# In It Together

## Why Less Inequality Benefits All

OECD

# In It Together: Why Less Inequality Benefits All

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# *Foreword*

The gap between rich and poor keeps widening. In the decades before the Great Recession, economic growth benefited disproportionally higher income groups while lower-income households were left behind. Since the crisis, disparities widened and in many OECD countries inequality is today at its highest since data collection started. This long-run increase in income inequality does not only raise social and political but also economic concerns: income inequality tends to drag down GDP growth, and it is the rising distance of the lower 40% from the rest of society which accounts for this effect. Debates how to best curb this trend and promote opportunities for all have moved to the top of the policy agenda in many countries.

This report is the third OECD flagship publication on trends, causes and remedies to growing inequalities. The 2008 report *Growing Unequal?* documented and analysed the key features and patterns of trends in income inequality in OECD countries. The 2011 publication *Divided We Stand: Why Inequality Keeps Rising* analysed the deep-rooted reasons for rising inequality in advanced and most emerging economies. *In It Together: Why Less Inequality Benefits All* highlights the key areas where inequalities originate and where new policy approaches are required. It takes a fresh look at the question how trends in inequality have affected economic growth and through which channels; looks at the consequences of the recent period of crisis and fiscal consolidation on household incomes; analyses the impact of structural labour market changes, such as rising non-standard work, job polarisation and profound changes in women's employment and earnings; documents levels of wealth concentration and indebtedness; and discusses the role for redistribution policies in OECD and emerging economies. The report also discusses a range of promising policy practices to tackle high inequality and promote equality of opportunities.

This report is the outcome of a collective effort with contributions from a team of policy analysts largely from the OECD Social Policy Division of the Directorate for Employment, Labour and Social Affairs. The overview Chapter 1 was prepared by the entire team. Principal authors of the other chapters were Wen-Hao Chen (Social Policy Division at the time of writing, currently Statistics Canada): Chapters 4 and 5; Federico Cingano (Employment Analysis Division): Chapter 2; Christine Le Thi (Statistics Directorate): Chapter 6; Ana Llena-Nozal (Social Policy Division): Chapters 4, 5, 6 and 7 (Section 7.2); Horacio Levy (Social Policy Division): Chapters 3, 4 and 7 (Section 7.2); Nora Lustig (Tulane University): Chapter 7 (Section 7.3); Fabrice Murtin (Statistics Directorate): Chapter 6; Céline Thévenot (Social Policy Division): Chapter 7 (Section 7.2). Guillaume Cohen, Pauline Fron and Maxime Ladaique (all Social Policy Division) contributed to all chapters and provided research assistance.

Michael Förster (Social Policy Division) led the team and co-ordinated the project and the publication. Monika Queisser, Head of the OECD Social Policy Division, supervised the preparation of this report and provided useful comments on various drafts.

Marlène Mohier prepared the manuscript for publication and Kathleen Connors Bouchaud, Patrick Hamm and Brian Keeley contributed to the editing of the report.

The analyses in this report rely partly on the *OECD Income Distribution Database* prepared by national experts, many of whom have also provided advice on country-specific results. They are too numerous to mention here but details can be found on the OECD inequality website (www.oecd.org/social/income-distribution-database.htm). The report makes use of many other data, in particular the micro data from the Luxembourg Income Study (LIS) (www.lisproject.org) and a new set of data on household wealth collected by the OECD Statistics Directorate. Discussions of data methodology and other supporting material for this report can be found on the website www.oecd.org/social/inequality-and-poverty.htm.

We are very grateful to Stefano Scarpetta and Mark Pearson, Director and Deputy Director of Employment, Labour and Social Affairs at the OECD for their guidance and extensive comments on various versions of the report. The report also benefited from comments received by colleagues in and outside the OECD. We gratefully acknowledge the many suggestions provided by members of the Working Party on Social Policy and the Employment, Labour and Social Affairs Committee of the OECD as well as by experts of the European Commission. The report also benefited from a close collaboration with the OECD Statistics Directorate in the update and development of the *Income Distribution Database*. We also thankfully acknowledge the comments and suggestions provided by colleagues from OECD Directorates: the Development Centre, the Economics Department, the Directorate for Education and Skills, the Directorate for Employment, Labour and Social Affairs, the Public Governance and Territorial Development Directorate and the Statistics Directorate. Finally, we are indebted to Professors Brian Nolan, Ive Marx and Tim Smeeding for their comments and suggestions on the first drafts of several chapters of this report.

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# Acronyms and abbreviations

| | |
|---|---|
| BHPS | British Household Panel Survey |
| CEQ | Commitment to Equity |
| DFE | Dynamic fixed-effect |
| ECB | European Central Bank |
| EE | Emerging economies |
| EMTR | Effective marginal tax rate |
| EPL | Employment protection legislation |
| EPR | Employment/population ratio |
| ESA | European System of Accounts |
| EU-LFS | European Union Labour Force Survey |
| EU-SILC | European Union Statistics on Income and Living Conditions |
| EUROMOD | EU tax-benefit microsimulation model |
| FTER | Full-time equivalent rate |
| FTFY | Full-time full-year |
| GDP | Gross domestic product |
| GEPF | Government Employees Pension Fund (Africa's largest pension fund) |
| GMM | Generalised Method of Moments |
| GSOEP | German Socio-Economic Panel |
| HFCS | Household Finance and Consumption Survey |
| HILDA | Household, Income and Labour Dynamics in Australia |
| ICT | Information and communication technology |
| IDD | OECD Income Distribution Database |
| ISCED | International Standard Classification of Education |
| ISCO | International Standard Classification of Occupations |
| JHPS | Japan Household Panel Survey |
| KLIPS | Korean Labor & Income Panel Study |
| LIS | Luxembourg Income Study |

| | |
|---|---|
| NSW | Non-standard work |
| OLS | Ordinary least square |
| PEB | Parent education background |
| PIAAC | OECD Programme for the International Assessment of Adult Competencies |
| PIM | Perpetual Inventory Method |
| PISA | Programme for International Student Assessment |
| PIT | Personal income tax |
| PMG | Pooled mean group |
| PMR | Product market regulation |
| PPP | Purchasing power parity |
| PTFY | Part-time full-year |
| PTPE | Part-time permanent employment |
| PTR | Participation tax rate |
| PTTE | Part-time temporary employment |
| RIF | Recentered Influence Function |
| SCF | Survey of Consumer Finances |
| SES | Structure of Earnings Survey |
| SLID | Survey of Labour and Income Dynamics |
| SME | Small and medium-sized enterprise |
| SNA | System of National Account |
| SW | Standard work |
| TBM | OECD tax-benefit model |
| TE | Temporary work |
| TTR | Transition tax rate |
| UQR | Unconditional quantile regression |
| VAT | Value-added tax |
| VET | Vocational education and training |
| YS | Years of completed schooling |

## ISO country codes

| | | | |
|---|---|---|---|
| Argentina | ARG | Italy | ITA |
| Australia | AUS | Japan | JPN |
| Austria | AUT | Korea | KOR |
| Belgium | BEL | Latvia | LVA |
| Brazil | BRA | Luxembourg | LUX |
| Canada | CAN | Mexico | MEX |
| Chile | CHL | Netherlands | NLD |
| Colombia | COL | New Zealand | NZL |
| China | CHN | Norway | NOR |
| Czech Republic | CZE | Peru | PER |
| Denmark | DNK | Poland | POL |
| Estonia | EST | Portugal | PRT |
| Finland | FIN | Russian Federation | RUS |
| France | FRA | Slovak Republic | SVK |
| Germany | DEU | Slovenia | SVN |
| Greece | GRC | South Africa | ZAF |
| Hungary | HUN | Spain | ESP |
| Iceland | ISL | Sweden | SWE |
| India | IND | Switzerland | CHE |
| Indonesia | IDN | Turkey | TUR |
| Ireland | IRL | United Kingdom | GBR |
| Israel | ISR | United States | USA |

## Conventional signs

.. Not available

In figures, OECD refers to unweighted averages of OECD countries for which data are available.

(↘) in the legend relates to the variable for which countries are ranked from left to right in decreasing order.

(↗) in the legend relates to the variable for which countries are ranked from left to right in increasing order.

# *Executive summary*

## Income inequality increased in good times and in bad times

In most countries, the gap between rich and poor is at its highest level since 30 years. Today, in OECD countries, the richest 10% of the population earn 9.6 times the income of the poorest 10%. In the 1980s, this ratio stood at 7:1 rising to 8:1 in the 1990s and 9:1 in the 2000s. In several emerging economies, particularly in Latin America, income inequality has narrowed, but income gaps remain generally higher than in OECD countries. During the crisis, income inequality continued to increase, mainly due to the fall in employment; redistribution through taxes and transfer partly offset inequality. However, at the lower end of the income distribution, real household incomes fell substantially in countries hit hardest by the crisis.

Much of the recent debate surrounding inequality has focused on top earners, especially the "top 1%". Less well understood is the relative decline of low earners and low-income households – not just the bottom 10% but the lowest 40%. This report places a special focus on these households, investigating some of the factors that have weakened their economic position, and the range of policy options that can help address increasing inequality.

## Higher inequality drags down economic growth and harms opportunities

Beyond its impact on social cohesion, growing inequality is harmful for long-term economic growth. The rise of income inequality between 1985 and 2005, for example, is estimated to have knocked 4.7 percentage points off cumulative growth between 1990 and 2010, on average across OECD countries for which long time series are available. The key driver is the growing gap between lower-income households – the bottom 40% of the distribution – and the rest of the population.

A main transmission mechanism between inequality and growth is human-capital investment. While there is always a gap in education outcomes across individuals with different socio-economic backgrounds, the gap widens in high-inequality countries as people in disadvantaged households struggle to access quality education. This implies large amounts of wasted potential and lower social mobility.

## Rising non-standard work can create job opportunities but also contributes to higher inequality

Temporary and part-time work and self-employment now account for about a third of total employment in OECD countries. Since the mid-1990s, more than half of all job creation was in the form of non-standard work. Many non-standard workers are worse off in many aspects of job quality, such as earnings, job security or access to training.

In particular, low-skilled temporary workers face substantial wage penalties, earnings instability and slower wage growth.

Households that are heavily dependent on earnings from non-standard work have much higher income poverty rates (22% on average), and the increase in the number of such households in OECD countries has contributed to higher overall inequality.

Non-standard work can be a "stepping stone" to more stable employment – but it depends on the type of work and the characteristics of workers and labour market institutions. In many countries, younger workers, especially those with only temporary work contracts have a lower chance of moving on to a more stable, career job.

## More women in the workforce lowers inequality

Women have made substantial progress in narrowing the participation, pay and career gap with men and this has put a brake on rising inequality. But they are still about 16% less likely to be in paid work and earn about 15% less than men. If the proportion of households with working women had remained at levels of 20 to 25 years ago, income inequality would have increased by almost 1 Gini point more on average. The impact of a higher share of women working full-time and higher relative wages for women added another brake of 1 point.

## High wealth concentration limits investment opportunities

Wealth is much more concentrated than income: on average, the 10% of wealthiest households hold half of total wealth, the next 50% hold almost the other half, while the 40% least wealthy own little over 3%. At the same time, high levels of indebtedness and/or low asset holdings affect the ability of the lower middle class to undertake investments in human capital or others. High wealth concentration can weaken potential growth.

## Designing policy packages to tackle high inequality and promote opportunities for all

Policy makers have a range of instruments and tools at hand to tackle rising inequality and promote opportunities for all. For such policy packages to be successful, solid trust in institutions and effective social dialogue are essential. Reducing the growing divide between rich and poor and promoting opportunities for all requires policy packages in four main areas:

- *Women's participation in economic life*: governments need to pursue policies to eliminate the unequal treatment of men and women in the labour market and to remove barriers to female employment and career progression. This includes measures for increasing the earnings potential of women on low salaries and to address the glass ceiling.
- *Employment promotion and good-quality jobs*: policies need to emphasise access to jobs *and* labour market integration. The focus must be on policies for the quantity *and* quality of jobs; jobs that offer career and investment possibilities; jobs that are stepping stones rather than dead ends. Addressing labour market segmentation is an important element of enhancing job quality and tackling inequality.
- *Skills and education*: A focus on the early years, as well as on the needs of families with school children, is crucial in addressing socio-economic differences

in education. More must be done to provide youth with the skills they need to get a good start in the labour market. With a rapidly evolving economy, further efforts, with the close involvement of business and unions, should be made in promoting a continuous up-grading of skills during the working life.

- *Tax-and-transfer systems for efficient redistribution*: Adequately designed redistribution via taxes and transfers is a powerful instrument to contribute to more equality and more growth. In recent decades, the effectiveness of redistribution weakened in many countries due to working-age benefits not keeping pace with real wages and taxes becoming less progressive. Policies need to ensure that wealthier individuals but also multinational firms pay their share of the tax burden. Large and persistent losses of low-income groups underline the need for well-designed income-support policies and counter-cyclical social spending.

# *Chapter 1*

# Overview of inequality trends, key findings and policy directions

*This chapter documents the longer-term trends as well as recent developments in income inequality and summarises the main messages from the in-depth chapters of the report. In particular, it highlights the channels through which inequality affects growth, the impact of women's employment and of developments in the type of jobs on inequality, and the extent of wealth concentration and indebtedness. It discusses individual measures but especially policy packages that are both equality- and growth-friendly by focusing on four main areas: women's participation, employment promotion and good quality jobs, skills and education, and taxes and transfers.*

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

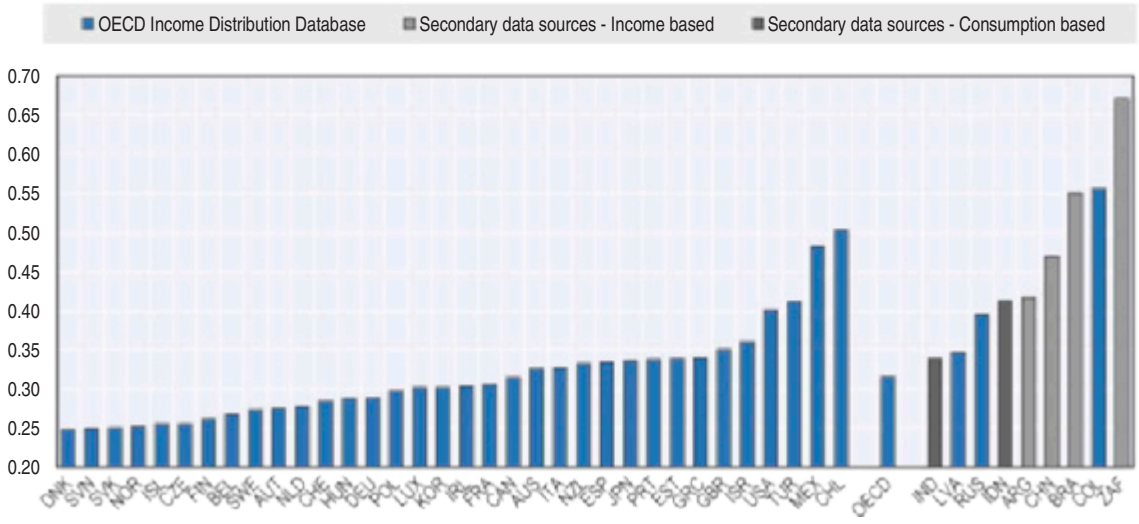
## 1.1. Introduction and key findings

Over the past three decades, income inequality has risen in most OECD countries, reaching in some cases historical highs. Today, the Gini coefficient – a common measure of income inequality that scores 0 when everybody has identical incomes and 1 when all the income goes to only one person – stands at an average of 0.315 in OECD countries, exceeding 0.4 in the United States and Turkey and approaching 0.5 in Chile and Mexico. In the main emerging economies, income inequality is higher than in the OECD area (Figure 1.1); in some it has increased over the past decade but there are encouraging signs of stabilisation (e.g. China) or even declines in some of them (e.g. Brazil).

This widespread rise in income inequality has been accompanied by growing public discussion and concern over the impact of the high and often rising gap between rich and poor on our societies. In recent years, and especially since the onset of the economic downturn, these debates have moved to the top of the policy agenda in many countries.

**Figure 1.1. Income inequality varies greatly across OECD countries and emerging economies**

Level of income inequality (Gini coefficient), 2013 or latest available year




*Note*: Data refer to 2014 for China, 2013 for Finland, Hungary, Netherlands and the United States and India, 2011 for Canada, Chile, Israel, Turkey and Brazil, 2010 for Indonesia, 2009 for Japan, and 2012 for the other countries. See note to Table 1.A1.1.Data from secondary data sources are not strictly comparable and should be interpreted with caution. Gini coefficients are based on equivalised incomes for OECD countries, Colombia, Latvia and the Russian Federation; per-capita incomes for other countries; and per-capita consumption for India and Indonesia.

*Source: OECD Income Distribution Database* (IDD), www.oecd.org/social/income-distribution-database.htm, for OECD countries, Latvia, Russian Federation and Colombia. World Bank, Poverty and Inequality Database for India. Statistics Indonesia (Susenas) for Indonesia. SEDLAC database for Argentina and Brazil. National Bureau of Statistics of China for China. National Income Dynamics Survey (NIDS) from Finn, A. and M. Leibbrandt (2013), "Mobility and Inequality in the First Three Waves of NIDS", *SALDRU Working Paper*, No. 120 and *NIDS Discussion Paper*, No. 2013/2, SALDRU, University of Cape Town, for South Africa.

StatLink http://dx.doi.org/10.1787/888933207690

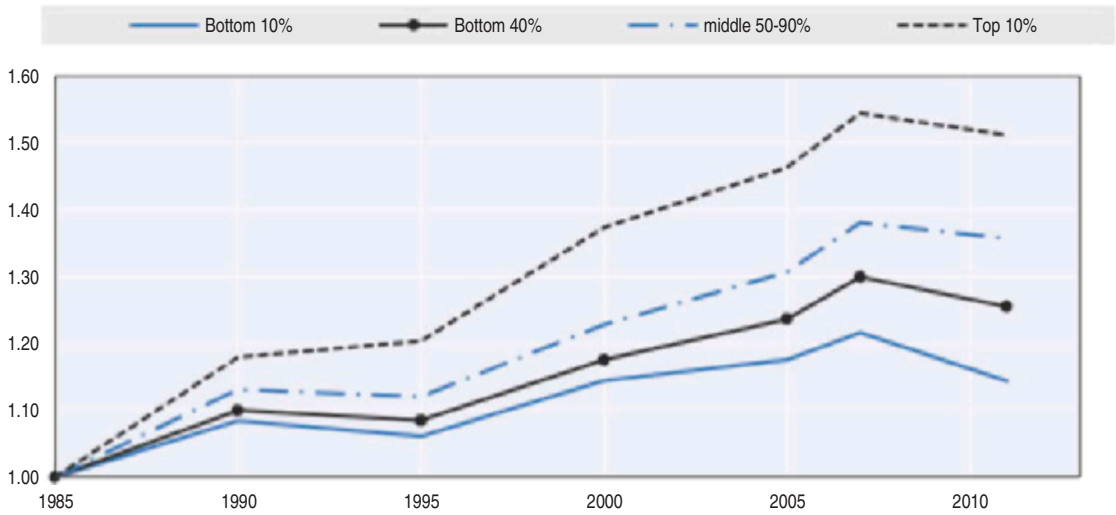
In the United States and other advanced economies, much of the recent debate on inequality focuses on the richest 1% and, increasingly, the 0.1%, the groups that have enjoyed the lion's share of income growth in recent decades. In the United States, for example, average pre-tax income rose by 1% a year between the mid-1970s and up to the

Great Recession. But when the growth that went to the top 1% of earners is excluded, the annual growth rate for the remaining 99% was just 0.6%, about the same level as in France (Förster et al., 2014). The rise of "the super-rich" has led to warnings about the risks of rent-seeking and political and economic "capture" by the economic elite.

But while the flashy lifestyles and incomes of the top 1% are certainly eye-catching, focusing on them exclusively risks obscuring another area of growing concern in inequality – namely the declining situation of low-income households. This is not a small group. In recent decades, as much as 40% of the population at the lower end of the distribution has benefited little from economic growth in many countries. In some cases, low earners have even seen their incomes fall in real terms (Figure 1.2). Just as with the rise of the 1%, the decline of the 40% raises *social* and *political* questions. When such a large group in the population gains so little from economic growth, the social fabric frays and trust in institutions is weakened.

**Figure 1.2. Lower and lowest incomes were increasingly left behind**

Trends in real household incomes at the bottom, the middle and the top, OECD average, 1985 = 1




*Note*: Income refers to disposable household income, corrected for household size. OECD is the unweighted average of 17 countries (Canada, Germany, Denmark, Finland, France, United Kingdom, Greece, Israel, Italy, Japan, Luxembourg, Mexico, Netherlands, Norway, New Zealand, Sweden and United States). See notes to Figure 3.5.

*Source: OECD Income Distribution Database* (IDD), www.oecd.org/social/income-distribution-database.htm.

StatLink http://dx.doi.org/10.1787/888933207705

Income inequality rose not only in bad economic times but also in good economic times (see Chapter 3). There have been periods when some countries managed to contain the growth in income inequality, but these have rarely lasted for long (OECD, 2014a). In 2008, the OECD rang the alarm bells about the pervasive, decades-long rise in income inequality in a report entitled *Growing Unequal?* (OECD, 2008). Three years later, OECD analysis in *Divided We Stand* (2011) documented the deep-rooted reasons for why inequality was rising so much, not only in advanced but also in most emerging countries.

Because the rise in inequality is so deeply embedded in our economic structures, it will be hard to reverse it. Changing institutions, policies, and relationships between

economic actors that have been with us for so long will be far from easy. And, forces of technological change and globalisation are not going away. So we need compelling evidence to show us the way to change so that all citizens can have better lives.

The purpose of this publication is to provide the evidence for why such a shift is urgently needed and how to implement it. Some may consider that the social and political costs of high and rising inequality are in and of themselves sufficient to justify action. The central argument of this publication is different. It is that, beyond its serious impact on social cohesion, high and often growing inequality raises major *economic* concerns, not just for the low earners themselves but for the wider health and sustainability of our economies. Put simply: *rising inequality is bad for long-term growth.* Chapter 2 of this report discusses these issues in detail.

The 2011 OECD report, *Divided We Stand*, documented that, beyond skill-biased technological changes, some structural reforms, while raising the economic potential, and creating new jobs, have also been associated with a widening of wage disparities. Exacerbating this trend has been a decline, in many countries, in the effectiveness of tax and benefit systems to redistribute market income. Such trade-offs of pro-growth policy reforms with both equality and stability of incomes have been described recently in OECD (2015a) and Cournède et al. (2015).

Making the rich richer, while incomes of the bottom 40% remain flat, could be seen as sensible from an economic perspective – after all, some are better off, and none are worse off. However, policies which lead to this outcome may *not* be even economically sensible if wider inequality reduces the capacity of the bottom 40% to improve their position and that of their children in the future. But just because inequality is bad for growth does not mean that all policies that reduce inequality are good for growth. OECD work in the frame of *Going for Growth* (OECD, 2013a, 2014b, 2015b) points to pro-growth policy reforms that could yield a double dividend in terms of boosting GDP per capita and reducing income inequality.

One of the messages of this report is that structural policies are needed now more than ever to put our economies back on a path of strong and sustainable growth, but have to be carefully designed and complemented by measures that promote a better distribution of the growth dividends. The challenge, therefore, is to find appropriate policy packages that are both growth-friendly and that reduce inequality. The bulk of this report is about looking at the main policy areas that are at the intersection of growth and a better distribution of its outcomes. It suggests that in order to reduce the growing divide between rich and poor and restore opportunities for all requires focusing policy attention on four main areas:

- women's participation in economic life
- employment promotion and good-quality jobs
- skills and education
- tax-and-transfer systems for efficient redistribution.

## 1.2. Inequality increased in good times, and it continued increasing in bad times

### *The long-term trend*

Over the past three decades, labour markets have been profoundly transformed by the interplay of globalisation, technological change and regulatory reforms. These changes have had a major impact on earnings and incomes. People with skills in high demand sectors like IT or finance have seen their earnings rise significantly, especially at the very top end of the scale, where performance-based pay and bonuses have become widespread. Meanwhile, at the other end of the scale, wages of workers with low skills have not kept up. The period has also seen reforms of tax systems that have reduced marginal tax rates for high earners. In addition, taxes and benefits have tended to redistribute less in the period from the mid-1990s up to the crisis; this has been felt most keenly by low-income working-age households.

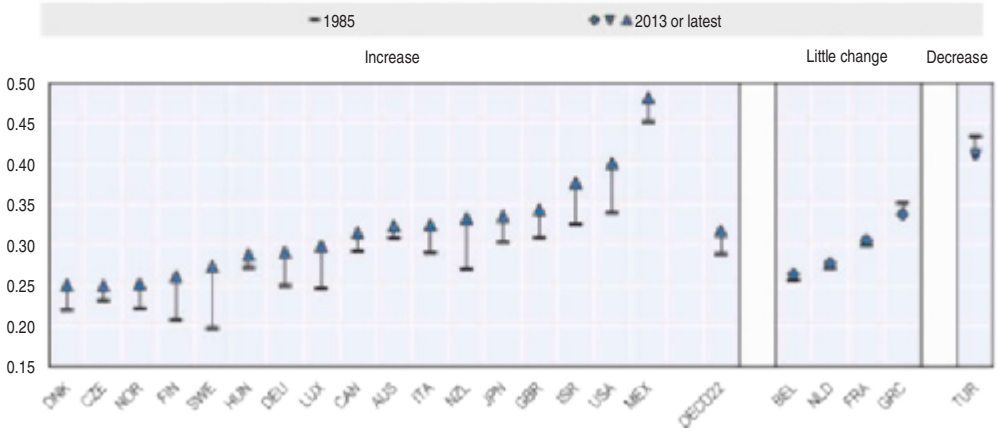
These factors, along with a number of demographic and social trends, are key to understanding the long-term rise in income inequality in OECD countries. Cyclical factors play a role as well, as steep drops in income during downturns lead to scarring and longer-term disadvantage when social policies are insufficiently counter-cyclical (OECD, 2014a). In the 1980s, the richest 10% of the population earned seven times more than the poorest 10%; today they earn almost ten times more. In broad terms, this long-term trend has been driven by two main movements: at the top end, and especially among the top 1%, a surge in incomes; at the bottom end, much slower income growth during good times and often a fall in incomes in bad times, especially during and after the Great Recession.

In the two decades prior to the global economic crisis, average real disposable household income rose by an average of 1.6% across OECD countries. With the exception of Japan, real incomes rose at both the top and bottom of the earnings ladder in every country (OECD, 2011). But in three-quarters of countries, household incomes of the top 10% grew faster than those of the poorest 10%, which led to widening income inequality. Other measures of inequality also support this general picture: the Gini coefficient of income inequality stood at 0.29, on average, across OECD countries in the mid-1980s. But by 2013, it had increased by about ten percent or 3 points to 0.32, rising in 17 of the 22 OECD countries for which long-time series are available[1] (Figure 1.3). Trends differed by age groups and the working-age population often bore the brunt of inequality increases.

In emerging economies, as documented above and in Chapter 7, levels of inequality are generally higher than in OECD countries.[2] Gini coefficients often exceed levels of 0.5, as in Brazil and many other Latin American countries, and approach 0.7 in South Africa. Over the long-term, inequality has been on the rise in most emerging economies, too, although data and indicators are less comparable than those from OECD countries. That said, all available evidence shows narrowing income gaps in most Latin American countries since the late 1990s, most notably in Brazil, and signs of a halt in the rise in some other countries, including China and Russia, since the mid-2000s.

**Figure 1.3. Income inequality increased in most OECD countries**

Gini coefficients of income inequality, mid-1980s and 2013, or latest available year




*Note*: "Little change" in inequality refers to changes of less than 1.5 percentage points. Data year for 2013 (or latest year): see Figure 1.1. These values differ slightly from those in Figure 1.1 for some countries as they have been adjusted to be comparable with 1985 values.

*Source: OECD Income Distribution Database* (IDD), www.oecd.org/social/income-distribution-database.htm.

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## *Was the crisis a game changer?*

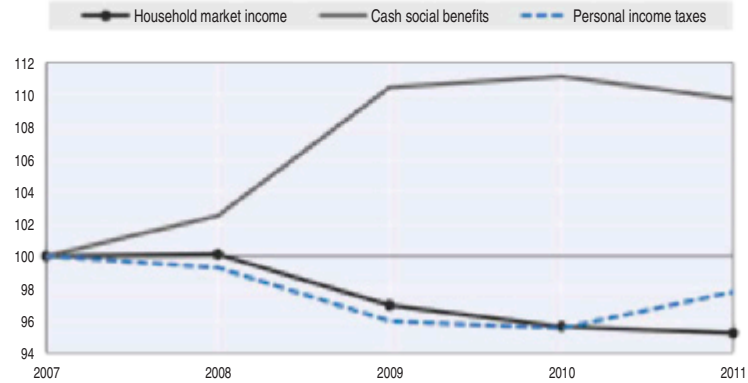
Real average disposable household income stagnated or fell in most OECD countries in the years from 2007 to 2011. The declines were particularly striking in the countries hit most severely by the crisis. In Greece, the average household lost over 8% of its real net income annually, and in Spain, Ireland and Iceland, average annual losses exceeded 3.5%. The dramatic collapse was due in large part to the loss in employment, rather than falling wages.

But these averages only tell part of the story. The groups at the bottom of the income scale lost even more in some countries. In Spain, for instance, incomes of the poorest 10% dropped by almost 13% per year, compared to only 1.5% for the richest 10%. In about half of those countries where incomes continued to grow, the top 10% did better than the bottom 10%. In Austria, Denmark, France and the United States, incomes at the top increased in real terms while they fell at the bottom.

In all OECD countries, income inequality is greatly reduced through redistribution – typically, taxes and transfers such as unemployment and other benefits. This is why "net" or "disposable" income inequality is much lower than "market" income inequality. But the impact of such redistribution has changed. In OECD countries, in the decade prior to the crisis, inequality before taxes and benefits often stabilised. But income inequality was driven upwards by weakening redistribution. In the initial years of the crisis, income inequality before taxes and benefits increased strongly but out-of-work benefits and other redistribution measures managed to cushion at least partially the rise (Figure 1.4). In the most recent years of weak economic recovery, unemployment persisted and yet governments chose to shift focus to fiscal consolidation, including curtailing unemployment benefits, education and investment. While income inequality before taxes and benefits continued to rise, the cushioning effect of taxes and benefits has become weaker, accelerating the overall upwards trend in *disposable* income inequality.

**Figure 1.4. Taxes and benefits cushioned the effect of the crisis on household incomes**

Percentage changes of household market income, benefits and taxes, 2007=100%, OECD, total population




*Note:* Household incomes are equivalised by household size and adjusted for inflation using changes in consumer price indices and differences in purchasing power using 2010 PPP indices for private consumption. OECD average refers to the unweighted average of 26 countries.

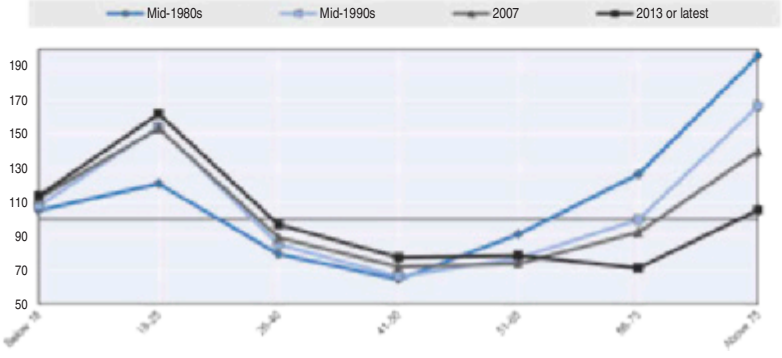
*Source: OECD Income Distribution Database* (IDD), www.oecd.org/social/income-distribution-database.htm.

StatLink http://dx.doi.org/10.1787/888933207729

The crisis period also saw a marked rise in income poverty in OECD countries, especially when measured in terms of "anchored" poverty, i.e. when fixing the real low-income benchmark to pre-crisis level. This gives a stronger sense of absolute changes in the living standards of the poor than the more commonly used "relative" measure of poverty, where the benchmark also evolves. Between 2007 and 2011, the OECD anchored poverty rate rose by just over one percentage point to 9.4%. In Greece, anchored poverty more than doubled to 27% and in Spain it almost doubled to 18%. There was also a shift in the age profile of poverty, with young people replacing the elderly as the group most at risk of poverty, continuing a trend lasting for the past 30 years (Figure 1.5). Poverty rates rose among children and especially among youth while they fell among the elderly.

**Figure 1.5. The risk of income poverty has shifted from the elderly to the young**

Relative poverty rate of the entire population in each year = 100, mid-1980s to 2013, or latest available year




*Note:* OECD unweighted average for 18 OECD countries for which data are available from the mid-1980s: Canada, Denmark, Finland, France, Germany, Greece, Israel, Italy, Japan, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Sweden, Turkey, the United Kingdom, the United States.

*Source: OECD Income Distribution Database* (IDD), www.oecd.org/social/income-distribution-database.htm.

StatLink http://dx.doi.org/10.1787/888933207732

## 1.3. Higher inequality drags down economic growth

High and often growing income inequality in so many countries has renewed interest on its possible economic effects, over and above its impact of social outcomes. This is by no means a new debate. Economic theory has long argued that the relationship between inequality and growth can go either way. A gap between rich and poor means that people have strong incentives to do what they can to be rich – including working harder, studying longer, and taking greater risks, all of which can lead to more economic activity, efficiency and growth (the "incentives" hypothesis). On the other hand, more inequality means that some people – the rich – are better able to take advantage of economic opportunities than the poor. Poor families may be unable to keep their children in education for as long as is optimal, or to afford high-quality education, thereby harming their future earnings. And they may find it difficult to borrow to invest in new opportunities (the "opportunities" hypothesis). As a result, economic growth is slower than it would otherwise be and disproportionately benefits the rich.

The empirical evidence has until recently been mixed as to which of the opposite forces dominates and in which country. But new research at the OECD, presented in Chapter 2, finds consistent evidence that the long-term rise in inequality of disposable incomes observed in most OECD countries has indeed put a significant brake on long-term growth. Further, it shows that efforts to reduce inequality through redistribution – typically, certain forms of taxes and benefits – do not lead to slower growth (confirming similar results in Ostry et al., 2014). This suggests that redistribution can be part of the solution, but requires a serious discussion on how to promote effective and well-targeted measures that promote a better sharing of the growth outcomes not only for social but also for economic considerations.

The analysis in Chapter 2 which draws on data for 31 OECD countries covering the period 1970-2010, finds that income inequality has a sizeable impact on growth. Between 1985 and 2005, for example, inequality rose by more than 2 Gini points on average across 19 OECD countries, an increase estimated to have knocked 4.7 percentage points off cumulative growth between 1990 and 2010.

The inequality brake on growth is not restricted to developed countries (see Ostry et al., 2014); it affects even more emerging economies. Despite often impressive growth rates and reductions in absolute poverty, high and sometimes very high levels of income inequalities in emerging economies are found to undermine their long-term growth potential. Some of these economies have recently provided important examples and insights into how income inequality can be addressed via well-targeted social and employment programmes (e.g. *Jefes y Jefas de Hogar Desocupados* in Argentina; the *Bolsa Familia* programme in Brazil; *Prospera* in Mexico).

### *If the bottom loses ground, everyone is losing ground*

The OECD analysis indicates that the biggest factor for the impact of inequality on growth is the growing gap between lower income households and the rest of the population. This is true not just for the very lowest earners – the bottom 10% – but for a much broader swathe of low earners – the bottom 40%. Countering the negative effect of inequality on growth is thus not just about tackling poverty but about addressing low incomes more broadly.

Since the dominant mechanism through which inequality seems to affect growth is by curbing opportunities for the poor and lower middle classes, Chapter 2 looks at their

investment in education and skills compared with other social groups. In particular, the analysis compares the education performance at different levels of inequality of three social groups – people whose parents come from high, medium and low educational backgrounds (PEB) – across three areas, namely education attainment, skills and employment. It is no surprise to find that people from low socio-economic groups do less well in all three of these dimensions than people from higher socio-economic groups. However, the analysis shows that as inequality rises the outcomes of people from lower groups *decline* still further.

On average, around 40% of people from a high PEB and around 30% from a medium PEB graduate from university. These figures remain broadly consistent regardless of the level of inequality. However, this is not the case for children from poorer educated families. An increase in inequality of around 6 Gini points lowers the probability of poorer people graduating from university by around four points. A similar effect was found when it comes to the amount of time students spend in education. Increasing inequality by around 6 Gini points cuts the length of time children from poorer families spend in education by about half a year.

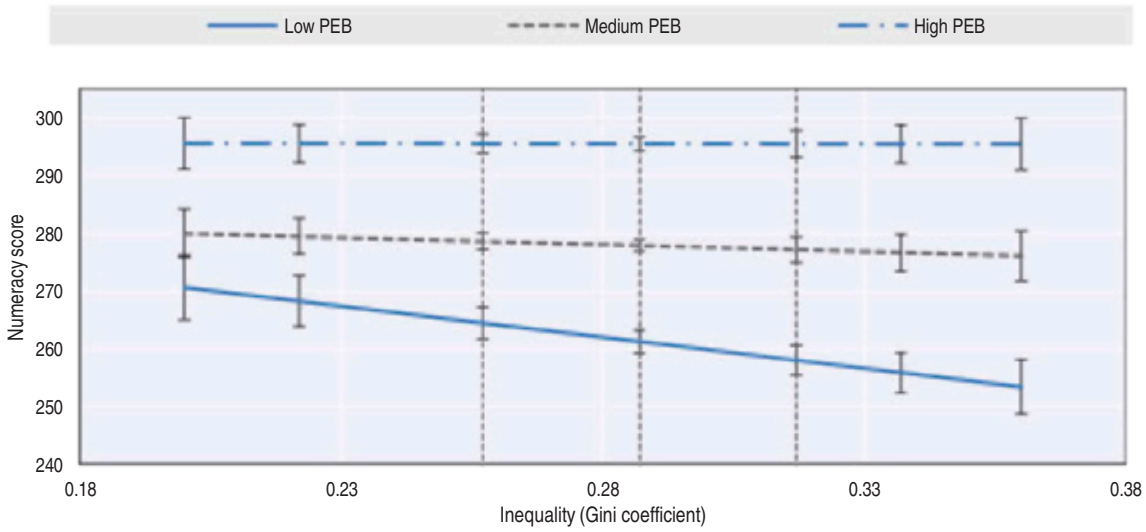
The impact of higher income inequality on children from poorly educated families can also be seen in *quality* of education, by measurements of skills (e.g. indexes of proficiency in numeracy and literacy) drawing from the OECD Skills Survey (OECD, 2013e). Once again, the numbers remain fairly constant for people from high and medium PEBs, regardless of the level of inequality in the country, but decline markedly for children from poorer families (Figure 1.6). This might seem like an obvious follow-on from the previous finding – people from poorer families spend less time in education and therefore develop weaker numeracy and literacy skills. However, the data show that even when poorer people spend the *same* amount of time in education as their better-off peers they do *worse*. This suggests that a large part of their lower proficiency is not because they have less education, but rather that they get less out of their time in education. This is probably due to education being of poorer quality, but there may be other social factors as well, such as people from poorer backgrounds being unable to spend the same amount of time studying as their richer counterparts.

Finally, the impact of higher levels of income inequality is also clearly visible in employment patterns. As inequality rises, people from poorer families face much weaker job prospects while there is little change for those from better-off families. An increase in inequality of around 6 Gini points rises the fraction of time spent out of employment by someone from a low PEB by around 3 percentage points.

Rising income inequality thus has a significant impact on economic growth, in large part because it reduces the capacity of the poorer segments – the poorest 40% of the population, to be precise – to invest in their skills and education. It has long been popular to say that while there is no social consensus around the desirability of tackling inequality of *outcomes,* for example by redistributing wealth, surely we can agree that it is necessary to ensure that we have equality of *opportunities* – i.e., that all should have the same life chances, regardless of their initial conditions. In reality, few societies come close to ensuring such equality of opportunities. However, the importance of research showing the links between family status and education shows that the distinction between opportunities and outcomes is not straightforward. Higher inequality of incomes of parents tends to imply higher inequality of life chances of their children. To achieve greater equality of opportunities without tackling increasing inequality in outcomes will be very difficult.

**Figure 1.6. Inequality lowers skills of the poor**

Average numeracy score by parent educational background and inequality




*Note*: The graph plots the average predicted numeracy score for individuals from low, medium and high family (educational) backgrounds, as a function of the degree of inequality (Gini points) in the country at the time they were around 14 years old. Low PEB: neither parent has attained upper secondary education; medium PEB: at least one parent has attained secondary and post-secondary, non-tertiary education; high PEB: at least one parent has attained tertiary education. The bars indicate 95% confidence intervals. The vertical dashed lines indicate the 25th, the median and the 75th percentiles of the underlying distribution of inequality.

*Source*: OECD Secretariat calculations based on PIAAC data. See Chapter 2, Box 2.3 and Annex 2.A1.

StatLink http://dx.doi.org/10.1787/888933207742

## 1.4. Why increased non-standard work can lead to more inequality

Promoting equality of opportunities is not just about improving access to quality education but also ensuring that the investment in human capital is rewarded through access to productive and rewarding jobs. Before the crisis, many OECD countries were facing a paradoxical situation: their employment rates (employment to working-age population) were at record-high levels and yet income inequality was on the rise. Typically, rising employment might be expected to reduce income inequality as the number of people earning no salary or relying on unemployment benefits falls. However, in recent decades the potential for this to happen has been undercut by the gradual decline of the traditional, permanent, nine-to-five job in favour of non-standard work – typically part-time and temporary work and self-employment. More (often low-skilled) people have been given access to the labour market but at the same time this has been associated with increased inequalities in wages and, unfortunately even in household income.

Policy needs to focus on access to jobs and labour market integration in order to increase both equality and growth. But *only* focusing on the number of jobs is not enough; Chapter 4 of this report shows that it is about policies for quantity *and* quality of jobs; jobs that offer career and investment possibilities; jobs that are stepping stones rather than dead ends.

The development of non-standard work is related to technological changes and the associated evolution of labour demand. In most advanced economies, there has been an

increasing *job polarisation* – a decline in the share of workers in the middle of the workforce, both in terms of skills and income, and increases in the proportions of workers in high- and low-skill jobs. The share of workers with routine-task jobs, such as accountants, fell from 53% to 41% between 1995 and 2010. At the same time, the employment share for high-skill abstract jobs, such as designers, grew from 28% to 38%, and relatively low-skill non-routine manual jobs, such as drivers, increased from 18% to 21%. The emergence of this U-shaped workforce is closely matched by developments in non-standard employment. The decline in middle-skill employment went hand in hand with a decrease of standard work contracts; and workers taking on low *and* high-skill jobs were increasingly likely to be self-employed, part-timers or temporary workers.

The spread of non-standard work is most visible when comparing its share in new jobs created before and since the onset of the crisis. Between the mid-1990s and the start of the Great Recession, almost half of all job creation was in the form of non-standard work; including the crisis years brings the share up to 60% (Figure 1.7).

The most recent data shows that non-standard work accounted for around a third of total employment in OECD countries in 2013, shared roughly equally between temporary jobs, permanent part-time jobs and self-employment. In some eastern European countries the proportion of non-standard workers is lower than 20% but in most southern European countries, Australia and Switzerland it exceeds 40% and in the Netherlands more than half of all workers are in non-standard work, largely because of a high number of part-timers.

**Figure 1.7. More than half of all jobs created since 1995 were non-standard jobs**

Panel A. Employment growth (%) 1995-2007, by type of employment

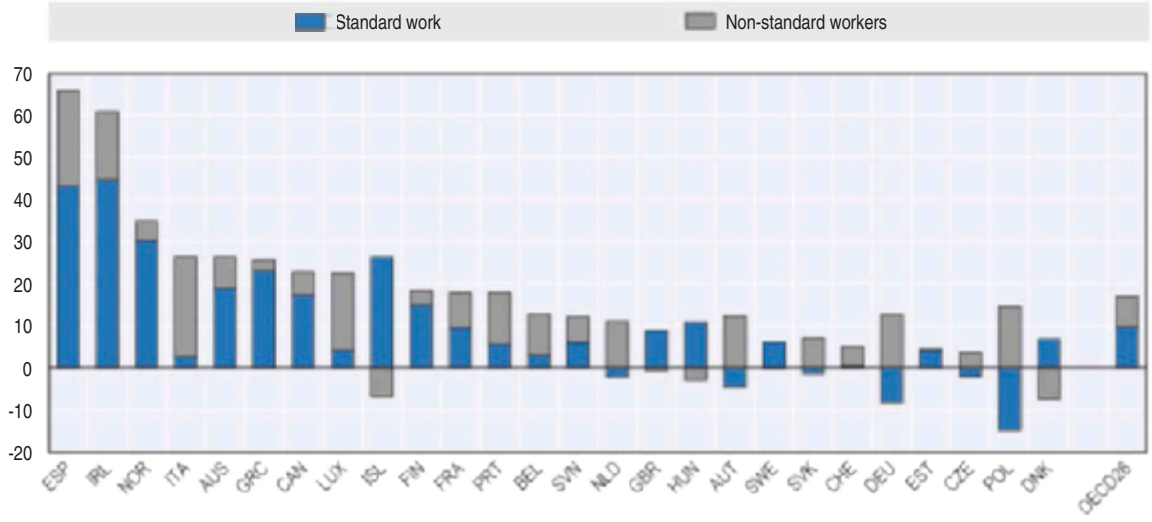


**Figure 1.7. More than half of all jobs created since 1995 were non-standard jobs** *(cont.)*

Panel B. Employment growth (%) 2007-2013, by type of employment

*Note:* Working-age (15-64) workers, excluding employers as well as students working part-time. Non-standard workers include workers with a temporary contract, part-timers and own-account self-employed.

*Source*: European Union Labour Force Survey (EU-LFS), Labour Force Survey for Canada, Household, Income and Labour Dynamics in Australia (HILDA) for Australia.

StatLink http://dx.doi.org/10.1787/888933207750

### *Who are the non-standard workers?*

Women and youth are more likely to be in non-standard work than prime-age men. A quarter of men have non-standard jobs, but that proportion rises to 40% among women, mostly because many women work part-time. They represent close to 70% of non-standard workers in Luxembourg, Austria and Switzerland, and more than 60% in most Nordic countries, the Netherlands, Germany, France, Belgium and Japan. Youth are the age group with the highest incidence of non-standard work at 40%. This mostly involves younger workers on temporary contracts; among temporary workers, close to half are under the age of 30.

Non-standard workers are also more likely to have lower levels of education and to be found in smaller rather than larger firms. In both cases, incidence is just under 50%. Half of all non-standard workers are the main breadwinners in a household, and a large majority of them (80% or more) live in two-or-more-person households, often with children.

### *It's about jobs – but which jobs?*

Non-standard jobs are not necessarily bad jobs. Non-standard employment is used by employers in need of a flexible workforce that can be adjusted quickly with production, to cut costs during downturns or as a screening device for new hires. Part-time, temporary and self-employment arrangements can be attractive to certain workers who opt for this type of employment to achieve a better work-family life balance, higher life satisfaction or, in the case of self-employment, a greater sense of control.

But it can also be associated with precariousness and poorer labour conditions where non-standard workers are exempted from the same levels of employment protection, safeguards and fringe benefits enjoyed by colleagues on standard work contracts. The analysis in Chapter 4 shows that many non-standard workers are indeed worse off on a range of aspects of job quality. First, and foremost, a non-standard job typically pays less than traditional permanent work. In general, earnings levels are lower in terms of annual and hourly wages. For part-timers, however, the differences in *hourly* wages tend to disappear once other demographic and job characteristics are taken into account. But temporary workers face substantial wage penalties, earnings instability and slower wage growth compared to permanent workers.

These earnings gaps are especially wide among low-skill, low-paid workers; non-standard workers in the bottom 40% of earners typically suffer wage penalties of 20%. This gap between non-standard and standard workers narrows markedly among higher-income workers and vanishes completely among top earners (i.e. the highest earnings quintile).

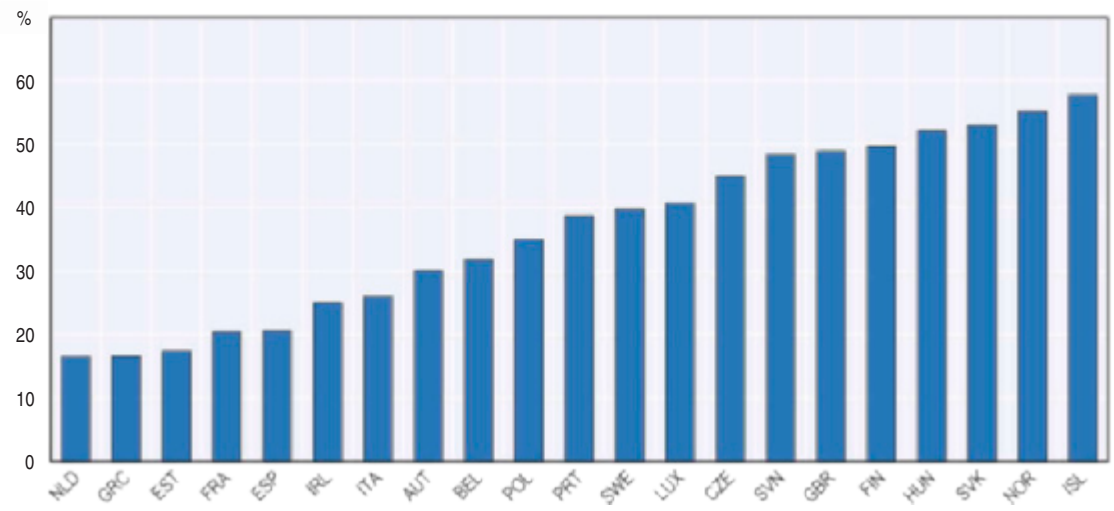
Non-standard workers suffer other penalties, too. Full-time temporary workers are 20% less likely – and part-time workers 40% less likely – to receive training than standard workers. Non-standard workers also face higher levels of insecurity in terms of the probability of job loss and unemployment and, in the case of temporary workers, report significantly higher job strain.

While associated with lower job quality, non-standard work can be a "stepping stone" to more stable employment – but it depends on the type of work and the characteristics of workers and labour market institutions. In particular, temporary contracts can increase the chances of acquiring a standard job compared with remaining unemployed in the short run by some 12 percentage points on average. But this is not true of part-time work or self-employment, which do not increase the chances of a transition to a standard job. In many countries, prime-age and older workers have a better chance of using non-standard jobs as "stepping stones" than younger workers, especially those with only temporary work contracts. In addition, transition rates remain low when considering a longer time span: less than 50% of the workers that were on temporary contracts in a given year were employed with full-time permanent contracts three years later (Figure 1.8).

In sum, people are more likely to be poor or in the struggling bottom 40% of society if they have non-standard work, especially if they live in a household with other non-standard or non-employed workers. This might not matter too much if such work were a stepping stone to a better job in the future, but too often this is not the case. Excessive wage penalties associated with temporary jobs in particular can contribute to wider inequality. That can also contribute to lower levels of training and skill development – precisely those activities that can lead to higher growth in the future. Ensuring that different employment arrangements meet the interests of both employees and employers, and do not become a caste system of "good" and "bad" jobs, is one way of ensuring that equality and growth move hand-in-hand.

**Figure 1.8. In most countries, the majority of temporary workers stay on such jobs**

Percentage share of temporary employees in 2008 that were employed as full-time permanent employees in 2011




*Note*: 2007-10 for the Czech Republic, France, Greece, Sweden and the United Kingdom; 2006-09 for Norway and the Slovak Republic; and 2005-08 for Ireland.

*Source*: OECD (2014), *OECD Employment Outlook*, OECD Publishing, Paris, http://dx.doi.org/10.1787/empl_outlook-2014-en. Calculations based on the European Union Statistics on Income and Living conditions (EU-SILC) 2005-11.

StatLink http://dx.doi.org/10.1787/888933207768

## 1.5. Tackling job and wage discrimination of women will boost growth and equality

Over the past 20 years, most OECD countries have seen big increases in the numbers of women joining the labour market and major improvements in the status of women in the workforce. These changes have brought benefits not just for women themselves and their families, but for the economy as a whole. A narrowing in the labour force participation gap between men and women of 50% has been estimated to raise annual growth in GDP per capita by 0.3 percentage points on average (OECD, 2012a). And even though there are complex interactions between female labour force participation and inequality the overall impact has been positive: having more women in the workforce lowers income inequalities.

### *Inequalities between men and women persist*

Despite substantial progress, inequalities between women and men in the workforce persist. Over the past 20 years the employment gap in OECD countries has narrowed by an average of 7 percentage points but it still stands at 16 percentage points. When taking into account that women are more likely to hold part-time jobs and thus work fewer hours than men, the hours-adjusted employment gap widens to almost 24 percentage points (see Chapter 5).

Differences in pay also persist, due in large part to the fact that women are more likely to work in lower-paid occupations. Still, the pay gap has narrowed: among full-time employees, women earned, on average, 15% less than men in 2013, an improvement of four percentage points since 2000.

### *More women in paid work means less income inequality*

A priori, higher female labour force participation could lead to more or less inequality. On the one hand, there are cases, where the presence of more women in the workforce may actually result in higher income inequality. This may happen, for example, when more women take up high-skill jobs that are better paid. Nowadays people tend to choose their spouses more often from the same socioeconomic group, meaning that doctors are marrying other doctors rather than nurses as it was the case more than 20 years ago. This behaviour, also called "assortative mating", results in a situation where higher incomes become more concentrated.

In addition, earnings inequality *among* women is higher than *among* men, and one could expect this to drive up overall inequality. However, the earnings gap between high and low educated women has been increasing at a much slower pace than the same gap among men since the mid-1980s, on average by 9% as compared to 17% for men. There are two main reasons why low-income women are not slipping as far behind as low-income men. Firstly, their real earnings have increased more – or declined by less – than men's in most countries. Second, women in the bottom 20% of earners worked longer hours than in the past.

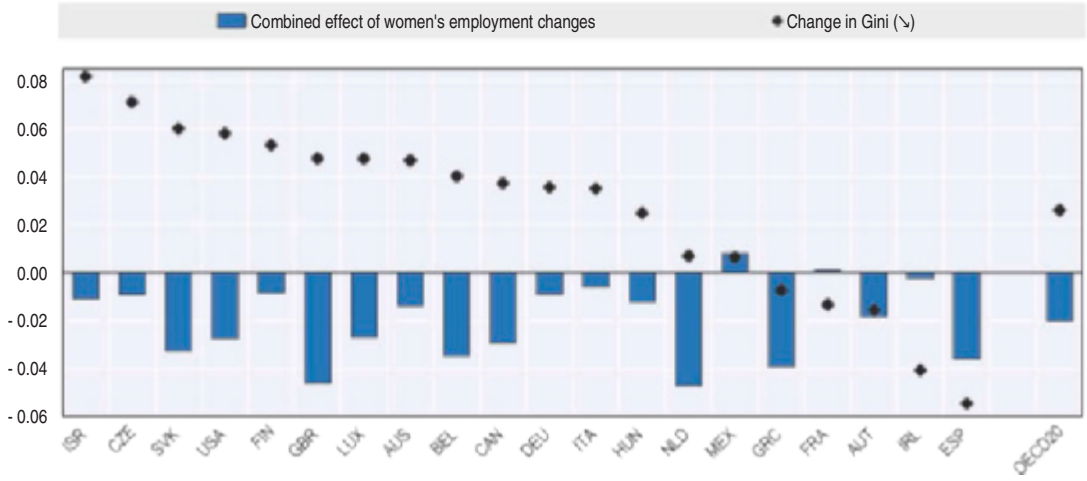
On the other hand, the mere fact of more women entering the workforce outweighs the disequalising pressures and clearly narrows income inequality overall. This is particularly true – although not in all countries – when more women are working "traditional hours" in full-time jobs. Improvements in the gender pay gap also contribute to further reducing income inequality.

Overall, the evidence in Chapter 5 shows that if the proportion of households with a working woman had remained at around the same levels as 20 to 25 years ago (52% rather than 61%), income inequality would have increased by almost 1 Gini point more on average than it actually did. In addition to the general impact of women joining the labour force, the impact of a higher share of women working full-time and higher relative wages for women added another brake of 1 point (Figure 1.9).

For these effects to continue into the future, governments need to pursue policies to increase the earnings potential of women on low salaries and to address the glass ceiling, which prevents women from moving up the career ladder. Governments can also act as a role model for other employers by ensuring equality of opportunity in the public service and promotion the representation of women in public life.

**Figure 1.9. In all OECD countries, women's employment put a brake on increasing inequality**

Contribution of composition and wage structure effects (women) to percentage point changes in Gini of household disposable income, mid-1990s to 2007 or latest available pre-crisis year




*Note:* Data refer to working-age (25-64) households. Decomposition results are based on Recentered Influence Function (RIF) regressions. Combined effect of women's employment changes include both the composition and wage structure effects, each combining three covariates: participation, work intensity and job skill nature. Data refer to changes from the early/mid-1990s to the latest available pre-crisis year.

*Source*: OECD Secretariat calculations from the Luxembourg Income Study (LIS).

StatLink http://dx.doi.org/10.1787/888933207774

## 1.6. Wealth concentration widens disparities further and limits investment opportunities for many

Understanding people's incomes, especially after taxes and benefits, gives a strong sense of whether or not they can meet their bills and make long-term investments in education, housing and so on. Yet there is no doubt that wealth also matters, both in shaping people's individual circumstances by generating capital income and as a wider socio-economic force. Accumulated wealth can generate capital income, which, in turn, can deepen income inequalities. In basic terms, income is the cash that people earn every month through work, transfers or rents; wealth is the money they accumulate over time in bank accounts and in assets such as property and stocks. Comparable data on income are much more abundant than data on wealth, which perhaps partly explains why wealth inequalities have been largely neglected, up until recently.

### *Wealth is more unequally distributed than income*

Household wealth – in particular financial assets – is much more unequally distributed than income. The bottom 40% owns only 3% of total household wealth in the 18 OECD countries for which comparable data are available. For comparison, their share of total household income is 20%. At the other end of the scale, the top 10% of the wealth distribution own half of all total household wealth and the wealthiest 1% hold 18%. The richest 10% of *income* earners get around a quarter of all cash income, ranging from 20% in Norway to 28% in the United States, and close to 40% in Chile and Mexico. But countries with lower income inequality levels are not necessarily those with low wealth concentration, as witnessed by the examples of Austria, Germany and the Netherlands (Figure 1.10).

**Figure 1.10. Wealth is more concentrated at the top than income**

Share of top 10% of household disposable income and top 10% of household net wealth, 2012 or latest available year

*Note:* Income refers to disposable household income, corrected for household size. Wealth refers to net private household wealth. Data refer to the shares of the richest 10% of income earners (bars) and of the richest 10% of wealth holders (diamonds), respectively.

*Source*: *OECD Wealth Distribution Database* and *OECD Income Distribution Database* (www.oecd.org/social/income-distribution-database.htm).

StatLink http://dx.doi.org/10.1787/888933207780

If it is problematic to develop a snapshot of wealth at any one time,[3] it is doubly difficult to track trends. Piketty (2014) compiled data from eight OECD countries since the 1970s and concluded that, like income, private wealth has tended to become more unequally distributed in recent decades, reversing a long-term decline throughout much of the 20th century. Several factors have contributed to this rise, most notably the increase in stock and housing prices relative to consumer prices.

Since the crisis, there are indications that the trend towards greater wealth inequality has deepened. Comparable data from six OECD countries indicate that the crisis has increased wealth concentration at the top in four of them, while wealth inequality at the bottom of the distribution increased in five (Australia, Canada, Italy, the Netherlands and the United States).

### *The flipside of wealth: Debt*

Real assets, typically the family residence, are the main source of wealth, both for the wealthy and for people with low levels of wealth. They account for 75% of the value of total assets on average. It is only among those at the top of the wealth scale that financial assets, such as stocks, form a significant source of wealth.

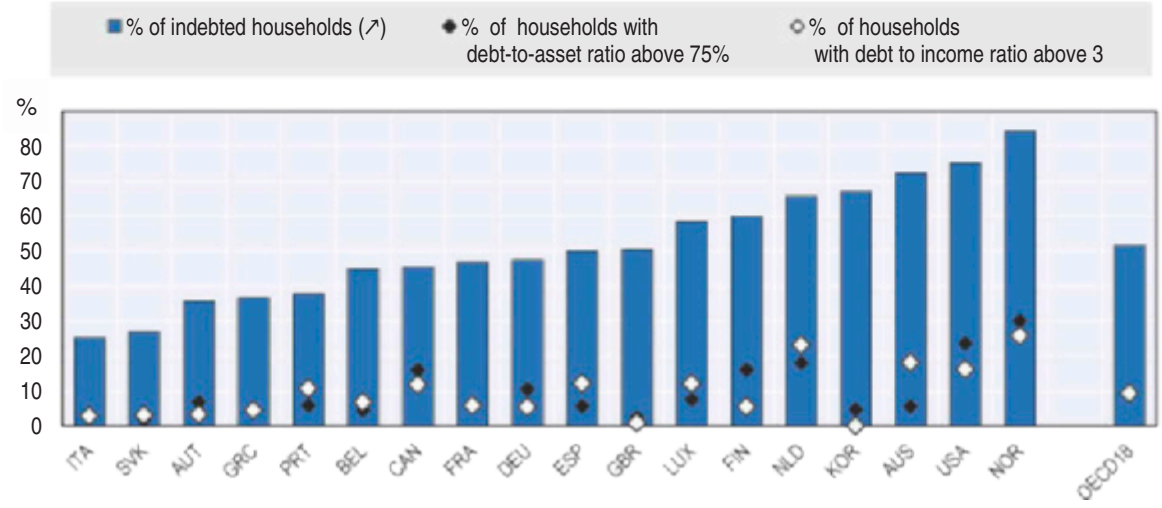
The flipside of wealth is debt, and, in some countries, there are reasons to be concerned about the scale and concentration of liabilities, which are typically created by loans on families' main homes. As witnessed in the recent financial and economic crisis, the concentration of debt on some households, even those with high levels of assets, may put them at risk if there are sudden changes in asset prices. That, in turn, could affect consumption and investment in the entire economy.

Close to 10% of households in the 18 OECD countries for which data are available are over-indebted, i.e. they have a debt-to-asset ratio exceeding 75% or a debt-to-income ratio

over 3, and these ratios exceed 16% in the Netherlands, Norway and the United States (Figure 1.11). The largest share of indebted households are found in the middle of the income distribution, i.e. outside the bottom fifth and the top fifth. Only about a third of households in the bottom fifth have any debts, as many poorer households have difficulties in securing loans.

**Figure 1.11. Half of all households have debts and one tenth is over-indebted**

Percentage of indebted and over-indebted households




*Source*: *OECD Wealth Distribution Database*.

StatLink http://dx.doi.org/10.1787/888933207792

In summary, wealth is much more concentrated than income, and there are reasons to believe that wealth inequalities are deepening over time. The capital income generated by wealth concentration is likely to deepen income inequality still further, with implications for deteriorating economic growth. At the same time, a high level of indebtedness and/or low asset holdings further affects the ability of the lower middle class to undertake investments in human capital or others, and reduces risk taking. This constitutes a second pathway for how disparities in wealth holdings can weaken potential growth.

## 1.7. Designing sustainable policy packages to promote equality of opportunities

There is nothing inevitable about growing inequalities. Policy makers have a range of instruments and tools at hand to tackle rising inequality and promote opportunities for all while also promoting growth. There is, however, no single best model or policy mix to adopt. Each country will have to design its own package, depending on the key factors at the origins of inequality in the national context. How countries choose to address inequality also depends on the extent to which their societies agree on the importance of values such as solidarity, redistribution and equality and what role they assign to government in promoting equality (see Atkinson, 2015).

This report adds a particular dimension to discussions of policy choices to tackle inequality by demonstrating how inequality can reduce growth. The case for addressing inequality becomes more urgent once it is realised that successfully doing so might also

increase long-term growth. Furthermore, the report suggests that it is the position of the bottom 40% that matters in particular for economic growth.

There are two approaches to identifying the policy choices that countries might make in order both to reduce inequalities and increase growth.

- First, identify which policies will best promote growth, and then analyse their potential distributional effects. This approach has recently been followed in OECD work (e.g. OECD, 2008; Causa et al. 2014), identifying, within the pro-growth policy toolbox, reforms that could yield a double dividend in terms of boosting GDP per capita and reducing income inequality. It also identifies other policy areas where reforms could entail a trade-off between both objectives, such as tightening benefits to long-term unemployed people, or administrative extensions of collective wage agreements.
- The second approach is to identify those policy areas which will best address inequality, and then assess their effect on growth. Such approach builds on the extensive OECD work on the drivers and causes of inequality since *Growing Unequal?* (2008) and *Divided We Stand* (2011), and the most promising elements for a policy package are discussed below.

It might be expected that the two approaches are largely compatible. However, to the extent that some countries prioritise economic growth they will prefer some policies over those that are prioritised by those countries where the focus is on ensuring a more equitable distribution of the growth benefits. Whatever the starting point, it should be stressed that there are important *policy complementarities* that can and should be exploited. A government may for example go for a growth-enhancing policy but introduce at the same time complementary measures that reduce its potential negative distributional effects. This means, for example, that it is a good idea to accompany measures to reduce barriers to competition (e.g. relaxing product market regulations) with adequate policies to support workers affected by the transition from less to more productive activities.

The most efficient policy package will address inequalities at the point where they originate rather than trying to pick them up only at a later stage. Redistribution strategies based on transfers and taxes *alone* would not necessarily be effective or financially sustainable. Policy needs to be pitched broadly, both with respect to the target groups and to the policy tools applied – targeting poverty alone is not the solution. The analysis in this report shows that it is not only the situation of the very poorest section of the population that inhibits growth but that of a much broader group of working and lower middle class people. Policy thus needs to be directed towards the bottom 40%.

As the analysis in this report shows, some – though not all – policies to reduce income inequalities will not only increase fairness but will also sustain growth. Identifying such policies is of particular importance within the broader new OECD strategy of achieving *Inclusive Growth* (see www.oecd.org/inclusive-growth), i.e. growth that creates opportunities for all and distributes the dividends of increased prosperity fairly (OECD, 2014d, 2014e).

Following the approach of identifying policies which are effective in tackling inequality, and then assessing their impact on growth, this report proposes a strategy for efficient policy packages to reduce the growing divide between rich and poor and restore opportunities for all, i.e. focusing policy attention on the four areas: i) women's

participation in economic life; ii) employment promotion and good-quality jobs; iii) skills and education, and iv) tax-and-transfer systems for efficient redistribution.

### *Women's participation in economic life*

While gender gaps in employment and earnings have declined, they remain large and there is a need for policies to eliminate the unequal treatment of men and women in the labour market. This agenda is relevant for OECD and emerging economies alike as witnessed by a joint report of international organisations for the G20 (OECD-ILO-IMF-WB, 2014). Establishing clear legislative frameworks to protect all workers against all forms of direct and indirect discrimination and harassment – including discrimination of workers based on gender, maternity, paternity and family responsibilities – can help provide a formal structure to remove barriers to female employment and career progression (see the OECD Gender Recommendation, for a comprehensive set of policy principles and commitments to promote gender equality in education, employment and entrepreneurship, OECD, 2013b).

Examples of such measures include labour legislation which guarantees the right of women to return to work to the same or an equivalent position paid at the same rate after maternity leave, as introduced for example, in Canada, Korea and the United States. The principle of equal pay for equal work or for work of equal value should also be respected in collective bargaining as well as labour laws and practices. In Indonesia, equal employment opportunities guidelines were developed by the government in collaboration with social partners, which explain the principle of equal pay for men and women for work of equal value and provide guidance on how to identify discriminatory pay practices.

Measures supporting the reconciliation of work and family life are also critical for men and women to participate in the labour market on an equal footing (OECD, 2012a; OECD 2014b). The difficulty of combining work and family responsibilities very often results in women working part-time or dropping out of the labour force altogether. A range of policies is necessary to remove this obstacle. In many countries, governments and businesses have implemented family-friendly policies – parental leave, childcare, out-of-school-hours care, flexible working arrangements, etc. – to help parents with children. France and the Nordic countries, for example, provide a continuum of publicly provided reconciliation support for parents during the early years of their child's life, and they have been able to combine high female employment with high fertility rates, carrying a demographic dividend with them into the future.

One policy option towards better sharing of unpaid work is to institute leave arrangements for the exclusive use of fathers. Many countries have paternity leave ranging from a few days up to two weeks as for example, in France, Spain and the United Kingdom. In a number of countries including Germany, Italy and France, policy encourages fathers to take leave to care for young children by granting them the exclusive right to part of the paid parental leave entitlement for two months or more on a "use it or lose it" basis, or provide "bonus" months when couples share leave entitlements while (to a varying degree) providing income support during the leave period. Yet, this needs to be combined with active promotion of the policy to change mentalities (e.g. Ikumen Project in Japan) designed to reduce the stigma associated with men taking paternity leave, since in both Korea and Japan such leave is seldom used. Another recent policy change is the inclusion of "Dad and Partner Pay" for up to two weeks, paid at the rate of the national

minimum wage within the Australian parental leave scheme. Paternity leave was also introduced recently in Argentina, Brazil and Hong Kong, China.

As highlighted in Chapter 4, women are often overrepresented in low-wage or minimum wage occupations. An appropriate minimum wage can help to address increasing concerns about inequality and rising levels of working poverty. Several countries have also taken steps to improve the working conditions of domestic workers, which are predominantly women, and reduce the incidence of informality among them. France and Canada (Quebec), for example, have introduced model contracts to facilitate the establishment and formalisation of an employment relationship. Some emerging economies, have also introduced fiscal measures to encourage formalisation, such as the "Simples Law" in Brazil or the "Regimen de Incorporación Fiscal" in Mexico. Other emerging economies, such as South Africa, have taken steps to improve the working conditions of domestic workers through the introduction of a minimum wage and laying down hours of work, overtime, salary increases, and leave entitlement (Basic Conditions of Employment Act, 2002).

In addition to gender gaps in employment participation, women still face a glass ceiling in getting through to the top of their professions. To increase women's representation in decision-making positions, countries have introduced mandatory quotas (e.g. France, Germany, Italy, Spain), target-setting (Denmark), disclosure initiatives (United States) and monitoring processes.

### *Employment promotion and good-quality jobs*

The most promising way of promoting equal opportunities and reducing high inequality is to boost employment and access to good-quality jobs, not only for women but more generally. As the analysis in Chapter 4 shows, before the crisis income inequality increased despite strong growth in employment. One of the reasons is that more than half of the jobs created since the mid-1990s were in non-standard work. While non-standard arrangements such as part-time work or self-employment may suit many workers' efforts to strike the right work-life balance, they also hollow out middle-skill, middle-income jobs and drive down earnings for low-skilled non-standard workers, thus contributing to rising income inequality. To break this circle of increasing employment and higher income gaps, more inclusive labour market policies are needed which focus not only on the quantity but also on the quality of jobs.

The new OECD conceptual and operational framework to boost job quality suggests that policies should focus on three dimensions of jobs: earnings quality; labour market security; and the quality of the work environment (OECD, 2014c). Earnings quality captures the extent to which the job contributes to workers' material living standards. Labour market security captures labour market-related aspects of economic security. For the advanced economies, this focuses on the risk of unemployment and the income support workers are entitled to if unemployed. For the emerging economies, hidden unemployment and under-employment on extremely low pay need also be taken into account. Quality of the working environment captures non-economic aspects of job quality, e.g. the incidence of job strain that can impinge on workers' health and well-being. Job strain occurs when high demands on workers are combined with low resources available to address them.

An important finding for advanced countries is that job quantity and the different dimensions of job quality tend to be positively related across countries, across population groups, and across individuals over the lifetime. This implies that with the right mix of

policies and institutions it is possible to do well across all dimensions of labour market performance. To reduce inequalities in both job quantity and job quality, policies should target those workers who tend to do poorly along several dimensions, particularly youth and the low-skilled. By contrast, in emerging economies, job quantity and job quality often do not go hand in hand. The main issue is generally not open unemployment, but the lack of better paid and more protected jobs. This calls for policy actions on job quality. Indeed, there is increasing evidence that job quality and inclusiveness play a positive role for economic growth and social stability. In all countries, however, promoting the quality of the work environment impacts not only on the well-being of workers, but also has direct economic implications, e.g. higher productivity and lower public health expenditure. In this area, policies should focus on increasing the effectiveness of occupational health systems to prevent work-related health problems, and on promoting social dialogue and employers' social responsibility on these issues.

### *Active labour market policies*

The design and implementation of benefit systems, employment and training programmes and employment service arrangements are important drivers of unemployment and under-employment, benefit dependency rates but also the degree of matching of workers with jobs. Recent OECD studies of activation policies (*Connecting People With Jobs*) revealed substantial differences in eligibility conditions for benefits and their generosity; in the operation of the public and private employment services; in resources devoted to active labour market programmes; and in the targeting of these resources to different groups.

There is no unique formula for effective activation. Active labour market measures for unemployed workers vary among the different target groups. The long-term unemployed require measures to help them find paid work based on skills acquisition and work experience (e.g. Work Experience Phase in Australia), combined with intensive and specific case management and interventions, such as the individualised action plans and employment service centres in Japan.

For people with disabilities, policies should focus on preventing permanent withdrawal from the labour market by enhancing their remaining capacity for work, rather than their incapacity. In countries such as Australia, the Netherlands, Switzerland, United Kingdom and the European Nordic countries, reforms have been introduced to turn passive disability benefits into more active benefits with a re-employment perspective. Countries that have pursued structural reforms of disability benefits by introducing stronger gate-keeping mechanisms, time-limiting benefits with a or reassessing the eligibility of existing recipients managed to avert the risk of the long-term unemployed drifting into disability benefit schemes and curb long-term expenditure during the global financial crisis. Such policies have been introduced in Sweden, the Netherlands, Switzerland, and the United Kingdom – all countries that have generally been able to put disability benefit claims on a declining trend. By contrast, other countries that have failed to reform disability benefit now face mounting beneficiary rates – in Estonia and the United States they have risen by over 10% (OECD, 2010).

For older workers, policies should be designed to allow for greater choice in work and retirement decisions (including part-time employment), and to facilitate employment and employability at an older age (e.g. the Perspective 50plus in Germany; Targeted Initiative for Older Workers in Canada). Enhancing employability is getting all the more important as programmes that fully exempt older unemployed workers from job-search

requirements have now generally been abolished, and partial exemptions from intensive activation measures are also becoming more restricted.

Direct job creation schemes can serve as a useful back stop to ensure that the long-term unemployed and other disadvantaged groups maintain a contact with the labour market (see OECD, 2015c). India has one of the largest public works programme in the world in terms of coverage – the National Rural Employment Guarantee Scheme (NREGA) – which plays an important role in reducing short-term poverty and smooth employment and income throughout the year for rural labourers. The programme however remains little used, mainly in poorer states because of lack of funding and weak implementation capacity.

A number of countries have engaged in reforms that simplify a myriad of social benefit programmes in order to lower administrative costs and increase take-up and effectiveness of the support provided. The United Kingdom, for instance, is currently implementing a reform aiming to bring together six different means-tested transfer programmes into a single Universal Credit, though it is currently too early to tell what the distributive outcomes of this reform will be.

### *Targeting young people*

More must be done to provide youth with the skills and help their need to get a better start in the labour market and progress in their career to avoid high drop-out rates and careers in low-paid work. The *OECD Action Plan for Youth* recommends a set of measures to tackle the current situation of high youth unemployment, including expanding active labour market strategies and encouraging employers to expand quality apprenticeships or internship programmes, while strengthening the long-term prospects of youth through strengthening the education system, the role and effectiveness of Vocational Education and Training and assisting the transition from school to work (OECD, 2013c).

Helping high-school dropouts through second-chance programmes can be an effective way to ensure they do not become stuck in low-paid jobs. For example, Second-Chance Schools in France aim to provide youth aged 18-25 who have left school early with the opportunity to complete a high-school diploma. It is also important that training and re-training opportunities are available to older individuals who have suffered job loss. A number of countries, such as Australia, have opened up apprenticeship schemes to those 25 or older, thus broadening the options for low-skilled older workers to obtain training.

Prolonged periods of unemployment can also lead to permanent scarring and reduce future earnings and widen inequality. For youth, different forms of hiring incentives, such as the Youth Contract in the United Kingdom or the *Zérocharges Jeunes* in France and the tax incentives introduced recently in Italy, could be considered as short-run measures targeted to provide job opportunities, especially for the low-skilled youth. However, they should involve some training component and serve as a stepping stone back into regular employment rather than becoming a low-wage trap. A good example of these schemes was the UK *Future Jobs Fund* which aimed at avoiding the scarring of young people as a result of the global economic crisis. In the medium- to longer-run, many countries need to introduce better and more attractive options for allowing youth to combine study and work experience and for encouraging their participation in vocational education and training. Useful examples in this direction are provided by the German and Australian experiences.

Often, there are also distinctive arrangements for unemployed youth including the recently introduced European Union *Youth Guarantee* and its predecessor guarantees in the Nordic countries as well as the prioritisation of education over job search for early school leavers in Australia. In some countries, unemployed and inactive youth benefit from special activation programmes such as intensive counselling – the Youth Guarantees – to avoid being trapped in benefit dependency. Youth guarantees require strong co-ordination between many service providers (health, social assistance, employment, career guidance, education and training, etc.) to solve special barriers such as lack of housing, health problems and devise a concrete development plan. The EU Youth Guarantee aims at ensuring young people's successful transition into work by ensuring that, within four months of leaving school or losing a job, young people under 25 can either find a good-quality job suited to their education, skills and experience; or acquire the education, skills and experience required to find a job in the future through an apprenticeship, traineeship or continued education. The EU Youth Guarantee is based on successful experience in Austria and Finland that show that investing in school-to-work transitions for young people pays off.

Policies that support the recognition of skills and competencies acquired during work may be helpful, especially for youth who follow a dual path of work and study. For instance, Slovenia has a programme in place that provides a digital tool for validation of informally gained work experience called Nefiks. This tool produces certificates that the young person can subsequently use to prove and demonstrate relevant skills to potential employers, who might be concerned about credentials (OECD, 2014c).

### *Reforming labour market institutions*

Low pay and in-work poverty are major policy challenges when addressing the question of rising inequality. Minimum wage settings, provided they are well-designed and embedded in appropriate tax and transfer settings can help supporting low-wage workers and low-income families while avoiding significant job losses (OECD, 2015c). Effective minimum-wage design requires: ensuring that decisions on the level and adjustments of the minimum wage involve independent commissions; taking account of differences in average income levels across regions as well as by age; ensuring enforcement; and reducing social security contributions to lower non-wage labour costs at the minimum wage. At the same time, minimum wages alone tend to be a rather poor anti-poverty toll. First, while in-work poverty is associated with low wage levels, a substantial number of minimum wage workers live in households with income above the poverty line. Second, lack of co-ordination between minimum wage policy and other redistribution measures, may reduce the impact of minimum wages: for instance, higher taxes and reduced benefit entitlements could consume large parts of any minimum wage increase.

Policies must address not just the level of wage adjustment but also its distribution. In this respect, previous analysis has shown that declining union coverage had a disequalising effect on the wage distribution (OECD, 2011). Improving social dialogue and industrial relations are therefore other important elements of a more equitable and inclusive growth. High union density and bargaining coverage, and the centralisation/co-ordination of wage bargaining tend to go hand-in-hand with lower overall wage inequality in both OECD countries and emerging economies, although there is some disagreement about the size of these effects and whether they hold for women (OECD, 2004; Golden and Londregan, 2006; Card et al., 2003; Hayter, 2015). Union coverage, rather than union membership appears to be more important because in many

countries there is a legal or administrative extension of collective agreements within an industrial sector.

Addressing labour market segmentation and more balanced employment protection are also important elements of enhancing job quality and tackling inequality. Temporary employment is associated with lower current and future long-term earnings. While temporary jobs may provide stepping stones to more stable employment, temporary jobs may be replacing stable jobs instead of encouraging job matching. In addition, in some countries the likelihood of moving to a stable job is low because of high segmentation in the labour market, highlighting the importance of having more homogenous employment protection legislations (EPL) across workers of different types of contracts.

Since the onset of the recent economic crisis, a number of countries with relatively strict EPL on permanent contracts undertook reforms to relax their regulations on individual or collective dismissals, reducing the gap in the stringency of regulations affecting permanent and temporary workers. Such reforms are expected to improve the allocation of labour to most productive uses and also reduce labour market duality. However, in the short-term some workers may be affected by the reallocation process; the number of dismissed workers is likely to increase and the latter are likely to experience income losses (OECD, 2013f). Therefore, it is important that governments have in place adequate social protection and unemployment benefit schemes as well as effective re-employment services. Again, any success of EPL reforms will rely on a strong basis of dialogue between the social partners and the government.

A more equitable labour market also benefits from efficient public employment services. The responsiveness and effectiveness of activation policies have in many countries been improved by overarching institutional reforms. Various lines of policy actions have been considered: one option is the merging of employment assistance with benefit administration services (United Kingdom, JobCentre Plus); another option is to create a separate institution charged with co-ordinating the delivery of labour market and support programmes (United States, Workforce Investment Boards); or to set up an integrated social assistance information system (Turkey, İŞKUR). The effectiveness of these initiatives can be further improved through careful performance management, particularly where services are being outsourced (as in Australia).

Experience from countries such as Finland, Ireland, Switzerland and Australia, suggests that partnership approaches between organisations and agencies (including those in the private and not-for-profit sector) can improve the co-ordination of service delivery, especially for disadvantaged client groups or high-unemployment areas. In Finland, the alignment of institutional incentives – as national government and local governments agreed to share the cost of benefit payments to the target group – accompanied the development of jointly managed service centres for the very long-term unemployed.

The effectiveness of public and private employment services can also be improved through performance management. Performance is often measured in terms of job placements and, especially for harder-to-help groups, longer-term employment outcomes. However, the targets for these outcomes are often set at the national, regional and local office levels, by ad hoc methods such as negotiation or incremental improvements on the previous year's performance. Australia and Switzerland, by contrast, rate local employment office performance in terms of gross outcomes with regression adjustments for jobseeker and local labour market characteristics. This approach encourages the robust operational measurement of the variables involved, helps to identify further factors

influencing performance and, when well-developed, generates relatively accurate and objective ratings of local office performance.

### *Skills and education: Investing for opportunities*

The third area for promoting equality of opportunities and tackling high inequalities is investing in human capital through better skills and education policies. As the analysis in Chapter 2 shows, the inability of individuals from poor socio-economic background to access higher education and developing their human capital is at the heart of the transmission mechanism through which income inequality lowers economic growth. The reverse is true as well: the trend towards higher educational attainment and better skills has been one of the most important elements to foster economic growth in the long run and, at the same time, to partially counteract the trend toward higher earnings inequality. Investment in human capital must start in the vital early childhood period and be sustained through compulsory education. This will help ensure equality of opportunity for children from disadvantaged backgrounds. Once the transition from school to work has been accomplished successfully, there must also be sufficient incentives for workers and employers to further invest in skills throughout the working life.

#### *Early childhood care and education: Early years potential: use it or lose it*

A focus on the early years is crucial in addressing socio-economic differences in education. Poverty in childhood can result in gaps in the developmental trajectory for children in the formative years; such gaps can culminate in more negative outcomes in the long term as children are less able to take full advantage of interventions designed to promote development. This can lead to the entrenchment of poverty and inequality in future generations and thus to a lack of social mobility.

To combat poverty and promote child development, childcare services should provide parents with young children the care support they need to work, as well as the safe environments needed for pre-schoolers to learn and develop. The OECD PISA results show that participation in quality early childhood education (as measured by the ratio of children to staff, the programme's duration, and spending per child) is associated with stronger reading performance at age 15, especially for children from families with disadvantaged socio-economic backgrounds (OECD, 2013c). Insufficient and unequal access to childcare results from various obstacles, namely the length of parental leave, the cost of childcare, the tax-benefit system, and the quality, accessibility and availability of childcare.

While both OECD and emerging economy countries have achieved universal or near universal primary education, curbing inequalities in secondary and higher education remains a concern. In terms of educational attainment, while advanced economies are focusing on school retention until high school completion, emerging economies need to act on lower secondary schooling – through better learning inputs and more equality of access – before they can turn to upper secondary education. Conditional cash transfers can also help promoting the attendance of children from disadvantaged groups, as experienced in several emerging economies. In addition, improving the physical infrastructure, teachers' qualifications and school governance are required to enhance educational quality. South Africa, for instance, introduced a bursary programme to encourage students entering into the teaching profession and put in place wage incentives representing as much as 10% of a starting salary in 2007 to attract teachers in rural and remote areas (Murtin, 2013).

Addressing early school leaving – i.e. before completion of upper secondary education – is also crucial and requires early detection of youth at risk of dropping out early from school and remedial education for those young people who leave education too early only to become unemployed or inactive. In New Zealand, for instance, schools send regular reports to the Department of Education about every young person who leaves school either with or without a qualification. These data are filtered by the department, which identifies "at-risk" youth (based on information on qualifications and grades) and directly refers these youth to specialised service providers (OECD, 2014c). Because school dropout is a particularly acute problem among socio-economically disadvantaged students, examining school dropout is intrinsically linked to issues of equity and social mobility (OECD, 2014f).

Success at school depends not only on attendance and school resources (in terms of teachers' abilities or school equipment, for instance), but also on parental engagement with the learning process and what is available in the homes. Therefore, policies that support families with school-aged children can help reduce future poverty risks and inequalities.

### *Policies for families with school-age children*

These policies can be designed to encourage attendance at school (overall or at critical stages) for low-income children, or to meet specific costs for school equipment, uniforms and meals that might otherwise be a burden on disposable incomes in poor families. Examples of polices designed to encourage school attendance in OECD countries include an increase in the means-tested Family Tax Benefit in Australia between the ages of 13 and 15. This increment is designed to increase family income, and encourage children to stay in school, when leaving school to earn and supplement the family income is an option considered for the child.

Broader coverage policies designed to encourage the enrolment in school of children belonging to poorer families are Mexico's *Prospera* (former *Oportunidades*) and Brazil's *Bolsa Familia*, which conditions its cash payment on children attending school between the third grade of primary school until age 16 (see Chapter 7). Finally, in a number of OECD countries when children get older and may consider leaving school, family cash benefits or tax breaks are provided if children stay in further or pursue higher education. Examples of countries applying these policies include Austria, the Czech Republic, Germany, and Switzerland (higher education); and the United Kingdom (further education).

Policies specifically designed to enable families to provide school equipment for children can take the form of regular or one-off cash payments, or income tax reductions for primary and secondary school children: an example of the former comes from France, which provides a periodic tax allowance for families with school-aged children; examples of the latter include the school-clothing grant in Ireland, an annual child allowances for school-aged children for the purposes of buying school equipment in Israel, an educational care subsidy paid as part of the Patriot's Pension in Korea, and the Portuguese schooling complement (paid as an element in the main Portuguese Family Allowance). Luxembourg also pays a one-off cash "new year" school allowance per child.

School support can also come in the form of services, and most often this means support with food costs. Breakfast clubs, free meals, and free milk all contribute to the nutritional needs of growing and learning children. Support for poor children in the form

of food supports (milk or school meals) is provided in Mexico, the United Kingdom and the United States.

Recent analysis by the OECD has shown that countries with childcare systems that contribute most to poverty reduction maximise access to the service through universal provision whilst also using tapered fees structures (OECD, 2015d). Universal access facilitates parental participation in the labour market and progressive fees help pay for the service by the poorest parents. Denmark and France, for example, both have universal childcare systems, but childcare provision in Denmark contributes more to poverty reduction than in France due to a progressive fee structure. Countries in the OECD that presently provide families with universal access to childcare (i.e. at least 15 hours a week for at least two consecutive years, regardless of parental income or employment status), include the Nordic countries, Australia, France, Hungary, New Zealand, Spain and the United Kingdom. Denmark, Finland, Hungary and Sweden are examples of countries in which childcare fees structures based on differences in earnings and/or household types.

*Reducing inequality in educational outcomes*

Education policies focusing on equity in education can promote earnings mobility between generations and reduce income inequality over time. Countries can work towards this goal by giving equal opportunities to both disadvantaged and advantaged students to achieve strong academic outcomes – laying a pathway for them to continue on to higher levels of education and eventually secure good jobs.

Four top OECD performers on the 2012 PISA reading assessment show the potential of this approach. Canada, Finland, Japan, and Korea all have education systems that put a focus on equity. In each of these countries, relatively few students performed at lower proficiency levels on the PISA reading assessment, and high proportions of students performed better than would be expected, given their socio-economic background.

While each of these countries focuses on equity in education, their approaches differ. In Japan and Korea, for example, teachers and principals are often reassigned to different schools, fostering more equal distribution of the most capable teachers and school leaders. Finnish schools assign specially-trained teachers to support struggling students who are at risk of dropping out. The teaching profession is a highly selective occupation in Finland, with highly-skilled, well-trained teachers spread throughout the country. In Canada, equal or greater educational resources – such as supplementary classes – are provided to immigrant students, compared to non-immigrant students. This is believed to have boosted immigrant students' performance (OECD, 2012b).

*Upgrading skills to avoid obsolescence*

Too many youth enter the labour market with weak cognitive skills. Low cognitive skills in terms of numeracy and literacy are strongly associated with low long-term earnings. But learning does not end with initial education; improving adult competencies is an essential component to ensure the continuous employability of workers and promote their career progression. Workers continue to learn at work, and job-related training is essential to ensure that skills do not become obsolete and that workers can take up better-paid jobs and thus reduce inequality.

The OECD 2013 Survey of Adult Skills (PIAAC) found large disparities in the literacy, numeracy and problem-solving competences of adult workers. Unfortunately, the provision of job-related training is often sub-optimal and tends to benefit workers who need it the least – notably, those that already possess high skills. The Employer

Ownership pilot in England, for example, attempts to boost training provision by encouraging employers to take ownership, as well responsibility, for training their workforce. The scheme offers all employers in England direct access to up to GBP 250 million of public investment over two years to design and deliver their own training solutions, including apprenticeships, training courses and pre-employment opportunities.

Training provision is particularly low in small and medium-sized enterprises (SMEs). This is due to the challenge of finding and financing external training providers and to the opportunity cost of providing on-the-job training by employers in very small firms. To overcome these difficulties, Korea introduced a subsidy for private or public training providers forming partnerships or consortia with SMEs in which the providers' facilities or equipment are used to develop skills. Subsidies can cover the costs of the facilities, equipment and salaries for training personnel. Government spending on this programme has steadily increased since 2003and in 2009 231 000 workers received such training (*Source*: Korean Research Institute for Vocational Education and Training – KRIVET).

*Understanding the demand for skills to ensure alignment with skills supply*

Many skills are not fully used at work. This is the case, for example, of workers who are mismatched in their job. Yet productivity depends more on actual skills use than on skills proficiency. Hence, bringing skills use more in line with the skills proficiency of the workforce would foster a more equal wage distribution. It is necessary to ensure that skills' supply is in line with demand. Skills assessment and anticipation exercises are critical in this respect, as is the ability to effectively translate the information from such tools into policy action.

While investments in skills are important, it is crucial to ensure that skills taught at school are relevant for the labour market. If this is not the case, unmet demand for skills is likely to translate in higher rewards for scarce competences resulting in even higher income inequality. To achieve a good match between the skills possessed by the labour force and those required by employers, countries need good information about current and future skills demands and gaps, and to put in place effective systems and procedures for turning this information into education, employment and migration policy and practice. In addition, skills that are relevant to employers can only be developed by or in co-operation with employers themselves.

Many countries have systems and tools in place for assessing and anticipating skills needs, but approaches vary significantly in terms of: how they assess skills needs; their time span; their methods; and their national/regional/sectoral scope. For instance, Canada carries out analyses of current skills needs along with medium to long-run forecasts to identify future skills needs and imbalance and tailor immediate policy intervention (e.g. identify migration opportunities or develop short-term worker training schemes) as well as long-term policy orientations (e.g. develop apprenticeship programmes in certain fields).

The outputs of skills assessment and anticipation exercises are widely used to inform a range of skills-related policies across different domains. In education, they are commonly used to inform curriculum development and set the number of student places in upper-secondary, post-secondary and tertiary education programmes. In many countries skills assessment and anticipation exercises are specifically linked to the development of Vocational Education and Training (VET) programmes. With regards to labour market policy, information is used to update occupational standards (which

provide a guide for employers about the skills, training and experience needed to carry out a job) and to design apprenticeships, re-training and on-the-job training programmes.

### *Tax and transfer systems for efficient redistribution*

The fourth area of an effective policy strategy to curb high inequality relates to taxes and transfers. These policies constitute the most direct and powerful instrument to redistribute income. Most OECD countries make substantial use of income taxes and cash transfers to reduce income gaps. On average, income inequality among the working-age population is reduced by 26% in the OECD and by 30% in France and Germany, compared to 19% in the United States and 4-5% in Chile and Mexico. In most emerging economies, the effect of such redistribution is much weaker, often linked to lower levels of per-capita social spending and less effective taxation due to a high level of informality. At the same time, as in OECD countries, social spending on in-kind transfers – services such as education and health – also tends to lower inequality (see Chapter 7).

In the public debate, redistribution through taxes and transfers is often claimed to hinder economic growth. The analysis in this report suggests that, if they are well-designed, higher taxes and transfers to reduce inequality do not necessarily harm growth. Since taxes and transfers are so powerful in both affecting inequality and growth, getting them right is key. Previous OECD work (Arjona et al., 2001) indicates that active social spending, such as in-work benefits and spending on childcare, is associated with higher growth than "passive" spending, such as on unemployment benefits, which potentially has negative effects on growth. But the distinction between "passive" and "active" measures, such as in the case of re-employment support, is not always possible. Successful activation strategies, for instance, increasingly combine the two, protecting the livelihood of job losers while encouraging a return to self-sufficiency. OECD (2012c) discusses some of the trade-offs and complementarities between tax and transfer reforms, inequality and growth.

Unemployment insurance mitigates the adverse effect of the risk of unemployment by reducing earnings volatility and by alleviating concerns about not being able to find a job once unemployed. Recent findings show that the risks of unemployment and low pay are highly concentrated and that unemployment insurance reduces earnings volatility risk mainly at the bottom of the distribution (OECD, 2015e). Increasing coverage of unemployment insurance is a promising avenue for promoting worker security, provided systems are designed to preserve incentives to work. Such security is especially important for non-standard workers and those most excluded from the labour market, such as the long-term unemployed, and particularly in countries where both benefit coverage and generosity are relatively low.

Over the past decades, rising top incomes means that top earners now have a greater capacity to pay taxes than before. Moreover, the analysis of the evolution of wealth distribution in Chapter 6 found that the distribution of wealth is much more concentrated than income, and is likely to become more so over time, with negative effects on economic growth. Thus, governments should re-examine a wide range of tax provisions to ensure that wealthier individuals contribute their share of the tax burden. This aim can be achieved in several different ways – not only via raising marginal income tax rates on the rich but also improving tax compliance, eliminating or scaling back tax deductions, which tend to benefit high earners disproportionally, and reassessing the role of taxes on all forms of property and wealth, including the transfer of assets. Some countries have introduced base-broadening measures (Australia, Austria, Denmark, the Netherlands), or

a reduction in tax credits (France, Greece, the United Kingdom) but others have introduced measures that reduce the personal income tax base through tax credits (e.g. Spain).

To effectively pursue the objectives of intergenerational social mobility and equality of opportunity, capital gains on bequeathed assets should be taxed at a standard rate and estate taxes should be replaced with an inheritance tax. Most OECD countries tax inheritances rather than estates, and the past several decades have seen a shift away from estate taxes, as for example in Australia and Ireland. From the perspective of intergenerational social mobility, taxing inheritances is preferable to taxing estates since what matters is how much a person receives from others, not how much a person leaves to others, and taxing inheritances would reduce wealth and income inequality if implemented in a revenue-neutral way (see also Piketty, 2014).

Policies should also ensure that not only wealthy individuals but also multinational firms pay their intended share of the tax burden. This includes measures for increasing transparency and international co-operation on tax rules to minimise "treaty shopping" (when companies structure their finances to take account of favourable tax provisions in different countries) and tax optimisation. In that frame, the OECD-led effort on BEPS (base erosion and profit sharing) helps developing policies to improve transparency and tax compliance, and to ensure the automatic exchange of information between tax authorities.

At the lower end of the income spectrum, large and persistent losses in low-income groups underline the importance of well-targeted income-support policies. Government transfers have an important role to play in guaranteeing that low-income households do not fall further back in the income distribution, but they need to be paired with measures to re-establish self-sufficiency, prevent long-term benefit dependence, and support families' capacities to compensate earnings losses.

Within current budgets, policies to address growing inequality could be made more efficient, for example, by making more use of in-work benefits which encourage people to take up paid work and give additional income support to low-income households. During the past decade, several countries developed schemes which combine minimum income programmes with active in-work benefits such as the *Revenu de solidarité active* (RSA) in France. Also countries with much lower levels of redistribution via the tax and transfer system increased efforts and introduced transfer programmes to increase income protection and tackle income inequality such as *Prospera*, *65 y más* or *SinHambre* in Mexico.

More generally, while effective social protection requires a strong and sustainable resource base, it does not necessarily mean that governments need to push up spending levels. Ensuring that tax revenues are used efficiently means that social support measures need to be well targeted and implemented. This requires making support accessible to lower-income individuals, in particular. In addition, policies should be actively adapted when incomes and labour market situations change, such as during the recent crisis.

This requires counter-cyclical social budgets, first, because the objective need for support is greater during and after a downturn and, second, because economic upswings alone are unlikely to undo the damage inflicted by recessions, e.g. because income losses suffered during downturns become entrenched (OECD 2014a). For instance, countries such as France, Portugal and the United States, have extended out-of-work benefits at the onset of the recent crisis. Adjusting funding for active labour market policy in line with

unemployment is another good example. When the number of jobseekers grows during a downturn, governments should ensure adequate resources for public employment services and benefit and programme administration as these services act as "gateways" to activation programmes. For example, Australia, Denmark and Switzerland automatically adjust budgets for active labour market policies in line with labour market conditions. Similar provisions should also be considered in other countries in order to protect this area of social spending during times of fiscal restraint.

# Notes

1. Trends in inequality followed different patterns across OECD countries: in some countries increases in inequality were concentrated in the earlier decades of the 1980s and 1990s (e.g. New Zealand, United Kingdom, Mexico) while in others increases mainly occurred in later years (e.g. Nordic countries), see OECD 2011 (Figure 2).
2. Levels of income inequality reported in India and Indonesia are closer to the OECD average. It should be noted, however, that indicators are based on different concepts and methods (see Chapter 7, Box 7.1).
3. While much care has been given to make concepts and data as comparable as possible, the assessment of wealth levels and wealth concentration depends on what is excluded by the wealth concept used. This is, in particular the case with old-age pensions (see Chapter 6).

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# *Annex 1.A1*
# Key indicators of income inequality and poverty

## Table 1.A1.1. Key indicators on the distribution of household disposable income and poverty, 2007, 2011 and 2013 or most recent year

| | Gini coefficient | | | S90/S10 income share ratio | | | Income share in total income | | | | | | Poverty rate (relative threshold) | | | | | | | | Poverty rate (threshold "anchored" in 2005) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Bottom 10% | Bottom 20% | Bottom 40% | Top 40% | Top 20% | Top 10% | Total | | | By age group, latest available year | | | | | Total | | |
| | 2007 | 2011 | 2013 or latest available year | 2007 | 2011 | 2013 or latest available year | 2013 or latest available year (%) | | | | | | 2007 | 2011 | 2013 or latest available year | Children (< 18) | Youth (18-25) | Adult (26-65) | Elderly (> 65) | Working poor | 2007 | 2011 | 2013 or latest available year |
| Australia | 0.336 | .. | 0.326 | 9.3 | .. | 8.8 | 2.8 | 7.2 | 19.7 | 63.0 | 39.8 | 24.4 | 14.6 | .. | 14.0 | 12.9 | 7.9 | 11.3 | 33.5 | 4.6 | .. | .. | 8.2 |
| Austria | 0.284 | 0.281 | 0.276 | 6.9 | 7.1 | 7.0 | 3.1 | 8.5 | 22.6 | 59.2 | 36.0 | 21.6 | 9.7 | 9.1 | 9.6 | 10.4 | 10.1 | 8.7 | 11.4 | 7.8 | 8.2 | 7.3 | 7.9 |
| Belgium | 0.282 | 0.275 | 0.268 | 6.7 | 6.3 | 5.9 | 3.6 | 8.8 | 22.6 | 58.8 | 35.2 | 20.8 | 9.5 | 9.5 | 10.2 | 11.4 | 11.2 | 9.4 | 10.7 | 6.1 | 8.4 | 8.1 | 7.8 |
| Canada | 0.318 | 0.315 | .. | 8.6 | 8.6 | .. | 2.8 | 7.6 | 20.4 | 62.2 | 39.1 | 24.2 | 11.3 | 11.8 | .. | 14.4 | 13.1 | 11.8 | 6.7 | 8.7 | 9.8 | 9.3 | .. |
| Chile | 0.511 | 0.503 | .. | 29.5 | 26.5 | .. | 1.5 | 4.3 | 12.5 | 75.3 | 56.4 | 40.9 | 19.2 | 17.8 | .. | 23.5 | 15.1 | 15.1 | 20.5 | 14.3 | 20.6 | 14.7 | .. |
| Czech Republic | 0.257 | 0.262 | 0.256 | 5.3 | 5.6 | 5.4 | 4.0 | 9.9 | 24.3 | 58.0 | 35.7 | 21.7 | 5.5 | 6.3 | 5.3 | 8.2 | 5.7 | 4.9 | 2.8 | 4.7 | 3.3 | 4.2 | 3.6 |
| Denmark | 0.246 | 0.251 | 0.249 | 5.1 | 5.2 | 5.2 | 4.0 | 9.8 | 24.3 | 57.3 | 34.5 | 20.8 | 6.1 | 5.8 | 5.4 | 2.7 | 21.7 | 3.5 | 4.6 | 3.9 | 5.0 | 4.7 | 4.6 |
| Estonia | 0.316 | 0.334 | 0.339 | 8.2 | 9.6 | 9.7 | 2.6 | 7.0 | 19.0 | 64.2 | 40.9 | 25.0 | 14.1 | 11.8 | 12.3 | 11.8 | 13.5 | 12.2 | 12.6 | 9.0 | 4.4 | 7.1 | 6.0 |
| Finland | 0.269 | 0.264 | 0.262 | 5.8 | 5.6 | 5.5 | 3.9 | 9.4 | 23.6 | 58.3 | 35.5 | 21.5 | 7.8 | 7.5 | 7.1 | 4.6 | 15.9 | 6.3 | 7.8 | 4.1 | 6.4 | 4.9 | 4.6 |
| France | 0.293 | 0.309 | 0.306 | 6.8 | 7.4 | 7.4 | 3.4 | 8.5 | 21.8 | 61.3 | 39.5 | 25.3 | 7.2 | 8.0 | 8.1 | 11.4 | 13.7 | 7.1 | 3.8 | 7.3 | .. | 7.1 | 7.5 |
| Germany | 0.287 | 0.291 | 0.289 | 6.7 | 6.8 | 6.6 | 3.6 | 8.8 | 22.4 | 60.2 | 37.8 | 23.5 | 8.5 | 8.7 | 8.4 | 7.4 | 12.5 | 7.7 | 9.4 | 3.0 | 9.2 | 8.6 | 7.9 |
| Greece | 0.333 | 0.337 | 0.340 | 10.5 | 12.7 | 12.3 | 2.0 | 6.4 | 18.8 | 63.6 | 40.3 | 25.1 | 13.3 | 15.2 | 15.1 | 21.4 | 21.2 | 14.8 | 6.9 | 15.8 | 11.4 | 26.7 | 32.3 |
| Hungary | 0.272 | 0.289 | 0.288 | 6.0 | 7.3 | 7.2 | 3.1 | 8.3 | 22.0 | 60.2 | 37.0 | 22.5 | 6.4 | 10.3 | 10.1 | 11.8 | 11.9 | 9.6 | 8.6 | 7.2 | .. | 13.0 | 9.1 |
| Iceland | 0.286 | 0.256 | 0.256 | 6.5 | 5.7 | 5.6 | 3.8 | 9.6 | 24.0 | 57.9 | 35.2 | 21.3 | 6.7 | 5.9 | 6.3 | 8.1 | 11.4 | 5.0 | 3.0 | 6.0 | 3.8 | 7.2 | 6.9 |
| Ireland | 0.305 | 0.302 | 0.304 | 7.0 | 7.6 | 7.4 | 3.2 | 8.3 | 21.3 | 61.6 | 38.7 | 23.8 | 9.6 | 9.6 | 8.4 | 8.7 | 10.5 | 8.1 | 6.9 | 5.0 | 7.2 | 15.3 | 14.8 |
| Israel | 0.371 | 0.377 | 0.360 | 13.4 | 12.5 | 14.9 | 1.7 | 5.5 | 17.1 | 65.8 | 41.8 | 25.6 | 19.9 | 20.9 | 18.6 | 24.3 | 16.6 | 14.0 | 24.1 | 13.9 | .. | 17.8 | 13.2 |
| Italy | 0.313 | 0.323 | 0.327 | 8.9 | 10.3 | 11.4 | 2.2 | 6.9 | 19.7 | 62.8 | 39.7 | 24.7 | 11.9 | 12.8 | 12.7 | 17.4 | 14.7 | 12.1 | 9.3 | 12.0 | 10.7 | 13.5 | 14.9 |
| Japan | 0.329 | 0.336 | .. | 10.3 | 10.7 | .. | 2.3 | 6.5 | 18.9 | 63.7 | 40.0 | 24.4 | 15.7 | 16.0 | .. | 15.7 | 18.7 | 13.9 | 19.4 | 12.9 | .. | 19.6 | .. |
| Korea | 0.312 | 0.307 | 0.302 | 10.0 | 10.2 | 10.1 | 2.2 | 6.8 | 20.5 | 61.1 | 37.1 | 21.9 | 14.8 | 14.6 | 14.6 | 8.0 | 9.1 | 9.7 | 49.6 | .. | 14.4 | .. | .. |
| Luxembourg | 0.279 | 0.278 | 0.302 | 6.2 | 6.0 | 7.1 | 3.4 | 8.5 | 21.6 | 61.1 | 38.7 | 24.2 | 7.2 | 8.3 | 8.4 | 12.5 | 8.2 | 8.0 | 3.0 | 7.9 | 6.9 | 8.4 | 9.6 |
| Mexico | 0.475 | 0.466 | 0.482 | 26.8 | 28.5 | 30.5 | 1.2 | 3.9 | 12.5 | 73.9 | 52.9 | 36.7 | 20.9 | 20.4 | 21.4 | 25.8 | 15.0 | 18.6 | 31.2 | 19.0 | 17.6 | 19.7 | 21.1 |
| Netherlands | 0.295 | 0.283 | 0.278 | 7.1 | 6.7 | 6.6 | 3.4 | 8.8 | 22.7 | 59.4 | 36.7 | 22.4 | 6.7 | 7.4 | 7.9 | 10.7 | 21.9 | 6.1 | 2.0 | 6.6 | 6.1 | 7.1 | 7.0 |
| New Zealand | 0.330 | 0.323 | 0.333 | 8.3 | 8.0 | 8.2 | 3.1 | 7.6 | 19.7 | 63.8 | 40.7 | 25.7 | 11.0 | 9.8 | 9.9 | 12.8 | 10.4 | 8.9 | 8.2 | 5.8 | 5.5 | 6.8 | 5.7 |
| Norway | 0.250 | 0.250 | 0.253 | 5.9 | 6.1 | 6.2 | 3.3 | 9.1 | 24.1 | 57.3 | 34.5 | 20.6 | 7.8 | 7.7 | 8.1 | 5.9 | 30.0 | 5.7 | 4.1 | 6.7 | .. | 5.1 | 5.0 |
| Poland | 0.316 | 0.306 | 0.298 | 8.1 | 7.8 | 7.4 | 3.2 | 8.1 | 21.5 | 61.0 | 38.1 | 23.2 | 9.6 | 11.2 | 10.4 | 12.7 | 10.3 | 10.1 | 8.4 | 9.2 | 5.1 | 4.1 | 3.8 |
| Portugal | 0.360 | 0.343 | 0.338 | 10.4 | 10.0 | 10.1 | 2.6 | 7.0 | 19.5 | 63.7 | 41.1 | 25.9 | 12.8 | 12.0 | 12.9 | 17.8 | 15.8 | 12.5 | 8.1 | 12.2 | 10.7 | 12.4 | 13.6 |
| Slovak Republic | 0.249 | 0.264 | 0.251 | 5.3 | 5.9 | 5.7 | 3.5 | 9.1 | 23.8 | 57.7 | 34.2 | 19.7 | 7.0 | 8.5 | 8.5 | 14.9 | 7.3 | 7.6 | 4.1 | 8.0 | 3.3 | 2.1 | 2.3 |
| Slovenia | 0.240 | 0.247 | 0.250 | 5.2 | 5.3 | 5.4 | 3.7 | 9.2 | 23.9 | 57.4 | 34.2 | 20.0 | 8.0 | 8.9 | 9.4 | 8.6 | 7.1 | 8.5 | 15.9 | 6.6 | 5.5 | 6.9 | 8.2 |
| Spain | 0.328 | 0.342 | 0.335 | 9.9 | 12.1 | 11.7 | 2.1 | 6.5 | 19.0 | 63.7 | 40.1 | 24.4 | 14.5 | 14.7 | 14.1 | 21.0 | 16.8 | 13.5 | 6.8 | 13.6 | 8.8 | 12.6 | 13.7 |
| Sweden | 0.259 | 0.273 | 0.274 | 5.8 | 6.3 | 6.3 | 3.5 | 8.7 | 22.7 | 59.0 | 36.1 | 21.9 | 8.4 | 9.7 | 9.0 | 8.3 | 17.8 | 7.4 | 9.4 | 5.8 | .. | 5.1 | 4.8 |
| Switzerland | .. | 0.289 | 0.285 | .. | 7.0 | 6.7 | 3.5 | 8.7 | 22.4 | 59.8 | 37.3 | 23.2 | .. | 10.5 | 9.1 | 8.0 | 6.6 | 6.1 | 23.4 | 5.7 | .. | 7.9 | 6.1 |
| Turkey | 0.409 | 0.412 | .. | 14.5 | 15.2 | .. | 2.1 | 5.6 | 16.0 | 69.0 | 47.4 | 31.7 | 17.0 | 19.2 | .. | 28.4 | 16.2 | 14.4 | 18.4 | 17.8 | .. | .. | .. |
| United Kingdom | 0.361 | 0.344 | 0.351 | 11.1 | 9.6 | 10.5 | 2.7 | 7.2 | 19.3 | 64.5 | 42.6 | 28.0 | 11.6 | 9.5 | 10.5 | 10.4 | 10.9 | 9.6 | 13.4 | 5.3 | 11.4 | 10.6 | 11.8 |
| United States | 0.378 | 0.390 | 0.401 | 15.1 | 17.9 | 18.8 | 1.6 | 5.2 | 16.0 | 68.2 | 45.5 | 30.0 | 17.3 | 17.9 | 17.6 | 19.6 | 20.1 | 15.2 | 21.5 | 11.9 | .. | 19.5 | 19.4 |
| OECD | 0.314 | 0.314 | 0.315 | 9.2 | 9.5 | 9.6 | 2.9 | 7.7 | 20.6 | 62.2 | 39.4 | 24.6 | 11.0 | 11.2 | 11.2 | 13.3 | 13.8 | 9.9 | 12.6 | 8.7 | 7.6 | 9.5 | 9.9 |

**Table 1.A1.1. Key indicators on the distribution of household disposable income and poverty, 2007, 2011 and 2013 or most recent year** *(cont.)*

*Note*:

Income distribution data refer to the total population and are based on equivalised household disposable income, i.e. disposable income adjusted for household size. The Gini coefficient takes values between 0 (where every person has the same income), and 1 (where all income goes to one person). The S90/S10 income share ratio refers to the ratio of average income of the top 10% to the average income of the bottom 10% of the income distribution. The poverty threshold is 50% of median disposable income in each country. Working poor are those with income below the poverty line, living in households with a working age head and at least one worker.

The latest available data refer to 2014 for Hungary; 2013 for Finland, Hungary, Israel, the Netherlands and the United States, 2011 for Canada, Chile and Turkey, 2009 for Japan, and 2012 for the other countries. Data shown for 2011 refer to 2012 for Hungary, Korea and the United States; 2010 for Mexico; and 2009 for Japan. Data shown for 2007 refer to 2008 for Australia, France, Germany, Israel, Mexico, New Zealand, Norway, Spain, Sweden and the United States; 2006 for Chile and Japan. There is a break in series for Israel after 2011. In the case of Japan, data are based on the Comprehensive Survey of Living Conditions, submitted to the OECD by Japan. Other surveys, such as the National Survey of Family Income and Expenditure suggest lower levels of income inequality and poverty in 2009. The lack of data beyond 2009 is due to the fact that no recent estimates were provided by the Japanese authorities. The OECD average does not include Israel. The OECD average for 2011 includes 2012 data for Hungary. The OECD average for the latest year available includes 2011 data for Canada, Chile and Turkey, and 2009 data for Japan.

*Source*: *OECD Income Distribution Database* (IDD), www.oecd.org/social/income-distribution-database.htm.

StatLink http://dx.doi.org/10.1787/888933208820

**Box 1.A1.1. Towards a better understanding of people's perceptions of income inequality**

Statistics on income inequality are regularly produced by researchers and statistical offices around the world, and easily make it to the headlines news. What remains unclear is how much inequality people perceive, and what degree of inequality they regard as "ideal" or "acceptable". The second issue, i.e. preferences for how income and other valuable resources are distributed, has a long history in social sciences (Bénabou and Tirole, 2006; Osberg and Smeeding, 2006). The first issue, i.e. to what extent people have a good appreciation of income distributions in their country and of their position in it, has received less attention although it is, arguably, just as important.

Research based on data from the 2009 wave of the International Social Survey Programme on social inequality shows that people systematically misperceive the level of income inequality in their countries, although often in different directions (Niehues, 2014). For example, while people living in Hungary, Slovenia and the Czech and Slovak Republics overestimate the income inequality in their country, those living in the Nordic countries seem to be aware of living in a relatively equal society, and those in the United States substantially underestimate the extent of income inequality.

The issue of people's (mis)perception of income inequality has also attracted the interest of national statistical agencies. In 2011, the French National Institute of Statistics and Economic Studies (INSEE) launched a survey asking respondents to position themselves on the income scale: results showed that, while for 45% of respondents there was little discrepancy between perceptions and realities, most poor people (three out of five) overestimated their position, and most rich people (four out of five) underestimated it. Similarly, a survey conducted by TNS Gallup in Finland showed that, while most people's idea of "low income" corresponds quite closely to that used by Statistics Finland, respondents' own income influenced their perception: the higher their income, the higher their view of what "low" and "high" income is.

The OECD's "Compare your income" web-tool (www.oecd.org/statistics/compare-your-income.htm) allows users from different OECD countries to compare perceptions and realities, i.e. where in the income distribution of their country they fit. The tool, which is similar to those available in a range of countries, is based on the most recent data from the *OECD Income Distribution Database* (http://stats.oecd.org/Index.aspx?DataSetCode=IDD). While the application is completely anonymous, it will generate information on users' perceptions and characteristics that could allow different types of analysis, once sufficient data have been collected.

# *Chapter 2*

# The impact of income inequality on economic growth

*Drawing on harmonised data covering the OECD countries over the past 30 years, this chapter first explores whether income inequality has an impact on subsequent growth. In particular, it focuses on the growth consequences of income inequality in different parts of the income distribution, using measures of "top" and "bottom" inequality. The chapter then evaluates the "human capital accumulation theory", one prominent channel through which inequality is supposed to affect economic growth. Exploiting micro data from the Adult Skills Survey (PIAAC), it looks at the consequences of income inequality for the skills development of individuals with different parental education backgrounds, both in terms of the quantity of education attained (e.g. years of schooling) and in terms of its quality (e.g. skill proficiency).*

## 2.1. Introduction and key findings

As documented in Chapter 1, Income inequality has been rising over the past three decades in the vast majority of OECD countries. Addressing these trends has moved to the top of the policy agenda in many countries. This is partly due to worries that a persistently unbalanced sharing of the growth dividend will result in social resentment, fuelling populist and protectionist sentiments and leading to political instability. Recent discussion, particularly in the United States, about whether increased inequality might be a cause of the 2008 financial crisis has also made it more relevant to policy making.[1]

Another reason for the growing interest in inequality is the concern that cumulatively large and sometimes rapid increases in income disparity might have an effect on economic growth and on the pace of exit from the current recession. Is inequality a pre-requisite for growth? Or does a greater dispersion of incomes across individuals instead undermine growth? And which are the main channels through which inequality affects economic performance? Adding to a recent literature re-addressing these controversial and long-standing issues (see Ostry et al., 2014; Halter et al., 2014), this analysis will focus on the case of the OECD countries.

The chapter starts by briefly reviewing the theoretical and empirical literature on how inequality might affect growth. Section 2.2 then presents the core of the new empirical evidence on the links between income inequality and economic growth. Section 2.3 explores one of the main transmission mechanisms between inequality and growth: the human capital channel. Section 2.4 draws concluding remarks.

The chapter highlights the following key findings:

- When income inequality rises, economic growth falls.
- The negative effect of inequality on growth is determined by the lower part of the income distribution: not just the poorest decile but the bottom 40% of income earners.
- Redistribution through income taxes and cash benefits does not necessarily harm growth.
- Inequality has a negative impact on growth through the channel of human capital: the wider is income inequality, the lower is the chance that low-income households invest in education.

## 2.2. How inequality may affect economic growth

Over the last decades, a large body of theoretical and empirical research has attempted to determine whether inequality is good or bad for growth. Theoretical work has provided mechanisms supporting both possibilities, and the large empirical literature attempting to discriminate between these mechanisms has been largely inconclusive. This section provides a brief overview of both theoretical and empirical works, highlighting the main methodological and measurement issues and setting the stage for the new work on the OECD countries, described below.

### *Theoretical literature*

Alternative theories predict that inequality can affect growth in either a positive or negative direction. Greater inequality might *reduce* growth if:

- *Theory A*: Greater inequality becomes unacceptable to voters, so they insist on higher taxation and regulation, or no longer trust business, and pro-business policies, all of which may reduce the incentives to invest. This is referred as the "endogenous fiscal policy" theory (see Bertola, 1993; Alesina and Rodrik, 1994; Persson and Tabellini, 1994; Perotti, 1996).[2] In extreme cases, inequality may lead to political instability and social unrest, with harmful effects on growth (Alesina and Perotti, 1996; Keefer and Knack, 2000).

- *Theory B*: The presence of financial market imperfections implies that individuals' ability to invest depends on their level of income or wealth. If this is the case, poor individuals may not be able to afford worthwhile investments. For example, lower-income households may choose to leave full-time education if they cannot afford the fees, even though the rate of return on education (to both the individual and society) is high. In turn, under-investment by the poor implies that aggregate output would be lower than in the case of perfect financial markets.[3] This view, first formalised by Galor and Zeira (1993), is referred as the "human capital accumulation" theory.[4]

  The idea that higher inequality may result in under-investment in human capital by the poorer segments of society has also spurred a significant amount of research on the consequences of inequality on social mobility and the allocation of talents across occupations (Banerjee and Newman, 1993; Fershtman et al., 1996; Owen and Weil, 1998; Checchi et al., 1999; and Hassler et al., 2007).

- *Theory C*: The adoption of advanced technologies depends on a minimum critical amount of domestic demand, which might not be sufficient if the poorer sections of society have little resources. While originating from the modelling by Murphy et al. (1989) of the first stages of industrial take-off, and therefore initially perceived as tangential to the case of advanced economies, the domestic demand channel has recently been put forward again in, for example, the recent debate on the consequences of rising US inequality for economic performance (Krueger, 2012; Bernstein, 2013).

On the other hand, greater inequality might increase growth if:

- *Theory D*: High inequality provides the incentives to work harder and invest and undertake risks to take advantage of high rates of return (Mirrlees, 1971; Lazear and Rosen, 1981).[5] For example, if highly educated people are much more productive, then high differences in rates of return may encourage more people to seek education.

- *Theory E*: Higher inequality fosters aggregate savings, and therefore capital accumulation, because the rich have a lower propensity to consume (Kaldor, 1955; Bourguignon, 1981).[6]

### *Empirical evidence*

The large empirical literature attempting to establish the direction in which inequality affects growth is summarised in the literature review in Cingano (2014, Annex 2). That survey highlights that there is no consensus on the sign and strength of the relationship; furthermore, few works seek to identify which of the possible theoretical effects is at work. This is partly traceable to the multiple empirical challenges facing this literature. These include:

- *Estimation method:* Most empirical works focus on reduced-form estimates of the impact of inequality within the theoretical framework of empirical growth models. Early studies, exploiting cross-sectional variation, yielded negative coefficients (e.g. Alesina and Rodrik, 1994; Persson and Tabellini, 1994; Perotti, 1996). Later work using within-country variation (i.e. cross-country, time series panel data techniques), on the other hand, found the link to be positive or not significant (Li and Zou, 1998; Forbes, 2000; Andrews et al., 2011).[7] More recent analyses attempt to take advantage of both within-country and cross-country variation exploiting the Generalised Method of Moments (GMM, see Box 2.1).
- *Data quality*: The literature has also been largely constrained by the availability and quality of income distribution data across countries, which are usually assembled based on heterogeneous national sources (i.e. "secondary" datasets). This implies that the inequality measures normally differ as to coverage, reference unit, weighting and the definition of income.
- *Country coverag*e: The literature survey also highlights a role for the data country coverage in affecting the results. The channels predicting a negative inequality-growth relationship (in particular, the channels of credit market imperfections and of socio-political instability) are likely to be stronger in developing countries than in advanced countries. Previous work suggested that that the link between inequality and growth is negative among poor countries, but positive or insignificant among rich countries (Barro, 2000). Studies that include both developing and developed countries may therefore capture an average effect, giving misleading results.
- *Inequality indicators*: The impact of inequality on growth has been often analysed based on a single synthetic measure of income inequality (typically, the Gini coefficient). However, the links between inequality and growth might vary depending on inequality in different parts of the income distribution (Voitchovsky, 2005). For example, many of the negative mechanisms (e.g. financial market imperfections, political instability) are associated with inequality at the bottom end of the distribution; most of the positive mechanisms (e.g. based on different savings propensities or on incentive considerations) are more likely to depend on the degree of inequality in the top of the income distribution. Hence, a single inequality statistic may end up capturing an average effect of inequality on growth. This possibility calls for complementary indicators of the profile of income inequality (for example, ratios of income percentiles on either side of the median or average, or decile share ratios).

Parallel to the reduced-form inequality-growth literature, a more limited set of studies has looked at the channels through which inequality may affect growth by focusing in particular on the channels of endogenous fiscal policy (theory A above) and of human capital accumulation (theory B), and, more generally, on the link between inequality and social mobility.

- Research on the endogenous fiscal policy channel provides weak evidence of a positive association between inequality and fiscal redistribution (see Perotti, 1994, 1996; Persson and Tabellini, 1994; and De Mello and Tiongson, 2006, for a survey); moreover, the link between redistribution (e.g. the amount of taxes) and growth is found to be only weakly negative, or even positive (see Bergh and Henrekson, 2011).

- Direct estimates of the interplay between inequality and imperfect financial markets in shaping investment decisions produced (weak) evidence that the negative impact of income inequality on human capital accumulation increases according to the degree of financial imperfection (see Perotti, 1994, 1996; Deininger and Squire, 1998). Evidence based on aggregate data, however, does not allow inferring whether the sign and strength of the relationship varies across individuals depending on their socio-economic background, as predicted by core models following Galor and Zeira (1993).
- The available evidence on the links between inequality and social mobility is also largely based on cross-country correlations such as the so-called "Great Gatsby Curve", showing a negative relationship between inequality and intergenerational earnings mobility in a subset of OECD countries (D'Addio, 2007; Corak, 2013). Cross-country correlations are clearly only suggestive of the possible link between inequality and mobility. Recent work by Chetty et al. (2014) based on administrative data found that (upward) mobility is negatively correlated with income inequality (and positively with school quality) across areas within the United States.[8]

## 2.3. The impact of inequality on growth

### *A summary of the approach and the new evidence*

The present analysis on how inequality affects growth in the OECD countries attempts to take into account the above-mentioned issues with regard to estimation method, data quality and coverage, and appropriate indicators. It also provides evidence on one prominent intermediate mechanism (the financial market imperfection/human capital accumulation theory), investigating whether inequality disproportionately affects the investment decisions of disadvantaged individuals (see above).

*Estimation method:* The empirical equation estimates growth as a linear function of initial inequality, income, and human and physical capital; the model is similar to that used in most empirical analyses of growth determinants augmenting the Solow growth model (see Annex 2.A1). The equation is estimated using panel data, so the baseline regression specification takes the form:

$$lny_{c,t} - lny_{c,t-1} = \alpha lny_{c,t-1} + X_{c,t-1}\beta + \gamma Ineq_{c,t-1} + \mu_c + \mu_t + \epsilon_{c,t} \qquad [1]$$

where $c$ denotes a particular country and $(c, t\text{-}1)$ is a time interval of five years. The variable *lny* is the log of real GDP per capita so that the left-hand side of equation [1] approximates five-year growth in a country. On the right hand-side, *Ineq* is a summary measure of inequality; per capita GDP ($y_{c\text{-}1}$) is the standard control for convergence, and the vector $X$ contains a minimum set of controls for human and physical capital (see Annex 2.A1 for a detailed description of variables and sources). Using panel data allows accounting for country and time fixed effects ($\mu_c$ and $\mu_t$). The country dummies are included to control for time-invariant omitted-variable bias, and the period dummies are included to control for global shocks, which might affect aggregate growth in any period but are not otherwise captured by the explanatory variables.

In the baseline specification the relevant explanatory variables are measured at the beginning of the growth spell in order to mitigate the concerns that the GDP dynamics feed back into inequality (reverse causality). The analysis will exploit the Generalised Method of

Moments (GMM) as opposed to ordinary least squares or least square dummy variable estimators (see Box 2.1 for a description). More specifically, all results are based on the "System GMM" estimator, which exploits variation in inequality both between- and within-country (over time). Hence, it exploits the largest source of variation in inequality (i.e. across countries) while accounting for other potentially relevant country-specific explanatory factors. GMM allows taking into account the estimation issues arising due to the presence of a lagged dependent variable ($\ln y_{c,t-1}$), the so-called Nickell-bias.

### Box 2.1. GMM (Generalised Method of Moments) estimators in growth regressions

Because most empirical growth models are based on the hypothesis of conditional convergence, growth equations such as [1] contain some dynamics in lagged output (the independent variable $\ln y_{c,t-1}$) and can be rewritten as a dynamic panel data model:

$$lny_{c,t} = (1+\alpha)lny_{c,t-1} + X_{c,t-1}\beta + \gamma Ineq_{c,t-1} + \mu_c + \epsilon_{c,t} \qquad [1a]$$

Standard panel data approaches to estimate [1a], like fixed effect models, are unlikely to yield unbiased estimates of the parameters of interest ($\alpha$ and $\beta$). In fact, applying the within transformation, or taking first differences, creates a correlation between $\ln y_{c,t-1}$ and the error term such that the fixed-effect estimator of $\alpha$ is necessarily biased (Nickell, 1981). More importantly, these approaches would yield biased estimates of the coefficients of any independent variable, including $Ineq_{c,t-1}$, that is correlated with $\ln y_{c,t-1}$.

Specific GMM estimation techniques have been developed to deal with these problems: the first-difference GMM estimator and the System GMM estimator. The first-difference GMM estimator, developed by Arellano and Bond (1991), eliminates the country-specific effect by differencing model [1a], and uses lagged values of the right-hand-side variables (e.g. $\ln y_{c,t-2}$, $\ln y_{c,t-3}$, $Ineq_{c,t-2}$ etc.) as instruments for their change. Arellano and Bond (1991) show that, in particular, consistent estimates require the absence of serial correlation in the error term, $\varepsilon_{c,t}$. Accordingly, they provide a test of autocorrelation in the residuals, i.e. a test that the differenced error terms are not second-order serially correlated.

The main drawback of first-difference GMM estimates in the current context is that variables such as inequality display notable persistence within a country. Hence, taking first differences eliminates most of the variation in the data, and implies that the lagged levels of the explanatory variables are weak instruments for the variables in differences giving rise to large biases and imprecision (see e.g. Blundell and Bond, 1998; Bond et al., 2001).

Following the most recent papers on inequality and growth (Ostry et al., 2014; Halter et al., 2014), the empirical analysis exploits the System GMM estimator proposed by Arellano and Bover (1995) and Blundell and Bond (1998). The System GMM estimator combines first-differenced equations (as in the difference GMM) with an additional set of equations in levels where lagged first-differences of the right-hand side variables are used as instruments. It therefore rests on the assumption that first-differences are not correlated with the country fixed effect. In the context of growth regressions, this implies assuming that the deviation of initial observations (e.g. $\ln y_{c,1}$) from their steady states must be uncorrelated with the country-specific fixed effects (see Blundell and Bond, 1998, p. 124). To detect possible violations of these requirements, we regularly apply difference-in-Hansen tests to the instruments for the level equation as a group (as suggested by Roodman, 2009).

The analysis also follows the suggestion by Roodman (2009) to account for the problem of "too many instruments", which requires that the number of variables in the instrumental matrix be lower than the number of countries. Note, however, that even the System GMM has been shown to be subject to weak instruments problems (Bazzi and Clemens, 2013).

*Data quality*: The analysis focuses on a sample of advanced and relatively similar economies so as to avoid the problem that a different relationship between inequality and growth may exist depending on the level of development (see Barro, 2000). A newly-assembled unbalanced panel was exploited, with variables measured at five-year intervals

over the period 1970-2010 for 31 OECD countries (see Annex 2.A1 for details). Data on GDP, the working-age population and gross fixed capital formation are from the *OECD Annual National Accounts*. The average years of schooling of the working-age population are from the recently updated version of the Barro and Lee (2013) dataset.

The measures of inequality are based on the standardised data from the *OECD Income Distribution Database* (IDD, www.oecd.org/social/income-distribution-database.htm), a high-quality data source. It contains information on income measured both before and after income tax and cash transfers, which provides a proxy measure of the extent of redistribution. In-kind benefits and consumption taxes, however, are excluded, as the underlying income surveys do not provide this information. Redistribution through public services, such as health, education, social housing and assistance, or through services to the unemployed and active labour market policies is therefore not taken into account.[9]

*Inequality indicators:* The OECD IDD allows a variety of measures of inequality to be tested, including the Gini coefficient (computed on both disposable and market income) as well as indicators that focus specifically on either the upper or the lower ends of the distribution. The bottom inequality in a country is obtained as the ratio between (overall) average income and average income of one bottom decile (e.g. the second). An increase in this ratio signals a widening gap between average and poor households, i.e. higher inequality at the bottom. The top inequality is measured as the ratio between average income in one top decile (e.g. the eighth) and overall average income, and therefore informs about the gap between rich and average households. Hence the analysis can allow for the possibility that different forms of inequality have different consequences for growth.

*Sample size:* While restricting the analysis to OECD countries allows using high quality data on income distribution, it comes at the cost of focusing on a limited number of countries and, ultimately, on a final dataset of less than 130 observations. This limits the type of analysis one can reliably perform when using GMM techniques which, despite its many advantages, is quite data demanding. The estimates are therefore sensitive to reductions of the sample size stemming, for example, from focusing on sub-periods or on subsets of countries. The small sample size also exacerbates the estimation concerns arising because, in GMM, the number of instruments can easily become "too large" relative to the number of observations (Roodman, 2009). Among other things, this required focusing on a parsimonious set of control variables. Indeed, extending the baseline specification (for example, to look for non-linearity or heterogeneity of the effects) provided inconclusive results (see below). All these caveats suggest that quantifying the inequality-growth nexus remains a daunting task and that the coefficients estimated and discussed below are to be taken as indicative.

### *Baseline results*

The first part of the analysis estimates the baseline equation [1], focusing on net income inequality (with $Ineq_{ct} = Gini_{ct}$); it also considers the role of redistribution as captured by the difference between inequality in market income and in disposable income.

The empirical results show that inequality has a negative impact on economic growth. The baseline results are reported in columns 1 to 4 of Table 2.1. The results in column 1 refer to a baseline specification in which growth depends only on initial income and inequality. In column 2 the model is augmented with standard growth determinants such as human and physical capital, which does not affect the above finding.[10] On the other hand, the estimated coefficients on human and physical capital are not statistically significant, a result that is not affected by using alternative measures or specifications.[11] Columns 3 and 4 explore the same model, changing the specification of the instrumental variable matrix to address the problem of "instrument proliferation", which has been shown to lead to severe biases and weakened tests of instrument validity (see Roodman, 2009).[12] While the p-values on the Hansen tests fall with respect to their high value when using a high number of instruments relative to the number of countries (potentially mirroring an instrument-proliferation problem in unrestricted regressions), the estimated coefficients are if anything slightly larger.[13]

**Table 2.1. The negative impact of inequality on growth in OECD countries**

| | *(1)* | *(2)* | *(3)* | *(4)* | *(5)* | *(6)* | *(7)* | *(8)* |
|---|---|---|---|---|---|---|---|---|
| **Net inequality** (t-1) | -0.775** | -0.799** | -0.809* | -0.995*** | | -1.285** | -1.213** | |
| | (0.318) | (0.374) | (0.431) | (0.350) | | (0.503) | (0.462) | |
| **Gross inequality** (t-1) | | | | | -0.583 | 0.172 | | |
| | | | | | (1.031) | (0.612) | | |
| **(Gross - Net) ineq.** (t-1) | | | | | | | 0.081 | -0.278 |
| | | | | | | | (0.686) | (1.325) |
| y (t-1) | -0.140** | -0.089 | -0.069 | -0.081 | 0.047 | -0.073 | -0.086 | 0.133 |
| | (0.052) | (0.060) | (0.073) | (0.122) | (0.181) | (0.121) | (0.132) | (0.227) |
| Human capital (t-1) | | -0.002 | -0.005 | 0.004 | 0.009 | -0.005 | -0.007 | 0.014 |
| | | (0.013) | (0.013) | (0.018) | (0.022) | (0.013) | (0.012) | (0.020) |
| Investment (t-1) | | 0.216 | 0.521 | 0.187 | 1.606 | -0.217 | -0.251 | 2.423 |
| | | (0.379) | (0.634) | (1.393) | (1.299) | (1.359) | (1.486) | (2.028) |
| M2 (p-val) | 0.710 | 0.536 | 0.605 | 0.774 | 0.903 | 0.594 | 0.656 | 0.940 |
| Hansen statistic (p-val) | 0.991 | 0.736 | 0.535 | 0.375 | 0.602 | 0.378 | 0.356 | 0.528 |
| Observations | 128 | 128 | 128 | 128 | 125 | 125 | 125 | 125 |
| Number of countries | 31 | 31 | 31 | 31 | 30 | 30 | 30 | 30 |
| Number of instruments | 27 | 31 | 26 | 16 | 16 | 18 | 18 | 16 |

*Note:* The dependent variable is $\Delta \ln y_t$ where $y_t$ is per capita GDP, and [t-(t-1)] is a five-year period. Inequality is measured by Gini indexes. Robust, two-step System GMM estimator with Windmeijer-corrected standard errors. All regressions include country and period dummies. M2 are the p-values of the tests for second order serial correlation in the differenced error terms; Hansen denotes the p-value on the Hansen test of over identifying restrictions. ***, **, * denote significance at the 1%, 5%, 10% levels, respectively.

*Source*: See Annex 2.A1, OECD Secretariat calculations.

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The estimated impact of inequality on growth turns out to be sizeable. Based on the coefficient reported in column 1, for example, lowering inequality by 1-Gini point would translate into an increase in cumulative growth of 0.8 percentage point in the following five years (or 0.15 point per year). Annex 2.A1 details how the estimated coefficients can be used to infer the consequences of changes in inequality over the longer run in light of the Solow growth model. Focusing on a 25-year horizon, the estimated coefficients imply that a 1-Gini point reduction in inequality would raise average growth by slightly more than 0.1 percentage point per year, with a cumulative gain in GDP at the end of the period of around 3%.

Alternatively, one could focus on changes in inequality observed in the recent past and infer the extent to which subsequent growth rates would have increased or decreased had inequality not changed. Between 1985 and 2005, for example, inequality increased by more than 2-Gini points on average across 19 OECD countries;[14] the point estimates reported in column 1 imply that this change kicked 4.7 percentage points off cumulative growth in 1990-2010. For reference, the average of cumulated growth rates across the same set of countries amounted to 28%. In other words, the estimated coefficients imply that, had inequality not changed between 1985 and 2005 (and holding all other variables constant), the average OECD country would have grown by nearly 33%.

Columns 1 to 4 in Table 2.1 are based on the inequality of disposable income. With regard to the theoretical models referred to in Section 2.2, this measure is relevant for those approaches which predict that inequality generates missed opportunities by the poor (theory B) but also those models in which inequality rather represents a reward to costly investments in human or physical capital (theory D). However, disposable income is not the correct measure for testing the "endogenous fiscal policy" theory (theory A). Based on this view, increased inequality in market (rather than disposable) income would induce voters to choose a high level of (distortionary) taxation (Milanovic, 2000). Accordingly, the results reported in column 5 of Table 2.1 replicate the previous specification measuring inequality of income before taxes and transfers. Though still negative, the estimated coefficient is lower in magnitude and is not statistically significant. Hence, the analysis provides little support for this theory – at least for the sample of OECD countries.

One prediction of some of the theories about how inequality might impact growth is that the effect might be non-linear. Some of the political economy and socio-political instability theories discussed above (see Benhabib, 2003) suggest that while some inequality is unlikely to cause unrest and provides growth-enhancing incentives, inequality can disrupt economic relations after it reaches some "tipping point" by inviting political interference through rent-seeking behaviour and appropriation. A similar argument might be made about investment in education, for example. However, no such non-linearity was found in the results[15] – the effect on growth of an increase in inequality from 20 to 21 Gini points was found to be the same as the effect of increasing the Gini from 40 to 41. Nor was there any evidence found that the effects varied significantly between the short term and long term.[16] On the other hand, the negative inequality-growth relationship seems to hold even at the sub-national level (see Box 2.2).

### Box 2.2. Income inequality and economic growth in OECD regions

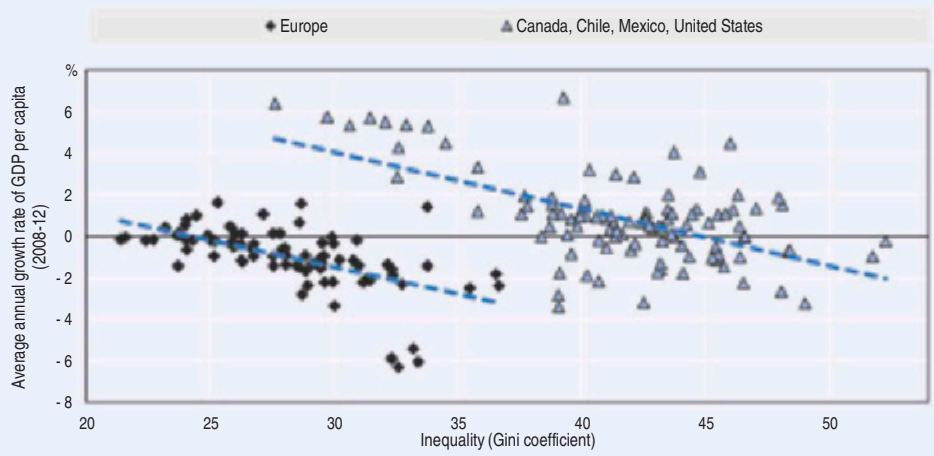
The OECD recently undertook an extension of its collection of standardised income distribution indicators to the regional level. The data show that, on average, the within-country variation in inequality is large, and comparable to that observed across countries (OECD, 2014a). Regional differences are particularly high in all large OECD countries and in some small countries with a dominant urban centre. The data show that income inequalities increase with city size. This has several possible explanations. First, large cities host the most productive firms, which pay the highest rewards to observable skills and attract talented individuals (Behrens and Robert-Nicoud, 2014). In addition, large cities may also have, on average, workers with higher unobserved skills, since there is evidence that the increase of inequality with city size occurs also within skill groups (Baum-Snow and Pavan, 2013). Finally, large cities are places of greater opportunities that attract poor people, thus contributing to greater wage dispersion.

Importantly, the data allowed addressing the relationship between income inequalities and economic growth at the sub-national level (Royuela et al., 2014). The analysis considers 15 OECD countries, covering three continents, over the period 2004-12.

A clear negative correlation was observed between income inequality and economic growth in OECD regions, especially when the patterns followed by European, and North and South American countries were considered separately. In both continents, more unequal regions experienced a subsequent slower growth rate of GDP per capita, on average (see figure below). Econometric results confirmed this negative relationship, which was stronger after 2008, suggesting that higher equality might represent an element of regional resilience against economic shocks.

The negative inequality-growth relationship was also found to be sensitive to the type of urban structure. After having controlled for the effect of urbanisation on economic growth, higher inequality seems to be more detrimental for growth in large cities, where inequality is already relatively higher on average.

**Income inequality and growth in OECD regions, 2008-12**




*Source*: Royuela, V., P. Veneri and R. Ramos (2014), "Income Inequality, Urban Size and Economic Growth in OECD Regions", *OECD Regional Development Working Papers*, Vol. 2014/10, OECD Publishing, Paris, http://dx.doi.org/10.1787/5jxrcmg88l8r-en.

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### *Redistribution*

If inequality has a negative impact on long-term growth, a relevant policy question is how to promote a win-win process to reduce inequality and boost growth. The main,

direct policy tool to reduce market income inequality is via taxes and benefits, which however may also have a negative effect on growth (see Ostry et al., 2014; OECD, 2012). The effect would be negative if, for example, high levels of taxes and transfers imply a waste of resources and generate aggregate inefficiencies (as in Okun's famous "leaky bucket" analogy).[17] If this is the case, reaching a given level of disposable income inequality would entail a stronger drag on growth in countries featuring higher market inequality to begin with.

The results of the analysis suggest that redistribution is, at worst, neutral to growth. The specification in column 6 of Table 2.1 looks at the role of redistribution including both market and disposable ("net") income inequality. The coefficient estimated on net inequality therefore reflects the effects of changes in inequality due to redistribution. The coefficient remains negative, statistically significant and almost unchanged from the previous columns. The non-significant estimate of the coefficient on market inequality indicates that the extent of redistribution necessary to achieve a given level of net equality has no negative direct consequences on economic growth.

This finding is further supported by alternative specifications. Column 7 shows that after controlling for net inequality, the extent of redistribution in a country (the difference between market and net income inequality) has no significant impact on growth. This specification is the same as the one used by Ostry et al. (2014), who obtained similar results for a broader set of countries. Finally, the extent of redistribution is not significant when it is taken as the only core independent variable (see column 8). Taken together, these results suggest that inequality in disposable incomes is bad for growth, and that redistribution is, at worst, neutral to growth.

These results are based on a partial and relatively crude measure of redistribution and do not therefore imply that all redistribution measures would be equally good for growth.[18] For one thing, they do not independently consider the possible contribution to growth of other redistributive tools, such as "pre-distributive" policies that affect market outcomes and alter income disparities before taxes and transfers. These include, for example, education policies that allow a larger fraction of the population to benefit from higher (skilled) wages, or labour market activation policies that favour the participation and employment of under-represented groups.

More importantly, the impact of different redistributive measures on efficiency and growth is in practice likely to vary, both in terms of sign and magnitude. Previous OECD work (Arjona et al., 2001) looked at the effects of social spending on growth, dividing such spending into "active" (social spending which attempts to change the distribution of market income by promoting the labour market participation of part of the population who would have lower-than-normal market incomes) and "passive" (e.g. unemployment benefits). Active spending included active labour market policies, but also in-work benefits and spending on childcare. This work found that active spending is associated with higher growth, whereas more "passive" social spending is associated with lower growth. While the approach is different from the one followed here, it suggests that not all redistribution is necessarily equally good for growth (see also OECD, 2012).

### *Top and bottom inequality*

To look at the growth consequences of inequality in different parts of the income distribution (see also Voitchovsky, 2005), the Gini index of inequality is replaced with several measures of "top" and "bottom" inequality. For example, top income inequality is measured by the ratio of average disposable income in one top decile to average

disposable income in the country, and bottom inequality the ratio of average income in the country to average income in one bottom decile.[19]

The results, presented in Table 2.2, suggest that lowering inequality by reducing income disparities at the bottom of the income distribution has a greater positive impact on economic performance than if the focus were on reducing top inequality. The estimated coefficients imply that lowering bottom inequality by half of a standard deviation (which is the same as changing bottom inequality in the United Kingdom to be at the level of that in France, or that of the United States to become like that of Japan, or Australia) would increase average annual growth by nearly 0.3-percentage point over the subsequent 25-year period, with a cumulated gain in GDP at the end of the period in excess of 7%.

**Table 2.2. Inequality at the bottom and at the top of the income distribution**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Bottom inequality* | | | | *Bottom and top inequality* | | | | *Top inequality* | |
| | *1st decile* | *2nd decile* | *3rd decile* | *4th decile* | *1st and 8th deciles* | *2nd and 8th deciles* | *3rd and 8th deciles* | *4th and 8th deciles* | *9th decile* | *10th decile* |
| **Bottom inequality** | -0.031** | -0.071* | -0.121* | -0.196* | -0.032* | -0.084*** | -0.133*** | -0.198** | | |
| | (0.012) | (0.037) | (0.067) | (0.111) | (0.018) | (0.029) | (0.047) | (0.083) | | |
| **Top inequality** | | | | | -0.038 | -0.367 | -0.220 | -0.066 | -0.571 | -0.065 |
| | | | | | (0.750) | (0.469) | (0.403) | (0.448) | (0.451) | (0.050) |
| M2 (p-val) | 0.318 | 0.305 | 0.333 | 0.537 | 0.266 | 0.193 | 0.248 | 0.338 | 0.311 | 0.378 |
| Hansen statistic (p-val) | 0.436 | 0.513 | 0.615 | 0.120 | 0.703 | 0.807 | 0.823 | 0.753 | 0.449 | 0.309 |
| Observations | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Number of countries | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Number of instruments | 11 | 11 | 11 | 11 | 13 | 13 | 13 | 13 | 11 | 11 |

*Note*: The dependent variable is $\Delta \ln y_t$ where [t-(t-1)] is a five-year period. Bottom inequality is measured by the ratio between mean disposable income in the economy ($\bar{Y}$) and mean income of one bottom decile specified in the column heading ($\bar{y}_n$, with n=1,.., 4). An increase in the indicator in column 1, for example, implies a widening disparity between average overall income and the average income of the bottom 10% of the population. Top inequality is measured as the ratio between the average income of one top decile, specified in the column heading, and overall average income in the economy ($\bar{Y}$). All regressions include country and period dummies and a control for beginning of period GDP per capita (see Annex 2.A1 for a detailed description of variables and sources). A robust, two-step System GMM estimator with corrected (Windmeijer, 2005) standard errors is used. M2 are the p-values of the tests for second-order serial correlation in the differenced error terms. Hansen denotes the p-value on the Hansen test of over-identifying restrictions. ***, **, * denote significance at the 1, 5 and 10% levels, respectively.

*Source*: See Annex 2.A1; OECD Secretariat calculations.

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The negative effect of bottom income inequality on growth proves robust. The basic approach is to focus on the poorest households in the population (i.e. the gap in incomes between the poorest decile and the average, see column 1). But it also holds – and is remarkably similar in magnitude – when focusing on the second, third or fourth income decile, which rather captures the relative income conditions of the lower-middle class (columns 2 to 4).[20] Moreover, it holds even when inequality on the upper end of the distribution is simultaneously accounted for in the specification (columns 5 to 8). These findings imply that countering the negative effect of inequality on growth is not (just) about tackling poverty and the least well-off in society, it needs to be about addressing low incomes more generally.

Changes in top income inequality, however, are found to have no statistically significant impact on economic growth (see columns 9 and 10, which confirm the results obtained when top inequality is considered together with bottom inequality, in columns 5 to 8). It is important to note that the income data used do not provide information on trends in concentration at the very top of the income distribution, e.g. movements of the top percentile and above.[21]

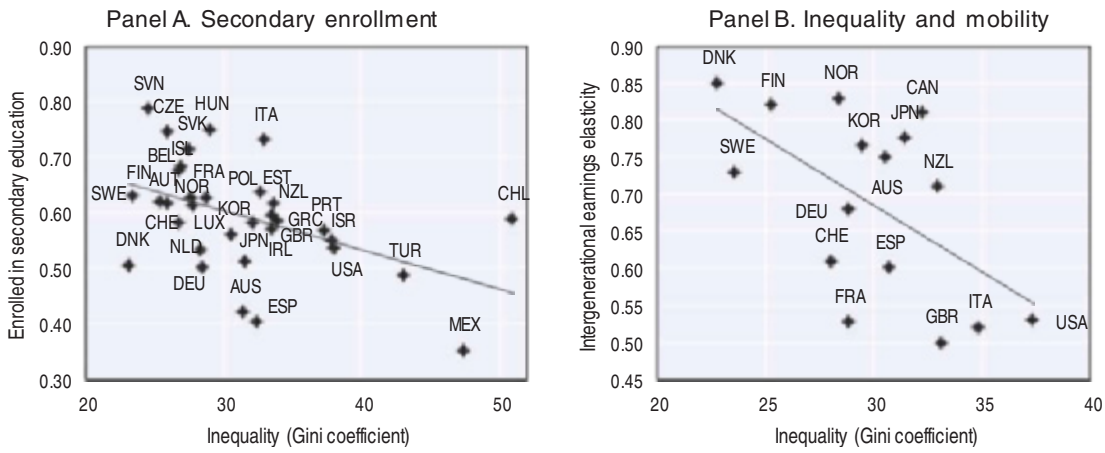
These findings shed further light on the relative importance of the alternative avenues through which income inequality is supposed to affect subsequent growth across OECD countries. As first pointed out by Voitchovsky (2005), most of the mechanisms predicting a negative effect of income inequality on growth emphasise the role of income disparities at the bottom end of the distribution. For example, the human capital accumulation theory (theory B above) predicts that inequality would be harmful because it raises the relative costs of education of an increasing fraction of families in the bottom half of the distribution. Higher inequality at the top is rather a signal of the existence of high rewards to risky investments, and therefore more directly linked to the theories implying a positive effect of inequality on growth (theory D above, for example). However, the present findings differ from those of Voitchovsky (2005), who found support for both bottom and top inequality having negative growth consequences.

In terms of the theoretical mechanisms highlighted in Section 2.2, the findings in this section seem to indicate that one important way in which income inequality affects growth is by lowering the investment and/or occupational opportunities of disadvantaged individuals, as in the financial market imperfection/human capital accumulation theory (theory B). Accordingly, the next section attempts to test this theory more directly, looking at the links between inequality and investment in human capital by individuals with different socio-economic backgrounds.

## 2.4. Inequality, social mobility and human capital accumulation

Across OECD countries, income inequality is negatively associated with average educational attainment. Panel A of Figure 2.1 shows this by plotting a simple correlation between the population share enrolled in upper secondary education and the Gini coefficients of disposable income inequality (a similar picture emerges when looking at tertiary enrolment). While consistent with the results from early cross-country regressions linking inequality to human capital investment (e.g. Perotti, 1996, Deininger and Squire, 1998), this simple correlation is not in itself confirmation of the human capital accumulation/financial market imperfection theory (theory B above). To test this, it would be necessary to see whether the sign and strength of the relationship between inequality and education varies across individuals in accordance with their socio-economic background.

**Figure 2.1. Inequality, enrolment and mobility across OECD countries**




*Note*: Panel A: The graph reports the ratio between the number of students enrolled in upper secondary education and the population aged 15-19. The two variables are sourced from the Education and Training Statistics in OECD.Stats ("Education and Skills") and the OECD Demography Statistics http://dx.doi.org/10.1787/5f958f71-en, and relative to 2010. Inequality (Gini coefficient) is measured when individuals were aged 10-14, that is in 2005. Panel B: Compiled from different sources as in D'Addio, A.C. (2007), "Intergenerational Transmission of Disadvantage: Mobility or Immobility Across Generations?", *OECD Social, Employment and Migration Working Papers*, No. 52, OECD Publishing, Paris, http://dx.doi.org/10.1787/217730505550; and OECD (2008), *Growing Unequal? Income Distribution in OECD Countries*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264044197-en.

*Source*: See Annex 2.A1.

StatLink http://dx.doi.org/10.1787/888933207806

The negative cross-country correlation between inequality and intergenerational earnings mobility, the so-called "Great Gatsby Curve" (see D'Addio, 2007; Corak, 2013), is also linked to the same theory. This relationship (reproduced in Panel B of Figure 2.1) suggests that in societies experiencing higher inequality, individuals might become less and less able to move outside the earnings class in which they were born. It is therefore compatible, in particular, with the idea that inequality lowers the investment and occupational opportunities of disadvantaged individuals (upward mobility). As for any other result based on pure cross-country variation, however, this finding is likely to suffer from biases induced by observed and unobserved time-invariant country-specific confounding factors.

The analysis in this section uses individual-level survey data (from the OECD Adult Skills Survey, PIAAC) to estimate whether the link between educational attainments and inequality varies with parent educational background (PEB, a proxy for socio-economic background). In doing this, it exploits within-country variation to account for time-invariant observed and unobserved country characteristics that might affect both attainment and the level of inequality. Studies of social mobility across OECD countries (e.g. Causa and Johansson, 2009; and OECD, 2010b) provide broad support for the idea that students' achievements strongly depend on parents' education. The current analysis extends these results, exploring whether the degree of educational mobility declines as inequality increases. Because human capital differences across individuals explain the largest fraction of income differences, confirmation of this hypothesis would contribute to understanding why inequality and intergenerational economic mobility are negatively correlated across countries or areas within a country.[22]

To exploit such variation in a cross-sectional survey like the PIAAC, the exercise uses differences in human capital attainment across age cohorts (within a country). More

specifically, individuals are pooled by five-year age groups (indexed with *t*), and each group is assigned the measure of inequality in their country at the time they were aged between 10 and 14.[23] The baseline empirical equation is:

$$HC_{i,t,c} = \boldsymbol{\beta_1}\mathrm{PEB}_{i,t,c} * Ineq_{t,c} + \boldsymbol{\beta_2}\mathrm{PEB}_{i,t,c} + \theta \mathrm{X}_{i,t,c} + \mu_t + \mu_c + \epsilon_{i,t,c} \qquad [2]$$

where *HC* is a measure of human capital for individual *i* in country *c*, *PEB* is a set of three indicators for her parent educational background (low, medium or high), and *Ineq* is an index of inequality in the country (see Box 2.2 for details). In this specification, the three parameters in $\beta_2$ measure average educational outcomes of individuals with different parental backgrounds, while those in $\beta_1$ capture whether such averages vary with the extent of income inequality in the country. This procedure allows running panel regressions (country *c*, period *t*) accounting for country fixed effects ($\mu_c$) and common shocks ($\mu_t$). Hence, the parameters $\beta$ can be estimated accounting for time-invariant country determinants that might bias cross-country estimates. This would be the case, for example, if inequality is correlated with the quality of the educational system, or with other policies and institutions that affect educational outcomes. (For a detailed description of the other variables considered and of the estimation approach, see Box 2.3.)[24]

**Box 2.3. The Programme for the International Assessment of Adult Competencies (PIAAC) survey**

The data used in this section are sourced from the OECD Programme for the International Assessment of Adult Competencies (PIAAC), a survey administered to representative samples of the working-age (15-64) population in 24 OECD countries between 2010 and 2011 (for more details, see OECD, 2013). It includes a rich battery of questions covering demographic characteristics (age, gender, place of residence, religion), working history and educational attainment as well as a direct measure of skill proficiency in three domains: literacy, numeracy and problem-solving in technology-rich environments. The PIAAC measures each of the three skill domains on a 500-point scale.

For each individual, the data allow measuring educational outcomes both in terms of formal achievements (e.g. highest degree obtained) and in terms of actual skills (e.g. numeracy score). Recent studies suggest that skills represent a potentially better measure of human capital than standard indicators of the highest level of formal education attained. For example, using indicators of skill proficiency (e.g. based on international test scores in literacy, science and math) dramatically improves the explanatory power of human capital in cross-country growth regressions (see e.g. Hanushek and Woessmann, 2012).

The PIAAC data also report the level of education and main occupation of parents, which are used to construct a measure of parent educational background (PEB). The variable is defined as follows. An individual is assigned a low PEB if neither parent has attained upper secondary education; a medium PEB if at least one parent has attained secondary and post-secondary, non-tertiary education; and a high PEB if at least one parent has attained tertiary education.

Other individual characteristics that are likely to be relevant for educational decisions that are made when the child is at an early age are used as controls (in matrix X). These include gender, parents' immigration status, whether the individual speaks a native or foreign language and the region of residence. Proficiency scores in problem-solving will sometimes be used as a proxy for individual ability. Because the exercise assumes a role for measured inequality in the country at earlier ages, individuals born abroad are excluded from the analysis.

This approach measures the degree of inter-generational educational persistence in terms of average outcome differences among individuals in the three groups (and to anticipate the results reported below, unsurprisingly it finds the persistence to be strong). However, crucially, it also allows (changes in) inequality to affect individuals with different PEBs differently. If the most important effect of higher income inequality is to increase the

incentives to invest in education, higher disparities should be associated with increased achievement by at least part of the population. On the other hand, evidence that achievement declines with rising inequality and that this effect is stronger among the poor would support the idea that, interacting with financial market imperfections, inequality significantly lowers the opportunities for education and upward social mobility for disadvantaged individuals.

This section tests these alternatives using three different sets of outcomes:

- The first is a set of measures of the quantity of human capital accumulated by the individual, including the probability of attaining tertiary education, and the number of completed years of formal education.
- The second is a set of indexes of skill proficiency, capturing cognitive ability and therefore also accounting for the quality of the education completed.
- The third measure is an index of the probability of employment, so moving beyond education to explore the impact of inequality on labour market opportunities.

The results of all three approaches indicate that widening income disparities lowers the outcomes of individuals from low socio-economic backgrounds, but does not affect those of individuals from medium and high backgrounds. As in the case of growth regressions, therefore, the results strongly support the idea that higher inequality lowers opportunities for education (and social mobility) for disadvantaged individuals in the society, an effect that dominates the potentially positive impacts through incentives.

### *Inequality and the quantity of human capital*

#### *Highest educational level attained*

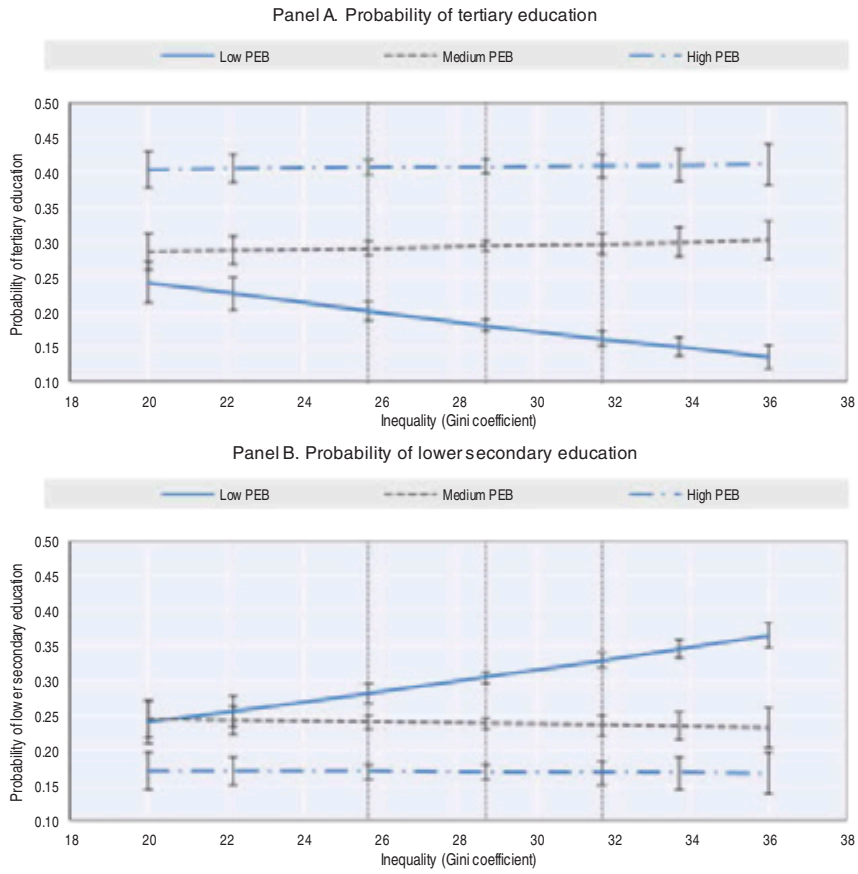
The first evidence supporting the negative effects of inequality on opportunities refers to the highest level of formal education achieved. This is obtained by estimating an ordered probit where the dependent variable ($HC_{i,t,c} = EDU_{i,t,c}$) takes three ranked values: low if the individual reports having attained less than lower secondary education, medium in case of upper secondary education, and high in case of tertiary education (see Annex 2.A1 for details). In this framework, the estimated parameters $\beta_1$ and $\beta_2$ allow predicting the average probability of achieving each educational level by parental education background *and* inequality level (i.e., at different levels of inequality). In Panel A of Figure 2.2, each line indicates the average predicted probability of graduating from university by PEB as a function of inequality (measured in Gini points).

Consistent with the substantial evidence for significant inter-generational educational persistence, the estimated probability of graduating from university is highest for individuals who have highly educated parents – just over 40% of them receive tertiary education, compared to an average of around 30% of those who have parents with medium levels of education.

However, the graph also shows that the probability of tertiary education decreases with inequality, but only in the case of low PEB individuals. Based on the underlying estimates, an increase in inequality of around 6 Gini points (corresponding to the income inequality differential between the United States and Canada in 2010) would lower the probability of individuals with parents of low educational background being in tertiary education by around 4 percentage points.[25] On the other hand, inequality does not have any impact on the probability of graduating from tertiary education in the case of individuals with a medium or high family background.

Inequality is also associated with a significant increase in the probability that low PEB individuals attain at most lower secondary education (see Panel B of Figure 2.2). This probability is predicted to increase, on average, by nearly 5 percentage points following an increase in inequality of 6 Gini points. However, there does not seem to be an association between inequality and the attainment probability of richer individuals.

**Figure 2.2. Probability of educational attainment by parent educational background (PEB) and inequality**




*Note*: The two panels report the average predicted probability that individuals from poor, medium and high parental (educational) backgrounds attain tertiary education (Panel A) or at most lower secondary education (Panel B), as a function of the degree of inequality (Gini points) in the country at the time they were around 14 years old. Low PEB: neither parent has attained upper secondary education; medium PEB: at least one parent has attained secondary and post-secondary, non-tertiary education; high PEB: at least one parent has attained tertiary education. The bars indicate 95% confidence intervals. The vertical dashed lines indicate the 25th, the median and the 75th percentiles of the underlying distribution of inequality.

*Source*: OECD Secretariat calculations based on PIAAC data. See Box 2.3 and Annex 2.A1.

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### *Average years of schooling*

The same results qualitatively hold if focusing on a summary measure of the above-mentioned outcomes, such as the number of years of completed schooling (YS). Table 2.A1.1 reports the results obtained for estimating [2] when $HC_{i,t,c} = YS_{i,t,c}$. The results in column 1 report the baseline estimates for the vector $\beta_2$, indicating that higher income inequality is negatively (and significantly) related to average schooling for low background individuals, while the link is not significant in the case of medium or high background individuals (as in the case of attainment probabilities). The remaining columns correspond to alternative specifications of the control set *X*, which are detailed in

the table note. Importantly, the results are robust to accounting for the country's level of per-capita GDP (column 3), for country-specific trends in inequality and educational achievements (column 4) and for the interaction between time dummies (i.e. age cohort) and country dummies (column 5).[26]

To get a better understanding of the relevance of the estimated coefficients, Figure 2.A1.1 reports the average predicted number of years of schooling by educational background as a function of inequality, using the results from the baseline specification (column 1). According to these estimates, increasing inequality by around 6 Gini points lowers human capital among low background individuals by almost 0.5 years of schooling. This represents more than 50% of the predicted schooling differential with individuals from medium family backgrounds.[27]

### *Inequality and skill proficiency*

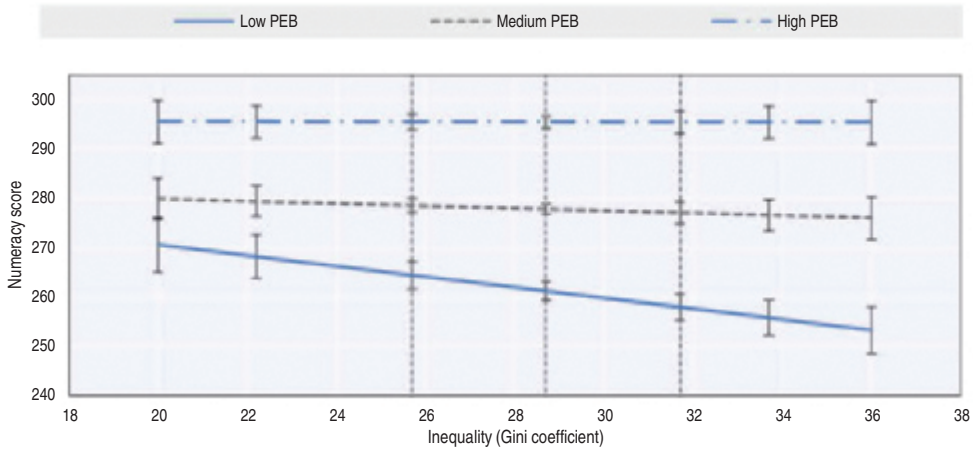
#### *Numeracy score*

The second set of evidence about the effects of inequality on human capital is obtained by looking at test scores (the PIAAC provides measures of proficiency in numeracy and literacy). Figure 2.3 reports the average predicted numeracy score by the father's educational background as a function of inequality. As in the previous case, Figure 2.3 shows that numeracy scores decrease with inequality in the case of individuals from low backgrounds. In contrast, the average scores of more advantaged individuals are unaffected by widening income inequality. According to these estimates, an increase in inequality of around 6 Gini points is associated with a 6-point fall in the numeracy score of low background individuals. This is a significant amount – it accounts for nearly 40% of the gap between their average predicted numeracy score (261) and that of individuals with medium parental backgrounds.

One obvious concern in the context of the present analysis is about the extent to which these measures actually reflect skills acquired while in education, given that skills are likely to depreciate with age, and might be complemented by those accumulated at work. These concerns are addressed empirically in Table 2.A1.2 and discussed in detail in Annex 2.A1. In particular, the core results are unaffected by controlling for country-specific trends in human capital achievements and inequality, and for occupation-specific and country-specific rates of depreciation. Moreover, previous results suggest that skills measured in the PIAAC largely reflect those accumulated while in education (OECD, 2014b).

In principle, the results reported in Figure 2.3 might simply be a consequence of the previous observation, whereby a lower amount of skills just reflects a lower quantity of education. However, the results are robust, albeit slightly lower in magnitude, even if conditioning the estimates on the level of formal education, therefore insulating the estimates from the negative consequences of inequality on the quantity of education. Figure 2.4 plots the patterns of numeracy scores by level of inequality as predicted by such exercise (see column 7 of Table 2.A1.2 for the underlying parameter estimates). The figure shows that low background individuals see their skills decrease as inequality rises even when they are compared with higher background individuals who attained the same amount of formal education. Relative to the previous, unconditional case (represented by the dotted blue line), the decreasing pattern is only slightly less steep. This suggests that a large part of the lower proficiency of low PEB individuals can be traced to a worse "quality" of the educational track (e.g. they attended worse quality schools/universities) or to a lower amount of effort (e.g. hours) while studying.

**Figure 2.3. Average numeracy score by parent educational background (PEB) and inequality**

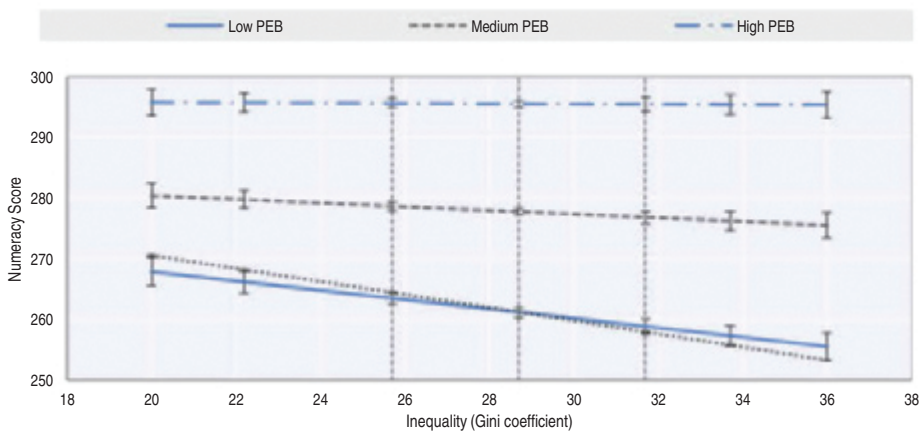



*Note*: The graph plots the average predicted numeracy score for individuals from low, medium and high parental (educational) backgrounds, as a function of the degree of inequality (Gini points) in the country at the time they were around 14 years old. Marginal effects obtained using estimates are shown in Table 2.A1.2, column 1. Low PEB: neither parent has attained upper secondary education; medium PEB: at least one parent has attained secondary and post-secondary, non-tertiary education; high PEB: at least one parent has attained tertiary education. The bars indicate 95% confidence intervals. The vertical dashed lines indicate the 25th, the median and the 75th percentiles of the underlying distribution of inequality.

*Source*: OECD Secretariat calculations based on PIAAC data. See Box 2.3 and Annex 2.A1.

StatLink http://dx.doi.org/10.1787/888933207829

**Figure 2.4. Average numeracy score conditional on education by parent educational background (PEB) and inequality**




*Note*: The graph plots the average predicted numeracy score for individuals from low, medium and high parental (educational) backgrounds, as a function of the degree of inequality (Gini points) in the country at the time they were around 14 years old. Marginal effects obtained using estimates are shown in Table 2.A1.2, column 7 (i.e. conditioning the degree of formal education). The dotted blue line replicates the results reported in Figure 2.4 in the case of low PEB individuals. Low PEB: neither parent has attained upper secondary education; medium PEB: at least one parent has attained secondary and post-secondary, non-tertiary education; high PEB: at least one parent has attained tertiary education. Dotted lines represent baseline probabilities for each group. The bars indicate 95% confidence intervals. The vertical dashed lines indicate the 25th, the median and the 75th percentiles of the underlying distribution of inequality.

*Source*: OECD Secretariat calculations based on PIAAC data. See Box 2.3 and Annex 2.A1.

StatLink http://dx.doi.org/10.1787/888933207839

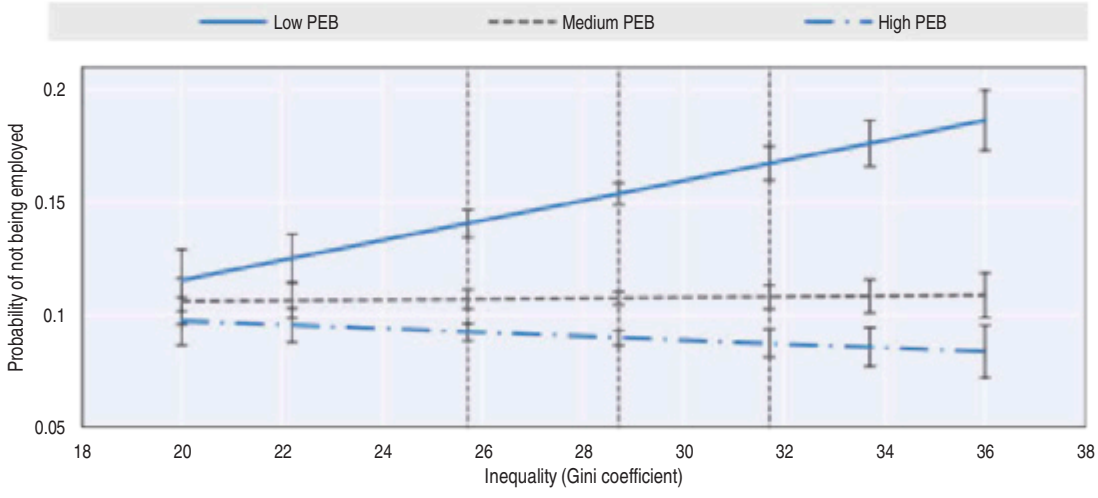
### *Literacy score*

Using literacy scores as a measure of the quality of human capital delivers very similar findings. Figure 2.A1.2 plots the average predicted literacy score by educational background as a function of inequality (using the specification in column 1 of Table 2.A1.3). An interquartile (25th-75th) increase in inequality is associated with a lower literacy score of low background individuals by slightly less than seven points. For comparison, the average predicted differential in literacy score with the medium PEB group amounts to 15 points.

### *Inequality and labour market outcomes*

The third set of evidence suggesting that higher inequality lowers the amount of opportunities available to disadvantaged individuals emerges from looking at their labour market outcomes. The PIAAC allows an analysis of the probability of *not* being employed, on average, over the working life.[28] As in the case of educational outcomes, this probability significantly increases with inequality in the case of low background individuals. The predicted probabilities plotted in Figure 2.5 imply that, for example, the probability of low background individuals not being employed rises by around 3 percentage points (or 20% of their baseline probability of non-employment) as inequality widens by 6 Gini points. Again, the corresponding probabilities for richer individuals are unaffected by inequality. A similar picture emerges when looking at the probability of not being employed at the date of interview, which increases with inequality for low PEB individuals only.

**Figure 2.5. Probability of not being employed over the working life by parent educational background (PEB) and inequality**




*Note*: The graph plots the average predicted probability of not being employed over the working life for individuals from low, medium and high parental (educational) background, as a function of the degree of inequality (Gini points) in the country at the time they were around 14 years old. Low PEB: neither parent has attained upper secondary education; medium PEB: at least one parent has attained secondary and post-secondary, non-tertiary education; high PEB: at least one parent has attained tertiary education. Dotted lines represent baseline probabilities for each group. The bars indicate 95% confidence intervals. The vertical dashed lines indicate the 25th, the median and the 75th percentiles of the underlying distribution of inequality.

*Source*: OECD Secretariat calculations based on PIAAC data. See Box 2.3 and Annex 2.A1.

StatLink http://dx.doi.org/10.1787/888933207843

### *Discussion and extensions*

As in the case of growth regressions, these findings seem more supportive of the "opportunity" arguments raised to explain the sources of the inequality-growth nexus rather than the "incentive" arguments. If higher inequality (e.g. a higher skill wage premium) increased the incentives to invest in education, this should be reflected in increased attainment by at least part of the population. The finding that attainment is in fact lowered, and that this happens only to the poorer segments, signals that income availability significantly determines the opportunities of education and social mobility.

Interesting extensions of this exercise include checking whether the strength of the link between inequality and educational attainment varies with countries' institutional characteristics or policy settings. This would help to shed light on the potential role of policy in offsetting the adverse long-run consequences of widening inequality. The characteristics of education systems and the effectiveness of educational expenditure in levelling the playing field are examples of ways to capture such policies. Preliminary attempts to explore these issues proved inconclusive, however.

## 2.5. Conclusion

This chapter contributes to a large empirical literature estimating the impact of inequality on growth. Drawing on harmonised data covering the OECD countries over the past thirty years, the econometric analysis suggests that income inequality has a sizeable and statistically significant *negative* impact on growth, and that achieving greater equality in disposable income through redistributive policies has no adverse impact on growth. Moreover, it suggests that it is inequality at the bottom of the income distribution that hampers growth. Further analysis based on OECD PIAAC data suggests that one key channel through which inequality negatively affects economic performance is through lowering investment opportunities (particularly in education) of the poorer segments of the population.

These findings have relevant implications for policy makers concerned about slow growth and rising inequality. On one hand it points to the importance of carefully assessing the potential consequences of pro-growth policies on inequality (OECD, 2015): focusing exclusively on growth and assuming that its benefits will automatically trickle down to the different segments of the population may undermine growth in the long run inasmuch as inequality actually increases. On the other hand it indicates that policies that help limiting or – ideally – reversing the long-run rise in inequality would not only make societies less unfair, but also richer. In particular, the present analysis highlights the importance of two pillars of a policy strategy for tackling rising inequalities and promoting equality of opportunities and plead for opting for "win-win" policies that aim both at reducing inequality and promoting economic growth. This approach is also consistent with the OECD Strategy for *Inclusive Growth* (OECD, 2014c).

One policy avenue for reducing inequality involves reforms to tax and benefit policies (see also OECD, 2012). Recent OECD work that has focused on top incomes (Förster et al., 2014) suggests that, as top earners now have a greater capacity to pay taxes than before, governments may consider re-examining their tax systems to ensure that wealthier individuals uphold their fair share of the tax burden. This aim can be achieved in several different ways – not only via raising marginal tax rates on the rich but also by improving tax compliance, eliminating or scaling back tax deductions that tend to benefit high earners disproportionally, and by reassessing the role of taxes on all forms of property

and wealth, including the transfer of assets. Broadening the tax base by closing loopholes in the current tax code has the potential to promote both efficiency and equity. This is particularly the case for the taxation of capital income, which is highly concentrated among wealthy households and represents a significant fraction of their total income. The unequal tax treatment of income from different asset classes increases inequality in some cases and distorts the allocation of capital.

However, the present chapter suggests that it is even more important to focus on inequality at the bottom of the income distribution. Government transfers have an important role to play in guaranteeing that low-income households do not fall further in the income distribution. This implies paying careful attention to the design of income support, for both those in work and out of work. This is not only restricted to cash transfers. Other important elements of this pillar are policies to promote and increase access to public services. This concerns services such as high-quality childcare and education or access to health or housing. Such measures immediately smooth inequality stemming from cash incomes, but they also constitute a longer-term social investment to foster upward mobility and create greater equality of opportunity in the long run. A final important element is the active promotion of inclusive employment, an area where the "double dividend" of reducing inequality and increasing growth has always been most apparent. Increasing employment can contribute to sustainable cuts in income inequality, provided that employment gains occur in jobs that offer career prospects. A key challenge for policy therefore is to facilitate and encourage access to employment for under-represented groups, such as youths, older workers, women and migrants.[29]

In terms of social policy, social assistance and minimum income policies are aimed at poverty alleviation. The analysis in this chapter suggests, however, that it is not just poverty (i.e. the incomes of the lowest 10% of the population) that inhibits growth. What is suggested instead is that policy makers need to be concerned about the bottom 40% more generally – including the vulnerable lower-middle classes at risk of failing to benefit from the recovery and future growth. Anti-poverty programmes will not be enough.

The other major set of policy insights from this chapter concerns the links between inequality and human capital. The evidence strongly indicates that high inequality hinders the ability of individuals from low economic backgrounds to invest in their human capital, in terms of both the level of education but even more importantly the quality of education. This would imply that education policy should focus on improving access by low-income groups, whose educational outcomes are not only worse on average from those of middle and top income groups, but also more sensitive to increases in inequality. However, the performance of disadvantaged individuals might not respond significantly to policies aimed at lowering the direct private costs of, in particular, tertiary education (e.g. tuition costs, or the availability of grants). The adverse impact of inequality may, in fact, still operate via the differential effects of foregone earnings on schooling decisions in different segments of the income distribution, via its effect on the allocation of parental inputs in children's human capital production, or via the ability of parents to select optimal schooling environments (e.g. neighbourhoods). Policy needs therefore to take account of the fact that in unequal societies low socio-economic groups are likely to have underinvested in formal education. Accordingly, strategies to foster skills development should include improved job-related training and education for the low-skilled (on-the-job training) and better access to formal education over their working lives.

# Notes

1. Rajan (2010) argued that rising inequality in the United States induced low-income individuals to borrow beyond their means to sustain consumption, and that this overleveraging sowed the seeds of the crisis. Stiglitz (2012) and Acemoglu (2011) claimed that increasing political influence of the rich and the financial industry contributed to the financial excesses that generated the crisis. Fitoussi and Saraceno (2010) argued that the roots of the crisis lie in a structural change in income distribution that has been going on for the past three decades.

2. According to the "endogenous fiscal policy" theory, the negative link between inequality and growth rests on the combination of two basic mechanisms: an economic mechanism positing that redistributive tools (e.g. capital income taxes) lower the private returns to investment, and a political mechanism predicting that higher inequality would induce more redistribution as poor individuals would prefer larger tax rates than the rich.

3. With perfect financial markets and decreasing returns to individual investment, efficiency is maximised as poor individuals would borrow from the rich to realise the optimal amount of investment. If financial markets are not available, under-investment by the poor implies that aggregate output would be less than optimal, a loss that would in general increase the degree of wealth heterogeneity (see e.g. Bénabou, 1996; Aghion et al., 1999).

4. Aghion and Bolton (1997) and Piketty (1997) explicitly modelled the supply side of the credit market, explaining imperfections based on moral hazard (e.g. problems of input verifiability) or enforcement problems stemming from contract incompleteness (e.g. due to output verifiability).

5. Mirrlees (1971) focused on the principal-agent setting where an (observable) output depends on an unobservable effort. In that context, rewarding the agent independently of output performance will discourage her from making any effort while allowing for wage dispersion would encourage the effort. More broadly, Rebelo (1991) showed that in a variety of growth models high investment or income tax rates would discourage capital accumulation and imply lower growth rates.

6. Kaldor (1955) suggested that, because the savings propensity out of labour income is lower than that out profits, richer individuals (i.e. those earning more income from capital) will tend to save more than the poor. This hypothesis was formalised in the context of a Solow model by Bourguignon (1981), who showed that when savings are a convex function of income, there may exist multiple steady states characterised by different degrees of inequality. In this case, output is shown to be larger in the unequal steady states not only at the aggregate level, but also for all individuals (i.e. the unequal Pareto equilibrium dominates the egalitarian one).

7. One interpretation of these differences is that panel data approaches are successful in controlling for country-specific effects. Another possibility, however, is that they end up eliminating most of the variation in the data, exacerbating measurement error biases and reflecting in practice only the short-run effects of inequality. But many of

the theoretical effects of inequality on growth may take a significant amount of time to materialise (changes in education, or in political stability, for example).

8. More specifically, upward mobility is negatively related to inequality when this is measured by Gini coefficients, which is consistent with the "Great Gatsby Curve" documented across countries. Top 1% income shares are not highly correlated with intergenerational mobility, however. By contrast, Bloome (2015) found that the US states in which income inequality has increased the most have not been more likely to suffer a decline in intergenerational income mobility.

9. See Verbist et al. (2012), who estimate that the combined effect of in-kind transfers for education, health and care reduces net income inequality by around one-fifth in OECD countries, on average.

10. Physical capital is proxied by the ratio of real non-residential fixed capital formation to GDP, while human capital is measured by average years of schooling of the working-age (25-64) population.

11. This result is not completely surprising, as several other GMM studies that focus on advanced economies estimated non-significant coefficients for one or more of the standard growth determinants. This issue is discussed in detail in Annex 2.A1, Section A2.

12. With GMM estimators, the set of available instruments (i.e. the lagged values of the independent variables) is potentially large, and using too many instruments may weaken their effectiveness (Roodman, 2009). It is therefore important to check the robustness of the results when reducing the instrumental variable matrix. Specifically, for the inequality variable two lags are used as instruments in columns 1 and 2, and one lag is used in column 3. In column 4, one lag is used and the instrument matrix has been collapsed into one column (i.e., column 5 has the minimum possible set of instruments). For all other variables, only one lag is used as instrument, and the instrument matrix has been collapsed.

13. The Arellano-Bond test indicates that serial correlation in the residuals, which potentially undermines the use of lagged variables as instruments, should not be a concern. The Hansen test of over-identifying restrictions does not suggest that any instruments might be invalid.

14 . The subsample of countries for which a time series of inequality and growth data is available include Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Mexico, Netherlands, New Zealand, Norway, Spain, Sweden, Turkey, the United Kingdom and the United States.

15. This was tested by adding in a quadratic term ($Gini^2$).

16. This was tested by adding further lags of the inequality variable (e.g. $Gini_{t-2}$). Using data on a larger sample of countries, Halter et al. (2014) find that higher inequality helps economic performance in the short term but reduces the growth rate in the longer run.

17. Okun's (1975) prominent "leaky bucket experiment" refers to the fact that, when government attempts to transfer income from rich to poor individuals, "(…) money must be carried (…) in a leaky bucket. Some of it will simply disappear in transit, so the poor will not receive all the money that is taken from the rich" (Okun, 1975, p. 91). Okun attributed these losses to the administrative costs of taxing and transferring, and to disincentive effects, mainly in the labour supply.

18. A detailed report investigating how tax structures can best be designed to support GDP per capita growth is OECD (2010a)

19. More specifically, denote average disposable income in the country as $\bar{Y}$, and the mean disposable income of the n$^{th}$ decile as $\bar{y}_n$. Bottom inequality is measured as the ratio between $\bar{Y}$ and average income in the lower deciles of the distribution (the focus is on the first to the fourth decile): $BI = \bar{Y}/\bar{y}_n$ (for n<5). Vice versa, top inequality is measured as the ratio between average income in the upper decile and average disposable income in the country: $TI = \bar{y}_n/\bar{Y}$ (for n>7). In both cases, an increase in the indicator suggests widening inequalities.

20. This is because the increase in the estimated coefficient on bottom inequality as one moves from specification in column 1 to column 4 is almost entirely offset by a fall in the standard deviation of the corresponding variable.

21. Unfortunately, the available sources of top income data (e.g. the World Top Income Database) only include pre-tax income shares of top deciles and percentiles. Further, only 18 OECD countries are included in this dataset (see Atkinson et al., 2011; OECD, 2014b). As a result, it is not possible to extend the analysis to consider the role of top inequality based, for example, on the top 1% pre-tax income shares.

22. Works focusing on within-country variation include Chetty et al. (2014), who find that (upward) mobility is robustly negatively correlated with income inequality across US counties, and Bloome (2015), who finds that the US states in which income inequality has increased the most have not experienced a decline in intergenerational income mobility.

23. For example, the exercise assumes that the educational outcomes of individuals born in 1966-70 informs about schooling decisions taken around 1980. Hence, in the statistical analysis the outcomes of those individuals can be related to $Ineq_{1980,c}$. Following this reasoning, the outcomes of the cohorts (1966-70, 1971-75, …, 1991-95) were related to the inequality measured in (1980, 1985, …, 2005, which correspond to *t* in equation [2]).

24. The specification allows accounting also for unobserved drivers of both individual attainments across subsequent cohorts *and* changes in inequality. This is obtained by controlling for country-specific trends and for country-cohort dummies, absorbing shocks that are specific to different country-cohort pairs (for example, the introduction of country-specific educational policies affecting some but not all cohorts, or the existence of country-specific rates of skills depreciation – when HC is measured in terms of test scores).

25. This amounts to more than one-fifth of the baseline probability of tertiary education attainment of low PEB individuals (18%), and more than one-third of the probability differential relative to medium PEB individuals.

26. Because inequality varies at the country-year level, this last specification only allows estimating the differential effect of inequality on average schooling by PEB (i.e. whether higher inequality lowers schooling by low relative to high PEB individuals). It does not identify, however, the consequences of inequality on the number of years of schooling for each group. However, comparing the results with the baseline regression is informative as to the relevance of potential biases from country-specific depreciation rates.

27. Estimating specification [2] allowing for nonlinear effects of inequality (e.g. interacting family background with a quadratic in inequality) reveals a similar overall

picture, but suggests that the negative effects of increased income dispersion on education attainment are slightly stronger when inequality is below the median.

28. Each individual is asked to report the number of years spent in paid employment (experience), and the number of years since she left the educational system (potential experience). This information allows computing the fraction of time spent out of employment (a measure of the probability of not being employed) over the working life.

29. Recent OECD work shows that several pro-growth policies helping to narrow (bottom) income inequality (Causa et al., 2014). This is the case of reducing regulatory barriers to domestic competition, trade and FDI, of stepping-up job-search support and activation programmes and of tightening unemployment benefits for all categories of jobseekers.

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# *Annex 2.A1*
# Estimating the inequality, social mobility and growth nexus

## A1. Introduction

This annex provides background information and estimation details on the empirical exercises summarised in the main text. Section A2 below describes the methodology and the data used in cross-country growth regressions (Section 2.2 in the main text). Section A3 focuses on the approach taken to investigate the link between inequality and educational mobility (Section 2.2 in the main text), presenting additional results.

## A2. The impact of inequality on growth

### *The growth equation*

Mankiw et al. (1992) showed how empirical growth equations similar to the one analysed here can be derived from a neoclassical growth model (Solow, 1956) augmented in order to take into account human capital as a factor of production. These equations start from a constant return-to-scale production function as:

$$Y(t) = K(t)^{\theta} H(t)^{\beta} (A(t)L(t))^{1-\theta-\beta} \qquad [A.1]$$

where $Y$, $K$ and $H$ are output, physical and human capital, respectively, $L$ is labour, A is labour-augmenting technology and $\theta$ and $\beta$ are the partial elasticities of output with respect to physical and human capital. As in the Solow model, L and A grow exogenously at rates n and g, respectively: $L(t) = L(0)e^{nt}$ and $A(t) = A(0)e^{gt}$. The number of effective units of labour $A(t)L(t)$ then grows at rate $n+g$. Physical capital depreciates at rate $\delta$.

Let $s_k$ and $s_h$ be the fraction of income invested in physical and human capital, respectively. Defining quantities in [A.1] in terms of units of effective labour input $A(t)L(t)$ ($y = Y/AL$, $k = K/AL$, and $h = H/AL$), the evolution of the economy is then determined by:

$$\dot{k}(t) = s_k\, y(t) - (n + g + \delta)\, k(t) \qquad [A.2]$$

$$\dot{h}(t) = s_h\, y(t) - (n + g + \delta)\, h(t) \qquad [A.3]$$

Under the assumption that $\alpha+\beta<1$ (i.e. of decreasing returns to reproducible factors), this system of equations can be solved to obtain steady-state values of $k^*$ and $h^*$ defined by:

$$k^* = \left( \frac{s_k^{1-\beta} s_h^{\beta}}{n + g + \delta} \right)^{1/(1-\theta-\beta)} \qquad [A.4]$$

$$h^* = \left(\frac{s_k^{\theta} s_h^{1-\theta}}{n+g+\delta}\right)^{1/(1-\theta-\beta)} \qquad [A.5]$$

Substituting [A.4] and [A.5] into the production function and taking logs yields the expression for the steady-state output in intensive form. The latter can be expressed either as a function of $s_h$ (investment in human capital) and the other variables or as a function of $h^*$ (the steady-state stock of human capital) and the other variables (Mankiw et al., 1992). From an empirical point of view, the choice between the two depends on the nature of the available data. In this chapter human capital is measured by the average years of education of the working-age population, and thus the expression is in terms of human capital stock ($h$). The steady-state path of output $y^*$ can therefore be written as:

$$ln\left(\frac{Y(t)}{L(t)}\right)^* = lnA(0) + gt + \frac{\theta}{1-\theta-\beta}\ln s_k + \frac{\beta}{1-\theta-\beta}\ln h^* - \frac{\theta+\beta}{1-\theta-\beta} ln\,(n+g+\delta) \qquad [A.6]$$

Let $y^*$ be the steady state level of output in efficiency units and $y(t)$ its value at time $t$, then the transitional dynamics to the steady state can be expressed as:

$$\frac{\partial ln\, y}{\partial t} = \lambda\,[\ln y^* - \ln y]$$

where $\lambda = (n+g+\delta)\,(1-\theta-\beta)$ is the rate of convergence. For example, if $\theta = \beta = 1/3$, and $n+g+\delta = 0.06$ then the convergence rate would equal 0.02. This implies that the economy moves halfway to the steady state in about 35 years. Under the assumption that $\theta+\beta < 1$ (i.e. decreasing returns to reproducible factors), this equation implies that $lny$ approaches $lny^*$ exponentially,

$$\ln y(t) - \ln y^* = e^{-\lambda t}\,[\ln y(t-s) - \ln y^*]$$

which can be rewritten to have an expression for the growth of income:

$$lny(t) - lny(t-s) = (1-e)^{-\lambda s}(lny^* - lny(t-s)) \qquad [A.7]$$

Substituting $y^*$ from [A.6] (with $\phi(\lambda) = (1-e)^{-\lambda s}$):

$$ln\,y(t) - ln\,y(t-s) = -\phi(\lambda)lny(t-s) + \phi(\lambda)\frac{\theta}{1-\theta-\beta}\ln s_k + \phi(\lambda)\frac{\beta}{1-\theta-\beta}\ln h^* - \phi(\lambda)\frac{\theta+\beta}{1-\theta-\beta} ln\,(n+g+\delta) \qquad [A.8]$$

Hence, in a Solow model, output growth is a function of the initial level of income and of the ultimate determinants of the steady state. This implies that estimating an equation as [A.8] would allow inferring the impact of each growth determinant on the subsequent pattern of growth.[1] This is because the coefficient $\hat{\alpha}$, estimated on lagged output in equation [1], allows recovering the speed of convergence: $\hat{\lambda} = -\ln(1-\hat{\alpha})/s$, with $s = 5$. Moreover, the coefficient estimated on a given growth determinant $X$ (call this coefficient $\gamma$, as in the case of inequality in [1]) allows computing the impact of this determinant on the steady state level of output ($\widehat{\Delta lny^*} = -(\hat{\gamma}/\hat{\alpha}) * \Delta X$). Exploiting these

two estimates and equation [A.7] one can, for example, calculate the implied effect of a change in inequality on long-run (i.e. 25-year) growth.

The figures discussed in Section 2.2, for example, are obtained from the coefficients estimated in the first column of Table 2.1. Based on those estimates, a 1-Gini point reduction in inequality would increase the steady state level of per capita GDP by 5.7% ($\Delta \ln y^* = -(\hat{\gamma}/\hat{\alpha}) * (-1) = 0.0569$). Differentiating [A.7] yields an expression for the percentage change in GDP at year $t$ (which is $s$ years ahead of the current period) as a function of $\Delta \ln y^*$: $\Delta \ln y(t) = (1-e)^{-\hat{\lambda}s}(\Delta \ln y^*)$. Finally, the estimated speed of convergence is $\hat{\lambda} = -\ln(1-\hat{\alpha})/5 = 0.029$. These estimates imply that a 1-Gini point reduction in inequality would increase GDP per capita by 3% after 25 years (with a gain in average growth of nearly 0.115% per year). These values also imply that GDP would cover slightly more than half of the distance from the new steady state over the same horizon.[2]

Since the beginnings of the empirical growth literature in the early 1990s, equation [A.8] has been extended to account for a variety of long-run growth determinants (such as public and social capital, trade openness, financial development, quality of institutions, etc.). Early works focussing on the role of inequality include Persson and Tabellini (1994) and Alesina and Rodrik (1994).

Moreover, equation [A.8] can be estimated for any time interval. Because inequality indicators have not been measured at high frequency in the past across countries, the present application will exploit five-year intervals (i.e. s = 5). This allows using a dynamic fixed-effect (DFE) specification estimated with GMM methods, accounting for a country-specific component in the error term, which is a likely source of bias in early cross-country regressions of long-run per capita GDP growth on inequality.

However, DFE specifications typically impose homogeneity of all slope coefficients, and homogeneity of the rate of convergence appears to be at odds with data for OECD countries (Bassanini and Scarpetta, 2002). Pesaran and Smith (1995) show that, under slope heterogeneity, GMM (and simple least square dummy variable) dynamic fixed-effect estimates of the speed of convergence are usually affected by a downward heterogeneity bias. Accordingly, Arnold et al. (2011) rather looked at an error correction (ECM) version of equation [A.8], using pooled mean group (PMG) estimators, which allow the speed of convergence to the steady state to differ across countries. This is a realistic approach, as both exogenous (i.e. Solow) and endogenous (i.e. Uzawa-Lucas) growth models imply that the speed of convergence to the steady state differs across countries because of cross-country heterogeneity in population growth, technical change and the progressiveness of income tax. Moreover, the approach permits to discriminate between growth theories by just glancing at the estimated parameters. In fact, for plausible values of the parameters, the Solow model implies a much slower speed of convergence to the steady state than that implied by the Lucas model (Arnold et al., 2011, concludes that the estimated speed of convergence is compatible with endogenous growth theories). As mentioned, this empirical approach could not be taken in the case of the present analysis due to the lack of time series variation in inequality data.

### *The empirical model and data*

The baseline regression considered in the analysis augments the above estimating equation by including inequality among the determinants of steady-state income. It is estimated empirically exploiting a newly assembled (unbalanced) panel of data covering

OECD countries over the period 1970-2010. More specifically, the baseline estimating equation is:

$$lny_{c,t} - lny_{c,t-s} = \alpha lny_{c,t-s} + \gamma Ineq_{c,t-s} + \beta_1 HC_{c,t-s} + \beta_2 Inv_{c,t-s} + \mu_c + \mu_t + \epsilon_{c,t} \quad [1]$$

In the baseline specification:

- Inequality is measured by the Gini coefficient. The analysis will also focus on measures capturing income disparities at the top/bottom of the distribution. More specifically, denote average disposable income in the country as $\overline{Y}$, and the mean disposable income of the nth decile as $\overline{y}_n$, then bottom inequality is measured as: $BI = \overline{Y}/\overline{y}_n$ (for n<5), and vice versa, top inequality is measured as $TI = \overline{y}_n/\overline{Y}$ (for n>7).
- The main source of the inequality data is the OECD-IDD dataset.[3] The dataset contains a number of standardised indicators based on the central concept of "equivalised household income", i.e. the total income received by households adjusted for household size with an equivalence scale. Income data refer to cash income. This includes earnings; self-employment income; capital income (rent, dividends and interest). The figures for public transfers and household taxes are also included, which allows distinguishing "market" and "disposable" income (measured after taxes and transfers). The analysis assumes the household is the unit within which income sources are pooled and equally shared. The income attributed to each person is adjusted for household size based on a common equivalence elasticity (the square root of household size). While satisfactorily covering the last part of the period 1970-2010, the IDD presents more missing values in the early sub-periods and has therefore been integrated with information from the key figures from the LIS (Luxembourg Income Study) database.[4]
- Output is measured by the log of real GDP relative to the population aged 25-64 in country *c* and year *t* ($\ln y_{c,t}$) expressed in 2005 USD at purchasing power parity. The analysis exploit five-year intervals (i.e. s = 5), so that the left-hand side variable measures five-year growth rates of per capita GDP (*Source: OECD Annual National Accounts*[5]).
- Physical capital is proxied by the ratio of real non-residential fixed capital formation to real GDP expressed in 2005 USD at purchasing power parity (*Source: OECD Annual National Accounts*).
- Human capital is measured by average years of schooling of the working-age (25-64) population. The baseline specification focuses on the level of this variable (as in recent works on inequality and growth, see e.g. Halter et al., 2014), but the consideration of a log transformation, which would be consistent with the derivation in Section A2, did not change the results. The data are sourced from the latest (2013) version of the widely used Barro and Lee dataset.[6] In general, the quality of available cross-country data on human capital has been shown to be relatively poor (De la Fuente and Doménech, 2013). The high quality education data re-constructed by Arnold et al. (2011) are however available only for a subset of OECD countries and could not be used in the present analysis, as they would imply a substantial reduction in the sample size.

Panel data allow estimating the empirical link between inequality and growth while accounting for country and period fixed effects ($\mu_c, \mu_t$). The baseline specification does not, on the other hand, account for the last term in [A.7], cumulating population growth, capital depreciation and technological progress ($n+g+\delta$). The chapter focuses on a simplified specification for several reasons. First, since sample size is already limited by the availability of inequality statistics, and especially since panel estimation requires a large number of observations, this simple specification helps maximise the degrees of freedom. Second, within-country variation in population growth is unlikely to differ a lot for OECD countries (capital depreciation is assumed constant and technological growth is unobserved). Third, the adopted model is the one typically used to estimate the effect of inequality on growth (see e.g. Perotti, 1996; Forbes, 2000; Halter et al., 2014).

It is important to discuss the possible reasons why the results shown in Table 2.1 do *not* point to a positive direct effect of human capital on growth. Those findings are in fact hard to reconcile with the large amount of evidence on the positive consequences of education on individual productivity (from the labour literature) and on the significant contribution of human capital to aggregate growth (from growth accounting). Yet these findings parallel those obtained in several other growth studies exploiting panel data (Islam, 1995; Prichett, 2000) and, in particular, those adopting GMM estimation techniques (Caselli et al., 1996; Bond et al., 2001; Castello-Climent, 2010).

One explanation is that, while eliminating one source of bias, exploiting within-country variation dramatically lowers the precision of estimates when variables either display high stability over time or trend in one direction (such as the stock of human capital). This concern is even more serious given the high volatility of growth rates measured at short horizons (e.g. five years) and the likelihood of substantial errors in the measurement of human capital (De la Fuente and Doménech, 2006; Cohen and Soto, 2007). When variables are highly persistent, lagged levels can be weak instruments for first differences, so that the (first difference) GMM panel data estimator is likely to be severely biased in short panels. With System GMM, identification therefore relies on lagged first differences having some explanatory power for levels, which might not be the case of available measures of human capital.

One further source of bias in GMM estimates arises from (cross-country) parameter heterogeneity (Lee et al., 1997). To address these issues, previous OECD research (Bassanini and Scarpetta, 2002; Arnold et al., 2011) carefully re-constructed high quality, yearly education data and looked at an error correction (ECM) version of the underlying growth model, estimated using pooled mean group (PMG) techniques developed by Pesaran, Shin and Smith (1999). This approach allows to deal with parameter heterogeneity and to estimate short- and long-run coefficients separately for each growth determinant. The results suggest that across 21 OECD countries human capital has a robust, positive and significant impact on long-run growth. Those data and the approach could not be used in the present analysis, however, due to the lack of yearly data on inequality for a sufficiently large number of OECD economies.

## A3. Inequality, social mobility and human capital investment

This section describes the methodology used to test the relevance of the human capital accumulation channel, presenting additional results.

### *Inequality, background and educational attainments*

The link between inequality, family background and the highest level of education attained is estimated through an ordered probit model. An ordered probit can be derived form a latent variable model $y^* = X\beta + \epsilon$ where $y^*$ is unobserved and the error term is normally distributed. The latent continuous variable would in this application measure the individual's desired level of education. While this is unobserved, we assume that there exist two threshold levels in the support of $y^*$ that determine *observable* changes in education attainment. The three available educational alternatives can be ranked and are defined as follows: low if the individual reports having attained less than lower secondary education, medium in case of upper secondary education and high in case of tertiary education. These cut points $\mu_1$ and $\mu_2$ are therefore such that y=low if $y^*<\mu_1$, y=med if $\mu_1<y^*<\mu_2$, and y=high if $y^*>\mu_2$. The parameters $\beta$ and the cut points $\mu$ can be estimated by maximum likelihood.

In this application, the estimated parameters $\beta_1$ and $\beta_2$ of equation [2] in the text allow predicting the average probability of achieving each educational level by parental education background *and* inequality level (i.e., at different levels of inequality). Figure 2.4 in the main text shows that higher inequality lowers the probability of tertiary education for low background individuals, and increases their probability of lower secondary (or no) education.

Table 2.A1.1 reports further results obtained estimating [2] in the text when $HC_{i,t,c} = YS_{i,t,c}$, and where YS = years of schooling. The baseline estimate of the vector $\beta_2$ (column 1) indicates that higher inequality is negatively (and significantly) related to average schooling by low background individuals, while the link is not significant in the case of medium or high background individuals (as in the case of attainment probabilities). The remaining columns present alternative specifications of the control set *X,* which are detailed in the table note.

**Table 2.A1.1. Years of schooling, family background and inequality**

| | *(1)* Baseline | *(2)* Individual controls | *(3)* Level of development | *(5)* Country specific trend | *(6)* Country X year dummy |
|---|---|---|---|---|---|
| **Inequality X low PEB** | -0.076*** | -0.061*** | -0.095*** | -0.061* | -0.043* |
| | (0.024) | (0.021) | (0.022) | (0.034) | (0.022) |
| **Inequality X medium PEB** | -0.013 | 0.004 | -0.024 | -0.010 | 0.010 |
| | (0.025) | (0.023) | (0.024) | (0.036) | (0.013) |
| **Inequality X high PEB** | -0.019 | -0.002 | -0.024 | -0.019 | |
| | (0.026) | (0.024) | (0.025) | (0.038) | |
| Observations | 64 562 | 64 562 | 62 315 | 64 562 | 64 562 |
| R-squared | 0.343 | 0.390 | 0.352 | 0.351 | 0.360 |

*Note*: The dependent variable is the number of years of schooling. All regressions control for family background (high/med./low), country and year (age-cohort) dummies. Column 2: Adds individual controls (age, gender, region, language, and parents' birth place). Column 3: Adds the interaction between PEB and average GDP per capita. Column 4: Adds a country-specific trend. Column 5: Controls for the interaction country*year (age cohort) dummies. Cluster-adjusted (country*age cohort) standard errors are in parentheses. ***, **, * denote significance at the 1%, 5%, 10% levels, respectively.

*Source*: OECD Secretariat calculations based on PIAAC data. See Box 2.3 and Annex 2.A1.

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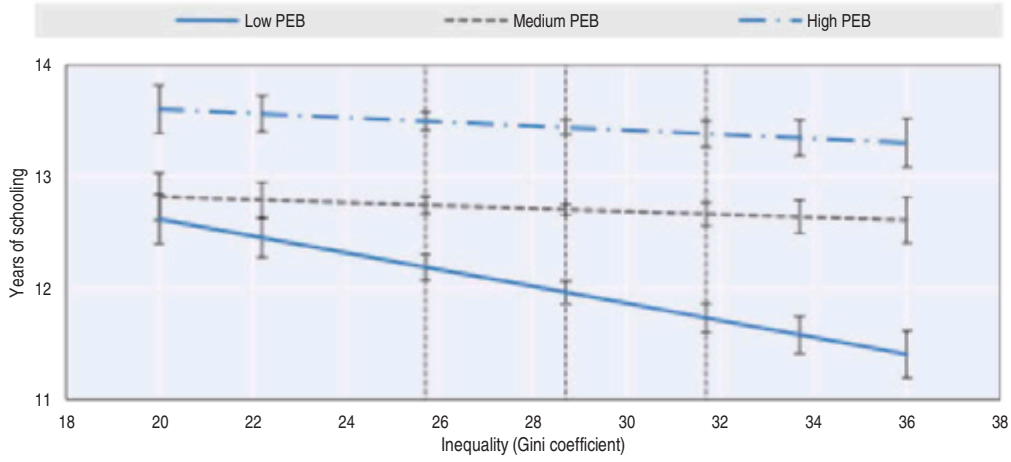
Figure 2.A1.1 plots the average predicted number of years of schooling by educational background as a function of inequality, using the results from the first column.

**Figure 2.A1.1. Years of schooling by parent educational background (PEB) and inequality**




*Note*: The graph plots the average predicted years of schooling for individuals from low, medium and high parental (educational) backgrounds, as a function of the degree of inequality (Gini points) in the country. Marginal effects obtained using estimates in column 1 of Table 2.3. Low PEB: neither parent has attained upper secondary education; medium PEB: at least one parent has attained secondary and post-secondary, non-tertiary education; high PEB: at least one parent has attained tertiary education. The bars indicate 95% confidence intervals. The vertical dashed lines indicate the 25th, the median and the 75th percentiles of the underlying distribution of inequality.

*Source*: OECD Secretariat calculations based on PIAAC data. See Box 2.3 and Annex 2.A1.

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## *Inequality, background and skills*

One key element of the PIAAC is a skill assessment exercise, consisting of a set of test questions organised into three domains: numeracy, literacy and problem-solving. The test results are used to impute to each participant an indicator of skill proficiency, which is transformed into a scale ranging from 0 to 500. Hence, the survey offers the possibility to estimate model (1) using as a dependent variable one of the available measures of skill proficiency.

One obvious concern, however, is the extent to which the tests actually reflect skills acquired while in education. On the one hand, proficiency in literacy and numeracy as accumulated at school is likely to depreciate with age. On the other, skills measured later in life might not just reflect those accumulated at school. These concerns are somehow mitigated by the following considerations. First, if skill depreciation occurs at the same rate for individuals in different countries, its effect would be captured by the time (age cohort) dummies. These are always included in the specifications showed in Table 2.A1.2, e.g. columns 1 to 3). To capture this pattern more flexibly, column 4 allows for occupation-specific depreciation rates, measured by cohort*2-digit occupation dummies using current information. More importantly, the specification allows controlling for country-specific time trends and even for time- (i.e. cohort-) country dummies, thus accounting for country-specific rates of depreciation. Finally, previous work focusing on the consequences of job-specific training on skills as measured by the PIAAC did not find any significant relationship, suggesting that they largely reflect skills accumulated while studying (OECD, 2014b).

**Table 2.A1.2. Numeracy scores, family background and inequality**

| | (1) Baseline | (2) Individual controls | (3) Level of development | (4) Skills depreciation | (5) Country specific trend | (6) Country X year dummy | (7) Formal education | (8) Ability |
|---|---|---|---|---|---|---|---|---|
| **Inequality X low PEB** | -1.077*** | -1.004*** | -1.034*** | -1.051*** | -1.006*** | -0.997*** | -0.773*** | -0.485** |
| | (0.304) | (0.293) | (0.258) | (0.284) | (0.283) | (0.259) | (0.263) | (0.195) |
| **Inequality X medium PEB** | -0.244 | -0.148 | -0.141 | -0.310 | -0.287 | -0.271* | -0.307 | -0.076 |
| | (0.267) | (0.260) | (0.228) | (0.246) | (0.251) | (0.142) | (0.250) | (0.163) |
| **Inequality X high PEB** | -0.008 | 0.057 | 0.147 | -0.005 | -0.010 | | -0.024 | 0.088 |
| | (0.275) | (0.269) | (0.244) | (0.260) | (0.274) | | (0.260) | (0.179) |
| Observations | 65 500 | 65 500 | 63 253 | 65 500 | 65 500 | 65 500 | 65 485 | 51 560 |
| R-squared | 0.177 | 0.195 | 0.184 | 0.250 | 0.182 | 0.185 | 0.285 | 0.679 |

*Note*: The dependent variable is the PIAAC numeracy score. All regressions control for Family Background (high/med./low), country and year (age-cohort) dummies. Column 2: Adds individual controls (age, gender, region, language, and parents' birth place). Column 3: Adds the interaction between PEB and average GDP per capita. Column 4: Skills depreciation columns include interactions of age cohort*occupation (2-digit classification). Column 5: Adds a country-specific trend. Column 6: Controls for the interaction country*year (age cohort) dummies. Column 7: Accounts for education (3-group dummy). Column 8: Includes problem-solving score (when >0) as a proxy for ability. Cluster-adjusted (country*age cohort) standard errors are in parentheses. ***, **, * denote significance at the 1%, 5%, 10% levels, respectively.

*Source*: OECD Secretariat calculations based on PIAAC data. See Box 2.3 and Annex 2.A1.

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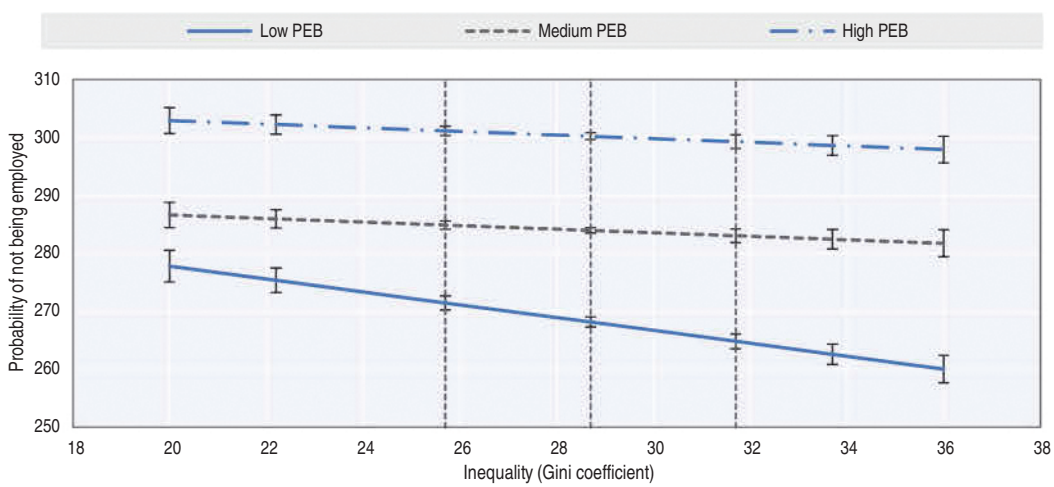
## *Literacy score*

Figure 2.A1.2 reports the average predicted literacy score by educational background as a function of inequality, using the baseline specification (column 1) of the subsequent Table 2.A1.3.

**Figure 2.A1.2. Literacy scores by parent educational background (PEB) and inequality**




*Note*: The graph plots the average predicted literacy score for individuals from poor, medium and high family (educational) background, as a function of the degree of inequality (Gini points) at the time they were around 14 years old. Low PEB: neither parent has attained upper secondary education; medium PEB: at least one parent has attained secondary and post-secondary, non-tertiary education; high PEB: at least one parent has attained tertiary education. The bars indicate 95% confidence intervals. The vertical dashed lines indicate the 25th, the median and the 75th percentiles of the underlying distribution of inequality.

*Source*: OECD Secretariat calculations based on PIAAC data. See Box 2.3 and Annex 2.A1.

StatLink http://dx.doi.org/10.1787/888933207862

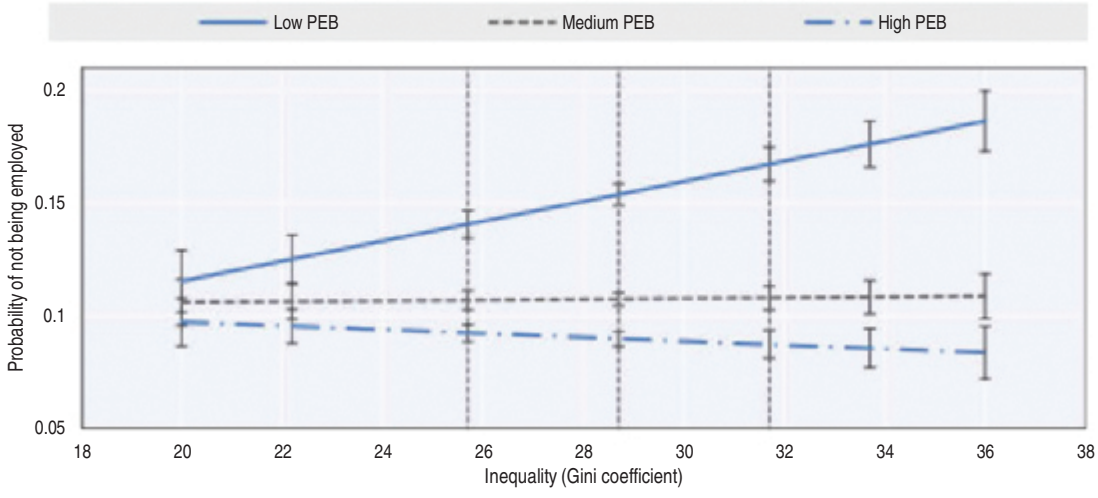
### *Literacy score*

Using literacy scores as a measure of the quality of human capital delivers very similar findings. Figure 2.A1.2 plots the average predicted literacy score by educational background as a function of inequality (using the specification in column 1 of Table 2.A1.3). An interquartile (25th-75th) increase in inequality is associated with a lower literacy score of low background individuals by slightly less than seven points. For comparison, the average predicted differential in literacy score with the medium PEB group amounts to 15 points.

### *Inequality and labour market outcomes*

The third set of evidence suggesting that higher inequality lowers the amount of opportunities available to disadvantaged individuals emerges from looking at their labour market outcomes. The PIAAC allows an analysis of the probability of *not* being employed, on average, over the working life.[28] As in the case of educational outcomes, this probability significantly increases with inequality in the case of low background individuals. The predicted probabilities plotted in Figure 2.5 imply that, for example, the probability of low background individuals not being employed rises by around 3 percentage points (or 20% of their baseline probability of non-employment) as inequality widens by 6 Gini points. Again, the corresponding probabilities for richer individuals are unaffected by inequality. A similar picture emerges when looking at the probability of not being employed at the date of interview, which increases with inequality for low PEB individuals only.

**Figure 2.5. Probability of not being employed over the working life by parent educational background (PEB) and inequality**




*Note*: The graph plots the average predicted probability of not being employed over the working life for individuals from low, medium and high parental (educational) background, as a function of the degree of inequality (Gini points) in the country at the time they were around 14 years old. Low PEB: neither parent has attained upper secondary education; medium PEB: at least one parent has attained secondary and post-secondary, non-tertiary education; high PEB: at least one parent has attained tertiary education. Dotted lines represent baseline probabilities for each group. The bars indicate 95% confidence intervals. The vertical dashed lines indicate the 25th, the median and the 75th percentiles of the underlying distribution of inequality.

*Source*: OECD Secretariat calculations based on PIAAC data. See Box 2.3 and Annex 2.A1.

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# Notes

1. Empirically, such an equation has been adapted to assess the relevance of a variety of growth determinants, allowing for different specifications of the functional form; see Section A2 in Annex 2.A1 for a precise definition of the variables and specification considered here.

2. The aggregate implied effect mentioned in the second paragraph of page 67 was obtained using the same estimated coefficients and equation. The only difference is that the impact on growth was obtained cumulating the effects of each of the four five-year changes in average OECD inequality observed between 1985 and 2005. Hence, for example, $\Delta Ineq_{1985-90}$ induces a shift in $lny^*$ which affects the growth of GDP during 20 years $(\Delta \ln y(2010) = (1-e)^{-20\hat{\lambda}} \Delta \ln y^*(\Delta Ineq_{1985-90})$ while $\Delta Ineq_{2000-05}$ only affects GDP during five years $(\Delta \ln y(2010) = (1-e)^{-5\hat{\lambda}} \Delta \ln y^*(\Delta Ineq_{2000-05})$. Hence earlier shifts would have a larger impact on GDP at the end of the period than would subsequent shifts of the same magnitude.

3. See www.oecd.org/social/income-distribution-database.htm.

4. See www.lisdatacenter.org/data-access/key-figures/.

5. The data can be downloaded at http://dotstat.oecd.org/Index.aspx.

6. The data can be downloaded at www.barrolee.com/data/dataexp.htm.

# *Chapter 3*

# Income inequalities during the crisis and fiscal consolidation

*This chapter looks at the distribution of income during the recent global financial and economic crisis and subsequent period of fiscal consolidation. In particular, it describes trends in market and disposable income inequality. It analyses drivers of earnings inequality using a decomposition of the employment and wage effects. It examines the redistribution of income via taxes and transfers, their role as automatic stabilisers and impact on income inequality. The chapter also explores trends in relative poverty rates and anchored poverty rates, as well as poverty rates by age groups. Finally, it summarises detailed analyses of tax and benefit reforms in ten OECD countries implemented as part of fiscal stimulus and fiscal consolidation programmes and their impact and incidence on household income.*

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

## 3.1. Introduction and key findings

Most OECD countries entered the global economic crisis with historically high levels of income inequality (OECD, 2011a). In fact, some scholars even suggest that high income inequality was a direct or indirect cause of the crisis, at the least in some countries, such as the United States (Rajan, 2010; Stiglitz, 2012; and Fitoussi and Saraceno, 2010).

The impact of the crisis itself on inequality, over and above the long-term trend is uncertain, *a priori*. On the one hand, lower (and especially negative) returns from capital reduce incomes at the top of the distribution, where capital income tends to be concentrated, thereby narrowing the gap between rich and poor.[1] On the other hand, higher unemployment rates will increase inequality, particularly when job losses are concentrated among lower-income groups.

In many OECD countries hard hit by the crisis, household income inequality and poverty did in fact increase. However, the final impact was also affected to a significant extent by the role played by the tax-benefit systems as well as the specific measures implemented during the period. Although this suggests a continuation of the long-term trend of rising inequality, a closer look reveals that the crisis significantly changed the factors underlying the rise of income inequality and poverty in most OECD countries. Throughout this chapter, "the crisis" refers to the period between 2007 and 2011.

This chapter is divided into six sections. Section 3.2 analyses the extent to which income inequality has increased since 2007, what drove the rise, how sensitive the results are to different measures, and how taxes and benefits contributed to the trends in inequality. Section 3.3 examines how much poverty increased, using relative and "anchored" poverty thresholds, and it explains why poverty among the elderly fell in many countries during the crisis. Section 3.4 discusses how taxes and benefits cushioned the impact of the crisis on household income and why this effect has become weaker in recent years. Section 3.5 summarises ten in-depth country reviews analysing the tax-benefit measures implemented in these countries during the crisis and their impact on income distribution. Section 3.6 summarises and concludes.

The following key findings emerge from this analysis:

- *Income inequality*, before accounting for taxes and benefits, rapidly increased during the crisis in most countries. Income inequality after taxes and benefits was already at an all-time high before the crisis, and it continued to rise. The rise was particularly large when focusing on inequality at the lower end of the income distribution.
- *Income poverty* also increased during the crisis, especially when compared to pre-crisis real income benchmarks ("anchored poverty"). In many countries average household incomes declined in real terms. Poverty rates increased among children and youth while they fell among the elderly.
- There have been *two distinct phases* since the beginning of the crisis. In the initial years, automatic stabilisers and fiscal stimulus measures cushioned the household sector better than other sectors of the economy. As the economic difficulties continued, benefits started to expire and governments introduced fiscal consolidation programmes; the cushioning diminished, especially in the countries hit hardest (e.g. Greece, Ireland and Spain).

- While *tax-benefit reforms* varied considerably across countries and across time, in the initial years of the crisis many countries reduced taxes and/or raised benefits, thus reinforcing the impact of automatic stabilisers on household incomes. Many of these countries later reversed these policies and raised taxes and cut benefits. Families with children (especially lone parents) tended to lose more, partly due to cuts in family benefits. Broadly, measures had a progressive effect among in-work households, with gains or smaller losses on low-earning families and greater losses on higher-earning families.

## 3.2. Income inequality continued to increase through the crisis

The dispersion of market income (i.e. gross income from labour and capital) increased strongly during the crisis. On average across the OECD, the Gini coefficient of market income inequality increased by 1.5 percentage points between 2007 and 2011 (Figure 3.1, Panel A). This rise in market income inequality was continuous throughout the crisis period (Figure 3.1, Panel B) and represented a shift in the drivers of inequality of disposable income. Since the mid- to late 1990s, falling redistribution had been the main factor driving the rise of inequality of disposable income (OECD, 2011a). The recent rise in market income inequality was widespread: out of the 30 OECD countries where trend data is available, it increased by more than 0.3 point in 21 countries and decreased by more than 0.3 point in four, while in the other five there was "no significant change". Market income inequality rose particularly strongly in Greece, Ireland and Spain, while it fell considerably in Poland and Israel. The drivers of the changes are analysed below.

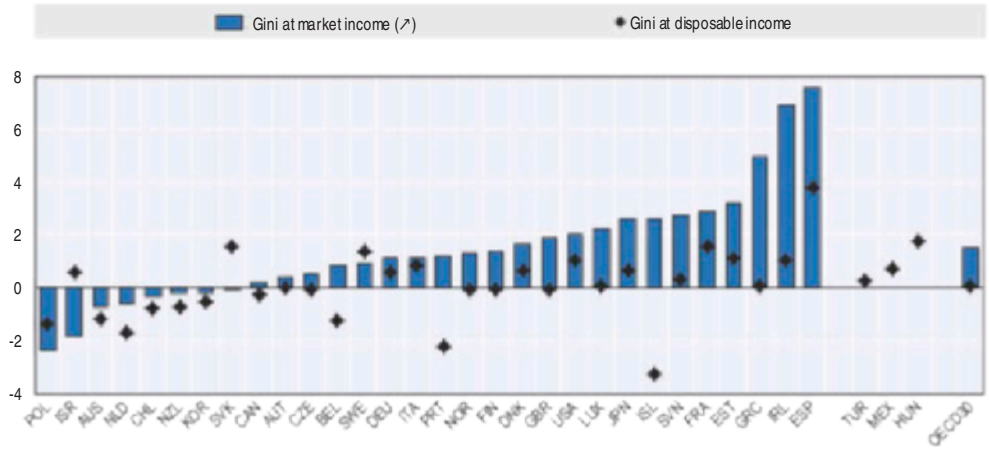
Higher tax-benefit redistribution cushioned the steep rise in market income inequality during the crisis. After taking account of income taxes and cash benefits – a proxy for "redistribution" – the rise in inequality was considerably less for disposable income than for market income. Part of the rise in redistribution was "automatic". With progressive tax-benefit systems in place, greater inequality automatically leads to more redistribution, even if no policy action is taken (Immervoll and Richardson, 2011). The rise in redistribution was reinforced by tax-benefit reforms implemented in the early years of the crisis, which were reversed in later years. The trend in disposable income inequality describes two distinct phases. In the first years of the crisis, disposable income inequality stalled or even fell slightly. In later years, it increased once again (Figure 3.1, Panel B). These two phases in the trend are linked to the role of taxes and benefits and the fiscal reforms implemented in the period, which are discussed in Sections 3.4 and 3.5.

Between 2007 and 2011 disposable income inequality increased in a majority of countries. Out of the 33 OECD countries where trend data is available for disposable income inequality, it rose by more than 0.3 point in 15 countries and fell by more than 0.3 point in nine, and in the other nine there was "no change". The differences in inequality between market income and disposable income varied considerably across countries, thus revealing significant differences in the ability of tax-benefit systems to cushion the rise of inequality. In Iceland, Portugal and Belgium, income inequality fell after accounting for taxes and benefits, despite rises in market income inequality.[2] Tax-benefit redistribution also alleviated higher market income inequality in Ireland, Greece, Luxembourg, Slovenia, the United Kingdom, Norway and Finland, and, to a lesser extent, in Spain, France, the United States and Estonia. In Poland, market income inequality fell to a larger extent than disposable income inequality, as tax-benefit reforms generally favoured middle and top incomes.[3] In Israel and the Slovak Republic,

disposable income inequality increased due to a fall in redistribution. Similarly, in Sweden a rise in market income inequality was accompanied by a fall in redistribution. In Spain, disposable income inequality increased so sharply that, while in 2007 it was below the OECD average, by 2011 it was among the ten most unequal countries in the OECD (OECD, 2014a).

**Figure 3.1. Income inequality during the crisis**

Panel A. Percentage point change in Gini coefficient, 2007-11, total population[1]




Panel B. Percentage change in Gini coefficient, 2007=100, OECD, total population[2]

1. 2007 refers to 2006 for Chile and Japan: 2008 for Australia, Germany, Finland, France, Israel, Mexico, Norway and Sweden. 2011 refers to 2009 for Japan; 2010 for Austria, Belgium, Ireland and the United Kingdom and 2012 for Australia, Hungary, Korea and United States; Switzerland is not available. OECD refers to the unweighted average (Turkey, Mexico and Hungary are not included.

2. OECD refers to the unweighted average of 26 countries. Austria, Belgium, Switzerland, Hungary, Japan, Mexico, New Zealand and Turkey are not included.

*Source*: *OECD Income Distribution Database* (2014), www.oecd.org/social/income-distribution-database.htm.

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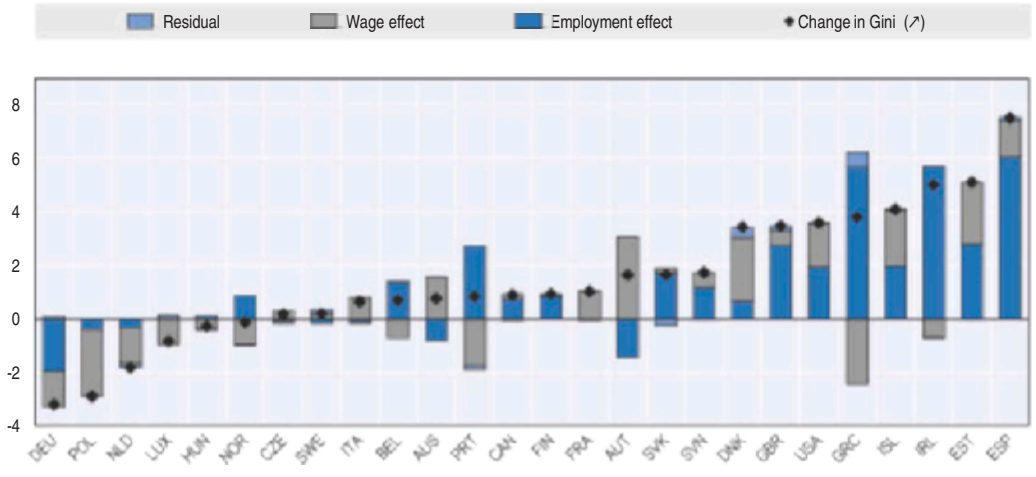
### *The fall in employment drove the rise in market income inequality*

Labour income is, by far, the largest source of income of working-age households (OECD, 2011a), and thus drives market income inequality. Labour income can become more unequally distributed either as a result of employment changes (e.g. higher unemployment increasing the number of working-age individuals with low or non-labour income) or changes in the distribution of wages (i.e. changes in the pay gap between lower- and higher-paid workers); it is important to disentangle these two effects.

In most countries, it was the fall in employment that drove the rise in labour income inequality during the crisis years. Figure 3.2 presents the employment and wage effects on overall labour income inequality of working-age individuals (including employees and self-employed workers). Estimates are based on a theoretical model proposed by Atkinson and Brandolini (2006) and applied in OECD (2011a). During the crisis, the employment effect (i.e. a rise in unemployment or inactivity) was the main driver in most countries where labour income inequality rose. Before the crisis the wage effect was the main driving force in most countries (OECD, 2011a). In Spain, out of the 8 point rise in labour income inequality, six were due to the fall in employment and two to the wage effect. In Greece, Ireland and Portugal, the rise in labour income inequality was also due to the employment effect. However, in these three countries wage inequality fell perhaps in part due to reductions in public sector wages, which had larger effects in the upper part of the income distribution of these countries (Callan et al., 2011; Avram et al., 2013). Only in Australia, Austria, France, Denmark and Italy, higher wage dispersion among workers was the main – and in most cases the sole – driver of rising labour income inequality. In the few countries that registered a fall in labour income inequality, the wage effect was generally the main driving force.

**Figure 3.2. Decomposition of changes in the Gini coefficient of labour income**

Percentage point change in Gini coefficient, 2007-11, working-age individuals[1]




1. Gini coefficient of labour income among the entire working-age population estimated by assigning zero earnings to non-workers.

*Source:* OECD Secretariat calculations from the European Union Statistics on Income and Living Conditions (EU-SILC, 2008 and 2012), the Survey of Labour and Income Dynamics (SLID, 2007 and 2010) for Canada, Household, Income and Labour Dynamics in Australia (HILDA, 2008 and 2012) for Australia and the Current Population Survey (CPS, 2008 and 2012) for the United States.

StatLink http://dx.doi.org/10.1787/888933207898

Capital and business incomes also play a role in market income inequality, particularly at the very top of the income distribution, where they are concentrated. According to OECD (2014c), the richer the income group, the higher its share of capital and business income. For the five countries analysed (Canada, France, Italy, Spain and the United States), capital income and business incomes are the largest income sources of individuals in the top 0.01%, except in Canada. The United States was the only country where capital and business income also drove the income growth of the top 0.1% as well. But it must be kept in mind that capital income may be underreported in some countries; some types of capital income are not subject to income tax and consequently not reported in the tax files from which top income data is extracted (Förster et al., 2014).

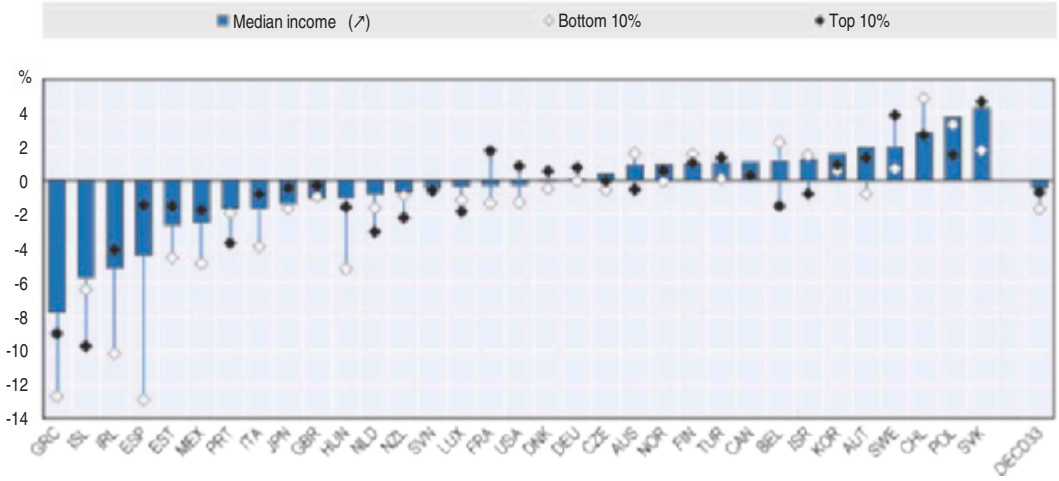
### *The bottom 10% fared worse than the rest of the population*

Lower-income households either lost more during the crisis or benefited less from the recovery than other income groups. Figure 3.3 shows the annual change in household disposable income for the median, bottom and top 10%, between 2007 and 2011. On average, the income of the bottom 10% fell at a much higher rate than that of the top 10% and the median. Out of the 33 countries for which data are available, the bottom 10% fared worse than the top 10% in 21 countries and worse than the median in 27 countries.

The income fall at the bottom was particularly striking in some of the countries hit hardest by the crisis. In Spain, Greece, Ireland, Iceland, Hungary, Mexico and Estonia, the average income of the bottom 10% fell 5% or more per year. Except for Iceland, in all of these countries the bottom fared considerably worse than the median and the top 10%. In countries where median household incomes were less affected by the crisis, the patterns were more mixed. In Austria, France, the Slovak Republic, Sweden and the United States, the bottom 10% fared worse than the median and the top, whereas in Belgium, Chile and Poland the bottom fared better than the top.

**Figure 3.3. Changes in household real disposable income by income group**

Annual percentage change between 2007 and 2011,[1] total population




1. 2007 refers to 2006 for Chile and Japan: 2008 for Australia, Germany, Finland, France, Israel, Mexico, Norway and Sweden. 2011 refers to 2009 for Japan; 2010 for Austria, Belgium, Ireland and the United Kingdom and 2012 for Australia, Hungary, Korea and United States; Switzerland is not available. OECD33 refers to the unweighted average.

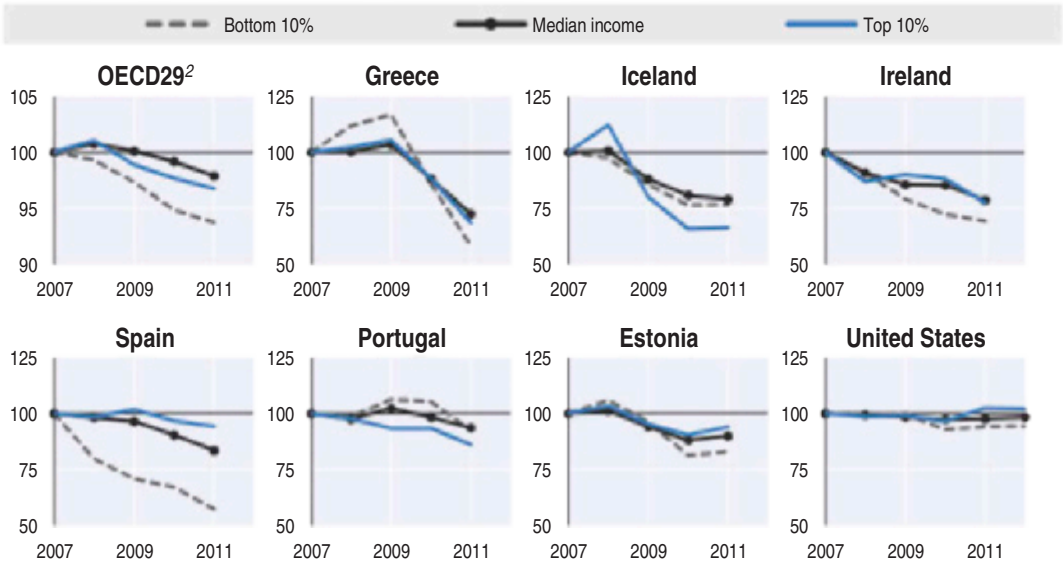
*Source: OECD Income Distribution Database* (2014), www.oecd.org/social/income-distribution-database.htm.

StatLink http://dx.doi.org/10.1787/888933207907

On average across the OECD, the fall in income at the bottom started earlier and was more intense than for other income groups. While median and top incomes were still rising in 2008, bottom incomes were already falling. Since then, in each year incomes at the bottom fell at least as much as the worst-performing income group (see Figure 3.4). The trends were not the same across all countries. Some countries (e.g. Spain) followed the OECD average trend, with incomes at the bottom faring considerably worse than for other income groups since the beginning of the crisis. In other countries, incomes at the bottom fared either better or similarly to other income groups in the early years of the crisis, but performed considerably worse in later years. Greece is the most dramatic example of this, with bottom incomes rising until 2009 and then plummeting afterwards. On the other hand, in Iceland top incomes increased in 2008 and then fell strongly afterwards.

**Figure 3.4. Income trends at the bottom, top and median of the distribution**

Percentage change in household disposable income by income group, 2007=100%, total population[1]




1. Countries are ranked by average annual percentage change in median income between 2007 and 2011 (cf. Figure 3.3.)

2. OECD refers to the unweighted average of 29 OECD countries. Austria, Belgium, Japan, New Zealand and Switzerland are not included.

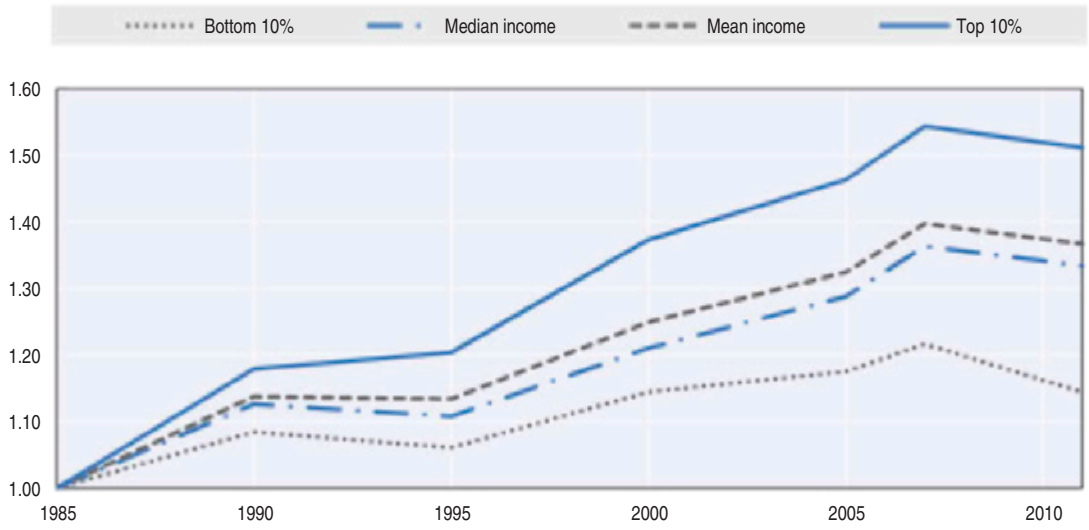
*Source: OECD Income Distribution Database* (2014), www.oecd.org/social/income-distribution-database.htm.

StatLink http://dx.doi.org/10.1787/888933207914

The fact that the bottom 10% fared worse than other income groups during the later years of the crisis is particularly worrying as it exacerbates a long-term trend. Focusing on 11 countries for which long-term data are available, Figure 3.5 shows that, in the last 25 years, incomes for the bottom 10% increased much less than the rest as they grew less during expansions and fell more during recessions.

**Figure 3.5. Trends in household disposable income by income group over the last 25 years**

Percentage change, index 1985=1, OECD17,[1] total population[2]




1. OECD is the unweighted average of 17 countries: Canada, Germany, Denmark, Finland, France, United Kingdom, Greece, Israel, Italy, Japan, Luxembourg, Mexico, Netherlands, Norway, New Zealand, Sweden and United States.

2. 1985 refers to 1983 for Sweden, 1984 for France, Italy, Mexico and United States and 1986 for Finland, Greece, Luxembourg and Norway; 1990 refers to 1989 for France and United States and 1991 for Italy and Sweden, and is corrected to include Greece, Japan, Luxembourg, Mexico and Norway; 1995 refers to 1994 for Greece, Mexico and United Kingdom and 1996 for France and Luxembourg; 2005 refers to, 2003 for Japan and New Zealand, 2004 for Germany, Finland, Mexico, Norway and Sweden and 2006 for Italy; 2007 refers to 2006 Japan and 2008 for Germany, Finland, France, Israel, Mexico, Norway, New Zealand, Sweden and United States: 2011 refers to 2009 for Japan 2012 for Mexico, Netherlands and United States.

*Source: OECD Income Distribution Database* (2014), www.oecd.org/social/income-distribution-database.htm.

StatLink http://dx.doi.org/10.1787/888933207920

## Box 3.1. Do the results differ when using other inequality measures?

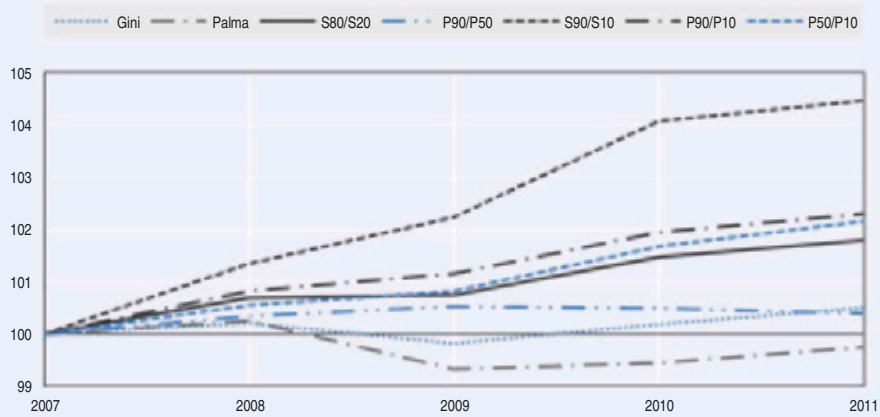
The results presented above focus on estimates based on the Gini coefficient, an indicator that is particularly sensitive to changes around the middle part of the distribution (Lambert, 2001). The trends in income inequality during the crisis and particularly the levels differ depending on the indicator used to measure it. Indicators that are less sensitive to changes at the bottom part of the distribution suggest relatively small changes, including a slight fall in 2009. However, indicators that are more sensitive to changes at the bottom indicate a continuous increase in income inequality which intensified in more recent years.

According to the S90/S10 indicator (which compares the income share of the top 10% with the bottom 10%), between 2007 and 2011 income inequality increased of almost 5% on average across OECD countries. The rise in inequality was also significant when looking at the income share of the top and bottom 20% (S80/S20), as well as the ratio of the highest income of the bottom 90% and bottom 10% (P90/P10) and the ratio of the median to the highest income at the bottom 10% (P50/P10). Income inequality increased less when comparing the top and middle of the distribution (P90/P50). The Palma index (the ratio between the income share of the top 10% and the bottom 40%) describes a similar pattern as the Gini coefficient.

**Box 3.1. Do the results differ when using other inequality measures?** *(cont)*

**Trends of different income inequality indicators through the crisis**

Percentage change in income inequality,[1] 2007=100%, OECD,[2] total population




1. See text above for explanation of indicators.

2. OECD is the unweighted average of 29 countries; Austria, Belgium, Japan, New Zealand and Switzerland are not included.

*Source: OECD Income Distribution Database* (2014), www.oecd.org/social/income-distribution-database.htm.

StatLink http://dx.doi.org/10.1787/888933208012

## 3.3. Income poverty increased, no matter how it is measured

The higher income losses at the bottom of the income distribution raise concerns about poverty. Indeed, income poverty increased during the crisis. However, the intensity of the change and in some countries even its direction differ depending on how poverty is measured. Income poverty increased less when measured against a relative threshold than against an anchored poverty threshold. While the relative poverty threshold is based on the current median income (hence variable), the anchored poverty threshold is based on the median income of a previous year (hence fixed). Since median incomes fell as a result of the crisis (see Figure 3.3), so did the relative poverty threshold.

Indicators of relative income poverty, such as the ones most commonly used by the OECD and the European Union (OECD, 2008; European Commission, 2014), are based on the notion that poverty is defined in relation to a country's general level of prosperity at a given point in time (Atkinson et al., 2002). Furthermore, unlike measures based on an absolute poverty threshold, relative measures allow international comparisons independently of specific national definitions of basic needs (Förster and Mira d'Ercole, 2012). However, in examining changes over time, a relative approach, based on percentages of current mean or median income, may overemphasise the comparative dimension of poverty at the expense of real absolute changes in living standards. Methodologically, this issue is often illustrated by the fact that a strictly relative indicator would suggest no change in poverty if the incomes of all households were to double or halve.

The analysis in this section shows evidence of a similar type of issue during the economic crisis. In a number of countries, relative poverty thresholds fell following a

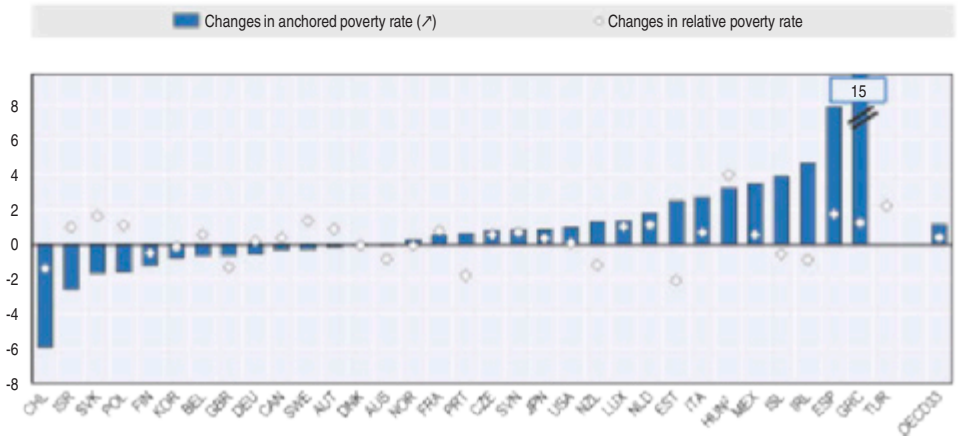
decrease in real median incomes. As relative poverty thresholds fall, households previously considered "in poverty" may now be classified differently, even though their income remains the same. This situation may even apply to households whose income falls, if the fall is lower than the median.

Although this type of result is consistent with the relative approach (i.e. inter-personal comparisons), it fails to recognise people's comparisons to their own circumstances in a (recent) previous period. Anchored poverty lines provide an alternative that addresses this issue. Similarly to the relative approach, anchored poverty lines are based on relative living standards (e.g. median income). However, instead of using current living standards (as in the relative approach), anchored lines are based on the living standards of a previous year, adjusted for inflation. The anchored poverty threshold used in this analysis is based on the median income of 2005.

Between 2007 and 2011, the OECD anchored poverty rate increased by about one percentage point (see Figure 3.6). Relative poverty grew by just a third of a percentage point, from 11.2% to 11.5%. In Greece, anchored poverty more than doubled (rising from 12% to 27%), reflecting the dramatic effect of the crisis on household income. The relative poverty rate also went up in Greece, but just by 1 percentage point. Anchored poverty rates also increased considerably in Spain (8 points), Ireland, Iceland, Mexico and Hungary. In some countries, most noticeably Estonia, Portugal, New Zealand, Ireland and Iceland, relative poverty fell while anchored poverty increased, indicating that the income of some low-income groups (particularly the elderly, see below) did not fall as much as the median. On the other hand, anchored poverty rates fell while relative poverty increased in Israel, the Slovak Republic and Poland, as those at the bottom benefited from income growth but not to the same extent as the median. Both anchored and relative poverty fell in Chile, Finland and the United Kingdom.

**Figure 3.6. Changes in relative and anchored poverty rates during the crisis**

Percentage point change, 2007-11,[1] total population




1. 2007 refers to 2006 for Chile and Japan: 2008 for Australia, Germany, Finland, France, Israel, Mexico, Norway and Sweden. 2011 refers to 2009 for Japan; 2010 for Austria, Belgium, Ireland and the United Kingdom and 2012 for Australia, Hungary, Korea and United States; Switzerland is not available. OECD33 refers to the unweighted average.

2. Hungary is the only country were relative poverty rate increased more than anchored poverty rate. This is due to a combination of very low but different anchored and relative poverty rates in 2007 (2% and 6%, respectively) and a strong fall of low incomes between 2007 and 2011 (see Figure 3.3).

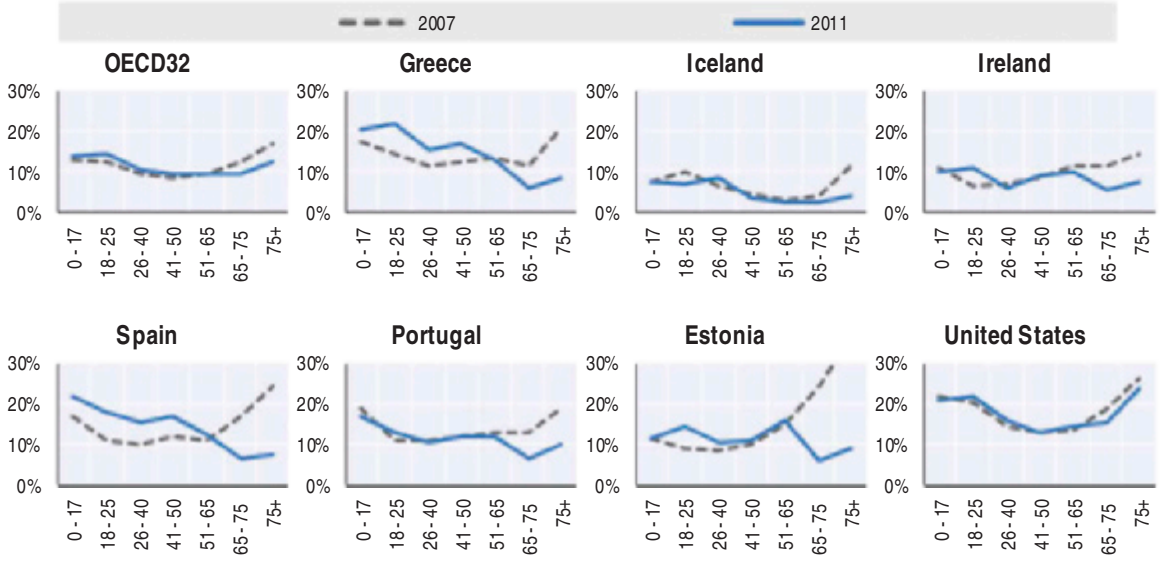
*Source: OECD Income Distribution Database* (2014), www.oecd.org/social/income-distribution-database.htm.

StatLink http://dx.doi.org/10.1787/888933207934

### *Poverty increased for all age groups except the elderly*

The age profile of relative poverty changed considerably during the crisis. Relative poverty increased among all age groups except the elderly. Between 2007 and 2011, on average across the OECD, poverty increased by 1 point among children, 2 points among youths and 1 point among working-age adults (see Figure 3.7). In 2007, the elderly (particularly aged 75 or more) were the age group with the highest poverty incidence. By 2011, the young and children had taken this place. OECD (2008) had already identified a long-term trend of increasing poverty rates among the young and falling poverty rates among the elderly. The crisis clearly accelerated this process.

**Figure 3.7. Relative poverty rates by age group in 2007 and 2011[1, 2]**




1. 2011 refers to 2012 for United States. OECD refers to the simple (unweighted) average of 32 OECD countries, Switzerland and Korea are not included

2. Countries are ranked by average annual percentage change in median income between 2007 and 2011 (cf. Figure 3.3.)

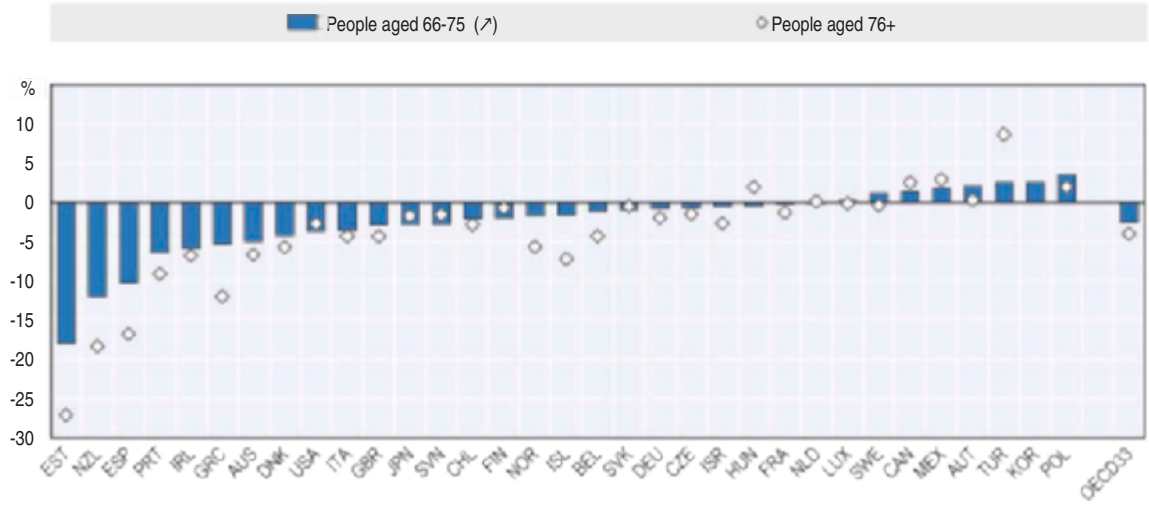
*Source: OECD Income Distribution Database* (2014), www.oecd.org/social/income-distribution-database.htm.

StatLink http://dx.doi.org/10.1787/888933207942

For the first time since the OECD started collecting this data, in 2011 the poverty rate of people aged 66 to 75 was lower than the population average (OECD, 2014a). Between 2007 and 2011, the OECD average relative poverty rate fell by 2.6 points among people aged 66 to 75 and by 4 points among people over age 75. The fall in elderly poverty was widespread: poverty among people aged 66 to 75 fell by 1 point or more in 18 countries and among people over age 75 in 21 countries (Figure 3.8). In Estonia, relative poverty among people over age 75 fell by 27 points. Substantial falls in poverty also took place in New Zealand, Spain, Portugal Ireland and Greece. On the other hand, in Poland, Korea, Turkey, Austria, Mexico and Canada elderly poverty increased noticeably between 2007 and 2011.

**Figure 3.8. Changes in relative poverty among the elderly during the crisis**

Percentage point change in relative elderly poverty rates, 2007 to 2011,[1] by age group of elderly




1. 2007 refers to 2006 for Chile and Japan: 2008 for Australia, Germany, Finland, France, Israel, Mexico, Norway and Sweden. 2011 refers to 2009 for Japan; 2010 for Austria, Belgium, Ireland and the United Kingdom and 2012 for Australia, Hungary, Korea and United States; data for Switzerland and for people aged 76+ in Korea are not available. OECD33 refers to the unweighted average.

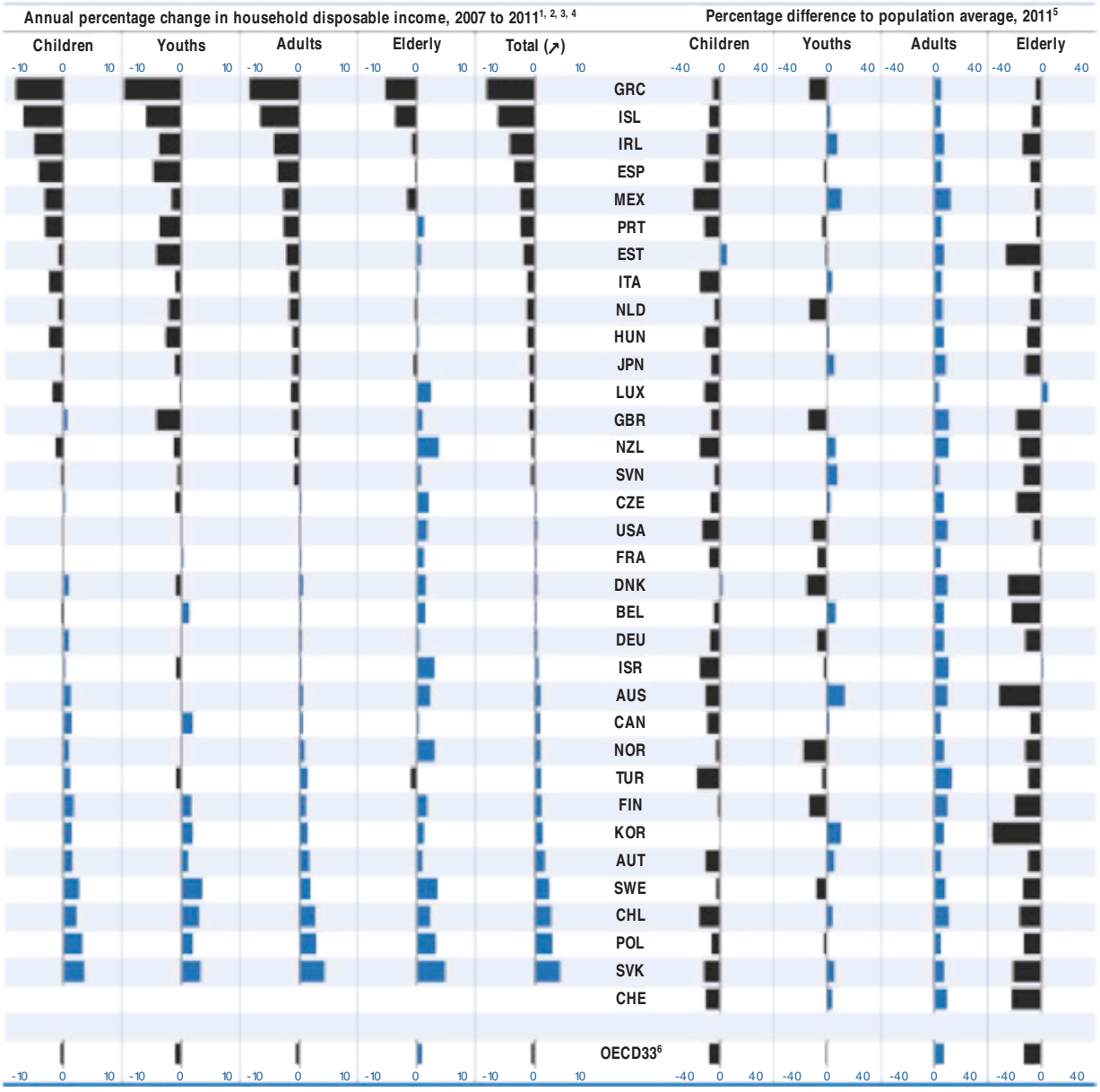
*Source: OECD Income Distribution Database* (2014), www.oecd.org/social/income-distribution-database.htm.

StatLink http://dx.doi.org/10.1787/888933207952

Relative poverty rates among the elderly fell due to a combination of falling poverty thresholds and rising incomes. Elderly poverty rates can be quite responsive to slight changes in the poverty line, as in many countries a considerable part of low-income pensioners are clustered around the poverty threshold. On the other hand, elderly incomes were not hit as hard by the crisis, as these depend more on public pension transfers and are less sensitive to changes in the labour market. Even in some of the countries hit hardest by the crisis, such as Estonia, Portugal, Spain and Italy, the average incomes of the elderly either rose or at worst stagnated since 2007. In Greece, Iceland and Ireland elderly average income fell, but considerably less than for other age groups. Elderly income also outperformed that of the rest of the population in some countries that experienced overall income growth, such as Israel, Norway, the Slovak Republic and Sweden. Only in Turkey was elderly income considerably outperformed by that of the rest of the population (see Figure 3.9).

This protection of the elderly from the crisis can be considered a positive outcome of the social protection systems. Not only are the elderly less able to adapt to changing circumstances in the labour market and find new sources of income but their household income is also on average lower than for the rest of the population. Across OECD countries, elderly income is 13% lower than the population average (see Figure 3.9). On the other hand, the rise in child poverty is particularly worrying. Poverty in childhood can have a damaging and lasting effect on people's future outcomes, such as cognitive and behavioural development or health outcomes. In the long run, early childhood poverty is associated with reduced adult working hours (and so earnings) and higher poverty risks and welfare dependency later in life (OECD, 2011b; Duncan et al., 2010).

**Figure 3.9. Changes and relative differences in household disposable income by age group**




1. Annual percentage changes in household disposable income between 2007 and 2011, by age group and total population.

2. 2007 refers to 2006 for Chile and Japan: 2008 for Australia, Germany, Finland, France, Israel, Mexico, Norway and Sweden. 2011 refers to 2009 for Japan; 2010 for Austria, Belgium, Ireland and the United Kingdom and 2012 for Australia, Hungary, Korea and United States; Switzerland is not available.

3. Children refer to 0-17 years old; youth refers to 18-25 years old; adults refer to 26-65 years old and elderly refers to over 65 years old.

4. Household incomes are equivalised by household size (www.oecd.org/els/soc/OECD-Note-EquivalenceScales.pdf).

5. Difference between average household disposable income of each age group and that of total population in 2011.

6. OECD33 refers to the unweighted average of 33 countries. Trend data for Switzerland is missing.

*Source: OECD Income Distribution Database* (2014), www.oecd.org/social/income-distribution-database.htm.

StatLink http://dx.doi.org/10.1787/888933207962

## 3.4. Taxes and benefits cushioned the impact of the crisis on household income, but mostly during the first years

Significant increases in public expenditure on social benefits and lower personal income tax burdens prevented inequality in disposable income from rising as much as disparities in market income during the early phase of the crisis. This cushioning effect resulted from the stabilising properties of the tax-benefit system, in some cases reinforced by fiscal stimulus measures. However, in more recent years the effect diminished as entitlements to social benefits expired and most governments switched from fiscal stimulus to fiscal consolidation to tackle increases in the public deficits and high debt-to-GDP ratios.

Taxes and benefits acted as automatic stabilisers, offsetting part of the income losses resulting from the economic downturn. Public spending on social benefits typically increases as more people claim unemployment or other safety-net benefits. At the same time, tax revenues fall as the tax base (e.g. income or consumption) shrinks.

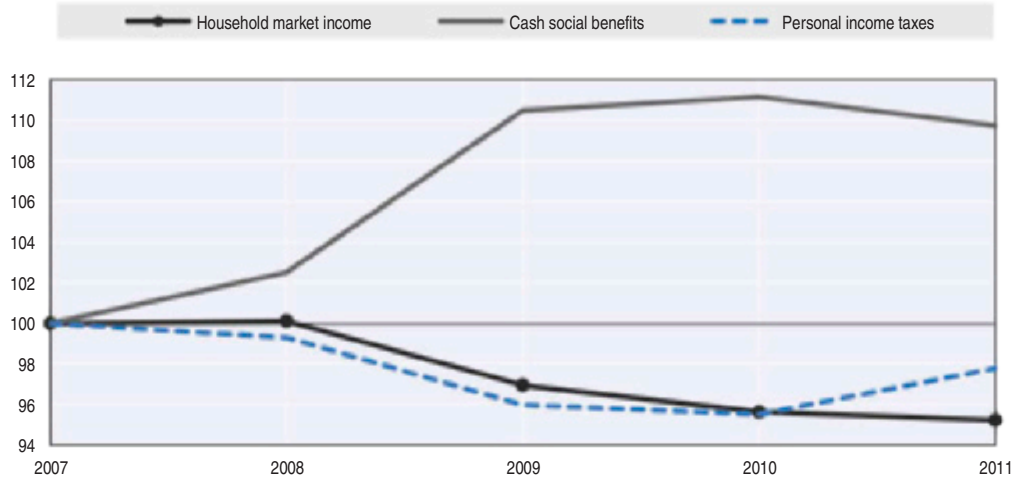
In the early stages of the crisis several governments reinforced the stabilising effect of their tax-benefit systems through fiscal stimulus packages that raised public expenditure and reduced taxes (as for example in the United States between 2007 and 2010, see Section 3.5). As the crisis continued, however, governments, facing large and increasing budget deficits, reversed these policies and began implementing fiscal consolidation programmes. In many countries, the consolidation measures included rises in personal income taxes (Spain in 2011 and 2012) and reductions in social cash benefits (Spain in 2013, Ireland in 2011 and 2012, Portugal in 2012), thus directly affecting household income.[4]

Figure 3.10 clearly illustrates these two phases of fiscal policies during the crisis, with 2010 as a transition year. Between 2007 and 2009, personal income taxes decreased and cash social benefits increased in response to the fall in market income. The changes in both types of policies were considerable: benefit spending rose by 10% and tax revenues fell by 4%. Between 2010 and 2011, market income continued to fall, but now the cushioning effect was reversed, with taxes rising and benefits falling.

In general, similar patterns took place in most OECD countries at the onset of the crisis, with benefits rising and taxes falling. In later years, trends in taxes and benefits across countries started to diverge. Figure 3.11 shows developments in market income, taxes and benefits in eight selected countries for which annual income data are available. In Greece, benefits increased significantly up to 2009 but started to fall in 2010. By 2011, benefits were below pre-crisis levels. Following a dramatic decline in market income, taxes plunged in 2010, but recovered slightly in 2011, as reforms were introduced. In Iceland and Estonia, benefits rose steeply in 2008, but started to fall in 2009, while taxes picked up in 2010 and 2011, as market income began to recover. In Ireland, the substantial tax hikes started in 2009 raised taxes well above their pre-crisis levels. On the other hand, benefits continued to increase up to 2010 but fell sharply in 2011. In Spain, despite the fiscal consolidation measures introduced since 2010, benefits have not fallen but tax levels have – suggesting that the rises in tax rates were not sufficient to compensate the fall in taxable income. In Portugal, as market income worsened, benefits continued to rise. On the other hand, following reforms implemented in 2010 and 2011, taxes increased back to their pre-crisis levels. In the United States, the tax-benefit cushioning effect started with a rise in benefits in 2008 and 2009, followed by a reduction of pension contributions in 2011. In Finland, as in other Nordic countries, benefits increased significantly as market incomes stagnated or fell.

**Figure 3.10. Trends in taxes, benefits and market income during the crisis**

Percentage change, 2007=100%, OECD,[1] total population



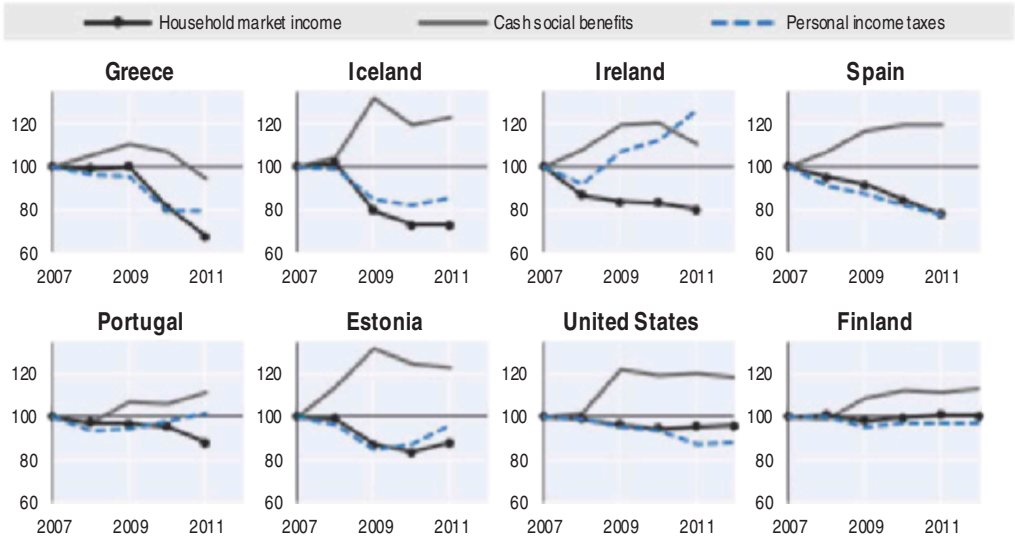

1. Household incomes are equivalised by household size and adjusted for inflation using changes in consumer price indices and differences in purchasing power using 2010 PPP indices for private consumption. OECD average refers to the unweighted average of 26 countries. Austria, Belgium, Switzerland, Hungary, Japan, Mexico, Switzerland and Turkey are not included.

*Source: OECD Income Distribution Database* (2014), www.oecd.org/social/income-distribution-database.htm.

StatLink http://dx.doi.org/10.1787/888933207976

**Figure 3.11. Trends in taxes, benefits and market income across countries**

Percentage change, 2007=100%, total population[1]




1. Countries are ranked by average annual percentage change in median income between 2007 and 2011 (cf. Figure 3.3).

*Source: OECD Income Distribution Database* (2014), www.oecd.org/social/income-distribution-database.htm.

StatLink http://dx.doi.org/10.1787/888933207982

## 3.5. Tax-benefit measures during the crisis: A summary of detailed analyses of ten countries

The tax-benefit measures implemented during the crisis varied considerably not only across time and countries but also with respect to how they were designed and their impact on the incomes of households in different demographic, labour market and earnings circumstances. The previous sections showed that the tax-benefit system played an important role in cushioning the impact of the crisis in its initial years. Part of the cushioning effect was automatic – with taxes falling and benefits rising as earnings and employment tumbled. However, several new measures introduced by governments during the period also had an important impact shaping the role of taxes and benefits, particularly with the introduction of fiscal consolidation programmes.

This section summarises policy changes applied to taxes and benefits between 2008 and 2013 for a selection of OECD countries (Estonia, France, Germany, Greece, Iceland, Ireland, Portugal, Spain, the United Kingdom and the United States) including those hit hardest by the crisis.[5] Simulations with the OECD tax-benefit model are used to make an in-depth analysis of policy changes by policy, type of measure and impact on household income according to demographic and labour market characteristics and earning levels.

### *Context*

The economic crisis had a major impact on public finances. As public revenues fell and expenditure rose, many OECD governments ran large budget deficits (see Table 3.1). Part of the mounting pressure on public finances had to do with the cushioning of the household sector that resulted from the stabilising properties of the tax-benefit system and fiscal stimulus programmes. As the ratios of public budget deficits-to-GDP rose (in many countries reaching double figures), most OECD governments introduced fiscal consolidation measures to reduce public borrowing and debt levels.

**Table 3.1. Public budget deficits during the crisis**

Government net lending, as a percentage of GDP, 2007-13

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| Estonia | 1.7 | -3.6 | -2.3 | 0.2 | 1.0 | -0.3 | -0.5 |
| France | -2.5 | -3.2 | -7.2 | -6.8 | -5.1 | -4.9 | -4.1 |
| Germany | 0.3 | 0.0 | -3.0 | -4.1 | -0.9 | 0.1 | 0.1 |
| Greece | -6.7 | -9.9 | -15.2 | -11.0 | -10.1 | -8.6 | -12.2 |
| Iceland | 5.1 | -12.9 | -9.4 | -9.5 | -5.3 | -3.7 | -2.0 |
| Ireland | 0.2 | -7.0 | -13.9 | -32.4 | -12.6 | -8.1 | -5.7 |
| Portugal | -3.0 | -3.8 | -9.8 | -11.2 | -7.4 | -5.5 | -4.9 |
| Spain | 2.0 | -4.4 | -11.0 | -9.4 | -9.4 | -10.3 | -6.8 |
| United Kingdom | -2.9 | -4.9 | -10.7 | -9.5 | -7.5 | -5.9 | -5.6 |
| United States | -3.7 | -7.2 | -12.8 | -12.2 | -10.7 | -9.0 | -5.7 |
| OECD10 | -0.9 | -5.7 | -9.5 | -10.6 | -6.8 | -5.6 | -4.7 |

*Note:* OECD10 is the average of the ten countries analysed in this section.

*Source:* OECD (2014), *OECD Economic Outlook,* No. 96, November, http://dx.doi.org/10.1787/data-00717-en.

StatLink http://dx.doi.org/10.1787/888933208889

OECD (2009) assessed the fiscal position of OECD countries in the early years of the crisis and also documented and examined the fiscal stimulus programmes introduced in the period 2008-10. The study suggested that most of the increase in budget deficits in

this period was a cyclical effect due to the operation of automatic stabilisers. On average, the size of the impact of the automatic stabilisers over the period 2008-10 was about three times the size of the fiscal stimulus programmes. While most countries announced fiscal stimulus measures, they varied substantially in size, with the United States announcing the largest programme. On average, their cumulative impact on fiscal balances amounted to about 3.5% of GDP. Most packages adopted a broad range of measures, adjusting various taxes and spending programmes simultaneously. A majority of countries gave priority to tax cuts over spending rises. In the United States, in 2008, the stimulus focused entirely on tax cuts, whereas in 2009 about two-thirds was on spending measures. Tax cuts were concentrated on personal income taxes and to a lesser extent on business taxes, with the United Kingdom and Portugal cutting VAT. On the spending side, most countries increased public investment. Transfers to households were often made more generous, in particular for those on low incomes. A few countries also announced larger subsidies to the business sector.

OECD (2011c) and OECD (2012) analysed and compared the fiscal consolidation plans announced for the period 2009-15. OECD (2012) categorised countries into four groups (see Table 3.2) based on the different pressures and pace of fiscal consolidation. The analysis indicated that while most countries announced large deficit reductions, the consolidation plans varied significantly in size, across time and by composition.

**Table 3.2. Countries by category of fiscal consolidation**

| Consolidation category | Countries |
|---|---|
| A. Countries with IMF/EU/ECB programmes | **Greece**, **Ireland** and **Portugal** |
| B. Countries under distinct market pressure | Belgium, Hungary, Italy, Poland, the Slovak Republic, Slovenia and **Spain** |
| C. Countries with substantial deficits and/or debt, but less market pressure | Austria, Canada, the Czech Republic, Denmark, Finland, **France**, **Germany**, **Iceland**, Israel, Japan, Mexico, the Netherlands, New Zealand, the **United Kingdom** and the **United States** |
| D. Countries with no or marginal consolidation needs | Australia, Chile, **Estonia**, Korea, Luxembourg, Norway, Sweden, Switzerland and Turkey |

*Note:* Countries analysed in this section are in bold.

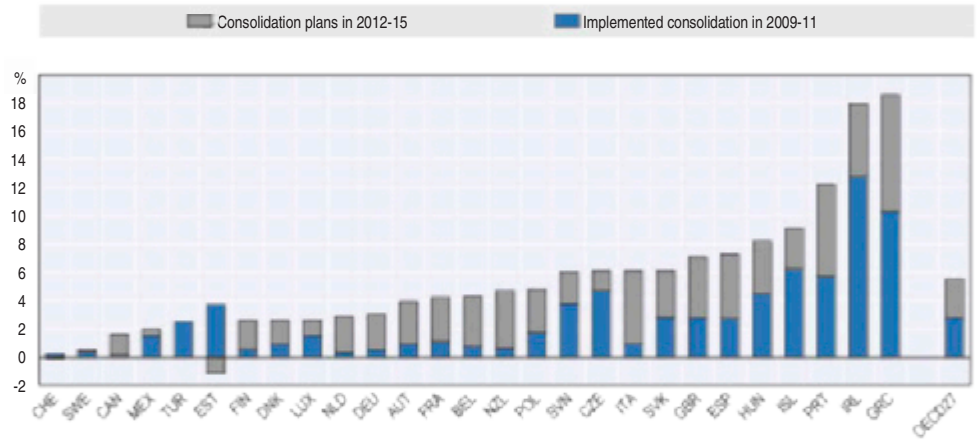
*Source:* OECD (2012), *Restoring Public Finances: 2012 Update*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264179455-en.

According to OECD (2012), the size of the announced consolidation plans varied significantly depending on the country's fiscal position and the current status and time frame of the consolidation plan. Countries with the largest economic and public finance imbalances announced larger consolidation plans. The three countries with programmes with the IMF/EU/ECB (Greece, Ireland and Portugal) announced the largest packages, all above 10% of GDP (Figure 3.12, Panel A). Iceland, Spain and the United Kingdom also adopted fiscal consolidation plans amounting to over 5% of GDP, whereas France, Estonia and Germany announced plans with a cumulative impact of between 3% and 5% of GDP. The plans also changed considerably as circumstances evolved. For example, between 2011 and 2012 the volume of fiscal consolidation was revised by at least 1% of GDP in 17 countries and as much as 5% of GDP in Portugal. Similarly, the time span of the consolidation plans also varied and tended to be occasionally revised.

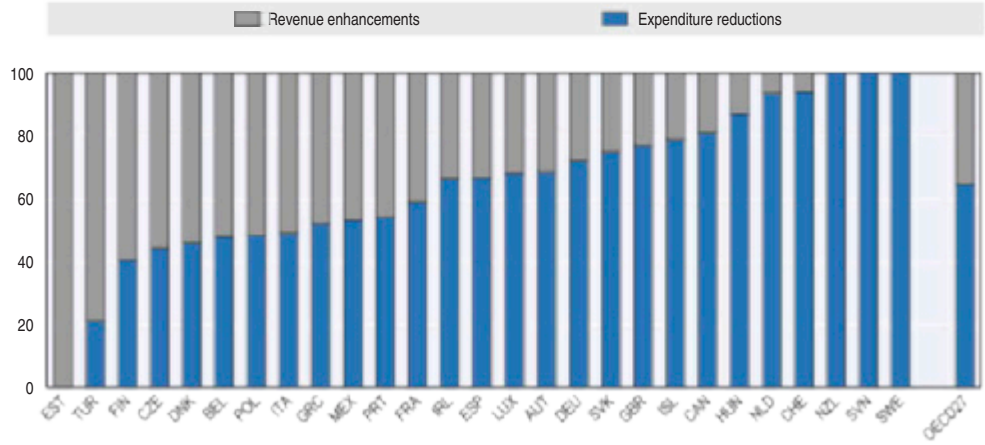
The fiscal consolidation plans tended to focus on reducing expenditure, partly scaling back the spending rises implemented during the fiscal stimulus. On average, about two-thirds of the consolidation packages announced by 2012 relied on reducing expenditure and one-third on increasing revenue (Figure 3.12, Panel B). There was nevertheless a significant variation in the composition of consolidation measures. Countries with smaller consolidation plans focused mostly on expenditure measures. Some countries with large consolidation plans (including Germany, Iceland, Ireland, Spain and the United Kingdom) focused on reductions in expenditure that exceeded the OECD average; whereas others (including France, Greece and Portugal) took the middle ground. Only a few countries, particularly those that were already withdrawing from consolidation (including Estonia), relied on tax increases for the majority of their consolidation.

**Figure 3.12. Fiscal consolidation plans, 2009-15**

Panel A. Cumulative fiscal consolidation plans as a percentage of GDP




Panel B. Share of consolidation plans on expenditure reductions and revenue enhancements




*Note*: The data are the sum of annual incremental consolidation from 2009/10 until 2015 as reported by the national authorities. Korea, Japan and the United States have not reported an announced concrete consolidation plan and are not included in the figure. Australia reports consolidation but applies a broader definition of the term consolidation than this report. Norway is not applying a consolidation plan.

*Source:* OECD (2012), *Restoring Public Finances: 2012 Update*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264179455-en.

StatLink http://dx.doi.org/10.1787/888933207991

Governments can use a number of instruments to achieve their fiscal consolidation objectives. Table 3.3 lists the instruments most frequently reported by OECD governments for fiscal consolidation plans between 2009 and 2015. Rawdanowicz et al. (2013) examined how policy instruments may influence equity as well as their impact on long-term growth, and then assessed the equity implications of the consolidation plans announced in OECD countries. Similarly, Cournède et al. (2013) evaluated the potential short- and long-term impact of policy instrument on growth, equity and current accounts (see Table 3.4). Their results suggest that half of OECD countries could reduce excess debt mainly through moderate adjustments to instruments that have at most limited side-effects on growth and equity. They also found that a smaller number of countries faced more difficult choices, as they would need either to make bigger adjustments in areas where spending cuts or tax hikes are least harmful or to rely significantly on consolidation instruments with substantial adverse side-effects. These trade-offs could be alleviated through structural reforms in the delivery of public services and in taxation.

**Table 3.3. Fiscal consolidation instruments reported by governments**

| | |
|---|---|
| **Expenditure** | |
| | **Welfare** |
| | Wage cuts |
| | Health |
| | ***Pensions*** |
| | Infrastructure |
| | Staff reduction |
| | Other |
| **Revenue** | |
| | ***Consumption taxes*** |
| | **Personal income tax** |
| | Corporate income tax |
| | Property tax |
| | **Tax expenditures** |
| | Non-tax revenue |
| | **Social security contributions** |
| | Tax on financial sector |
| | Improving tax compliance |

*Note:* Instruments are sorted in decreasing order by reporting frequency. Policies fully analysed in this section are in bold, and policies partially analysed in bold and italic.

*Source:* OECD (2012), *Restoring Public Finances: 2012 Update*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264179455-en.

**Table 3.4. Summary assessment of growth and equity effects of fiscal consolidation instruments**

| | Growth | | Equity | |
|---|---|---|---|---|
| | Short-term | Long-term | Short-term | Long-term |
| **Spending cuts** | | | | |
| Education | - - | - - | - | - - |
| Health services provided in kind | - - | - | - | - |
| Other government consumption (excluding family policy) | - - | + | - | |
| Pensions | | + + | | |
| Sickness and disability payments | - | + | - - | - |
| Unemployment benefits | - | + | - | |
| Family | - | - | - - | - - |
| Subsidies | - | + + | + | + |
| Public investment | - - | - - | | |
| **Revenue increases** | | | | |
| Personal income taxes | - | - - | + | + |
| Social security contributions | - | - - | - | - |
| Corporate income taxes | - | - - | + | + |
| Environmental taxes | - | +* | - | |
| Consumption taxes (other than environmental) | - | - | - | |
| Recurrent taxes on immovable property | - | | | |
| Other property taxes | - | | + + | + |
| Sales of goods and services | - | + | - | - |

*Note*:

+ sign reflects positive welfare effects. – sign reflects negative welfare effects.

* This + sign reflects positive welfare effects as the long-term impact on output narrowly defined as GDP may be ambiguous.

*Source:* Cournède, B., A. Goujard and Á. Pina (2013), "How to Achieve Growth- and Equity-friendly Fiscal Consolidation? A Proposed Methodology for Instrument Choice with an Illustrative Application to OECD Countries", *OECD Economics Department Working Papers*, No. 1088, OECD Publishing, Paris, http://dx.doi.org/10.1787/5k407lwvzkkh-en.

### *Tax and benefit measures implemented during the crisis*

Countries used their tax-benefit toolkits in different ways. Table 3.5 summarises the aggregate effects of measures introduced between 2008 and 2013, by policy type, based on simulations with the OECD tax-benefit model (see Box 3.2). Households gained from personal income tax cuts in Germany, the United Kingdom and the United States, and from benefit rises in Estonia, France, Germany, Iceland and the United States. Households lost mainly from benefit cuts particularly in Ireland and Portugal but also in Greece, Spain and the United Kingdom. Tax rises led to significant losses to households in Greece, Iceland, Ireland and Portugal, and to a lesser extent in France and Spain. Value-added tax rates (VAT) increased in most countries, particularly Greece and Spain. Measures on pensions were less homogeneous across countries.

Different mechanisms were used both to cut benefits and to raise taxes. Benefits were cut by lowering levels, thresholds or rates, restricting eligibility, reducing durations and diminishing real-term amounts by failing to update them in line with inflation (fiscal drag). Taxes were raised by implementing new taxes, increasing the number and/or level of tax rates, and reducing tax deductions in nominal or real terms by fiscal drag.

## Box 3.2. Assessing policy changes with the OECD tax-benefit model

### The OECD tax-benefit model

The OECD tax-benefit model (TBM) computes the effects of tax and benefit systems on household disposable income. The model contains information for 33 OECD countries, and six EU non-OECD countries, currently for years 2001 to 2013. The benefit model covers unemployment, social assistance, housing, family and employment-conditional benefits. The tax system covers personal income taxes and social security contributions. The results capture the effects of taxes and benefits on the incomes of working-age individuals and their families both in and out of work (see www.oecd.org/social/benefits-and-wages.htm).

By modelling taxes and benefits in detail and in an integrated way, the TBM can assess structural policy reforms such as changes in tax exemptions or benefit eligibility, as well as account for the complexity of the knock-on effects and interactions between policies and policy elements. Furthermore, as the results are computed at the household level, the analyses based on this model account for differences in household and personal circumstances, such as household composition, labour market status and earning levels.

The scope of the modelled policies focuses on those with a direct and immediate effect on the household income of working-age individuals in employment or unemployment. Pensions, sickness and disability payments, public services, in-kind benefits and indirect, capital and self-employment taxes and contributions are not included.

### Simulations

Simulations with the TBM compute changes in the amount of taxes and benefits for a group of family types. The characteristics of these family types vary in terms of family composition, labour circumstances and earning levels. Six family types are considered: single individuals, single parents with children, one-earner couples with and without children and two-earner couples with and without children. In all the families there is at least one active working-age individual (either employed or unemployed). If present, other working-age individuals in the household are assumed to be either inactive (in one-earner households) or working full-time and earning the average wage in the country (two-earner households). The labour market circumstances of active working-age individuals include unemployment (from 1 to 60 months out of work) and employment (with earnings ranging up to 200% of the average wage in the country).

### Results

The results are computed as unweighted averages by groups of family types. The size and composition of the groups depend on the level of analysis. Full aggregates (see, for example, Table 3.5) are based on the unweighted average of all analysed family types (i.e. household composition, labour market circumstances and earning levels, amounting to 1 560 households). While these results are not representative at the population level, as they do not account for the frequency of each of these household circumstances,* they are sensitive to and illustrative of the effects of policy changes under different household circumstances. Furthermore, these results are broadly consistent with those drawn from actual and population-representative data (see below). Thus, though TBM simulations may not accurately estimate magnitudes, findings suggest that they provide appropriate indicators for a qualitative assessment of the overall effect of tax-benefit reforms.

Also, due to the same caveats, the results can only partially assess the distributive impact of fiscal reforms through different breakdowns, including by earnings levels. A full distributive incidence analysis would require that simulations were computed on representative household survey data, as it is done with tax-benefit microsimulation models such as the EU tax-benefit microsimulation model (EUROMOD). On the other hand, analysis based on "typical" families allows many of the determinants of tax and benefit amounts to be held constant while changing one household characteristic at a time, thus facilitating the understanding of existing policy instruments as well as the differences between them across countries and different points in time.

Although pensions and value-added tax (VAT) are not simulated by the OECD tax-benefit model, statutory changes are shown, based on additional national sources. Only changes that affect current pension levels (e.g. indexation rules) are indicated. Other changes (e.g. retirement age) are not considered. Similarly, only changes in VAT standard rates are indicated. Other changes (e.g. tax classification of goods) are not considered.

* See Immervoll, H. et al. (2004) and Levy (forthcoming) for an assessment of the scope and incidence of the policies simulated by the TBM and the frequency of the standard family types in the actual population of each country.

Unemployment benefits became more generous in the United States via both an automatic mechanism that is triggered once state-level unemployment rates exceed a pre-defined threshold but also by the decision of the Obama administration to extend the maximum duration to 99 weeks (Immervoll and Richardson, 2013). In Iceland, the duration of unemployment benefits was also extended in the early years of the crisis, but was subsequently brought back to its original level. In Spain, Ireland and Greece, the unemployment insurance level was reduced, but in Spain a new benefit for the long-term unemployed was introduced, and in Greece the means-tested threshold for unemployment assistance was raised. In Portugal, the benefit amount and duration were reduced but eligibility conditions relaxed. In Germany, long-term unemployment benefits were reduced as transition measures implemented in the Hartz labour market reform (OECD, 2007) were phased out.

Family benefits increased in Germany as the levels were increased above inflation. In Ireland and Portugal, family benefit levels were lowered in nominal terms. In the United Kingdom, Spain, Greece and Iceland, benefit levels fell in real terms, as they were kept frozen or increased below inflation. In the United Kingdom, eligibility for child benefit, previously a universal benefit, was effectively withdrawn from high-income taxpayers.

In-work benefits are widely used in the United States, the United Kingdom, Ireland and France as policies to protect low-earning families and to increase working incentives (Pearson and Scarpetta, 2000; Immervoll and Pearson, 2009). In the United States these were increased and temporarily supplemented in 2008 and 2009. In Ireland, the levels were increased considerably in 2008 to 2010. In the United Kingdom, some elements of the in-work benefits were cut and others increased. The levels of working tax credit were frozen, except for the child care tax credit, which increased above inflation. The child tax credit had the family element frozen, the baby element removed and the tapering increased, but the child element increased above inflation. In France, several amounts of the in-work benefit, *Prime pour l'emploi*, were kept frozen and the lump-sum in-work benefit (*Prime de retour à l'emploi*) was abolished and replaced as part of the new social assistance benefit (*Revenu de solidarité active*).

Housing benefits were cut by keeping levels frozen in Germany, and by a reform in the United Kingdom. In France, Ireland and Iceland, despite being kept frozen in some years, housing benefit levels in 2013 were higher in real terms than in 2007. Housing benefits are not simulated in Portugal, Spain and the United States.

Social assistance levels fell in real terms due to fiscal drag in Germany and to nominal cuts in Portugal. On the other hand, social assistance benefits increased both in Estonia, Iceland and the United States, as levels rose above inflation, and in France with the introduction of the new social assistance benefit (*Revenu de solidarité active*), which is more generous than the previous system for working families with low earnings. Real-term benefit levels remained more or less constant in Ireland and the United Kingdom, and no social assistance benefit is simulated in Spain and Greece.

Employee social security contributions increased in Iceland and the United Kingdom, as rates were raised, and in Greece, as the contribution ceiling was lifted. Contributions fell both in Germany, as rates were reduced and contribution floors failed to increase with inflation, and in Ireland as health contributions were replaced by a new income tax (see below). In the United States pension insurance contributions were temporarily reduced in 2011 and 2012, but brought back to their previous level in 2013. In real terms, employee social security contributions remained about the same in Estonia, France, Iceland, Portugal and Spain.

Personal income tax rates were raised in France, Greece, Iceland, Portugal, Spain and the United Kingdom. Tax deductions were reduced via nominal cuts in Ireland and Portugal and by fiscal drag in Estonia, Iceland, Ireland, Portugal and Spain. New income taxes were introduced in Ireland ("Universal Social Charge") and Greece ("Special solidarity contribution"). On the other hand, income tax expenditures were increased in the United Kingdom (exemption limit), the United States (tax credits) and Germany (tax allowances).

Public pension levels fell due to indexation below inflation in Germany, Iceland, Portugal and Spain. Pension levels were nominally reduced in Greece (the number of payments per year was reduced from 14 to 12) and Portugal (due to an extraordinary pension contribution). On the other hand, pension levels increased above inflation in Estonia, France, Ireland, the United Kingdom and the United States.

Value-added tax (VAT) rates were increased in virtually all countries. In absolute terms, Spain and Greece saw higher increases. In France, the standard rate did not change, but the reduced rate effectively rose as an additional rate was added.[6] In Germany, rates did not change in the period, but increased considerably in 2007. In the United States, there is no federal value-added tax on goods or services. Instead, sales tax is common in most states.

**Table 3.5. Simulated overall effect of tax-benefit measures, 2008-13, by policy type**

| | Working-age cash benefits | | | | | | Personal income taxes | | | Other policies* | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | UB | FB | IWB | HB | SA | Total | SC | PIT | Pensions | VAT |
| Estonia | + | | | - | | + | | | | + + | - |
| France | + | + | - | - | + | + | - | | - | + | |
| Germany | + | - | + | | - | | + | + | + | - | |
| Greece | - | - | | | | | - - | - - | - - | - - | - - |
| Iceland | + | | - | | + | + | - - | - | - - | - - | - |
| Ireland | - - | - | - | + | + | + | - - | + | - - | + | - |
| Portugal | - - | - | - | | | - | - - | | - - | - | - |
| Spain | - | - | | | | | - | + | - | - | - - |
| United Kingdom | - | | - | - | - | | + | - | + | + | - |
| United States | + | + | - | + | | + | + | | + | + | |
| OECD10 | - | - | - | | | + | - | - | - | - | - |

*Note*:

+ sign indicates a measure that has a positive effect on household income (i.e. a tax cut or benefit rise).

– sign indicates a measure that has a negative effect on household income (i.e. a tax rise or benefit cut).

* Results for other policies (pensions and VAT) are not simulated, and simply indicate statutory changes.

FB = family benefits; HB = housing benefits; IWB = in-work benefits; PIT = personal income taxes; SA = social assistance benefits; SC = social security contributions; UB = unemployment benefits; VAT = value-added tax.

Underlying detailed analyses are available at www.oecd.org/social/inequality-and-poverty.htm.

*Source*: OECD tax-benefit model (www.oecd.org/social/benefits-and-wages.htm); *OECD Tax Database* (www.oecd.org/tax/tax-policy/tax-database.htm); Adiego, M., M. Burgos, M. Paniagua and T. Pérez (2014), "Spain 2010-2013", *EUROMOD Country Report*; Adiego, M., O. Cantó, H. Levy, M. Paniagua and T. Pérez (2012), "Spain 2007-2010", *EUROMOD Country Report*; Bardens, J. and R. Cracknell (2014), "2014 Benefit Uprating", House of Commons, Social and General Statistics; DPS (2015), "Rates of Payment", Department of Social Protection, Ireland; Leventi, C., A. Karakitsios, M. Matsaganis and P. Tsakloglou (2014), "Greece 2009-2013", *EUROMOD Country Report*, www.iser.essex.ac.uk/euromod/resources-for-euromod-users/country-reports; MISSOC (2015), "MISSOC Comparative Tables Database", retrieved on 02/01/2015 from http://missoc.org; SSA (2015), "Cost-of-Living Adjustment (COLA) Information for 2015", US Social Security Administration, www.ssa.gov/news/cola/.

### *The effect of tax-benefit measures on household income*

In line with findings in the sections above (see Figures 3.10 and 3.11), simulation results presented in Table 3.6 shows that in most countries households tended to gain from the policy changes implemented in 2008 and 2009 (i.e. fiscal stimulus) and to lose from those implemented from 2010 to 2012 (i.e. fiscal consolidation). The effects of policy changes in 2013 were less homogeneous across countries. Taking the changes introduced in the period 2008-13 as a whole, the countries can be organised in three groups. In four countries (Estonia, France, Germany and the United States), the cumulated effect of tax-benefit changes on household income was positive. In two countries (Spain and the United Kingdom), the impact on household income was moderately negative. Finally, in four countries (Greece, Iceland, Ireland and Portugal), the impact was negative.

**Table 3.6. Simulated overall effect of tax-benefit measures by year**

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2007-2013 |
|---|---|---|---|---|---|---|---|
| Estonia | + | | - | - | - | + | + |
| France | - | + | - | - | - | + | + |
| Germany | - | + | + | - | + | + | + |
| Greece | + | + | - | - - | - | - - | - - |
| Iceland | - | - | - | - | - | + | - - |
| Ireland | + | - | - | - - | - | - | - - |
| Portugal | + | + | - | - - | - | - - | - - |
| Spain | + | + | - | - | - | - | - |
| United Kingdom | + | + | - | - | - | - | - |
| United States | + | + | | | - | - | + |
| OECD10 | + | + | - | - | - | - | - |

*Note*:

+ sign indicates a measure that has a positive effect on household income (i.e. a tax cut or benefit rise).

– sign indicates a measure that has a negative effect on household income (i.e. a tax rise or benefit cut).

Underlying detailed analyses are available at www.oecd.org/social/inequality-and-poverty.htm.

*Source*: OECD tax-benefit model (www.oecd.org/social/benefits-and-wages.htm).

Table 3.7 summarises the impact of the tax and benefit measures by family composition. Generally, the impact did not vary substantially by family type. However, there were some differences in intensity and also a few exceptions. Families with children tended to lose more than those without children, partly due to cuts in family benefits. Lone-parent families experienced greater losses across countries, except in Germany and the United States where the measures had a positive impact. Two-earner couples with or without children also tended to lose more than other family types. This was the case especially in countries that increased income taxation, such as France, Greece, Ireland, Iceland and Portugal, but also Estonia. On the other hand, two-earner families fared better than other family types in the United Kingdom as they gained from an increase in the income tax personal allowance (a standard deduction).

**Table 3.7. Simulated overall effect of tax-benefit measures by family composition, 2008-13**

| | No children | | | Two children | | |
|---|---|---|---|---|---|---|
| | Single person | One-earner couple | Two-earner couple | Lone parent | One-earner couple | Two-earner couple |
| Estonia | + | + | - | - | + | - |
| France | + | + | - | - | + | - |
| Germany | + | + | + | + | + | + + |
| Greece | - - | - - | - - - | - - | - - | - - - |
| Iceland | - | - | - - | - - | - | - - |
| Ireland | - - | - | - - | - - - | - - | - - - |
| Portugal | - - | - - | - - - | - - | - - - | - - - |
| Spain | - | - | - | - | - | - |
| United Kingdom | - | - | + | - | - | + |
| United States | + | + | + | + | + | + |
| OECD10 | - | - | - | - | - | - - |

*Note*:

+ sign indicates a measure that has a positive effect on household income (i.e. a tax cut or benefit rise).

– sign indicates a measure that has a negative effect on household income (i.e. a tax rise or benefit cut).

Underlying detailed analyses are available at www.oecd.org/social/inequality-and-poverty.htm.

*Source*: OECD tax-benefit model (www.oecd.org/social/benefits-and-wages.htm).

Figure 3.13 shows the average impact of the tax and benefit measures taken between 2008 and 2013 on families with different labour market circumstances and earning levels. The results are expressed as a proportion of the average wage in each country in 2007, and thus represent absolute changes, despite being presented as percentages. Furthermore, the results are computed as an unweighted average from four family types (single person, one-earner couple, lone parent with two children, and one-earner couple with two children). Each chart is divided into two parts. The left-hand side presents the results for households in which the earner has been unemployed and out-of-work for 1 to 60 months. The right-hand side presents the results for households in which the earner has been in-work and has earnings that range between 1% and 200% of the national average wage.

The impact of the tax-benefit measures varies considerably across households with different labour market circumstances. In most countries measures affecting personal direct taxes and cash benefits had a progressive effect on households in work. Generally, low-earning families fared better than higher-earning families. The main exception is Germany, where higher-earning families gained from the tax cuts, and to some extent Portugal and the United Kingdom, where benefits for low-earning families fell considerably. Results are less clear-cut for working-age households in unemployment, as in several countries their losses are considerable.

Similar results were found using micro-simulation techniques. Looking at 12 EU countries, including all eight analysed here, De Agostini et al. (2014) found that the distributional effects of changes in personal direct taxes, public pensions and cash benefits were broadly progressive, except in Germany and Estonia. The distributional effects became more regressive once VAT changes were introduced.[7] For the United States, Larrimore, Burkhauser and Armour (2013) found that tax and benefit reforms played an important role to cushion the impact of the crisis, particularly among the bottom quintile of the distribution.

**Figure 3.13. Simulated overall effect of tax-benefit measures implemented in 2008-13, by labour market circumstance and earning level**

Change in household disposable income as a proportion of national average wage

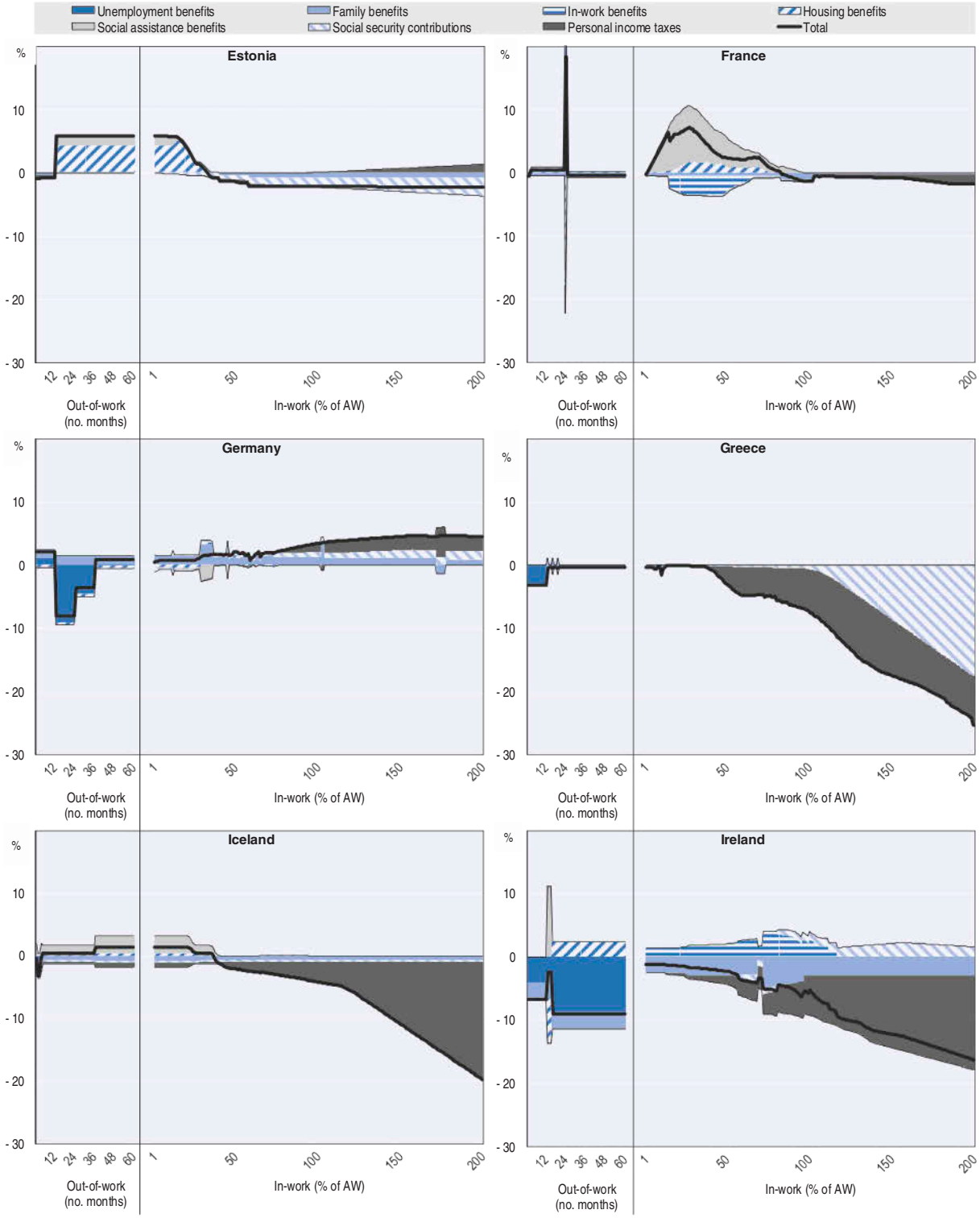
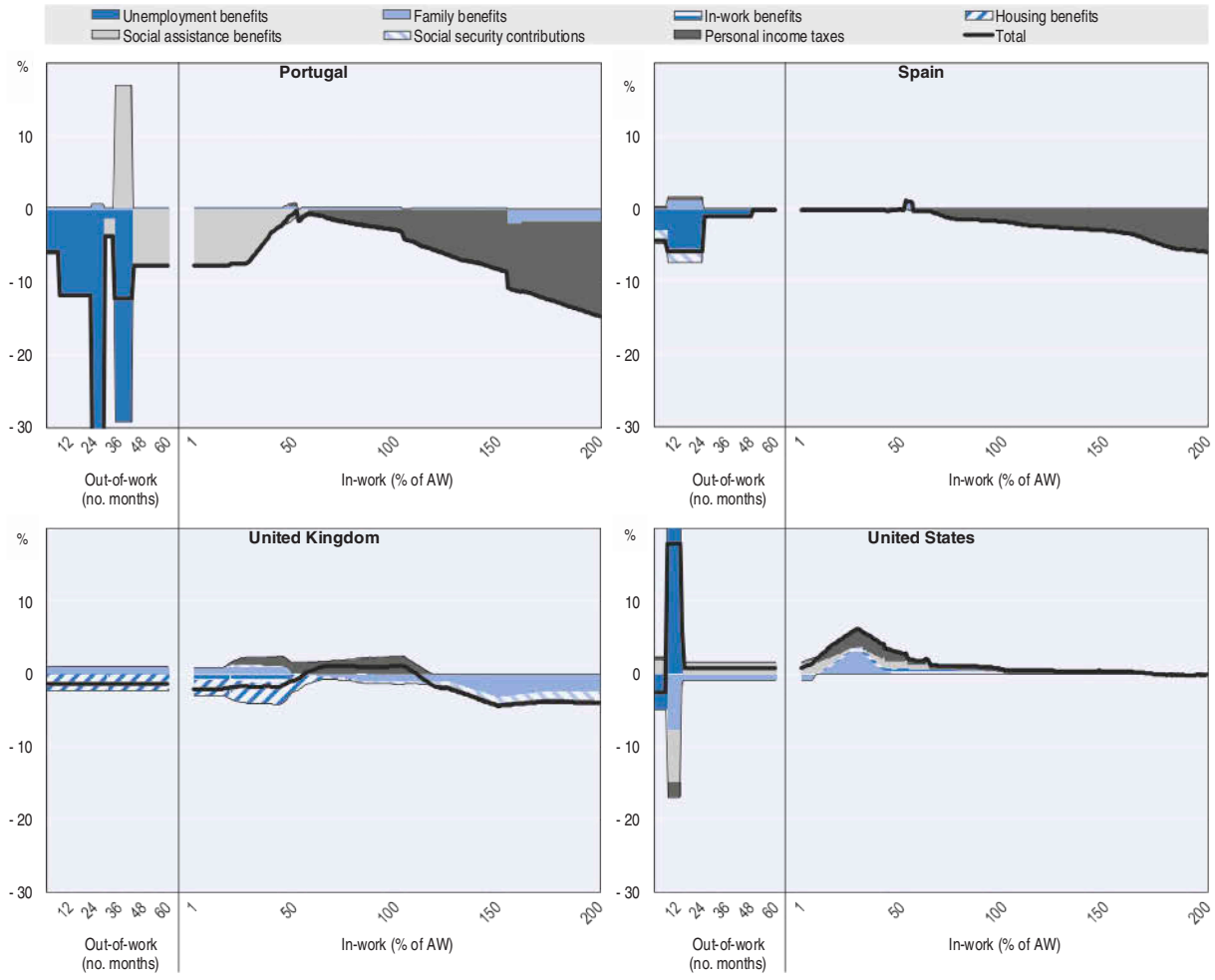


**Figure 3.13. Simulated overall effect of tax-benefit measures implemented in 2008-13, by labour market circumstances and earning levels** *(cont.)*

Change in household disposable income as a proportion of national average wage




*Note*:

Differences in the amount taxes and benefits between 2007 and 2013, due to the policy changes implemented between 2008 and 2013. Amounts expressed as a percentage of the average wage in each country. See main text for further details.

Underlying detailed analyses are available at www.oecd.org/social/inequality-and-poverty.htm.

*Source*: OECD tax-benefit model (www.oecd.org/social/benefits-and-wages.htm).

StatLink http://dx.doi.org/10.1787/888933208002

Households in unemployment for less than one year gained in Germany, but lost in Ireland, Portugal, Greece and Spain as well as to some extent in the United States and Iceland. The policy changes for the longer-term unemployed were rather irregular. This group lost in Portugal, due to a cut in the duration of unemployment benefits. When these expire, households fall into social assistance benefits, and their levels were also cut. In Ireland and Spain, the long-term unemployed lost due to real-term cuts in unemployment assistance, and in Germany due to the phase-out of a transition measure. The long-term unemployed benefited from the extension of benefit duration in the United States and from a real-term increase in the level of housing benefit in Estonia.

Low-earning families (earning less than half the average wage) faced considerable losses in Portugal due to cuts in social assistance. Low-earning families also faced some losses in the United Kingdom, due to housing benefit reform, and in Ireland, due to cuts in family benefits. On the other hand, lower-earning families gained in France, the United States and Estonia.

Families earning between half and one time the average wage gained from higher family benefits in Germany and higher tax deductions in the United Kingdom and the United States. On the other hand, higher taxes reduced the incomes of these families in Greece, Ireland and Iceland.

In Germany, family earnings between once and twice the average wage gained from the higher tax deductions implemented in 2010 (see OECD, 2010; OECD, 2011d). In all other countries, families either lost or remained more or less the same. The largest losses happened in Greece, Iceland, Ireland and Portugal. More moderate losses also took place in Spain and the United Kingdom.

## 3.6. Conclusion

Household income inequality and poverty increased during the crisis. The impact during the different phases of the downturn and recovery was largely affected by the tax-benefit systems and measures introduced. The largest impact of the crisis was not so much on the level of income inequality as on the nature of its drivers. In the decade prior to the crisis, income inequality was driven upwards by weakening tax-benefit redistribution, while inequality before taxes and benefits often stalled (OECD, 2011a). In the first years of the crisis, income inequality before taxes and benefits increased strongly but taxes and benefits cushioned the rise. In more recent years, while income inequality before taxes and benefits has continued to rise, the tax-benefit cushion weakened, thus accelerating the overall upwards trend in disposable income inequality.

During the crisis, labour income inequality rose due to declines in employment (i.e. rising unemployment and inactivity), rather than to higher inequality in wages (i.e. rising pay gap), as had been the case in the pre-crisis period (OECD, 2011a). The persistent increase in unemployment in many OECD countries has exerted considerable downward pressure on real wage growth, however the wage adjustment costs have been shared quite evenly across workforce groups (OECD 2014c). Lower employment pushed labour income inequality up in most OECD countries, particularly in Spain, Estonia, Ireland, Greece, the United Kingdom and Portugal. Australia, Austria, France, Denmark and Italy were the only countries where the pay gap was the main driver of higher labour income inequality. In most of the few countries where labour income inequality fell, the lower pay gap was also the main driver.

Income inequality increased considerably more when looking at indicators that are more sensitive to changes at the bottom part of the income distribution, as lower-income households either lost more during the crisis or benefited less from the recovery than other income groups. In most countries, the bottom 10% fared worse than the top 10% and the median. These results suggest the continuation of a long-term trend, in which the growth of bottom incomes has been persistently outperformed by middle and, especially top incomes.

Independently of the indicator used, income poverty increased in most countries during the crisis. Poverty increased sharply when measured using an anchored poverty threshold, i.e. fixing the poverty line at a pre-crisis level in real terms. Poverty increased

less when measured using relative thresholds based on current income levels, as these have fallen with the crisis.

Trends in household disposable income and poverty were uneven across age groups. Income rose and poverty fell among the elderly, while all other age groups saw their incomes fall and poverty rise. Income losses were largest among young people, followed by adults and children. In the first years of the crisis, incomes of the elderly were less exposed than of other age groups. *A priori*, this can be expected given that the main effect of the crisis was through the labour market and hence on the working-age population, while the elderly depend more on social transfers (particularly pensions) than on labour income. In more recent years, pensioners too were affected by fiscal consolidation measures to reduce public pension expenditure. Protecting the income of the elderly is an explicit goal of most social protection systems. Not only are the elderly less likely to be able to adapt to changing circumstances in the labour market and to find new sources of income but their household income is also on average lower than that of the rest of the population.

Taxes and benefits cushioned the fall in household income and the rise in inequality. Significant increases in public expenditure on social benefits and lower personal income tax burdens prevented household disposable income levels from falling and inequality from rising as much as levels of market income. This cushioning effect resulted from the stabilising properties of the tax-benefit system, in some cases reinforced by fiscal stimulus reforms. However, as the crisis continued, the effect diminished as entitlement to social benefits expired and most governments implemented fiscal consolidation programmes to tackle rising public deficits and debt-to-GDP ratios.

The size, composition and effect of the fiscal stimulus and fiscal consolidation programmes varied substantially across time and countries, reflecting both different fiscal positions and policy strategies. In many countries, households tended to gain from the policy changes implemented in 2008 and 2009 and to lose from those implemented between 2010 and 2012. The effects of the policy changes in 2013 were less homogenous across countries.

While overall fiscal stimulus and consolidation programmes concentrated more on public expenditure, tax-benefit measures targeted at working-age households were more balanced, with hikes in personal income tax playing an important role in several countries. The direction and intensity of the effect of these measures on household income depended on household circumstances. Families with children (especially lone parents) tended to lose more, partly due to cuts in family benefits. Broadly, measures had a progressive effect among households in-work, producing either gains or smaller losses on low-earning families and greater losses on higher-earning families. Results are less clear-cut for working-age households in unemployment, as in several countries their losses are considerable.

# Notes

1. Using data from the World Top Incomes Database, Förster et al. (2014) find that over the years 2008 and 2009 the income share of the top 1% decreased significantly in countries for which data are available. The top earners indeed experienced a higher income shock than the rest of the population, thereby reinforcing the idea that top incomes are more cyclically sensitive than others.

2. According to Decoster et al. (2014), tax-benefit reforms implemented in Belgium between 2007 and 2012 boosted average household disposable income in a progressive way, ranging from an extra 6% in the bottom 10% to 0.1% in the top 10%.

3. According to Domitrz et al. (2013), the reforms introduced between 2006 and 2011 increased the value of the Gini coefficient by 0.46 percentage points. Morawski and Myck (2010) estimate that due to the 2007 child tax credit reform, households with children in the bottom decile gained on average about PLN 7.60 per month, while those in the top 40% gained over PLN 100 per month on average (PLN 100 = approximately USD 26). Myck et al. (2013) suggest that tax-benefit reforms weakened labour market incentives for families who have children and are eligible for safety net benefits, and that work incentives improved over the years despite the negative effect of these reforms only due to significant real wage growth.

4. In 2012, more than two-thirds of OECD countries planned to reduce spending on working-age social benefits and about 40% of countries planned to do the same on pensions (OECD, 2014b).

5. The underlying detailed country analyses are available at www.oecd.org/social/inequality-and-poverty.htm.

6. In 2012, an additional rate ("*taux intermédiaire*") of 7%, higher than the reduced rate (5.5%), was introduced and applied to most goods and services previously taxed at the reduced rate. In 2014, the *taux intermédiaire* rose to 10% and the standard rate from 19.6% to 20%.

7. OECD/KIPF (2014) showed that VAT systems are regressive when measured as a percentage of income, but are generally either proportional or slightly progressive when measured as a percentage of expenditure.

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# *Chapter 4*

# Non-standard work, job polarisation and inequality

*This chapter provides evidence for the implication of trends in non-standard work for individual and household earnings and income inequality. It first presents the socio-demographic characteristics of non-standard workers before discussing the contribution of non-standard work to overall changes in employment. It shows that, in a majority of OECD countries, standard jobs have disappeared in the middle of the distribution in terms of wages and skill, while non-standard jobs have contributed to an increase in jobs at both ends of the distribution. Non-standard jobs tend to pay lower wages than standard jobs, especially at the bottom of the earnings distribution, thereby raising earnings inequality. The chapter then looks at the impact of non-standard work on household incomes and shows that non-standard workers living alone or with other non-standard workers suffer from higher chances of low income and poverty. Finally, the chapter examines the work incentives and adequacy effects of tax and benefit rules. It finds that some non-standard workers, such as the self-employed, usually face different statutory rules and shows that taxes and benefits reduce poverty gaps for non-standard workers but create work disincentives for moving from inactivity to work.*

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

## 4.1. Introduction and key findings

Changes in earnings – which constitute three-quarters of household income – and in labour market conditions have been identified as the most important direct driver of rising income inequality. This concerns, in particular, changes in the distribution of gross wages and salaries, which have become more dispersed in most OECD countries in the past 25 years. But this is also linked to changes in employment patterns, working conditions and labour market structures. For instance, growing levels of non-standard work, such as part-time work, casual work and work on temporary contracts, may help to explain the puzzle of increasing inequality despite aggregate employment growth prior to the global economic crisis.

The effects of the rising share of employment in non-standard work (NSW) arrangements have gained centre stage in policy debates in recent decades. Since the 1980s, labour markets in OECD countries have been subject to major structural changes. The employment protection legislation (EPL) became less strict in countries where protection had been relatively strong to start with, while countries where the strictness of the EPL was below average in 1985 tended to stick with a similar policy in the late 2000s (OECD, 2011). Alongside these institutional changes, demographic and societal developments – ageing and higher female labour market participation – have also profoundly modified the labour force. Finally, structural changes in employment due to growth in services and knowledge jobs, a greater use of ICTs and just-in-time delivery have all had implications for the demand and supply drivers of atypical forms of work. As NSW is often portrayed as being associated with lower earnings and with job insecurity, this has drawn attention to its potentially adverse impact on the distribution of individual earnings as well as of household income more generally.

Evidence from OECD (2011) has shown the impact of non-standard work on the level of overall earnings inequality: adding the earnings of part-time workers to the distribution of full-time employees increased earnings inequality by almost 20%, and adding self-employed workers increased inequality by a further 5%. In addition, policy reforms such as weaker employment protection for temporary contracts have tended to increase *employment* opportunities but were associated with wider *wage inequality*.

There is however a lack of empirical evidence on the detailed channels through which non-standard work may affect the distribution of individual and household income. Non-standard employment might be associated with poorer labour conditions (wages, working time, job security, leave entitlements, etc.), particularly in the case of dual or segmented labour markets, if firms use such arrangements for cost or flexibility reasons or as a probationary device. On the other hand, part-time, temporary and self-employment arrangements may be attractive to certain workers, and workers might choose this type of employment to achieve a better work-family life balance, higher life satisfaction or, in the case of self-employment, a greater sense of control. The degree of mobility between both segments is also likely to influence whether there are persistent wage differentials between both sectors.

The chapter is organised as follows. Section 4.2 defines different forms of non-standard work and the demographic composition of these workers. Section 4.3 analyses the extent to which employment growth stems from non-standard work and how NSW contributes to job polarisation. Section 4.4 looks at the question of whether non-standard jobs pay less and whether such jobs improve employment prospects. It also discusses the implications for the distribution of earnings. The contribution of NSW to

household income inequality and poverty is discussed in Section 4.5. Finally, Section 4.6 presents the impact of tax-benefit policies on income adequacy and on work incentives for non-standard workers.

The key findings from this chapter are:

- Non-standard work (temporary, part-time and self-employment taken together) represents one-third of total employment in the OECD, ranging from a low of under 20% in the eastern European countries (except Poland) to 46% or more in the Netherlands and Switzerland. Women (especially part-time), youth (especially temporary jobs) and workers with lower level of education are over-represented in NSW, as are workers in small firms.
- Close to half of employment growth since the 1990s and up to the global economic crisis has been in the form of non-standard work; the share reaches almost 60% of if the crisis years are included.
- Non-standard work contributes to job polarisation, i.e. to jobs disappearing in the middle of the distribution relative to those at the bottom and at the top: nearly all employment losses in middle-skill occupations were in standard work contracts, while job gains in high- and low-skill jobs were mainly in NSW.
- Non-standard work is not always a stepping stone to stable employment. Temporary contracts increase the chances of acquiring a standard job compared with remaining unemployed, but a part-time job or self-employment does not increase the chances of a transition to a standard job.
- Non-standard workers are worse off in terms of many aspects of job quality. They tend to receive less training and, in addition, those on temporary contracts have more job strain and have less job security than workers in standard jobs. Earnings levels are also lower in terms of annual and hourly wages but, for part-timers, once other demographic and job characteristics are taken into account, the differences in hourly wages tend to disappear. On the other hand, compared with permanent workers, temporary workers face substantial wage penalties, earnings instability and slower wage growth.
- Non-standard work tends to lower wages at the bottom of the earnings distribution, while the effect is often neutral at the top, thereby contributing to increased individual earnings inequality.
- Adding earnings from non-standard work to households where standard work is the norm increases household earnings inequality by three Gini points on average and help explain about 20% of household income inequality.
- Slightly more than half of non-standard workers are the main breadwinners in their household, and the great majority of them (80% or more) live in a household with two persons or more, including children.
- While not all low-wage non-standard workers live in low-income households, households with non-standard work arrangements are overrepresented at the lower end of the household income distribution. But the household constellation matters: low-income and poverty risks are five and ten times higher respectively if NSW is the main source of earnings rather than if NSW live with a standard worker.

- About 60% of working poor households are households where the main source of earnings is NSW.
- Non-standard workers face different statutory and effective entitlements to taxes and benefits in comparison to workers in standard jobs. For the self-employed, this is due to structurally different policy rules, while for part-timers it is the particular circumstances of these jobs that lead to different outcomes in terms of adequacy and incentives. In most countries, taxes and benefits significantly reduce in-work poverty gaps for NSW, though they are more effective for part-time than for self-employed workers.

## 4.2. A snapshot of non-standard work

There is no universally accepted definition of non-standard work arrangements. In its broadest sense, NSW may be defined as all employment relationships that do not conform to the "norm" of full-time, regular, open-ended employment with a single employer (as opposed to multiple employers) over a long time span. Such a broad definition of non-standard employment includes three partly overlapping types: a) self-employment (own-account workers[1]); b) temporary or fixed-term contracts; and c) part-time work.[2] It is clear that such a definition comprises very different groups of workers: for some (e.g. involuntary part-timers), this employment may have job characteristics associated with precariousness (low pay, instability); for others (e.g. voluntary part-timers with long tenure), such a job may actually be a desired outcome. Furthermore, transforming this definition into comparable cross-country statistics is not without problems, and the process is constrained by data availability (Box 4.1).

### Box 4.1. Defining non-standard forms of employment

Figures on non-standard employment are not easily comparable across countries because of national differences in definition and measurement. The difficulties in defining non-standard work on a comparable basis are accentuated if attempts are made to link non-standard forms of employment with wages and household earnings, as few data sources contain information on both employment and wages over time. Labour force surveys or household surveys typically ask respondents first, to classify themselves as employees or self-employed according to their status in their main job, and then ask employees to report on their type of contract and their working hours. Self-reporting errors may be present in such information, and figures should be used to indicate broad levels and trends across countries.

In its broadest sense, NSW arrangements are defined by what they are *not*: full-time dependent employment with a contract of indefinite duration, or what is generally considered the "standard" work arrangement. This definition generally implies that self-employed own-account workers and all part-time workers fall under "non-standard workers". While problematic – as this lumps together precarious and non-precarious forms of work – this convention is followed by a large part of academic international and national research (e.g. Houseman and Osawa, 2003; Wenger, 2003; Görg et al., 1998; Kalleberg et al., 1997; Kalleberg, 2000; Leschke, 2011), as well as by international organisations (e.g. International Labour Organisation, World Bank, Eurofound).

As noted above, this chapter breaks down non-standard employment into three separate categories: 1) self-employed (own-account), 2) temporary full-time employees and 3) part-time employees (including permanent and temporary contracts). Unpaid family workers are excluded from the analysis. Where possible, a distinction is made to break down the category of part-time employees into voluntary and non-voluntary part-timers, as well as part-timers on temporary and permanent contracts.

The distinction between different forms of employment has become increasingly blurred. There is a growing grey area, for instance between self-employment and wage employment (OECD, 2000). The growth in the numbers of self-employed contractors working for just one company or franchisees constitute groups on the borders of dependent and self-employment.

**Box 4.1. Defining non-standard forms of employment** *(cont.)*

Temporary jobs for the purpose of this analysis are defined as dependent employment of limited duration, including temporary work agency, casual, seasonal or on-call work. Definitions across countries outside the European Union are not harmonised and are based on different approaches. For Korea, workers in temporary jobs include fixed-term jobs or jobs of a limited duration, which is close to so-called contingent workers, as well as other atypical workers, i.e. temporary agency workers, individual contract workers, at-home workers, on-call workers and others. In the case of Australia, a broad definition of temporary work includes jobs of fixed-term duration, those employed through a labour hire or a temporary work agency as well as casual workers. Casual workers may lack entitlements to key fringe benefits such as paid vacation or sick leave or may not be protected by legislation against unfair dismissal, but might otherwise have continuous and stable employment, and are therefore one form of atypical or NSW. In this respect, this definition follows the work undertaken by the Australia Productivity Commission (2006) in classifying casual work as one form (and the most sizeable one) of non-standard work.

Part-time employees are defined based on their weekly working hours, namely working less than 30 hours per week. This may differ from national definitions which use different hours thresholds. Part-time work is also further disaggregated into part-time temporary and part-time permanent jobs when the data is available.

Employment in NSW arrangements in the OECD today is sizeable, comprising on average one-third of total employment (Figure 4.1). Permanent full-time employment remains nonetheless the norm in a majority of OECD countries, although there is substantial diversity across countries. In the Netherlands, more than one job in two is non-standard (though more than half of these are permanent part-time jobs), while in some eastern European countries the share is less than one in four jobs.

### *Different forms of non-standard work and their prevalence across the OECD*

The three main forms of non-standard work, i.e. self-employment, temporary employment and part-time work, account for fairly similar shares on average in the OECD, but they differ greatly by country (Figure 4.1, Panel A). For instance, self-employment is the most prevalent form of non-standard work in Greece, Turkey and the Czech Republic. On the other hand, part-time employment represents close to or over 60% of total non-standard employment in the Netherlands, the Nordic countries (except Finland), Belgium, Luxembourg and Switzerland, while it is only 12% in Korea and Poland. In Australia, where a broad definition of temporary employment also includes casual workers (Box 4.1), this type of work accounts for 85% (43%) of part-time (full-time) workers with a temporary employment contract.

Part-time workers are a very heterogeneous group with very different labour supply patterns. Some people work part-time because they wish to do so and would not take on full-time employment, while others do so because there is no full-time employment available. On average, involuntary part-time accounts for close to 30% of total part-time employment, with just under half of this associated with a temporary contract (Figure 4.1, Panel B). There are, however, large variations across countries. In Greece, Spain and Italy, over 60% of part-timers want to work more hours but could not find full-time jobs. In contrast, in Austria, Luxembourg, the Netherlands, Belgium and Switzerland, part-time work is predominantly voluntary and is associated with a permanent contract.

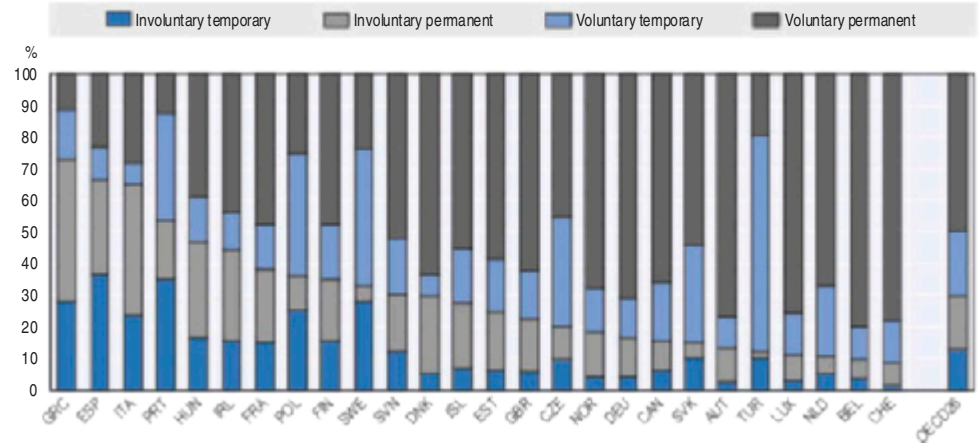
The characteristics and preferences of workers, as well as institutional factors and the sectoral composition of employment, all play a role in explaining cross-country differences in the share of non-standard workers. The tax wedge, product market regulations, employment protection legislation and the size of the public sector have been found to have

an impact on the incidence of different categories of non-standard work. For instance, there is a well-established negative relationship between the level of GDP and the self-employment rate (Acs et al., 1994). In addition, self-employment rates tend to be high in countries where the public sector is small, taxation levels are high, product market regulation (PMR) is tight[3] and the rule of law is weakly enforced (OECD, 1999; Schuetze, 2000; Torrini, 2005). Temporary employment tends to be higher in countries with stricter employment protection legislation for regular workers (OECD, 2014; Chen et al., 2015, forthcoming). One explanation put forward is that the employment protection of permanent jobs has a minor impact on total employment, but leads to a stronger substitution of temporary jobs for permanent jobs (Cahuc et al., 2012).

**Figure 4.1. Share of non-standard employment by type, 2013**

Panel A. Non-standard forms of employment as a percentage of total employment

Panel B. Part-time employment by type




*Note:* Sample restricted to paid and self-employed (own account) workers aged 15-64, excluding employers, student workers and apprentices. Breakdown of part-time employment by voluntary/involuntary is not possible for non-European countries. Panel A. For Australia, 42.6% of full-time temporary contract are casual; and 85.2% of part-time temporary employees are casual.

*Source:* European Union Labour Force Survey (EU-LFS, 2013), Household, Income and Labour Dynamics in Australia (HILDA, 2012), Japan Labour Force Survey "Basic Tabulation" (2012), Korean Labor & Income Panel Study (KLIPS, 2009) and Labour Force Survey (LFS, 2013) for Canada.

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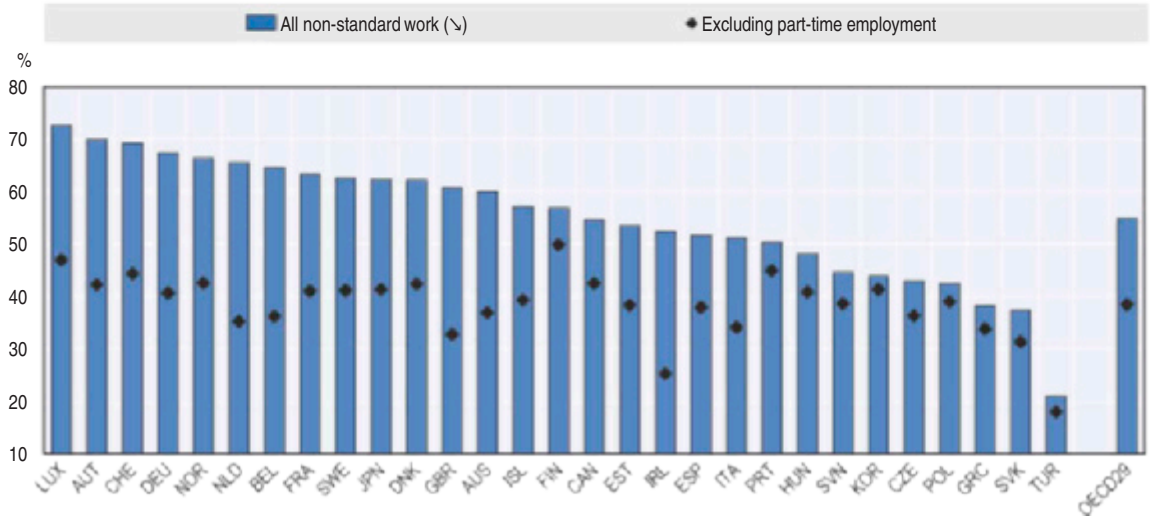
### *Typical profiles of non-standard employment by worker characteristics*

Given the predominance of part-time work in total non-standard employment in many countries, women are disproportionately represented among non-standard workers in about half of the OECD countries (Figure 4.2). They represent close to 70% of non-standard workers in Luxembourg, Austria and Switzerland, and more than 60% in most Nordic countries, the Netherlands, Germany, France, Belgium and Japan. If part-timers are excluded, women account for roughly 38% of non-standard employment (i.e. full-time temporary employment and self-employment), with higher shares (close to 50%) in Finland, Luxembourg and Portugal.

**Figure 4.2. Share of women in non-standard employment, 2013**




*Note:* Sample restricted to paid and self-employed (own account) workers aged 15-64, excluding employers, student workers and apprentices.

*Source:* European Union Labour Force Survey (EU-LFS, 2013), Household, Income and Labour Dynamics in Australia (HILDA, 2012), Japan Labour Force Survey "Basic Tabulation" (2012), Korean Labor & Income Panel Study (KLIPS, 2009) and Labour Force Survey (LFS, 2013) for Canada.

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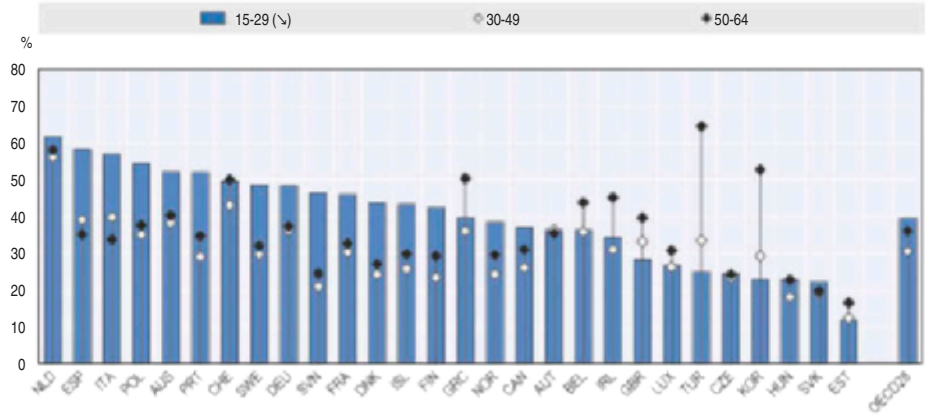
While youth represent a small fraction of total non-standard workers (less than 25%), they are the group with the highest incidence of NSW (Figure 4.3). The incidence of NSW is 40% among younger workers (versus 30% for prime-age), and it is over 50% in Australia, the Netherlands, southern Europe and Poland. This mostly involves younger workers on temporary contracts. On average in the OECD, 43% of temporary workers are aged 15 to 29, and this share is over 60% in Austria, Germany and Switzerland, suggesting that these jobs are often entry ports for young workers (figures not shown).

Education and skill levels also matter. The incidence of non-standard employment is highest among workers with a lower level of education (around 44%) and lowest among the higher educated (Figure 4.4). In particular, the incidence of non-standard work among those with a lower level of education is over 60% for workers in Greece, Korea, Poland, Switzerland, Germany and the Netherlands.

**Figure 4.3. Incidence of non-standard employment by age group, 2013**




*Note:* Sample restricted to paid and self-employed (own account) workers aged 15-64, excluding employers, student workers and apprentices.

*Source:* European Union Labour Force Survey (EU-LFS, 2013), Household, Income and Labour Dynamics in Australia (HILDA, 2012), Korean Labor & Income Panel Study (KLIPS, 2009) for Korea and Labour Force Survey (LFS, 2013) for Canada.

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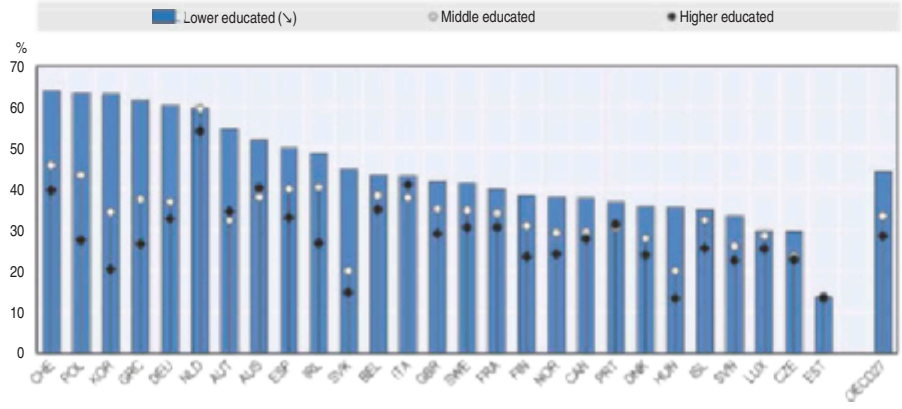
**Figure 4.4. Incidence of non-standard employment by educational attainment, 2013**



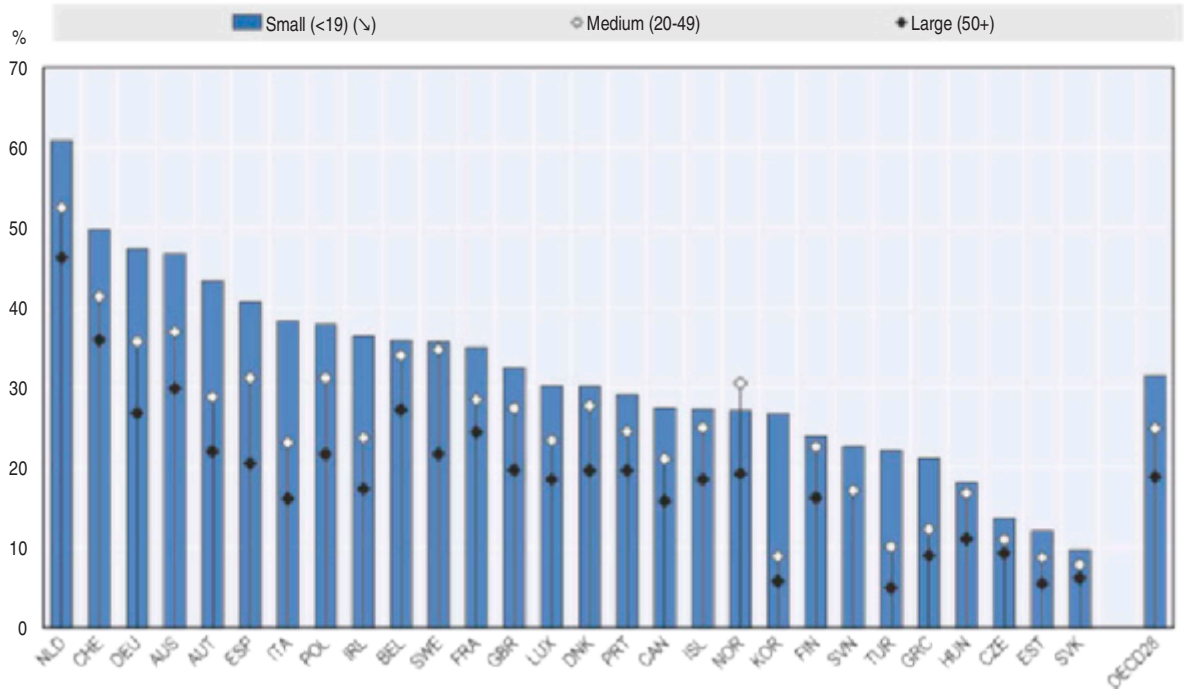

*Note:* Sample restricted to paid and self-employed (own account) workers aged 15-64, excluding employers, student workers and apprentices. Lower educated corresponds to basic education to levels 0 to 2 of the International Standard Classification of Education (ISCED), middle educated to ISCED 3-4 and higher educated to ISCED 5-6.

*Source:* European Union Labour Force Survey (EU-LFS, 2013), Household, Income and Labour Dynamics in Australia (HILDA, 2012), Korean Labor & Income Panel Study (KLIPS, 2009) for Korea and Labour Force Survey (LFS, 2013) for Canada.

StatLink http://dx.doi.org/10.1787/888933208059

Non-standard workers are also more likely to be found in small firms (Figure 4.5). Small firms might be more likely to make use of NSW arrangements as a screening process, or they may prefer more flexible work arrangements to cope with fluctuations in demand when lay-off costs for permanent workers are high (Bentolila and Saint-Paul, 1994). Indeed, a little less than half of all non-standard workers (excluding the self-employed) are working in small enterprises. Incidence of non-standard work is highest among small firms in the Netherlands with over 60%, followed by Switzerland, Germany and Australia, where close to 50% of workers in small firms are in NSW.

**Figure 4.5. Incidence of non-standard employment by firm size, 2013**




*Note:* Sample restricted to paid workers aged 15-64, excluding employers, self-employment, student workers and apprentices. For Australia and Canada, medium size refers to 20-99 workers and large to 100+ workers.

*Source:* European Union Labour Force Survey (EU-LFS, 2013), Household, Income and Labour Dynamics in Australia (HILDA, 2012), Korean Labor & Income Panel Study (KLIPS, 2009) for Korea and Labour Force Survey (LFS, 2013) for Canada.

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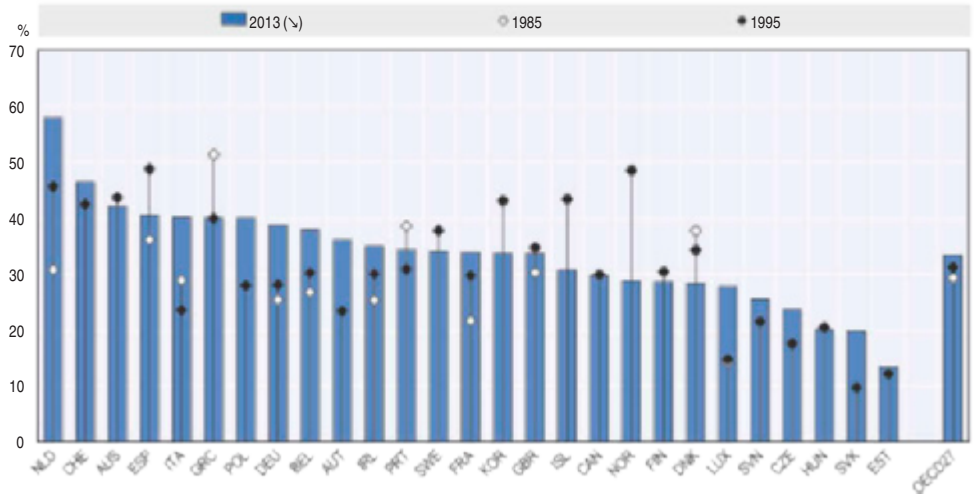
## 4.3. The role of non-standard employment in overall employment growth and job polarisation

### *How did non-standard work contribute to employment growth?*

Non-standard employment has increased in OECD countries, but only at a moderate level. On average, the share of non-standard employment increased by two percentage points between 1985 and 1995 in 12 countries for which data is available (Figure 4.6), and by another two points between 1995 and 2013 for a larger sample of countries. Non-standard employment has grown significantly in the Netherlands, where it increased by almost 30 percentage points, as well as in Austria, France, Germany and Luxembourg. In some Nordic countries (Iceland, Norway, Denmark), Greece and Korea, on the other hand, it declined by 20% or more. In Spain, non-standard employment increased until 1995 but declined in the subsequent decade.

**Figure 4.6. Trends in shares of non-standard employment, shares in total employment, 1985-2013**




*Note:* Sample restricted to paid and self-employed (own account) workers aged 15-64, excluding employers, student workers and apprentices.

1. Indicates 1998 instead of 1995 for Czech Republic, Estonia, Hungary, Luxembourg, Poland, Slovak Republic, Slovenia, and Switzerland.

*Source:* European Union Labour Force Survey (EU-LFS, 1985, 1995, 2013), Household, Income and Labour Dynamics in Australia (HILDA, 2001, 2012) for Australia, Korean Labor & Income Panel Study (KLIPS, 1999, 2009) for Korea and Labour Force Survey (LFS, 1997, 2013) for Canada.

StatLink http://dx.doi.org/10.1787/888933208079

While the overall increase was moderate, NSW represents a substantial fraction of the overall employment created since 1995: on average across countries, more than 40% of the growth in employment in the period up to the global economic crisis is attributable to non-standard jobs (Figure 4.7, Panel A). However, the trends vary largely by country. In Austria, Germany, the Netherlands and the Czech and Slovak Republics all employment growth over this period can be attributed to non-standard employment. During this same period, the total number of workers in standard employment in these countries has fallen, especially in Germany. Nevertheless, standard work was an important source of employment growth prior to the crisis in many other OECD countries, such as Norway and Greece but also Iceland and Hungary (where non-standard jobs declined).

The share of *part-time permanent employment* increased in more than half of the countries up to the global economic crisis and has contributed in itself to more than one-third of non-standard employment growth and 15% of overall employment growth. The rise in part-time employment was very prominent in Ireland, Luxembourg and Belgium, with growth of at least 10%. On the other hand, part-time employment declined sharply in some of the Nordic countries. Evidence shows that higher female labour force participation accounts for more than half of the growth in part-time employment in Europe and the United States during the 1980s and 1990s (OECD, 2010). Further evidence shows that part-time work has not developed at the expense of full-time employment (e.g. Jaumotte, 2003; Genre et al., 2005). In countries where part-time employment is widespread, inactivity rates are much lower. The relationship between part-time work, full-time work and inactivity varies significantly across different demographic groups. Higher part-time shares are unambiguously associated with a larger labour supply for youth and older workers, while

prime-age women may be substituting part-time work for full-time work in order to balance work and family life (OECD, 2010).

*Temporary employment* has increased in more than three-quarters of the countries and constitutes the bulk of growth in non-standard employment. The increases during the pre-crisis period were particularly large in Poland, Portugal and Spain, with growth of over 10%. In Poland, all employment growth during this period was in the form of temporary employment, while other types of jobs declined. There is also some evidence that strict EPL for permanent workers together with the weakening of regulations for temporary employment have contributed to the growth in the share of temporary jobs in some European countries, such as Spain.

Trends in *self-employment* are more mixed, with most countries showing stability and even a small decline, although a few countries experienced larger changes. Hungary and Poland have the largest relative declines in self-employment rates. This downward trend is strongly correlated with a reduction in the agricultural sector in OECD countries. At the same time, there has been growth in the numbers of own-account self-employed working for just one company. For some of this group, self-employment may be linked to tax incentives or employment protection legislation, i.e. the phenomenon of so-called "false" self-employment, especially in the sectors of construction, real estate and business activities. For instance, as a response to this phenomenon, a tax reform was introduced in the Czech Republic in 2004 to halt the spread of "false" self-employment, although the ban was overturned in 2007. While it remains difficult to isolate the effect of policy reforms from other factors, the incidence of own-account work increased less in the Czech Republic than in the Slovak Republic during this period (OECD, 2008a). In Italy, the legislation introduced in 1997 and 2003 to legalise temporary work agencies (while reforming collaboration agreements) may have led to an increase in self-employed workers who are in fact working for the same company, but as own-account workers.

The pattern of employment dynamics evolved differently during the recent global crisis (2007-13). Foremost, instead of the approximate 17% growth in employment recorded in the pre-crisis period (1995-2007), Figure 4.7 (Panel B) reports, on average, a 2% drop in the total number of persons employed in the latter period. There is, however, large cross-country variation. In about half of the countries, the loss in employment is mainly associated with standard jobs. In Greece and Ireland, for instance, the decline in the number of standard workers is responsible in itself for 15% drop in total employment over this period.

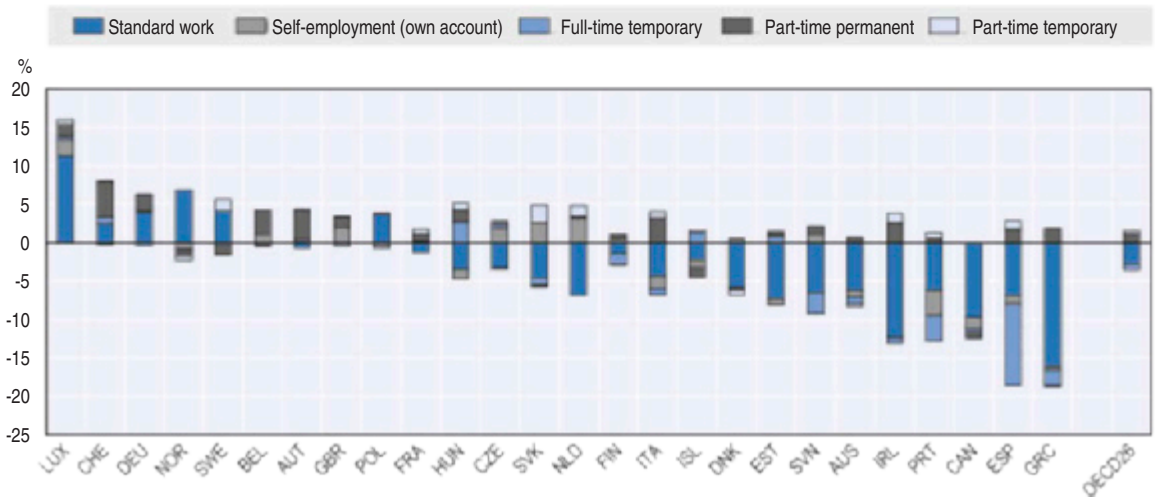
Full-time temporary workers were also hit hard during the global economic crisis. In Spain, for example, the losses of such jobs accounted for the biggest part of the drop in total employment, while in Portugal and Slovenia this represented 30% and 40%, respectively. The start of a recovery is underway in some countries and in a third of those (including Germany, Luxembourg, Norway, Belgium, Switzerland and Sweden, positive employment growth occurred in standard work during this period. It is also noteworthy that in Germany the number of workers of this type shrank between 1995 and 2007, but then increased again slightly. Changes in the relative share of standard and non-standard workers during the economic recession have led to a discussion about whether the crisis led to a "deskilling" of the workforce, with a destruction of full-time permanent jobs and a rise of more atypical jobs. However, the opposite might have occurred as in some countries, a large share of temporary jobs were eliminated, thus the economic crisis could have led to an up-skilling. So far, the evidence on this topic is inconclusive (Gallie, 2013).

**Figure 4.7. Employment growth by type of employment**

Percentage

Panel A. 1995-2007

Panel B. 2007-2013




*Note:* Working-age (15-64) workers, excluding employers as well as students working part-time. Countries are ranked from left to right in decreasing order for total employment growth. Temporary for Australia includes both casual and fixed-term work.

*Source:* European Union Labour Force Survey (EU-LFS), Labour Force Survey for Canada, Household, Income and Labour Dynamics in Australia (HILDA) for Australia.

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Interestingly, except in Canada and the Nordic countries, the number of part-timers continued to grow, albeit moderately, during the crisis and consolidation/recovery phase. Because of this growth in part-time employment and the important drop in standard employment in many countries, 56% of employment growth can be attributed to non-standard employment in the period from 1995 to 2013 as a whole.

### *Is job polarisation linked to the growth of non-standard employment?*

When employment is divided into three broadly defined tasks – abstract, routine and non-routine manual[4] – a clear and robust pattern of polarisation in job tasks can be seen in most EU countries between the mid-1990s and 2010 (Figure 4.8). The employment shares of routine-task jobs, which are traditionally composed of middle-skill standard job workers, have declined significantly in all OECD countries. At the same time, there has been an increase in non-routine manual jobs (9%), which were more often non-standard jobs and a large increase in the employment share of abstract jobs (21%). The growth of non-routine manual jobs (e.g. drivers or care workers) is more visible in Switzerland, Ireland and Portugal, where the employment share of such jobs grew by 20% or more. In Portugal and Switzerland, for instance, this corresponds to more than two-thirds of the total change in employment over the period. The observed polarisation by task in OECD countries since the mid-1990s has been driven primarily by within-sector movements in employment rather than by changes in the use of tasks between sectors. The within-component alone can explain about 80% of the increase in the share of abstract jobs and 63% of the reduction of routine jobs (see Table 4.A1.1).

While the literature on job polarisation often emphasises that the adoption of technology significantly alters the tasks performed by workers at their jobs, the analysis below adds another dimension to this phenomenon: the role of non-standard employment. In most countries nearly all the growth in low-skill/non-routine manual jobs (Figure 4.8, Panel C) was in non-standard employment, while losses in middle-skill/routine jobs were primarily associated with standard employment (Panel B), and both non-standard and standard work on average contributed roughly equally to the increase in abstract jobs (Panel A). The graphs also demonstrate a certain degree of "substitution" whereby some standard workers performing low-skilled tasks were replaced by workers with the same skill but on non-standard contracts (e.g. Austria, Germany, Italy, Luxembourg, the Netherlands and Slovenia). In a few countries like Austria, Germany, Italy, the Netherlands and Switzerland, even growth in high-skilled occupations (abstract jobs) was entirely driven by non-standard employment. Since nearly all job losses, regardless of the type of task, were associated with regular work, while growth in employment took place mainly in the form of non-standard employment, technological advancement alone cannot be the only explanation for job polarisation. Labour market institutions and policies have also probably played a role in the patterns of substitution observed in certain countries.

In reality, there is considerable variation in the level of skills used to perform the three broad tasks defined above (and thus wages), and as a result, different patterns of job polarisation could emerge depending on how the skill/value of a job is measured. Another way to look at employment polarisation is to use the "jobs-based" approach to analyse employment shifts (see Annex 4.A1 for a detailed description).[5] In general, the analysis based on this approach and presented in Figure 4.9 shows a clear trend towards job polarisation in more than half of the countries (i.e. 11 out of 19) for which linked job-wage data is available (Panels A and B).[6] In eight countries the pattern of employment shifts is strongly U-shaped across job deciles, with contractions of employment shares in the middle of the distribution and expansions at both ends. In Germany, for instance, the employment share of the least-paid and highest-paid jobs increased by about 2.7 and 2.3 percentage points, respectively, between 1995 and 2010, whereas the share of employment has fallen in most other job deciles. Polarisation varies across countries, however. For instance, jobs vanished mostly in the lower-middle (i.e. 2$^{nd}$-5$^{th}$) deciles of the skill distribution in Belgium, Canada, France and Norway, but in the more central (i.e. 3$^{rd}$-7$^{th}$) deciles in Germany, Finland, the Netherlands and the United Kingdom.

**Figure 4.8. Contribution of non-standard work/standard work to changes in employment share by task, 1995/98-2010**

Panel A. Abstract task

Panel B. Routine task

Panel C. Non-routine manual task

*Note:* Standard and non-standard workers, respectively, as defined in the text, with occupations classified as follows: Abstract (ISCO88: 12-34); Routine (ISCO88: 41-42, 52, 71-74, 81-82 and 93); and Non-routine manual (ISCO88: 51, 83 and 91). The overall sample is restricted to workers aged 15-64, excluding employers as well as students working part-time.

*Source:* European Union Labour Force Survey (EU-LFS).

StatLink http://dx.doi.org/10.1787/888933208091

Using the "job-based" approach to classify employment confirms that a shift from standard towards non-standard employment (i.e. de-standardisation of the employment contract) played a crucial role in the trend in job polarisation between 1995 and 2010. Among countries exhibiting a polarisation in jobs over this period (Panels A and B), some degree of polarisation in standard employment alone is observed, with a significant decline in this type of employment in the middle of the job spectrum. The pattern of polarisation becomes more visible once non-standard is factored in, as net expansion in such work has been concentrated mostly in both the lowest-paid and highest-paid occupations.[7]

Similarly, non-standard employment also intensifies the patterns towards job upgrading in Luxembourg, Italy and Sweden where there was an obvious expansion of atypical jobs in the top of the job distribution (Panel C). The growth in self-employed professionals may be part of the story of this development. Interestingly, in Poland and the Czech Republic changes in non-standard work tend to reduce the degree of upgrading in employment, as expansion of non-standard jobs was concentrated mostly in the middle to lower-end of the job deciles.

It is also noteworthy that in a few countries, such as Germany, the Netherlands and Poland, a decline in mid-range standard jobs was accompanied by similar growth in non-standard employment within the same job deciles, resulting in a moderate overall loss of jobs in the middle.

These findings suggest that the "routinisation" story cannot be the only explanation for the hollowing out of the middle, since the vanishing standard jobs in the middle, if driven by technology, cannot be easily replaced by workers with the same skill but in non-standard forms of employment.

Other mechanisms, in particular institutional changes such as those favouring more flexible labour force, are also at work in reshaping the pattern of employment polarisation in these countries. Some of the countries that experienced polarisation were characterised by high levels of employment protection legislation for regular jobs (full-time or part-time permanent) and low levels of protection for temporary jobs (full-time or part time), while others were not. Supply side factors, such as an increase in educational attainment or migration,[8] could also accelerate/decelerate the pace of job polarisation.

**Figure 4.9. Percentage-point change in employment share due to non-standard work/standard work by job decile, mid-1990s to 2010**

Panel A. Strong polarisation

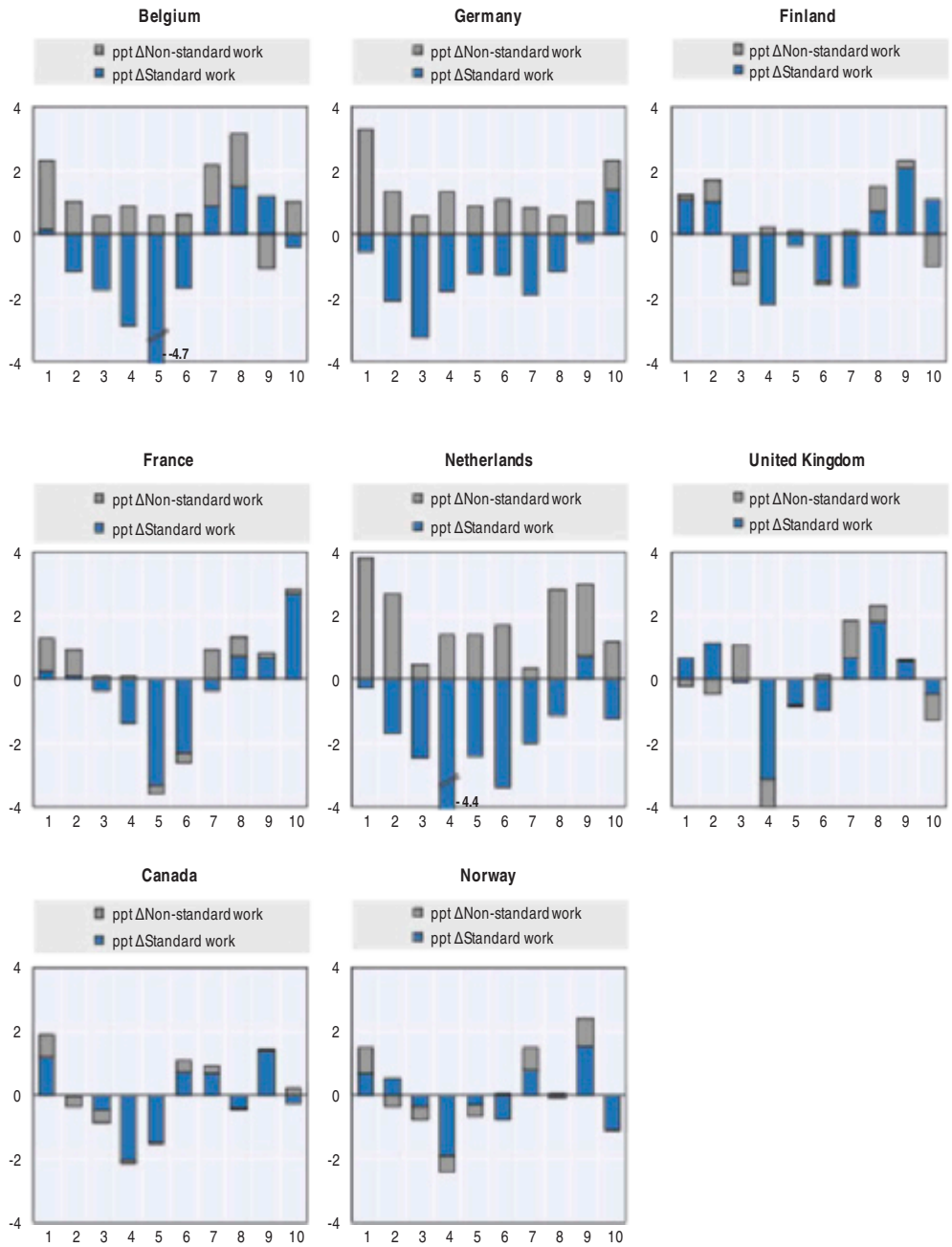
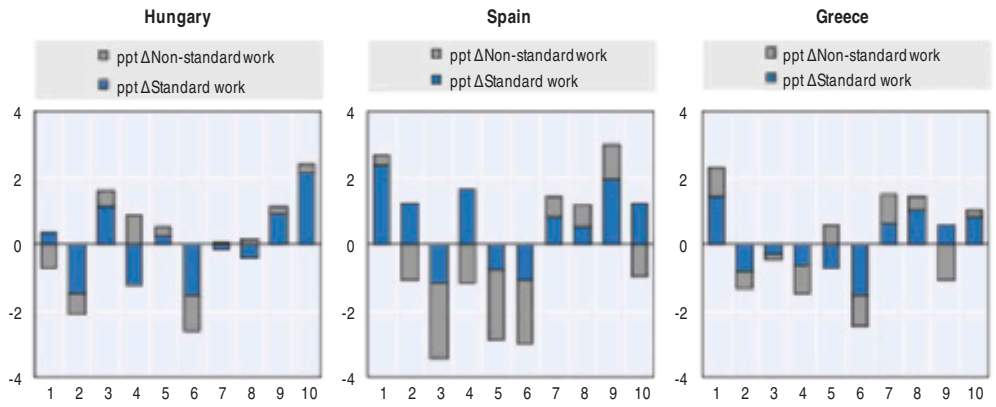


**Figure 4.9. Percentage-point change in employment share due to non-standard work/standard work by job decile, mid-1990s to 2010** *(cont.)*

Panel B. Moderate polarisation




Panel C. Upgrading

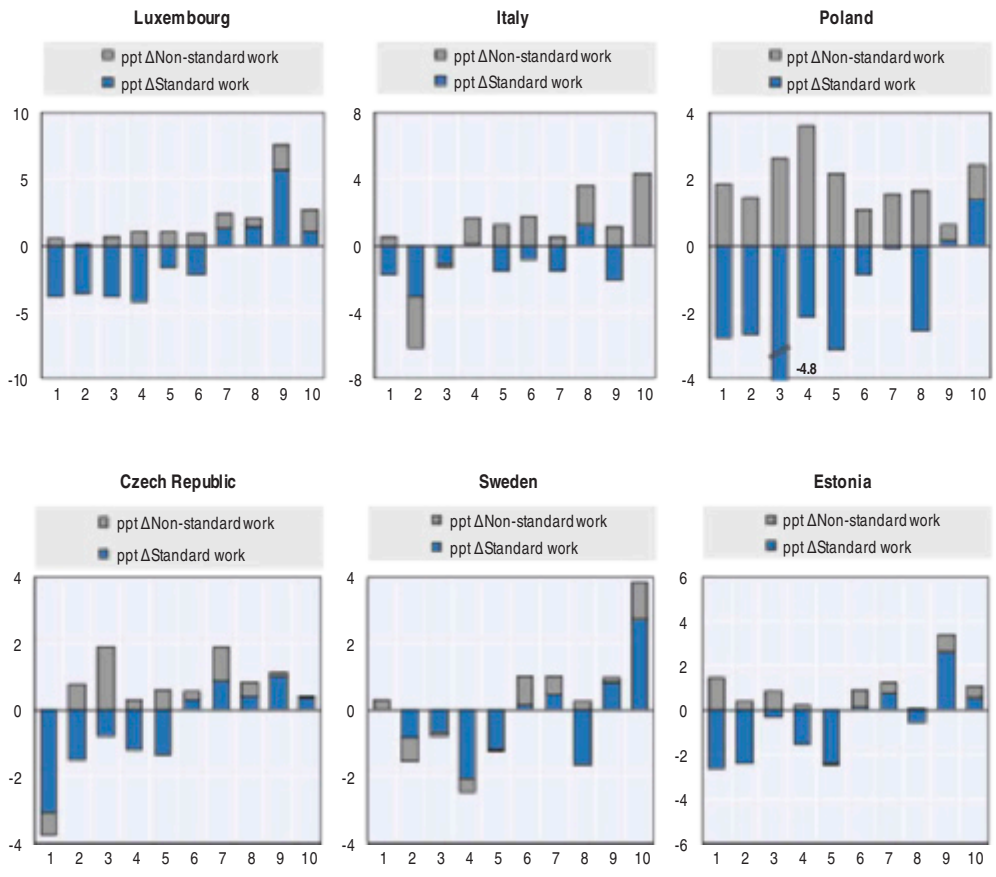
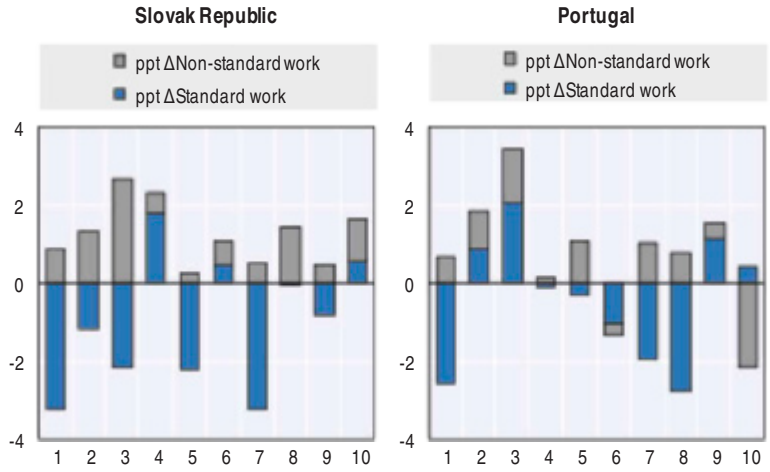


**Figure 4.9. Percentage-point change in employment share due to non-standard work/standard work by job decile, mid-1990s to 2010** *(cont.)*

Panel D. Other




*Note:* Working-age (15-64) workers, excluding employers as well as students working part-time.

*Source:* European Union Labour Force Survey (EU-LFS).

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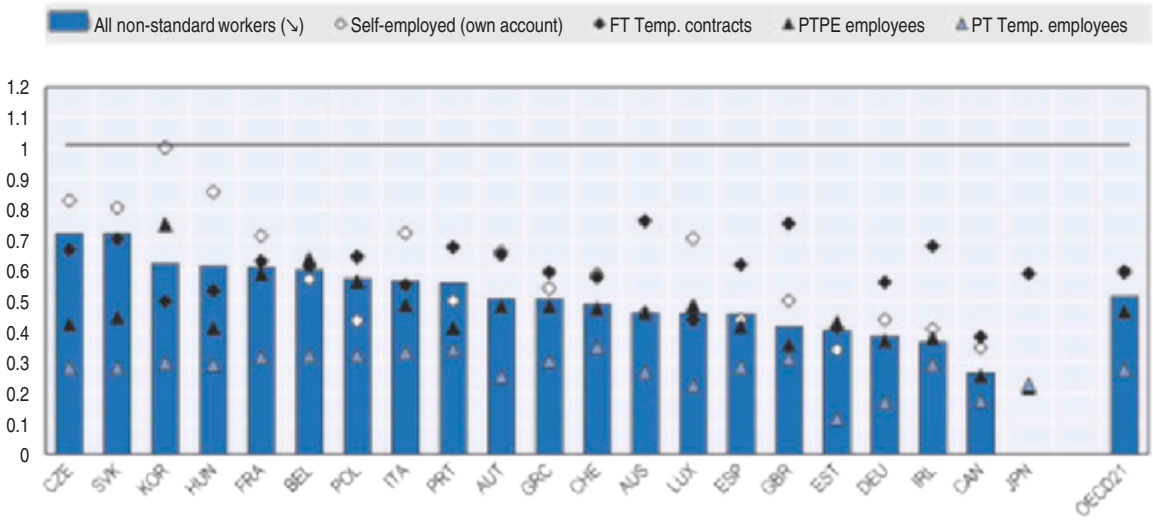
## 4.4. Wage gaps between standard and non-standard workers and their impact on the distribution of earnings

All types of NSW arrangements pay lower hourly wages and lower annual earnings than do standard jobs (Figure 4.10).[9] The median *annual earnings* of all non-standard workers are almost half the level of those for standard workers across the OECD. Median annual earnings for part-timers are less than half those of standard workers and even 70% lower for part-time temporary workers, reflecting a lower take-home pay due to fewer working hours. Earnings for temporary workers and for own-account self-employed workers – who have similar weekly hours as standard workers – are still some 40% lower. Workers on temporary contracts have particularly low annual earnings in Estonia, Canada and Luxembourg. The annual median earnings of the self-employed are closer to the level of standard workers in the Czech and Slovak Republics, Hungary and, especially, Korea, but they are considerably lower in Canada and Estonia.

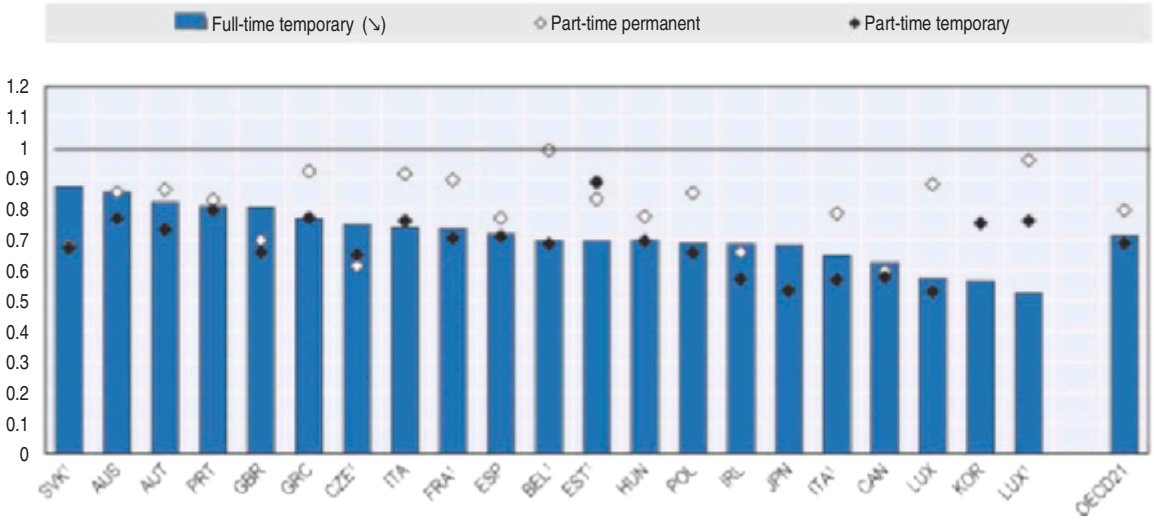
For the selection of countries for which data are available, the *hourly wages* for temporary and part-time employees are around 70 to 80% of the median hourly wages for standard workers (Figure 4.10, Panel B), which is smaller than the difference for annual wages. The gap in hourly wages is nevertheless high for temporary workers in Luxembourg, Korea and Canada and for part-time workers in Canada and Japan, who earn less than 60% of the hourly wage of a standard worker. In terms of hourly wages, part-time temporary jobs pay less than part-time permanent jobs, though the differences are small or insignificant in most countries, with notable exceptions (Belgium, Luxembourg, but also France, Greece and Poland). Part-time jobs pay higher hourly wages than temporary jobs in some countries, while they tend to pay less in the English-speaking countries and the Slovak Republic.

**Figure 4.10. Earnings ratio between standard and non-standard workers (standard workers = 1), 2012**

Panel A. Median annual earnings




Panel B. Median hourly wages, employees only




*Note:* Sample restricted to paid workers aged 15-64, excluding employers, self-employment, student workers and apprentices. Temporary contracts for Australia include both casual and fixed-term work. FT: Full-time, PT: Part-time, PTPE: Part-time permanent employment.

1. For seven EU-SILC (European Union Statistics on Income and Living Conditions) countries for which information on monthly wages is not available in the cross-sectional files, hourly wages are imputed from the 2012 longitudinal EU-SILC files, except Estonia and the Slovak Republic which are from 2010. Specifically, hourly wages are calculated as annual earnings divided by annual hours worked. Annual employee earnings are available from the survey, while annual hours worked (total weeks work*hours worked per week) are derived using monthly vectors of labour force activity (PL211A-PL211L) and as well as weekly hours worked variable (PL060). All wages are expressed in national currency units and are CPI adjusted. Hourly wages are computed as monthly earnings divided by the total number of hours worked per week (x4).

*Source:* European Union Statistics on Income and Living Conditions (EU-SILC, 2012), Household, Income and Labour Dynamics in Australia (HILDA, 2012), Basic Survey on Wage Structure (2012) for Japan, Korean Labor & Income Panel Study (KLIPS, 2009) and Survey of Labour and Income Dynamics (SLID, 2010) for Canada.

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### *Low pay: a result of different characteristics of workers or a penalty on non-standard work?*

The observed wage penalties may be partly the result of different worker characteristics. First, standard and non-standard workers may have different levels of human capital and be concentrated in particular occupations and at different stages in their life-cycles. There is evidence that women overall face occupational segregation, particularly part-time female workers, reflecting both demand and supply factors (Bardasi and Gornick, 2008). Temporary or fixed-term contracts may be more prevalent in certain sectors such as construction, hotels and retail, where wages may be lower. Second, employers may also pay lower hourly wages mainly to part-timers as a way to compensate for higher fixed labour costs. Third, even in cases where hourly wages are the same for standard and non-standard work, part-time and temporary workers may receive lower earnings because of lower additional pay compensation such as bonuses: evidence suggests that fixed-term, temporary agency workers and part-time workers are less likely to benefit from profit-sharing (but are as likely to receive paid overtime and individual performance pay) and that part-timers are also less likely to receive overtime pay and team-based bonuses (Venn, 2011).

At the same time, standard and non-standard workers may receive different salaries because they have different unobserved characteristics or because of asymmetric information with respect to their ability between employers and job applicants or workers.[10] Part-time workers, for instance, may be more productive because there is an inverted U-shaped relationship between hourly efficiency and the number of hours, and part-timers might be found on the rising part of the efficiency hours (Booth and Wood, 2006). On the other hand, temporary contracts may be used as a screening device. Firms might also use temporary contracts as a probation device if they cannot screen potential employees directly at a suitable cost to assess whether they are of high ability. In particular, firms can hire temporary workers or workers though temporary help agencies so as to obtain economies of scale in screening and training temporary workers (Autor, 2001; Houseman and Polivka, 1999). Prospective employers may use the type of employment or their earnings history as a sign of low ability or lower productivity and offer them lower wages. Controlling for individual unobserved characteristics is crucial to disentangle the reasons behind wage differentials (see Box 4.2. for the econometric approach).

Previous studies suggest that, once adjustments are made for personal and job characteristics, the wage gap between non-standard workers and standard workers narrows significantly, although an unexplained portion remains. Part-time wage differentials are related to the extent to which part-time workers are concentrated in low-wage occupations. Evidence suggests that much of the wage difference between part-time and full-time workers is explained by differences in workers and jobs, with differences in job characteristics such as occupation or sector being by far more important, and that the wage penalty might be small but rises over the working life, as a result of lower experience levels and accumulated human capital (Hirsch, 2005; Bardasi and Gornick, 2008; OECD, 2010). The under-investment in human capital associated with short-term contracts can give rise to lower wages for temporary workers. Another possibility is that workers accept lower wages with the expectation that this would be followed by more stable careers. In the case of temporary workers, occupational segregation *within* firms is also responsible for an important portion of the unadjusted wage gap (50%) while higher observed skills for those on indefinite contracts working in the same occupation accounts for 30% of the wage differential (De la Rica Goiricelaya, 2004).

**Box 4.2. Estimating the wage penalty between standard and non-standard workers**

Individual wages may be considered as a function of individual and job characteristics, including the type of contract:

$$lnw_{it} = X_{it}^{'}\beta + \alpha NSD_{it} + \mu_i + \varepsilon_{it}$$

where $i$=1,…, N represents the number of individuals at each wave and $t$=1,…, T is the number of waves, $w$ is the hourly wage rate in period $t$ for individual $i$, X is a vector of characteristics that influence wages including individual and job characteristics, NSD denotes non-standard employment status (either part-time or temporary), $\mu$ is an unobserved individual effect and $\varepsilon$ is a random error term. Wages are estimated separately for men and women, as the coefficients of certain covariates may vary by gender.

The inability to measure the unobserved individual effects leads to biased estimates of $\alpha$ if individual fixed effects are correlated with non-standard employment status. Panel-data techniques can be used to focus on wage changes as a result of changes in non-standard employment status, conditional on the values of the individual fixed effects. With the differencing, the permanent component $\mu$ is purged, and the resulting estimates of the equation yield consistent estimates of the coefficients on the assumption that $\mu$ is constant within the relevant time frame. This also relies on the assumption that $X$ and NSD are orthogonal to the error term $\varepsilon$. In addition, first-differencing resolves endogenous selection and non-random attrition problems as long as they are related to the time-invariant individual components.

Three specifications from both cross-sectional and panel data are estimated in the empirical analyses. The baseline specification includes ordinary least squares (OLS) estimates from pooled cross-sectional data to paint a general picture about the wage differences between non-standard and standard workers, controlling for observable characteristics. Specifications (2) and (3) further add interaction terms to examine whether the extent of the wage gap varies by age or skill groups, respectively. To take into account unobserved individual heterogeneity, estimates of the fixed effects model are also provided for four countries (Australia, Germany, Korea and the United Kingdom) for which panel data on hourly wages is available. The fixed effects panel analysis cannot be used for EU-SILC countries, as information on the hourly wage is not available. The samples are restricted to paid employees aged 15-64, excluding self-employed workers. In all specifications, the dependent variable is the logarithm of hourly wages expressed in 2010 constant currency. The main parameters of interest are dummy variables representing different types of non-standard contracts – full-time temporary work (TE), part-time permanent (PTPE) and part-time temporary work (PTTE) – as their coefficients capture the (log) wage differential with reference to standard work. A negative (positive) coefficient therefore indicates a wage penalty (premium) for non-standard workers. To facilitate interpretation, we translate coefficients into percentage difference in hourly wages between various groups of interest and the reference group in Tables 4.1 and 4.2 for men and women, respectively. Since hourly wages are log-transformed, the percentage difference in hourly wages between temporary and standard (reference) employment, for instance, can be obtained by $[exp(b^{TE}) - 1]*100$, where $b^{TE}$ is the estimated coefficient on the temporary contract dummy.

*Temporary workers* in all countries face a wage penalty, even after controlling for observable individual, family and work characteristics (Tables 4.1 and 4.2).[11] On average, a temporary contract worker receives an hourly wage that is 11% lower for men than their counterparts in standard jobs (13% lower for women). The wage penalty ranges between almost zero in Australia to 19% in Greece. Similar magnitudes are found in the wage penalties for men and women in most countries. Some noticeable exceptions include Greece, Ireland, Portugal and Korea where the wage penalty tends to be some four to five points higher for women than for men on temporary contracts.

Similarly, in most OECD countries *part-time worker*s also tend to earn lower hourly wages than their standard full-time counterparts. However, the degree of the penalty varies depending on the type of contract. In general, the wage penalty is smaller for those

with a permanent employment contract, compared with part-timers with a temporary contract, and for women: it represents 13% for part-time temporary male workers and 9% for their permanent counterpart, while it is 12% for part-time temporary women and 4% for women in part-time permanent employment. The wage penalty for working part-time is especially pronounced in Germany, Ireland and Poland (the latter for men only). In Germany, for instance, the hourly wage for part-time men in temporary jobs is 33% (24% for women) lower than that for full-time standard workers. This may partly reflect the rise of mini-jobs in Germany. Interestingly, part-time work is not associated with any wage penalty in Portugal (for those with permanent jobs). Australia stands out as the only country where a small part-time wage premium is found for female workers.

The analysis reveals that the young and the low-skilled face additional wage penalties in the case of *temporary workers* in almost all countries [Tables 4.1 and 4.2, specifications (2) and (3)].[12] This suggests that the pay levels of young and low-skilled individuals may take longer to converge with the levels of standard jobs if workers start a career with a temporary job. While the wages of temporary workers increase with age and skill level, they grow more slowly than those of standard workers. As a result, the wage differences between temporary and standard workers tend to widen with age or skill. This implies that years of labour market experience may not be valued in the same way for temporary workers as for standard workers. Having a higher education level does not eliminate the wage disadvantage faced by temporary workers. In most countries, those with a university degree are still at a considerable wage disadvantage compared with peers in standard work.

For *part-time workers*, mixed cross-national results are found for wage penalties by age or skill levels. In a number of countries, such as Austria, Belgium, Greece and Korea, a wage penalty for male part-timers compared with their full-time standard equivalents is more pronounced among young workers but tends to be less significant or even disappears for older workers. The opposite, however, is found in Ireland, Italy and Portugal. Similarly, the part-time wage penalty for temporary contract workers is largely driven by less-educated cohorts in some countries (Austria, Belgium) but not in others, such as Germany, where the wage penalty for part-time temporary workers tends to be fairly high and equal across all skill groups.

There are significant gender differences in the wage penalty with part-time work. In general, among those with a permanent contract, the part-time penalty is rather moderate or negligible for women regardless of age or skill groups, but is still apparent for men. In most countries, with the exception of Germany, Ireland and the United Kingdom, a wage premium is even found among young part-time women with a permanent contract.

**Table 4.1. Estimates of (log) hourly wage gap between standard and non-standard workers, pooled OLS: Men**

| | AUS (HILDA) | AUT | BEL | DEU (GSOEP) | ESP | GBR | GBR (BHPS) | GRC | HUN | IRL | ITA | KOR (KLIPS) | POL | PRT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Specification (1)** | | | | | | | | | | | | | | |
| Temporary employment (TE) | -0.026*** | -0.148*** | -0.116*** | -0.189*** | -0.160*** | -0.102*** | -0.146*** | -0.138*** | -0.135*** | -0.151*** | -0.165*** | -0.104*** | -0.187*** | -0.125*** |
| Part-time permanent employment (PTPE) | -0.088*** | -0.055*** | -0.051** | -0.239*** | -0.100*** | -0.174*** | -0.116*** | -0.074*** | -0.075*** | -0.194*** | -0.063*** | -0.070** | -0.146*** | -0.140*** |
| Part-time temporary employment (PTTE) | -0.01 | -0.051 | -0.170*** | -0.507*** | -0.191*** | -0.143*** | -0.134*** | -0.107*** | -0.128*** | -0.291*** | -0.171*** | -0.177*** | -0.244*** | -0.037 |
| **Other controls** | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | 3.108*** | 2.808*** | 2.861*** | 3.028*** | 2.416*** | 2.949*** | 2.486*** | 2.072*** | 1.407*** | 2.835*** | 2.683*** | 9.053*** | 1.147*** | 1.886*** |
| Number of observations | 25 449 | 22 817 | 3 799 | 62 434 | 46 520 | 19 051 | 42 703 | 16 557 | 24 866 | 12 838 | 67 237 | 21 572 | 42 964 | 16 478 |
| **Specification (2)** | | | | | | | | | | | | | | |
| TE | -0.012 | -0.129*** | -0.133*** | -0.190*** | -0.167*** | -0.144*** | -0.157*** | -0.142*** | -0.156*** | -0.201*** | -0.170*** | -0.099*** | -0.206*** | -0.131*** |
| PTPE | -0.185*** | -0.097*** | -0.075** | -0.185*** | -0.067*** | -0.251*** | -0.088*** | -0.127*** | -0.135*** | -0.171*** | -0.077*** | -0.058 | -0.105*** | -0.067 |
| PTTE | -0.098*** | -0.233*** | -0.166** | -0.560*** | -0.184*** | -0.023 | -0.199*** | -0.106*** | -0.118** | -0.302*** | -0.192*** | 0.053 | -0.291*** | -0.024 |
| Age1529 | -0.246*** | -0.181*** | -0.173*** | -0.207*** | -0.159*** | -0.254*** | -0.244*** | -0.240*** | -0.135*** | -0.266*** | -0.205*** | -0.209*** | -0.191*** | -0.215*** |
| Age5064 | 0.008 | 0.097*** | 0.141*** | 0.072*** | 0.128*** | 0.008 | -0.017*** | 0.179*** | 0.015* | 0.113*** | 0.128*** | -0.081*** | 0.009 | 0.111*** |
| TE·age1529 | -0.013 | -0.042 | 0.044 | -0.040*** | 0.071*** | 0.024 | 0.019 | 0.091*** | 0.068*** | 0.089* | 0.046*** | -0.102*** | 0.100*** | 0.038** |
| TE·age5064 | -0.044** | -0.043 | -0.066 | 0.045*** | -0.091*** | 0.170*** | 0.014 | -0.108*** | 0.001 | 0.097 | -0.047*** | 0.067*** | -0.045*** | -0.057** |
| PTPE·age1529 | 0.169*** | -0.027 | -0.147* | -0.137*** | -0.056 | 0.069 | -0.019** | 0.054 | 0.141** | 0.159*** | 0.136*** | -0.159** | -0.068 | -0.023 |
| PTPE·age5064 | 0.133*** | 0.158*** | 0.074 | -0.062*** | -0.059 | 0.141*** | -0.063** | 0.168*** | 0.08 | -0.134*** | -0.045** | 0.160** | -0.069* | -0.158 |
| PTTE·age1529 | 0.132*** | 0.122 | -0.028 | 0.152*** | 0.033 | -0.098 | 0.038 | 0.079* | 0.038 | 0.237*** | 0.127*** | -0.452*** | 0.177*** | 0.027 |
| PTTE·age5064 | 0.093*** | 0.419*** | 0.048 | -0.123*** | -0.086** | -0.210* | 0.201** | -0.106** | -0.059 | -0.105* | -0.096*** | -0.146** | 0.011 | -0.111 |
| **Other controls** | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | 3.109*** | 2.809*** | 2.863*** | 3.026*** | 2.412*** | 2.951*** | 2.487*** | 2.072*** | 1.410*** | 2.835*** | 2.684*** | 9.055*** | 1.146*** | 1.886*** |
| Number of observations | 25 449 | 22 817 | 3 799 | 62 434 | 46 520 | 19 051 | 42 703 | 16 557 | 24 866 | 12 838 | 67 237 | 21 572 | 42 964 | 16 478 |
| **Specification (3)** | | | | | | | | | | | | | | |
| TE | -0.036*** | -0.142*** | -0.126*** | -0.196*** | -0.194*** | -0.076** | -0.123*** | -0.140*** | -0.136*** | -0.171*** | -0.164*** | -0.131*** | -0.184*** | -0.260*** |
| PTPE | -0.064** | -0.067*** | -0.110*** | -0.236*** | -0.157*** | -0.151*** | -0.184*** | -0.113*** | -0.105*** | -0.121*** | -0.069*** | -0.032 | -0.194*** | -0.232* |
| PTTE | -0.002 | -0.041 | -0.186** | -0.479*** | -0.189*** | -0.185*** | -0.361*** | -0.129*** | -0.141*** | -0.183*** | -0.136*** | -0.173*** | -0.278*** | -0.058 |
| Less than high school (Less HS) | -0.130*** | -0.139*** | -0.094*** | -0.075*** | -0.131*** | -0.106*** | -0.127*** | -0.085*** | -0.132*** | -0.101*** | -0.102*** | -0.241*** | -0.125*** | -0.240*** |
| University (Univ.) | 0.144*** | 0.124*** | 0.139*** | 0.154*** | 0.080*** | 0.162*** | -0.139*** | 0.146*** | 0.339*** | 0.213*** | 0.199*** | 0.250*** | 0.198*** | 0.346*** |
| TE·Less HS | 0.006 | -0.03 | 0.02 | 0.007 | 0.083*** | -0.092 | -0.031 | 0.041** | -0.007 | 0.085 | 0.024*** | 0.225*** | 0.008 | 0.200*** |
| TE·Univ. | 0.029* | -0.012 | 0.014 | 0.017 | -0.054*** | -0.045 | -0.037 | -0.084*** | 0.023 | -0.001 | -0.093*** | -0.307*** | -0.039*** | -0.076** |
| PTPE·Less HS | -0.158*** | -0.103*** | 0.024 | -0.110*** | 0.104*** | -0.071 | 0.044 | 0.043 | 0.114* | -0.124*** | 0.029* | 0.133 | 0.176*** | 0.146 |
| PTPE·Univ. | 0.019 | 0.108*** | 0.154*** | 0.028 | 0.037 | -0.027 | 0.116*** | 0.081 | 0.089 | -0.074 | -0.050* | -0.151** | 0.132*** | -0.166 |
| PTTE·Less HS | 0.018 | -0.131 | -0.048 | -0.131*** | 0.029 | 0.052 | 0.304*** | 0.018 | 0.063 | -0.104 | -0.033 | 0.259*** | 0.056 | 0.01 |
| PTTE·Univ. | -0.050** | 0.04 | 0.152 | -0.042 | -0.044 | 0.08 | 0.334*** | 0.071 | -0.046 | -0.264*** | -0.194*** | -0.162*** | 0.217*** | 0.028 |
| **Other controls** | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | 3.110*** | 2.810*** | 2.866*** | 3.027*** | 2.418*** | 2.948*** | 2.488*** | 2.073*** | 1.407*** | 2.830*** | 2.682*** | 9.053*** | 1.147*** | 1.906*** |
| Number of observations | 25 449 | 22 817 | 3 799 | 62 434 | 46 520 | 19 051 | 42 703 | 16 557 | 24 866 | 12 838 | 67 237 | 21 572 | 42 964 | 16 478 |

*Note:* All regressions control for age groups, levels of education, marital status, the presence of children, limited health condition, dummies for region of residence, occupation and year effects. Temporary for Australia includes both casual and fixed-term work. Robust standard errors are calculated. ***, **, * denote significance at the 1%, 5%, 10% levels, respectively.

*Source:* European Union Statistics on Income and Living Conditions (EU-SILC, 2004-2012, cross-sectional files), British Household Panel Survey (BHPS, 1992-2009), German Socio-Economic Panel (GSOEP, 1999-2012), Household, Income and Labour Dynamics in Australia (HILDA, 2001-2012), Korean Labor & Income Panel Study (KLIPS 1999-2009).

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## Table 4.2. Estimates of (log) hourly wage gap between standard and non-standard workers, pooled OLS: Women

| | AUS (HILDA) | AUT | BEL | DEU (GSOEP) | ESP | GBR | GBR (BHPS) | GRC | HUN | IRL | ITA | KOR (KLIPS) | POL | PRT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Specification (1)** | | | | | | | | | | | | | | |
| Temporary employment (TE) | -0.033*** | -0.137*** | -0.106*** | -0.220*** | -0.152*** | -0.121*** | -0.151*** | -0.191*** | -0.141*** | -0.171*** | -0.152*** | -0.152*** | -0.167*** | -0.156*** |
| Part-time permanent employment (PTPE) | 0.050*** | -0.024*** | 0.041*** | -0.130*** | -0.052*** | -0.074*** | -0.122*** | -0.052*** | -0.019 | -0.107*** | -0.040*** | 0.009 | -0.051*** | 0.006 |
| Part-time temporary employment (PTTE) | 0.014** | -0.116*** | -0.188*** | -0.332*** | -0.106*** | -0.152*** | -0.122*** | -0.149*** | -0.063*** | -0.174*** | -0.150*** | -0.171*** | -0.101*** | -0.002 |
| **Other controls** | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | 3.168*** | 2.679*** | 2.834*** | 2.907*** | 2.225*** | 2.838*** | 2.275*** | 1.980*** | 1.338*** | 2.699*** | 2.491*** | 8.897*** | 1.096*** | 1.720*** |
| Number of observations | 25 184 | 19 876 | 3 229 | 58 159 | 37 378 | 19 656 | 45 292 | 13 023 | 24 766 | 13 179 | 54 202 | 14 260 | 37 748 | 15 855 |
| **Specification (2)** | | | | | | | | | | | | | | |
| TE | -0.050*** | -0.160*** | -0.100*** | -0.196*** | -0.151*** | -0.139*** | -0.143*** | -0.207*** | -0.146*** | -0.179*** | -0.136*** | -0.160*** | -0.179*** | -0.143*** |
| PTPE | 0.048*** | -0.015** | 0.041*** | -0.115*** | -0.054*** | -0.085*** | -0.149*** | -0.074*** | -0.014 | -0.107*** | -0.033*** | -0.016 | -0.025* | 0.053** |
| PTTE | -0.008 | -0.118*** | -0.182*** | -0.329*** | -0.114*** | -0.244*** | -0.119*** | -0.172*** | -0.029 | -0.143*** | -0.171*** | -0.171*** | -0.132*** | -0.037 |
| Age1529 | -0.182*** | -0.221*** | -0.212*** | -0.200*** | -0.188*** | -0.213*** | -0.199*** | -0.262*** | -0.145*** | -0.302*** | -0.233*** | -0.133*** | -0.239*** | -0.186*** |
| Age5064 | -0.001 | 0.098*** | 0.167*** | 0.056*** | 0.135*** | -0.015 | -0.058*** | 0.166*** | 0.052*** | 0.096*** | 0.158*** | -0.056*** | 0.079*** | 0.175*** |
| TE·age1529 | 0.039** | 0.067** | 0.018 | -0.078*** | 0.059*** | 0.063 | -0.012 | 0.119*** | 0.031 | 0.061 | 0.029*** | -0.022 | 0.094*** | 0 |
| TE·age5064 | 0.029 | 0.009 | 0.007 | 0.042** | -0.093*** | -0.018 | 0.009 | -0.126*** | -0.004 | -0.095 | -0.113*** | 0.072** | -0.061*** | -0.090*** |
| PTPE·age1529 | -0.003 | 0.031 | 0.062* | -0.01 | 0.086*** | 0.044** | 0.109*** | 0.099*** | 0.188*** | 0.097*** | 0.131*** | 0.055 | 0.107*** | -0.004 |
| PTPE·age5064 | 0.003 | -0.048*** | -0.060* | -0.042*** | -0.037*** | 0.015 | 0.038*** | 0.008 | -0.075*** | -0.036* | -0.102*** | 0.124* | -0.112*** | -0.112*** |
| PTTE·age1529 | 0.067*** | 0.129*** | 0.250*** | 0.055*** | 0.098*** | 0.134** | -0.003 | 0.134*** | -0.024 | 0.071 | 0.183*** | -0.098*** | 0.150*** | 0.103** |
| PTTE·age5064 | 0.005 | -0.087** | -0.340*** | -0.054*** | -0.080*** | 0.196*** | -0.02 | -0.068** | -0.078* | -0.126*** | -0.126*** | 0.183*** | -0.014 | 0.002 |
| **Other controls** | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | 3.168*** | 2.678*** | 2.822*** | 2.900*** | 2.222*** | 2.842*** | 2.287*** | 1.982*** | 1.337*** | 2.675*** | 2.485*** | 8.905*** | 1.094*** | 1.716*** |
| Number of observations | 25 184 | 19 876 | 3 229 | 58 159 | 37 378 | 19 656 | 45 292 | 13 023 | 24 766 | 13 179 | 54 202 | 14 260 | 37 748 | 15 855 |
| **Specification (3)** | | | | | | | | | | | | | | |
| TE | -0.040*** | -0.101*** | -0.080* | -0.205*** | -0.158*** | -0.065 | -0.163*** | -0.181*** | -0.146*** | -0.109*** | -0.159*** | -0.197*** | -0.129*** | -0.148*** |
| PTPE | 0.042*** | -0.028*** | 0.03 | -0.141*** | -0.084*** | -0.088*** | -0.118*** | -0.073*** | -0.029* | -0.123*** | -0.036*** | -0.037 | -0.036*** | -0.005 |
| PTTE | 0.020* | -0.109*** | -0.163*** | -0.350*** | -0.103*** | -0.202*** | -0.15*** | -0.098*** | -0.093*** | -0.218*** | -0.150*** | -0.284*** | -0.089*** | -0.009 |
| Less than high school (Less HS) | -0.052*** | -0.153*** | -0.120*** | -0.067*** | -0.120*** | -0.109*** | -0.107*** | -0.071*** | -0.092*** | -0.154*** | -0.127*** | -0.203*** | -0.063*** | -0.190*** |
| University (Univ.) | 0.143*** | 0.195*** | 0.176*** | 0.092*** | 0.104*** | 0.181*** | 0.159*** | 0.191*** | 0.325*** | 0.200*** | 0.155*** | 0.272*** | 0.299*** | 0.402*** |
| TE·Less HS | 0.014 | -0.036 | 0.051 | -0.025 | 0.043*** | 0.004 | 0.031 | 0.043** | 0.054** | -0.140* | 0.029*** | 0.151*** | -0.025 | 0.081*** |
| TE·Univ. | 0.006 | -0.101*** | -0.06 | -0.030* | -0.017 | -0.095* | 0.012 | -0.054*** | -0.031 | -0.074 | -0.003 | -0.096*** | -0.156*** | -0.216*** |
| PTPE·Less HS | -0.014 | 0.004 | 0.05 | 0.003 | 0.084*** | 0.074*** | 0.036*** | 0.049 | -0.006 | 0.053** | 0.021** | 0.059 | -0.001 | 0.039 |
| PTPE·Univ. | 0.028* | 0.022 | 0.005 | 0.044*** | 0.002 | 0.012 | -0.031*** | 0.068* | 0.075** | 0.01 | -0.087*** | 0.158*** | -0.055** | -0.227*** |
| PTTE·Less HS | -0.039** | -0.016 | -0.108* | 0.028 | 0.057*** | 0.195* | 0.019 | 0.011 | 0.061 | 0.094** | 0.042*** | 0.264*** | -0.029 | 0.013 |
| PTTE·Univ. | 0.012 | -0.017 | 0.056 | 0.062*** | -0.088*** | 0.076 | 0.051* | -0.156*** | 0.111* | 0.057 | -0.096*** | 0.165*** | -0.024 | -0.011 |
| **Other controls** | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | 3.166*** | 2.681*** | 2.834*** | 2.913*** | 2.224*** | 2.842*** | 2.273*** | 1.972*** | 1.339*** | 2.700*** | 2.488*** | 8.902*** | 1.084*** | 1.717*** |
| Number of observations | 25 184 | 19 876 | 3 229 | 58 159 | 37 378 | 19 656 | 45 292 | 13 023 | 24 766 | 13 179 | 54 202 | 14 260 | 37 748 | 15 855 |

*Note:* All regressions control for age groups, levels of education, marital status, the presence of children, limited health condition, dummies for region of residence, occupation and year effects. Temporary for Australia includes both casual and fixed-term work. Robust standard errors are calculated. ***, **, * denote significance at the 1%, 5%, 10% levels, respectively.

*Source:* European Union Statistics on Income and Living Conditions (EU-SILC, 2004-2012, cross-sectional files), British Household Panel Survey (BHPS, 1992-2009), German Socio-Economic Panel (GSOEP, 1999-2012), Household, Income and Labour Dynamics in Australia (HILDA, 2001-2012), Korean Labor & Income Panel Study (KLIPS, 1999-2009).

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Wage differences between standard and non-standard workers could also be driven by some unobserved individual effects like ambition or preferences. For instance, non-standard workers may receive lower wages simply because they are less productive or because they have preferences for more flexible work arrangements. Taking such effects into account tends to reduce the hourly pay gap. This analysis is undertaken for four OECD countries: Australia, Germany, Korea and the United Kingdom (Table 4.3). Overall, being a *temporary contract* worker is still associated with a wage penalty in three of the four countries, but the difference in hourly wages is more moderate: about 5% lower for men and 8% for women compared with their standard work counterparts, holding everything else equal. In Australia, there is no longer a difference in hourly wages between standard workers and temporary contract workers with similar characteristics.

Once individual fixed effects are taken into account, the *part-time* penalty is no longer present, especially for those with a permanent contract, except for German men. If anything, a wage premium is found in Australia and, to a lesser extent, for women in Korea. By contrast, part-time temporary workers still face some wage disadvantage in Germany and Korea (for women). In Australia, a substantial part-time premium (10-12% for women, 18-24% for men) was found once unobserved individual heterogeneity was taken into account: one hypothesis is that firms may have to pay more to attract part-time workers because of the high effective marginal tax rates for second-earners (Booth and Wood, 2006).

Distinct wage effects of NSW by age and skill group hold once unobserved effects are taken into account. In three panel countries where a wage penalty is observed for temporary workers, this penalty is higher for younger workers. In Germany, for instance, the hourly wages of young male (female) temporary workers are 11% (16%) lower than those of their age-similar equivalents in standard jobs. The comparable wage differences for other age groups, however, tend to be rather modest – about 5% or smaller.

With respect to those working in permanent jobs, there is no obvious wage penalty for part-time women in all age or skill groups, while for men the observed small or insignificant wage gap masks two contrasting effects across the population. In Korea, for instance, a wage penalty (13%) is found for young male workers – compared with standard full-time workers – whereas a wage premium (18%) is estimated for older workers. As for individuals with a temporary contract, the wage penalty also tends to be much higher among the young for both men and women. In the United Kingdom, on the contrary, older part-time workers (men) are at a higher risk of receiving a wage penalty, as they earn about 10% less than their age-similar counterparts in standard jobs. Moreover, in Australia wage premiums are found for all part-time workers, regardless of age or skill level.

In sum, four main messages can be drawn from the findings of this section. First, in most countries being a full-time temporary worker is associated with a wage penalty. This result is robust in both cross-sectional and panel analyses regardless of whether or not controlling for unobserved individual heterogeneity. Second, part-timers – in particular those with a temporary contract – also tend to have lower hourly wages than their regular full-time equivalents. However, part-time wage penalties diminish or even disappear when unobserved fixed effects are taken into account, suggesting that unobservable characteristics, such as individual preferences or ability, play an influential role in determining the wage gap for part-timers. Third, the extent of the wage penalty is not homogeneous across all non-standard workers. In many countries, the penalty primarily affects young workers, especially those with a temporary employment contract. Finally, there is a considerable cross-national variation in wage penalties associated with non-standard work. In general, full-time temporary contract workers tend to fare worse in hourly wages in Austria, while having a part-time job is harshly penalised in Germany but rewarded in Australia.

**Table 4.3. Fixed effects estimate of wage gaps**

| | Men | | | | Women | | | |
|---|---|---|---|---|---|---|---|---|
| | AUS (HILDA) | DEU (GSOEP) | KOR (KLIPS) | GBR (BHPS) | AUS (HILDA) | DEU (GSOEP) | KOR (KLIPS) | GBR (BHPS) |
| **Specification (1)** | | | | | | | | |
| Temporary employment (TE) | -0.001 | -0.063*** | -0.083*** | -0.068*** | 0.008 | -0.092*** | -0.101*** | -0.082*** |
| Part-time permanent employment (PTPE) | 0.172*** | -0.047** | -0.008 | 0.028 | 0.125*** | -0.009 | 0.060* | -0.001 |
| Part-time temporary employment (PTTE) | 0.172*** | -0.242*** | -0.012 | 0.004 | 0.139*** | -0.048*** | -0.074*** | -0.011 |
| **Other controls** | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | 2.872*** | 2.678*** | 8.852*** | 2.053*** | 2.775*** | 2.552*** | 8.487*** | 1.826*** |
| **Specification (2)** | | | | | | | | |
| TE | 0.007 | -0.052*** | -0.046** | -0.029 | 0.004 | -0.051*** | -0.079*** | -0.035* |
| PTPE | 0.178*** | -0.003 | 0.013 | 0.112*** | 0.124*** | -0.003 | 0.053 | -0.014 |
| PTTE | 0.174*** | -0.156*** | 0.136*** | 0.047 | 0.145*** | -0.036** | -0.056* | 0.015 |
| Age1529 | -0.001 | -0.059*** | -0.073*** | -0.092*** | -0.011 | -0.055*** | -0.062*** | -0.056*** |
| Age5064 | -0.053*** | -0.025*** | -0.039** | -0.094*** | -0.037*** | -0.014* | -0.069*** | -0.079*** |
| TE·age1529 | -0.024 | -0.067*** | -0.090*** | -0.074*** | -0.003 | -0.130*** | -0.078** | -0.102*** |
| TE·age5064 | 0.005 | 0.016 | -0.038 | -0.019 | 0.029 | 0.017 | 0.022 | -0.027 |
| PTPE·age1529 | -0.023 | -0.092* | -0.157* | -0.063 | -0.011 | 0.002 | 0.027 | 0.043*** |
| PTPE·age5064 | 0.019 | -0.078* | 0.152 | -0.218*** | 0.02 | -0.01 | 0.037 | 0.035** |
| PTTE·age1529 | -0.02 | -0.091 | -0.296*** | -0.047 | -0.02 | -0.064** | -0.121** | -0.069 |
| PTTE·age5064 | 0.038 | -0.235*** | -0.212** | -0.11 | 0.004 | 0.007 | 0.133** | 0.002 |
| **Other controls** | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | 2.872*** | 2.677*** | 8.842*** | 2.051*** | 2.778*** | 2.538*** | 8.487*** | 1.833*** |
| **Specification (3)** | | | | | | | | |
| TE | 0.008 | -0.067*** | -0.077*** | -0.064*** | -0.001 | -0.071*** | -0.148*** | -0.118*** |
| PTPE | 0.155*** | -0.053* | -0.052 | -0.028 | 0.127*** | -0.018* | 0.031 | -0.013 |
| PTTE | 0.183*** | -0.229*** | -0.044 | -0.137** | 0.119*** | -0.052*** | -0.172*** | -0.043 |
| Less than high school (Less HS) | -0.105*** | -0.012 | -0.077 | -0.001 | -0.050* | -0.028 | -0.037 | 0.004 |
| University (Univ.) | 0.081*** | 0.111*** | 0.092** | 0.055*** | 0.106*** | 0.108*** | 0.04 | 0.057*** |
| TE·Less HS | -0.019 | 0.031 | 0.058 | -0.04 | 0.022 | -0.017 | 0.147*** | 0.064 |
| TE·Univ. | -0.015 | 0.004 | -0.136*** | 8 | 0.008 | -0.055*** | -0.019 | 0.049* |
| PTPE·Less HS | 0.038 | -0.07 | 0.159 | 0.08 | -0.019 | 0.056** | 0.016 | 0.055*** |
| PTPE·Univ. | 0.024 | 0.046 | 0.079 | 0.074 | 0.004 | 0.013 | 0.132 | 0.001 |
| PTTE·Less HS | -0.005 | -0.082 | 0.121 | 0.187** | 0.003 | 0.072** | 0.219*** | 0.063 |
| PTTE·Univ. | -0.036 | -0.02 | 0.028 | 0.215*** | 0.055** | -0.023 | 0.171** | 0.063 |
| **Other controls** | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Additional[1] | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | 2.869*** | 2.676*** | 8.852*** | 2.055*** | 2.782*** | 2.551*** | 8.503*** | 1.83*** |
| Number of observations | 25 449 | 62 434 | 26 952 | 42 703 | 25 184 | 58 159 | 14 260 | 45 292 |
| Numbers of groups | 5 015 | 12 340 | 5 557 | 5 889 | 5 156 | 12 061 | 4 382 | 6 294 |

*Note*: All regressions control for age groups, level of education, marital status, the presence of children, limited health condition, dummies for region of residence, occupation and year effects.

1. Additional controls in national panels include dummies for industry, firm size, and job tenure (for Australia and Germany). Temporary for Australia includes both casual and fixed-term work. Robust standard errors are calculated. ***, **, * denote significance at the 1%, 5%, 10% levels, respectively.

*Source:* British Household Panel Survey (BHPS, 1992-2009), German Socio-Economic Panel (GSOEP, 1999-2012), Household, Income and Labour Dynamics in Australia (HILDA, 2001-2012), Korean Labor & Income Panel Study (KLIPS, 1999-2009).

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Having identified a wage penalty for temporary workers, it is important to investigate whether they have an equal or better chance of upward earnings mobility compared with workers in standard employment. If temporary jobs are a form of probation, a low wage during the probationary period will be followed by higher future wages and there should be little loss in terms of long-term wages (Booth et al., 2002). A conversion from a temporary to a permanent job (with the same employer) should thus be associated with upward earnings mobility. Also, because temporary workers are more likely to switch jobs voluntarily given their short-term contracts, they may be more likely to take advantage of higher-paying job opportunities than less mobile permanent workers (Amuedo-Dorantes and Serrano-Padial, 2007). Table 4.4 looks at contract and earnings mobility for temporary workers.[13]

## Table 4.4. Change of employment contract and earnings mobility, average over panel periods

| Australia (HILDA) | | | | |
|---|---|---|---|---|
| Transition | Downward | Stay | Upward | Total |
| SW-SW | 15.6 | 66.8 | 17.6 | 100 |
| SW-TE | 20.6 | 55.4 | 24.1 | 100 |
| TE-SW | 17.8 | 57.5 | 24.7 | 100 |
| TE-TE | 18.2 | 61.2 | 20.7 | 100 |

| Belgium | | | | |
|---|---|---|---|---|
| Transition | Downward | Stay | Upward | Total |
| SW-SW | 16.8 | 64.6 | 18.6 | 100 |
| SW-TE | 24.8 | 47.5 | 27.7 | 100 |
| TE-SW | 14.6 | 54.2 | 31.2 | 100 |
| TE-TE | 17.3 | 58.9 | 23.9 | 100 |

| Estonia | | | | |
|---|---|---|---|---|
| Transition | Downward | Stay | Upward | Total |
| SW-SW | 22.7 | 59.0 | 18.3 | 100 |
| SW-TE | 35.6 | 36.6 | 27.7 | 100 |
| TE-SW | 23.5 | 43.5 | 33.1 | 100 |
| TE-TE | 41.2 | 45.6 | 13.2 | 100 |

| Germany (GSOEP) | | | | |
|---|---|---|---|---|
| Transition | Downward | Stay | Upward | Total |
| SW-SW | 11.3 | 73.9 | 14.8 | 100 |
| SW-TE | 15.1 | 67.8 | 17.1 | 100 |
| TE-SW | 11.2 | 68.7 | 20.1 | 100 |
| TE-TE | 12.2 | 69.8 | 18.1 | 100 |

| Hungary | | | | |
|---|---|---|---|---|
| Transition | Downward | Stay | Upward | Total |
| SW-SW | 19.1 | 64.3 | 16.6 | 100 |
| SW-TE | 23.0 | 55.6 | 21.4 | 100 |
| TE-SW | 21.4 | 58.5 | 20.1 | 100 |
| TE-TE | 21.1 | 53.1 | 25.7 | 100 |

| Korea (KLIPS) | | | | |
|---|---|---|---|---|
| Transition | Downward | Stay | Upward | Total |
| SW-SW | 17.2 | 63.0 | 19.8 | 100 |
| SW-TE | 35.1 | 45.5 | 19.5 | 100 |
| TE-SW | 14.5 | 48.3 | 37.3 | 100 |
| TE-TE | 21.7 | 57.2 | 21.1 | 100 |

| Poland | | | | |
|---|---|---|---|---|
| Transition | Downward | Stay | Upward | Total |
| SW-SW | 16.7 | 67.1 | 16.2 | 100 |
| SW-TE | 24.4 | 54.2 | 21.4 | 100 |
| TE-SW | 20.1 | 55,15 | 24.7 | 100 |
| TE-TE | 20.0 | 56.4 | 23.7 | 100 |

| Spain | | | | |
|---|---|---|---|---|
| Transition | Downward | Stay | Upward | Total |
| SW-SW | 17.3 | 67.4 | 15.3 | 100 |
| SW-TE | 23.7 | 49.7 | 26.6 | 100 |
| TE-SW | 23.1 | 54.3 | 22.6 | 100 |
| TE-TE | 24.6 | 51.8 | 23.6 | 100 |

| United Kingdom (BHPS) | | | | |
|---|---|---|---|---|
| Transition | Downward | Stay | Upward | Total |
| SW-SW | 12.0 | 72.1 | 16.0 | 100 |
| SW-TE | 23.6 | 54.6 | 21.8 | 100 |
| TE-SW | 19.4 | 54.6 | 26.2 | 100 |
| TE-TE | 16.0 | 60.4 | 23.6 | 100 |

| Austria | | | | |
|---|---|---|---|---|
| Transition | Downward | Stay | Upward | Total |
| SW-SW | 27.0 | 54.4 | 18.6 | 100 |
| SW-TE | 28.3 | 43.3 | 28.3 | 100 |
| TE-SW | 27.7 | 45.5 | 26.8 | 100 |
| TE-TE | 28.4 | 44.4 | 27.2 | 100 |

| Czech Republic | | | | |
|---|---|---|---|---|
| Transition | Downward | Stay | Upward | Total |
| SW-SW | 19.2 | 63.6 | 17.3 | 100 |
| SW-TE | 21.3 | 54.2 | 24.5 | 100 |
| TE-SW | 18.9 | 58.5 | 22.5 | 100 |
| TE-TE | 21.2 | 58.5 | 20.3 | 100 |

| France | | | | |
|---|---|---|---|---|
| Transition | Downward | Stay | Upward | Total |
| SW-SW | 9.4 | 79.2 | 11.5 | 100 |
| SW-TE | 16.4 | 60.6 | 23.0 | 100 |
| TE-SW | 13.5 | 55.0 | 31.5 | 100 |
| TE-TE | 13.9 | 66.2 | 19.9 | 100 |

| Greece | | | | |
|---|---|---|---|---|
| Transition | Downward | Stay | Upward | Total |
| SW-SW | 11.8 | 74.6 | 13.6 | 100 |
| SW-TE | 14.8 | 66.6 | 18.7 | 100 |
| TE-SW | 16.2 | 66.7 | 17.2 | 100 |
| TE-TE | 15.5 | 67.2 | 17.3 | 100 |

| Italy | | | | |
|---|---|---|---|---|
| Transition | Downward | Stay | Upward | Total |
| SW-SW | 13.1 | 71.8 | 15.1 | 100 |
| SW-TE | 20.7 | 56.1 | 23.3 | 100 |
| TE-SW | 14.6 | 60.3 | 25.1 | 100 |
| TE-TE | 16.9 | 57.1 | 25.9 | 100 |

| Luxembourg | | | | |
|---|---|---|---|---|
| Transition | Downward | Stay | Upward | Total |
| SW-SW | 11.4 | 75.8 | 12.9 | 100 |
| SW-TE | 24.1 | 52.1 | 23.8 | 100 |
| TE-SW | 13.1 | 63.1 | 23.8 | 100 |
| TE-TE | 16.9 | 63.6 | 19.5 | 100 |

| Portugal | | | | |
|---|---|---|---|---|
| Transition | Downward | Stay | Upward | Total |
| SW-SW | 13.8 | 72.6 | 13.6 | 100 |
| SW-TE | 18.1 | 57.1 | 24.8 | 100 |
| TE-SW | 13.8 | 66.2 | 20.0 | 100 |
| TE-TE | 15.4 | 61.9 | 22.8 | 100 |

| Slovak Republic | | | | |
|---|---|---|---|---|
| Transition | Downward | Stay | Upward | Total |
| SW-SW | 20.6 | 59.7 | 19.7 | 100 |
| SW-TE | 23.3 | 50.5 | 26.2 | 100 |
| TE-SW | 22.9 | 52.4 | 24.8 | 100 |
| TE-TE | 23.8 | 54.0 | 22.3 | 100 |

*Note:* SW: standard full-time permanent employment; TE: full-time temporary contract. A worker is said to have upward mobility if he/she moved up at least one earnings quintile from year *t-1* to *t*; similarly downward mobility refers to a move to a lower quintile. Stay refers to workers who remained in the same earnings category. Temporary for Australia includes both casual and fixed-term work.

*Source:* British Household Panel Survey (BHPS, 1992-2009) for the United Kingdom, German Socio-Economic Panel (GSOEP, 1999-2012) for Germany, European Union Statistics on Income and Living Conditions (EU-SILC, 2004-2012) for other European countries, Household, Income and Labour Dynamics in Australia (HILDA, 2001-2012) for Australia, Korean Labor & Income Panel Study (KLIPS ,1999-2009) for Korea.

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On average, about one-third to one-half of full-time employees made a transition into another earnings category within one year (Table 4.4). A great majority of workers, however, remained in the same earnings quintile, regardless of changes in the type of contract. This is confirmed by evidence from Australia and several European countries that shows, in particular, strong state dependence among low-wage workers (Buddelmeyer et al., 2010; Cappellari and Jenkins, 2008; Mosthaf, 2011; Stewart, 2007, Uhlendorff, 2006). In general, upward earnings mobility is higher for those experiencing a change from temporary to permanent work (TE-SW). In Belgium, Estonia, France and Korea, for instance, about one in three workers who moved from TE to SW increased their earnings. Because of data limitations, it is not possible to distinguish whether or not a change of contract also involves a change of employer. It is therefore difficult to infer whether these upgrades in earnings reflect workers' gains in productivity, as people initially on temporary contracts who display high ability are later offered permanent positions at a firm, or whether this is due to a (more intensive) job search in the pursuit of a better career match. Similarly, switching from standard employment to a temporary contract (SW-TE) often results in earnings losses (especially in Estonia and Korea).

Although entering a standard job often leads to a wage rise, there are exceptions. In Hungary, Spain and the Slovak Republic, for instance, nearly one in two workers changed earnings category when moving from a temporary contact to standard employment; about one-half of them experienced upward mobility while the other half ended up with lower earnings.

Finally, in several countries (Austria, the Czech Republic and Korea) temporary workers who remained in the same contract type tended to be relatively mobile in earnings in both directions (upward and downward), suggesting greater earnings instability among such workers. A fall in earnings is more common in Estonia where more than 41% of persistent temporary workers experienced a fall in earnings, as shown by moving to a lower quintile.

### *Are non-standard jobs stepping stones?*

The analysis has shown that significant wage penalties are associated with temporary work, and in some countries with part-time jobs for men, compared with standard permanent employment, even when controlling for the observed and unobserved characteristics of workers. A related concern is whether this wage differential has a long-lasting impact on wages over the career, or whether temporary workers can catch up with their counterparts who started permanent jobs earlier. Spells of low-paid jobs may lead to depreciation in human capital, which may compromise the possibility to find better-paid jobs and thus generate persistence in low-paid employment. On the other hand, non-employment may lead to a larger loss of human capital and often has a scarring effect on subsequent employment; getting any job, even a low-paid, less stable job or one involving limited hours, is therefore often put forward as a way to improve future employment and wage prospects. In this view, non-standard jobs may offer unemployed individuals a transition to more stable jobs. This sub-section investigates whether such "stepping stone" effects exist in the short run.

Past findings on whether non-standard forms of employment improve or hinder labour market prospects vary across countries and the type of non-standard employment considered. Part of the literature suggests that *temporary jobs* are often stepping stones to permanent employment (e.g. Gagliarducci, 2005; Icchino et al., 2008). However, findings differ with respect to the type of temporary contract and other workers characteristics. For instance, in the United Kingdom, a large fraction of people on fixed-term contracts mainly move into permanent jobs while transition rates are much lower for workers on seasonal or casual jobs, especially for part-time workers (Booth et al., 2002). Weaker

labour market prospects for temporary and contingency workers have also been found in the United States (Autor and Houseman, 2005), Spain (Amuedo-Dorantes, 2000; Esteban-Pretel et al., 2009) and Japan (Yu, 2011).

### Box 4.3. Estimating the probability of labour market transitions

Because it is difficult to differentiate the effects of holding a given job (i.e. whether holding a non-standard job leads to human capital depreciation) from the characteristics and motivations that lead individuals to choose such jobs (i.e. whether individuals choose non-standard jobs), it is challenging empirically to test the "stepping-stone" hypothesis.

Testing the "stepping stone" hypothesis requires that the causal effect of holding a non-standard job (state dependency*) be isolated from the impact of confounding factors, such as differences in educational levels and motivations between standard and non-standard workers (unobserved heterogeneity). The analysis in this sub-section is performed for 17 OECD countries.

To analyse transitions between different states and address the issue of state dependence, a dynamic probit model is used. This model estimates the conditional probability of being in standard work at *t,* conditional on previous employment status ($L_{it-1}$) and demographic characteristics ($X_{it}$), while also controlling for unobservable individual heterogeneity ($\delta_i$). The general form is:

$$\Pr(L_{it} = 1 \mid L_{it-1}, X_{it}, \delta_i) = \Phi(L'_{it-1}\phi + X'_{it}\beta + \delta_i). \quad (1)$$

In estimating the dynamic model, the problem of initial conditions needs to be taken into account: an individual's labour market status at the start of the panel is not randomly distributed and will be influenced by unobservable individual heterogeneity ($\delta_i$). Failing to take into account the initial condition problem will lead to overstating the level of state dependence. Indeed, controlling for initial labour market status, demographic characteristics and household income leads to large drops in the coefficients of the lagged labour market status. This indicates that not controlling for initial conditions would seriously bias the estimates. Following Wooldridge (2002), the distribution of the individual effects is parameterised as a linear function of the initial employment status at the first wave of the panel and of the time means of the regressors, assuming that this has a conditional normal distribution:

$$\delta_i = c_0 + L'_{i0}\rho + \bar{X}'_i \upsilon + \xi_i. \quad (2)$$

Substituting (2) into (1) yields:

$$\Pr(L_{it} = 1 \mid L_{it-1}, X_{it}, \delta_i) = \Phi(L'_{it-1}\phi + X'_{it}\beta + c_0 + L'_{i0}\rho + \bar{X}'_i \upsilon + \xi_i). \quad (3)$$

For the probability of being in standard work, past labour market status includes dummies for lagged standard work, lagged NSW (temporary, part-time and self-employed) and lagged inactivity. The coefficients for NSW at time *t-1* should be interpreted as the difference in the likelihood of being in standard work at wave *t* as compared with being unemployed at *t-1*. In addition to the previous labour market state, the estimation controls for individual characteristics (X) and for initial conditions ($L'_{i0}$ and $\bar{X}$). The former include age, education, marital status, an indicator for self-reported health, household incomes and geographic location (as well as year effects).

Alternatively, a single equation can be estimated (a dynamics multinomial logit) to capture *all* labour market transitions simultaneously (e.g. Buddelmeyer and Wooden, 2011). This would allow individual heterogeneity ($\delta_i$) to be correlated across the different labour market choices. For the sake of simplicity, this study assumes independent choices in labour market status and estimates equation (3) in a univariate framework. That is, the probability of transition into standard work and transition into non-employment is estimated by two separate probit models.

* State dependency arises when individuals who have experienced an event in the past are more likely to experience the event in the future than are individuals with identical characteristics who have not experienced the event (Heckman, 1981).

The analysis undertaken for 17 OECD countries supports the stepping-stone hypothesis in most cases, at least in the short-run – but only for some types of non-standard jobs, in particular *temporary jobs*. The estimations presented in Figure 4.11 capture the marginal effects of the labour market and job status in the previous year on the probability of having a standard job. The reference group is that of the unemployed, i.e. the numbers for standard work, temporary, part-time, self-employed and inactive should be interpreted as how much more or less likely such individuals are to move to a standard job in the next year compared with unemployed people with similar characteristics.

In most countries, full-time temporary workers have a higher probability of entering into standard employment than the unemployed. In Belgium, for instance, the likelihood of having a standard job in the current period for men is 32 percentage points. The stepping-stone effect for temporary jobs is also noticeable in the Czech Republic, Germany, Portugal and the United Kingdom and in the Slovak Republic for women. France is an exception where female workers on temporary jobs have the same likelihood as the unemployed to obtain a standard job, and in the case of men are slightly less likely. Korea also stands out since both men and women in temporary employment have lower probabilities of moving into standard employment than the unemployed.[14] Other research for OECD countries shows however that transition rates remain low when considering a longer time span and that inequalities are likely to persist: less than 50% of workers who were on temporary contracts in a given year were employed with full-time permanent contracts three years later (OECD, 2014). In many countries, prime age and older workers in temporary jobs have a better chance of using such jobs as "stepping stones" than younger workers (Chen et al., 2015).

On the other hand, having a *part-time job or self-employed work* does not necessarily improve the chances of getting a permanent full-time job compared to being unemployed. An observable increased probability for part-timers compared with the unemployed is found only in about one-third of the countries studied, noticeably for men in Belgium and Spain, and for women in Hungary. In several countries part-time work reduces the likelihood of finding a standard job compared to being unemployed: in Australia, Korea and Luxembourg for both men and women (in Germany and the Slovak Republic for men, and in the United Kingdom for women). This confirms the findings from other studies showing that part-time jobs are used as stepping stones in very few cases and that retention in part-time employment is high: about two-thirds of part-timers stay in part-time employment for more than one year (OECD, 2010).

With regard to another dimension of job quality,[15] job security, non-standard workers are also worse off than full-time permanent employees. Job security, proxied by the probability of job loss within the next six months, is markedly different across types of jobs: non-standard workers are more than twice as likely as standard workers to lose their job within six months (Chen et al., 2015). Previous temporary employment increases the likelihood of unemployment in almost every country, especially for men, compared with being in standard work (Annex 4.A3, Figure 4.A3.1). On the other hand, part-time work or self-employment increases the risk of dropping out of the labour market. Indeed, working part-time is associated with a higher risk of inactivity compared with standard workers in about three-quarters of countries, on average by a margin of 4.5 percentage points. Moreover, in some countries, both temporary workers and part-timers face a double income and security penalty that can increase their risk of poverty: not only do their contracts tend to be more precarious, but they also have less coverage by unemployment insurance systems, since shorter periods of work (and shorter working hours for part-timers) make them less likely to meet the eligibility conditions for these insurance schemes (OECD, 2010; OECD, 2014).

**Figure 4.11. Influence of previous labour market status on the probability of having a standard employment**

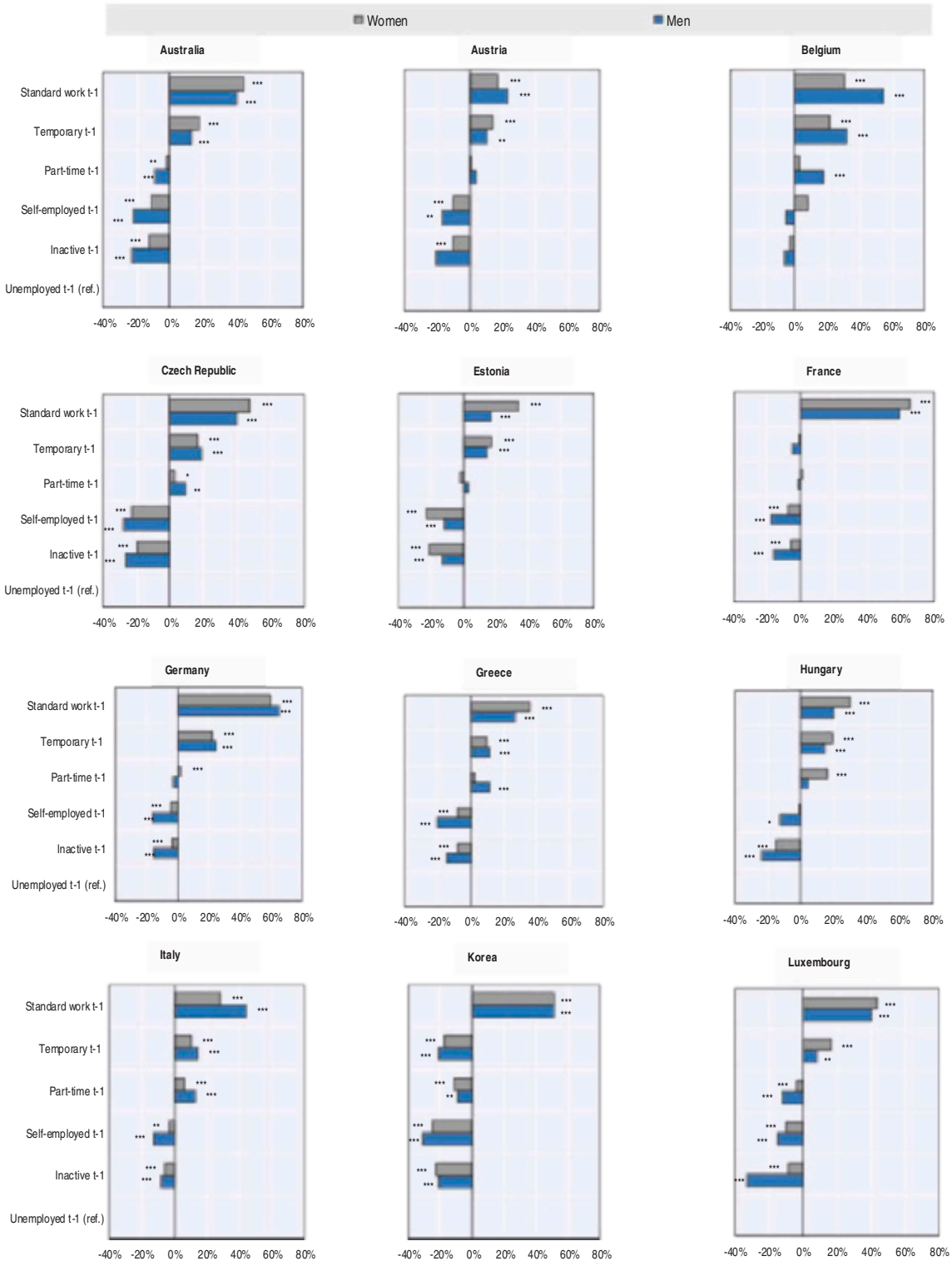
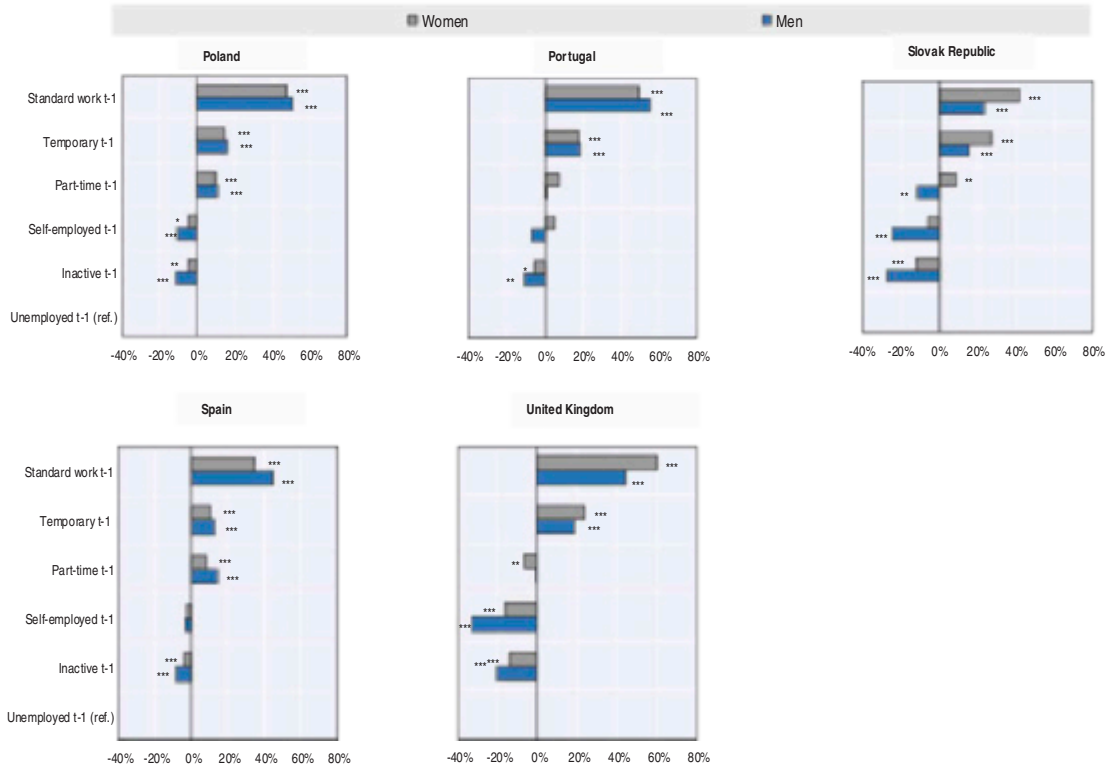


**Figure 4.11. Influence of previous labour market status on the probability of having a standard employment** *(cont.)*




*Note*:

Marginal effects from lagged employment status on the probability of standard employment based on a random-effects dynamic probit, controlling for initial conditions. ***, **, * denote significance at the 1%, 5%, 10% levels, respectively.

Samples include persons present in at least three consecutive waves and aged 15-64, and excluding retired individuals. Temporary for Australia includes both casual and fixed-term work.

All regressions include regional dummies, year dummies, age groups, a dummy for the presence of children, a dummy for whether the individual suffers from a health problem, a dummy for whether the individual is married, dummies for low-skilled and high-skilled (corresponding to ISCED 0-2 and ISCED 5-6) and equivalised household net income. To control for initial conditions, initial labour market status dummies are included as well as averages for time-varying regressors based on Wooldridge (2002). To test whether including additional controls alter the transition probabilities, separate regressions were estimated for countries for which additional variables are available (e.g. including job tenure, total time in employment since full-time education and its square, and shares of the foreign-born for Australia; an indicator of ethnicity for the United Kingdom; and an indicator of foreign-born and work experience for Germany). The results are very similar to the baseline specifications.

*Source:* British Household Panel Survey (BHPS, 2004-2009) for the United Kingdom, German Socio-Economic Panel (GSOEP, 2004-2012) for Germany, European Union Statistics on Income and Living Conditions (EU-SILC, 2004-2012) for other European countries, Household, Income and Labour Dynamics in Australia (HILDA, 2004-2012) for Australia, Korean Labor & Income Panel Study (KLIPS, 2004-2009) for Korea.

StatLink http://dx.doi.org/10.1787/888933208120

In terms of the work environment, differences between standard and non-standard workers depend largely on the type of contract, except with respect to training, which tends to be lower for all non-standard workers. Full-time temporary and part-time workers are 20% and 40% less likely respectively to receive training, while training for part-time permanent workers is marginally lower than for standard workers (Chen et al., 2015). From the perspective of financial efficiency, if jobs are temporary or workers are loosely attached to the labour market, it can be inefficient for workers to invest in specific human capital or for firms to provide firm-specific training. Across European countries, temporary workers in 40% of the countries report a slightly higher incidence of working on tight deadlines (Chen et al., 2015). Temporary workers report a higher incidence of job strain, which tends to be driven both by higher job demands and lower job resources: they report higher exposure to both physical health risk factors at work and workplace intimidation, while enjoying less autonomy, fewer learning opportunities and less support from their colleagues (OECD, 2014). However, the incidence of job strain tends to be lower among part-time contracts as they have lower job demands.

### *How does non-standard work affect the overall distribution of earnings?*

The previous sub-sections have discussed the wage penalty for non-standard workers at the median, but the evidence of job polarisation has shown that NSW appears to have increased both at the bottom and at the top of the job distribution. This section looks at the earnings gap across the distribution to ascertain whether wage differentials exist and are similar at different parts of the distribution and then make the link with wage inequality. The following analysis investigates whether an increase in non-standard work implies an increase in workers in the lowest earnings segments, thereby making earnings more unequal.

The impact of NSW on the overall wage distribution is likely to depend on the concentration of non-standard workers in particular parts of the wage distribution. Figure 4.12, Panel A confirms that non-standard workers (excluding the self-employed) are more likely to be found in the lower part of the earnings distribution, particularly in the lowest three deciles.[16] More than half of employees in the lowest decile of earnings are non-standard workers, and this figure reaches more than two-thirds in Germany and Canada. In contrast, the share of NSW is below 15% in the top decile. The presence of non-standard workers at the top of the distribution is particularly low in Hungary (5%), Spain and Korea (8-9%).

In almost all countries, there is an earnings gap between standard and non-standard workers that is significantly larger at the bottom of the wage profile: the so-called sticky-floor effect. Using the unconditional quantile regression models (see Box 4.4), Figure 4.12, Panel B shows how the wage penalty associated with a marginal increase in NSW varies for the different points of the wage distribution. On average, a rise in the share of NSW leads to lower log hourly wages of around 18% to 24% for the lowest 40% of the distribution. The earnings gap for non-standard workers decreases for each decile between the middle of the distribution and the top, virtually disappearing for the top 10%. The shape and magnitude of the gap are in line with previous work on temporary contracts (Bosio, 2014; Mertens et al., 2007; Santangelo, 2011). As a result, an increase in the share of NSW should contribute to widening overall wage inequality, since it increases inequality at the bottom end of the distribution and has a neutral effect on wage inequality at the top end.

**Box 4.4. Assessing the impact of non-standard work along the earnings distribution**

For investigating the impact of non-standard work on different deciles of the earnings distribution, and the resultant impact on inequality, a methodology using unconditional quantile regressions (UQR) is used, which was introduced by Firpo et al. (2007) and further developed in Fortin et al. (2010).

This method is based on regressions in which the dependent variable is a transformation, the Recentered Influence Function (RIF) of the outcome variable, i.e. the unconditional quantile. Each quantile of earnings is regressed against NSW, age (and its square), gender, education, industry and occupation, as well as regional controls.

While conditional quantile regression allows the estimated return to a given characteristic to vary according to the conditional quantile of an individual, which can be thought of as the individual's position in a virtual distribution in which everybody else has the same observed characteristics, unconditional quantile regressions allow estimating the impact of a small locational shift in the distribution of a variable of interest on the entire (unconditional) distribution of the dependent variable.

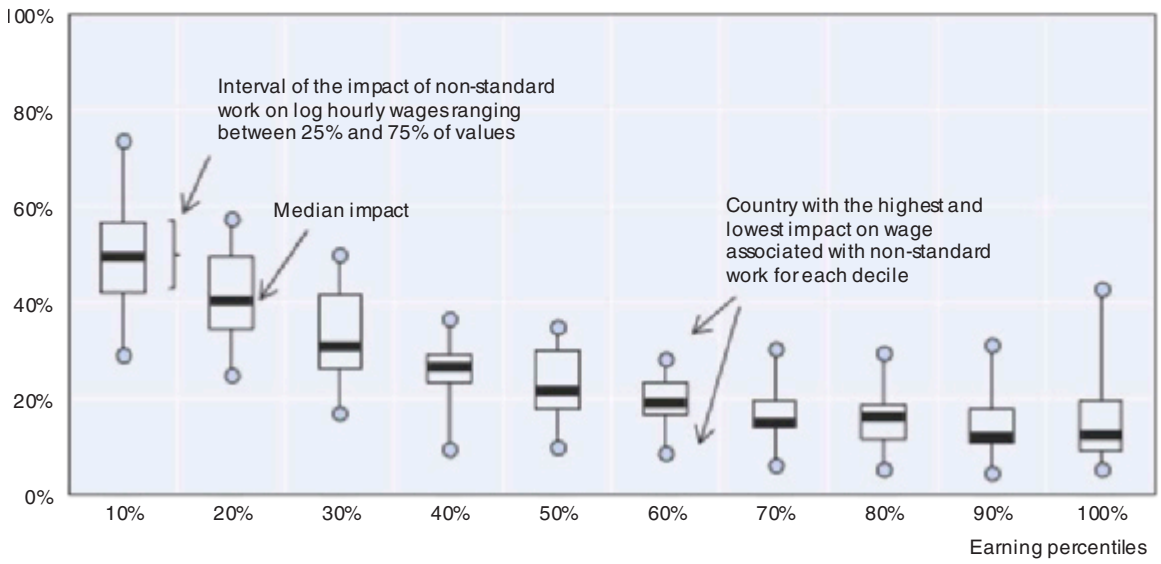
The coefficient on the dummy of NSW from an unconditional quantile regression (UQR) gives an estimation of the impact of NSW on inequality by showing whether the effect of NSW on wages is different at different points of the distribution. One caveat of the UQR, however, is that it does not allow for a control of endogeneity in the selection into NSW.

Although there is a higher earnings gap for NSW at the bottom, different country profiles emerge (see Annex 4.A3, Figure 4.A3.2). In one set of countries including Australia, Greece and Luxembourg, NSW results in lower wages below the middle of the distribution, and this wage penalty disappears in the upper deciles, turning into a wage premium in the top decile. In other countries, including Germany, Hungary, Italy and Spain, NSW tends to decrease wages in almost all deciles of the distribution, but the difference decreases monotonically with the upper deciles. In Canada, Ireland and the United Kingdom, the earnings gap is more pronounced in the bottom 20% to 40% of the distribution rather than the bottom 10%. Portugal is an exception in that the wage penalty is fairly small at the bottom of the distribution and more substantial in the upper middle part.

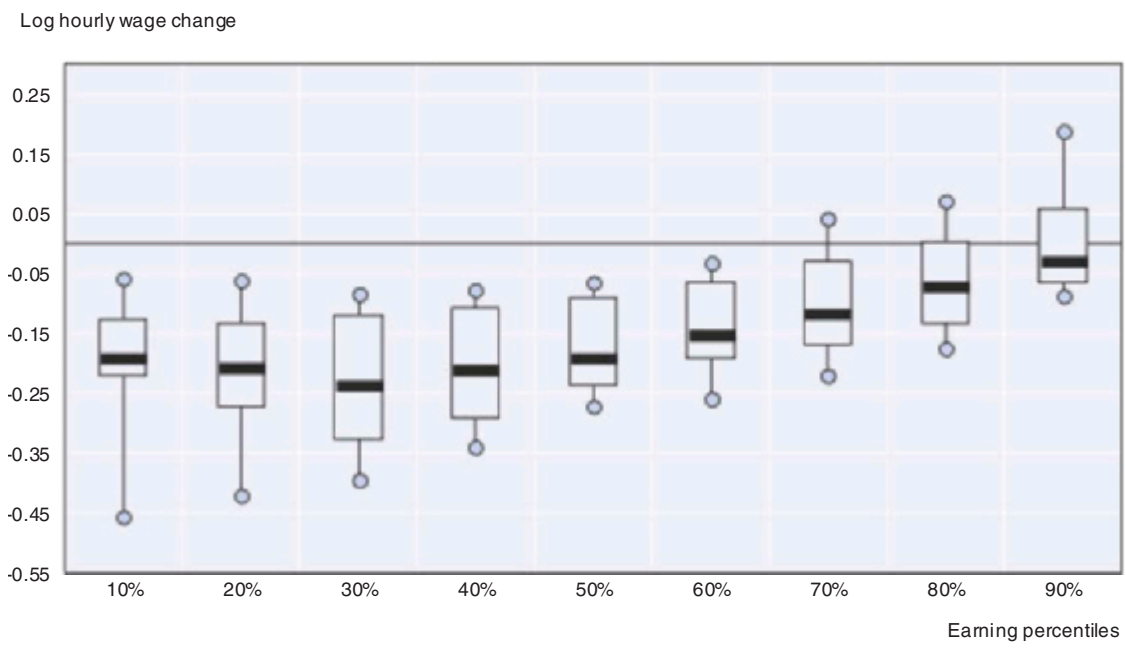
In general, the earnings gap is more marked in Germany, with NSW lowering log hourly wages by more than 40% in the lowest decile. On the other hand, in Australia the earnings gap at the bottom of the distribution is smaller, while there is a significant wage premium of 20% to NSW at the top.

**Figure 4.12. Non-standard work and earnings by decile of hourly wages, OECD-14 average**

Panel A. Share of non-standard work in earnings deciles




Panel B. Effect of non-standard work on wages by decile




*Note:* The box for each quantile represents the interval of the impact of non-standard work on log hourly wages ranging between 25% and 75% of values, with the black line representing the median impact. The circles represent the country with the highest and lowest impact on wage associated with NSW for each decile. OECD-14 refer to Australia, Austria, Canada, Germany, Greece, Hungary, Ireland, Italy, Korea, Luxembourg, Poland, Portugal, Spain, United Kingdom.

*Source:* European Union Statistics on Income and Living Conditions (EU-SILC, 2012), Household, Income and Labour Dynamics in Australia (HILDA, 2012), Korean Labor & Income Panel Study (KLIPS, 2009), Canada Labour Force Survey (LFS, 2013).

StatLink http://dx.doi.org/10.1787/888933208137

## 4.5. The impact of non-standard work on household income and poverty

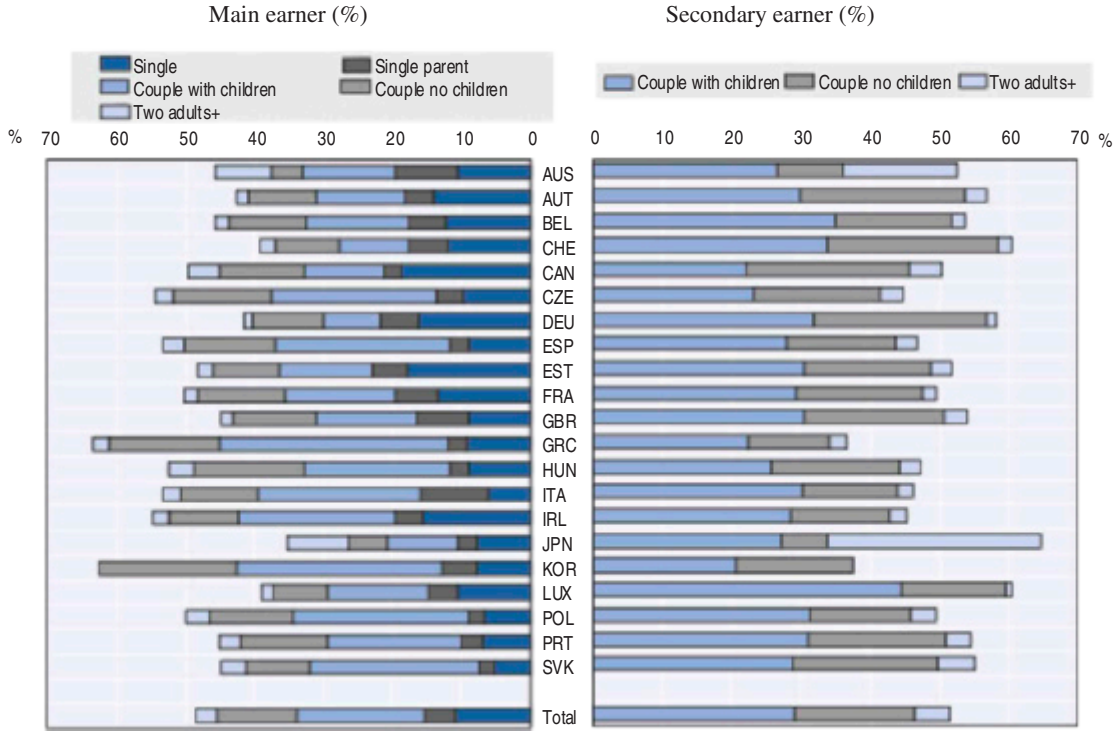
This section investigates how non-standard work contributes to *household* earnings and income inequality. This aspect has remained unexplored in the literature. Previous work has attempted to make a link between the polarisation of jobs and earnings by arguing that part of rising household earnings inequality is related to the polarisation between jobless and job-rich households (see Gregg and Wadsworth, 1996). However, this approach fails to account for the large part of inequality that is explained by inequality *within* working households. Part-time workers and temporary workers tend to have lower hourly wages and/or annual earnings (see Section 4.4 above), while the earnings of self-employed individuals are more dispersed, both at the top and at the bottom of the distribution. In addition, household earnings and income are also influenced by working hours and months worked during the years for the different workers in the household. How this translates into household earnings depends on the household composition of workers. Are non-standard workers the main or even the only earners, or are they typically the "secondary" earners within a household? If temporary or part-time workers earn less but supplement the earnings of a main earner with a standard job, an increased share of them will lead to higher household earnings in households where previously there was only one earner and smooth the overall distribution. On the other hand, if non-standard workers are concentrated mainly in households where all earners are in non-standard jobs, the impact may be different and can increase inequality.

### *Are low-wage non-standard workers in low-income households?*

Do non-standard workers change their relative distributional position when total household incomes, rather than individual earnings, are considered? In particular, what proportion of non-standard workers in the bottom part of the individual earnings distribution remain in the bottom when all other income sources are pooled within the households?

While the share of non-standard workers is sizeable in many countries, their contribution to household earnings can be very different. The extent to which non-standard workers are main or secondary earners in a household with multiple workers has distributional implications. Figure 4.13 presents the share of non-standard workers as the main or secondary income earner, with a breakdown by household type (number of adults and children).[17] On average across the countries, just under 50% of all non-standard workers are the main earners (right panel). The shares are higher for Korea and Greece (over 62%), but lower for Japan, Luxembourg and Switzerland (35%, 38% and 39%). It is striking that almost half of these workers (47%) have dependent children. Given that some non-standard workers, in particular temporary contract workers, tend to earn less and suffer greater earnings instability than standard workers, individuals living with such non-standard/main earners are at a greater risk of falling into the bottom part of the earnings distribution.

**Figure 4.13. Share of non-standard workers as the main/secondary income earner in a household**




*Note:* "Children" refers to persons aged 17 or less or young adults (18-24) who were economically inactive and living with at least one parent. Data for Japan refer to respondent and spouses aged 20-64 and there is no information on earnings for other household members.

*Source:* European Union Statistics on Income and Living Conditions (EU-SILC, 2012), Household, Income and Labour Dynamics in Australia (HILDA, 2012), Korean Labor & Income Panel Study (KLIPS, 2009), Survey of Labour and Income Dynamics (SLID, 2010) for Canada, Japan Household Panel Survey (JHPS, 2012).

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In addition to the earnings of other household members, non-labour incomes, including social transfers, need to be considered. Pooling data over 15 EU countries, Table 4.5 shows in the first column that about 45% of non-standard workers are in the bottom quintile of individual earnings. The rest of the table presents a matrix showing the relative distributional positions of non-standard workers within the household context. The columns refer to quintiles of individual earnings (among workers), and the rows correspond to quintiles of household equivalised income (for the whole working-age population). More than one-third of non-standard workers who were in the bottom quintile of individual earnings remained in the bottom quintile when household equivalised income was considered; another 24% moved to the following quintile, 20% to the middle, and the remaining 22% advanced to the top two quintiles. Strong movements are also found for non-standard workers in other earnings quintiles, as two-thirds to three-quarters of them are positioned in different quintiles in terms of the household equivalised income. The exceptions are the richest non-standard workers, those in the top quintile of the earnings distribution: 90% of them remain in the top two quintiles of the household income distribution.[18]

**Table 4.5. Distributional position of non-standard workers in quintiles of household equivalent income, by quintile of individual earnings, pooled 15 EU countries, 2012**

| | | Quintiles of household equivalent income | | | | | |
|---|---|---|---|---|---|---|---|
| Quintiles of individual earnings | Share of non-standard workers | 1 | 2 | 3 | 4 | 5 | Total |
| 1 | 45.4 | 34.2 | 24.2 | 19.6 | 14.3 | 7.8 | 100 |
| 2 | 24.8 | 17.3 | 22.2 | 24.6 | 22.9 | 13.1 | 100 |
| 3 | 12.9 | 7.9 | 17.8 | 26.3 | 28.4 | 19.6 | 100 |
| 4 | 8.8 | 2.7 | 10.4 | 19.7 | 32.9 | 34.4 | 100 |
| 5 | 8.1 | 0.6 | 2.9 | 8.2 | 19.4 | 68.9 | 100 |
| Total | 100.0 | 21.1 | 19.9 | 20.8 | 20.3 | 19.7 | 100 |

*Note:* Quintiles of individual earnings are defined based on all workers, while quintiles of household equivalent income are defined based on the whole working-age population.

*Source:* European Union Statistics on Income and Living Conditions (EU-SILC, 2012).

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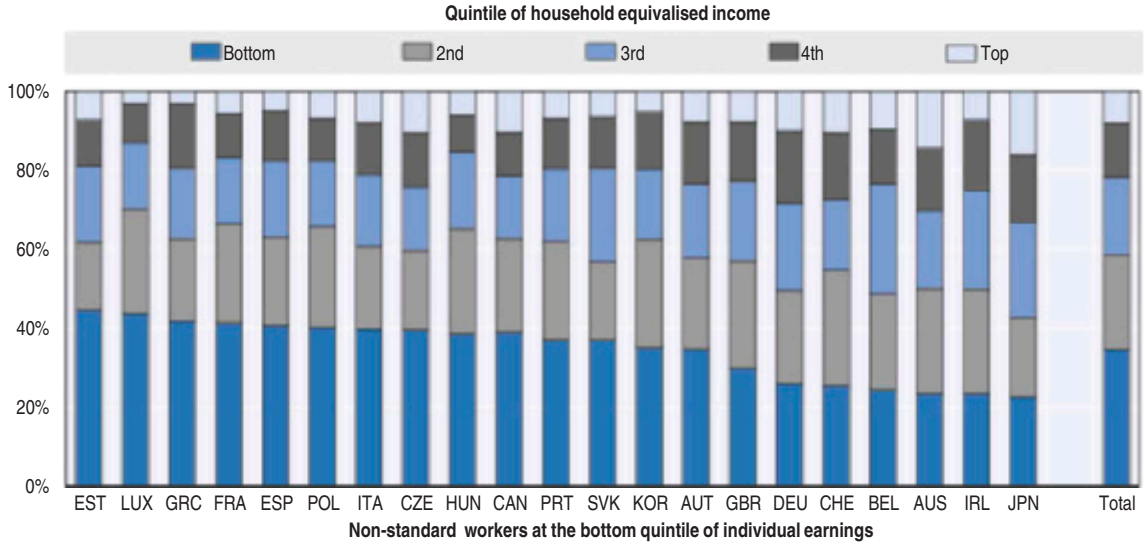
These average patterns, however, differ markedly by household type: low-earning non-standard workers are more likely to remain at the bottom of the income distribution if they live with another non-standard worker rather than with a standard worker. To illustrate this, Figure 4.14 presents a graphical form of Table 4.5 for two-earner households with a breakdown by two employment types: households with two non-standard workers, and mixed households with a standard and a non-standard worker. It comes as no surprise that non-standard workers who live in a household with other non-standard workers tend to remain in the same position, especially those in the bottom earnings quintile: about 42% of them remain in the bottom quintile of household equivalised income (first bar in Figure 4.14). The comparable figure is much lower (12%) for those living with a standard worker (i.e. mixed households) (second bar in Figure 4.14). Similar patterns are also found for non-standard workers in other low-earnings quintiles, that is, the chances of remaining in the second/third quintile (or falling below) are higher for those in NSW households than those in mixed households. This suggests that the income inequality impact of non-standard employment, if any, happens mainly through the increase in NSW households, not through the growth in mixed households.

Figure 4.14 (Panel B) presents the results by country, including the European countries from Table 4.5 as well as Australia, Canada and Korea. Non-standard workers in the lowest earnings quintile seem to fare better in the household income distribution in Japan, Ireland and Australia, where slightly under one-quarter of these workers remain at the bottom quintile when all income sources from other household members were pooled. Interestingly, low-earnings, non-standard workers in those three countries seem to get more financial support from their household members or have received noticeable non-labour incomes, as about half of non-standard workers in the bottom earnings quintile in these countries found themselves in the upper three quintiles of the household income. On the other hand, low-earnings, non-standard workers in Estonia, Luxembourg and Greece face a higher risk of low income, as more than 40% of them remain in the lowest quintile of household income.

**Figure 4.14. Distributional position of non-standard workers in household income quintiles, by quintile of individual earnings, 2012**

Panel A. For two-earner non-standard workers and mixed standard and non-standard worker households, pooled 15 EU-SILC countries

Panel B. By country




*Note:* Quintiles of individual earnings are defined based on all workers, while quintiles of household equivalent income are defined based on the whole working-age population. "NSW only households" are households with only non-standard workers; "Mixed households" are households with both standard and non-standard workers. Data for Japan refer to respondent and spouses aged 20-64 and there is no information on earnings for other household members.

*Source:* European Union Statistics on Income and Living Conditions (EU-SILC, 2012), Household, Income and Labour Dynamics in Australia (HILDA, 2012), Korean Labor & Income Panel Study (KLIPS, 2009), Survey of Labour and Income Dynamics (SLID, 2010) for Canada, Japan Household Panel Survey (JHPS, 2012).

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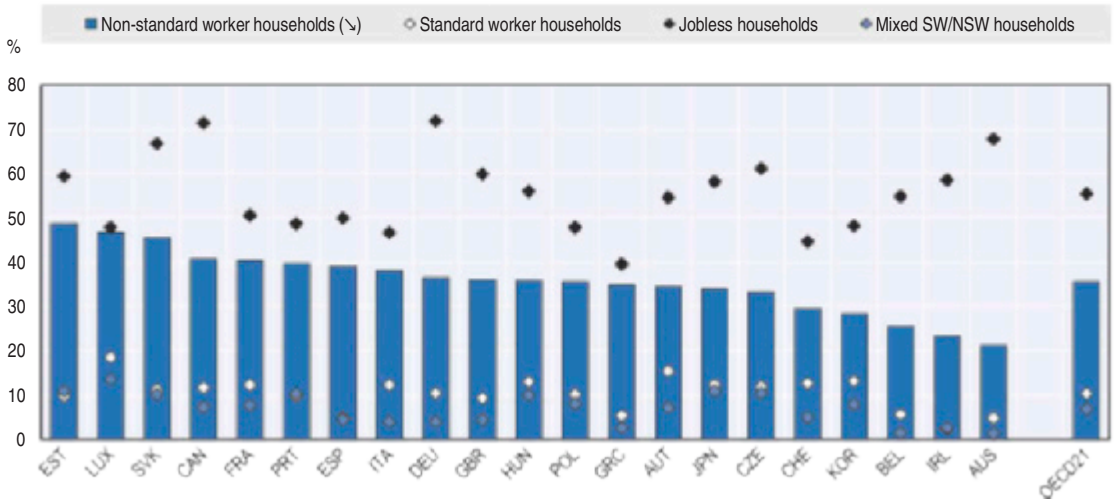
In spite of changes in the distributional position, households with NSW arrangements are still more likely to be found at the lower end of the household income distribution than other working households. Figure 4.15 reports that on average 36% of NSW households are situated in the bottom income quintile of household equivalised income. While this share is lower than that of jobless households (54%), it represents more than three times the share of households with only standard workers. The risk of being in the bottom quintile for NSW households is highest in Estonia, Luxembourg and the Slovak Republic where over 45% of NSW households fall into the lower part of the income distribution. Working poverty (which will be discussed below) is a concern when having a working household member (in a non-standard job) does not improve the position in the income distribution. It is remarkable that in Greece and Luxembourg the share of NSW households falling into the bottom quintile is very close to that of jobless households.

**Figure 4.15. Household employment patterns and household equivalised income, 2012 or most recent year**

Percentage of households in the bottom quintile of the household equivalised income distribution, by household and employment pattern




*Note:* "Standard worker households" refers to households where all adult members (16-64) are in standard work or to households with the presence of both standard worker(s) and jobless adult member(s). Similarly, "Non-standard worker households" refers to households where either all adult members are in non-standard work or there are only non-standard workers and non-working adult members. "Mixed SW/NSW households" refers to households with both standard and non-standard workers. Jobless households refer to households without any worker during the year. Household incomes are equivalised by family size. The cut-offs of income quintiles are calculated based on the entire population. Data for Japan refer to respondent and spouses aged 20-64 and there is no information on earnings for other household members.

*Source:* European Union Statistics on Income and Living Conditions (EU-SILC, 2012), Household, Income and Labour Dynamics in Australia (HILDA, 2012), Korean Labor & Income Panel Study (KLIPS, 2009), Survey of Labour and Income Dynamics (SLID, 2010) for Canada, Japan Household Panel Survey (JHPS, 2012).

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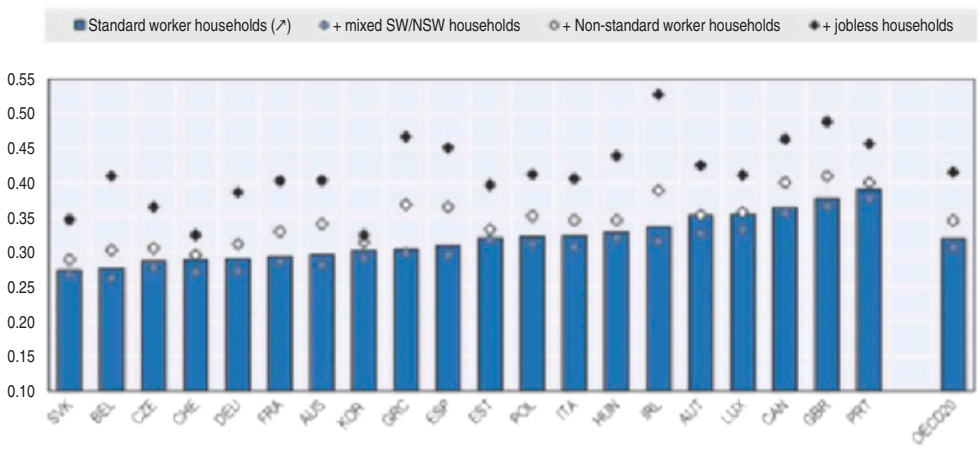
On the other hand, mixed households with both standard and non-standard workers are better placed in the income distribution. On average their risk of falling into the bottom of the income distribution is very similar to that of standard worker households: only about 7% of mixed households are found in the lowest income quintile. There are, however, some country differences, with the shares ranging from below 2% in Australia to around 15% in Luxembourg. Mixed SW/NSW households fare slightly better in the distributional position than SW households in all countries with the exception of Portugal.

### *How does non-standard work affect household earnings and income inequality?*

Do NSW arrangements widen the distribution of household earnings? Since almost half of all non-standard workers fall in the lowest earnings, a larger (and in many countries growing) share of non-standard workers may increase overall household earnings inequality. On the other hand, nearly half of non-standard workers live in a household with a standard worker, and these are less likely to be at the lower end of the distribution.

The analysis below presents earnings inequality by successively introducing households with different employment patterns in the calculation of inequality measured by the Gini coefficient of equivalised household earnings[19] (Figure 4.16). The first bar shows the level of earnings inequality among households that comprise only standard workers (including those living with non-workers). The second and third bars then show the level of inequality by successively adding households with mixed standard/non-standard workers and households with only non-standard workers, respectively. Finally, the triangle represents the estimates of household earnings inequality with the inclusion of households where no-one works.

**Figure 4.16. Gini coefficient of equivalised household earnings for households with different employment patterns, 2012 or most recent year**




*Note:* The Gini coefficient takes values between 0 for a perfectly equal income distribution where every person has the same income, and 1 which refers to a situation of maximum inequality where all income goes to one person. "Standard worker households" refers to households where all adult members (16-64) are in standard work or to households with the presence of both standard worker(s) and jobless adult member(s). Similarly, "Non-standard worker households" refers to households where either all adult members are in non-standard work or there are only non-standard workers and non-working adult members. "Mixed SW/NSW households" refers to households with both standard and non-standard workers. Jobless households refer to households without any worker during the year.

*Source*: European Union Statistics on Income and Living Conditions (EU-SILC, 2012), Household, Income and Labour Dynamics in Australia (HILDA, 2012), Korean Labor & Income Panel Study (KLIPS, 2009), Survey of Labour and Income Dynamics (SLID, 2010).

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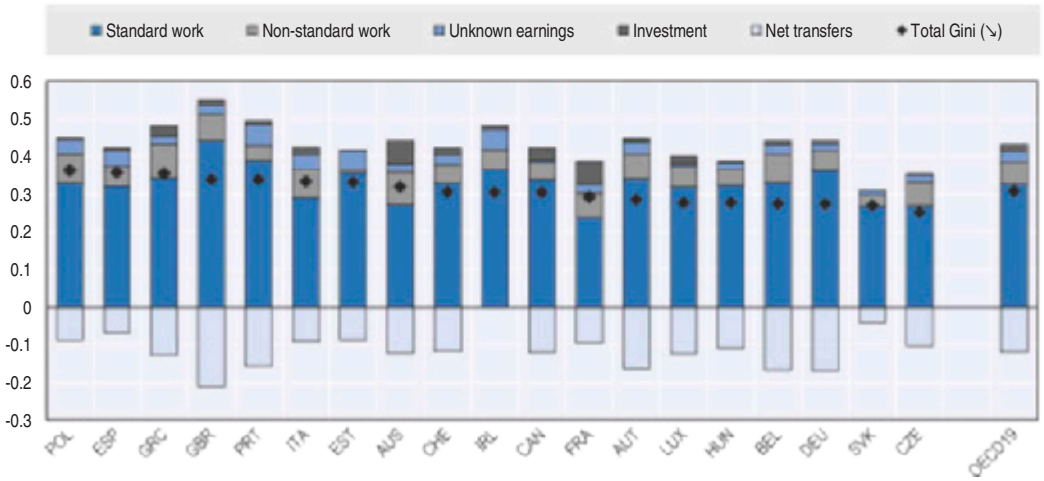
Figure 4.16 reveals that including earnings from households with non-standard workers has two opposing effects. On the one hand, when mixed SW/NSW households were added, household earnings inequality declines by one percentage point, from 0.32 to 0.31 on average (more than two points in Austria and Luxembourg), compared with inequality among households with only standard workers. The lower level of inequality for mixed worker households may be related to the fact that such households have at least

two workers, while standard work households include both single-earner households (households with SW and jobless members) and multiple earners in standard work. On the other hand, when households with only non-standard workers were added, inequality increases significantly across the board, by about four percentage points, to a Gini coefficient of 0.35, on average. The dis-equalising effect of non-standard work at the household level is particularly pronounced in Ireland, Greece and Spain, where adding households with non-standard workers increases household earnings inequality by 7-8 percentage points. Finally, inequality increases more markedly when jobless households are included (average Gini coefficient of 0.41). The largest increases (more than 10 points in Gini) were found in Belgium and Ireland.

The extent to which non-standard employment affects the distribution of household income depends not only on the earnings level but also on the non-labour incomes received in these households. Inequality would widen if households with NSW arrangements also received less income from other sources, including social transfers, compared to standard employment households. This, however, does not seem to be the case, as NSW households receive a considerable share of their income in the form of transfers (see Annex 4.A3, Table 4.A3.1), which in general have an equalising effect on the income distribution (OECD, 2011, Chapters 6 and 7). To identify the impact of non-standard employment on household income inequality, a decomposition is performed by income sources (Figure 4.17), breaking down household incomes into four main sources (i.e. earnings, capital, public transfers and taxes).[20]

**Figure 4.17. Breakdown of household equivalent income inequality (Gini) by income source, 2012**




*Note:* Non-standard work sources refer to earnings from full-time temporary contracts, part-time jobs as well as self-employment. Unknown earnings are labour incomes for which the source (i.e. from SW or NSW work) cannot be identified. Benefits include all transfers from government. All income sources are equivalised by family size. The sample refers to working-age households. Note that for France, Hungary and the United Kingdom there are some differences between the current results and the Gini coefficients reported in the *OECD Income Distribution Database*, for which information is collected through questionnaires.

*Source:* European Union Statistics on Income and Living Conditions (EU-SILC, 2012), Household, Income and Labour Dynamics in Australia (HILDA, 2012), Survey of Labour and Income Dynamics (SLID, 2010).

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On average across countries, earnings from non-standard work contributed about 20% to cross-sectional household income inequality. The contribution is higher for Australia and Belgium, reaching close to 30%, possibly due to their relatively higher share of

NSW earnings in income (28% and 26%, respectively) and the high correlation of NSW earnings with overall income. Earnings from non-standard work tend to be more dispersed than earnings from standard jobs, as non-standard jobs are more heterogenous (Annex 4.A3, Table 4.A3.2): the factor dispersion (in terms of Gini coefficient) for NSW earnings is about 0.8, compared with 0.55 for SW earnings. In addition to being more unequally distributed, earnings from NSW are more concentrated in the households at the lower part of the income distribution, as the factor correlation between NSW earnings and total household income is low (on average about 0.33).

### *Non-standard work and poverty*

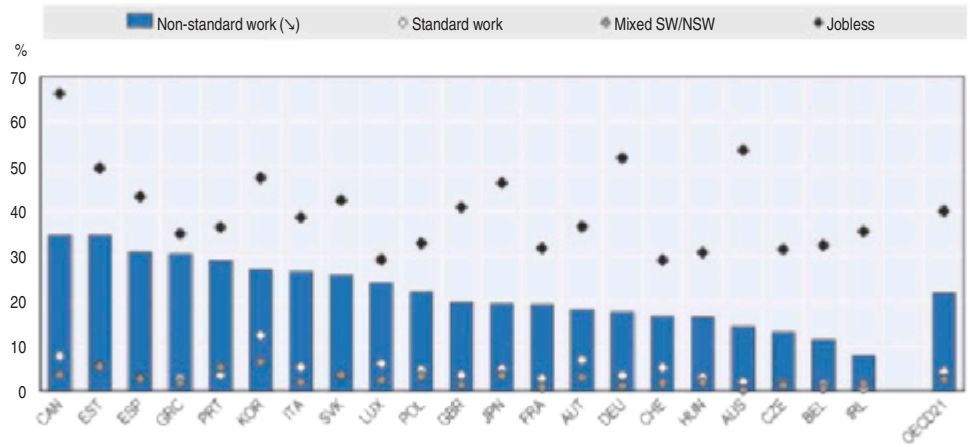
Non-standard employment may have a strong impact on poverty, as many NSW households are situated in the lower part of the income distribution. Previous OECD work has shown that access to a job is a major factor limiting the risk of poverty, but being employed *per se* is often not sufficient to escape poverty. While the poverty rate among jobless households is more than double the rate observed among working households, there are also significant in-work poverty risks in many countries. Indeed, 7% of individuals living in households with at least one worker are poor in the OECD, and the working poor comprise more than 60% of all the poor individuals of working age (OECD, 2008a).

Are non-standard workers and their households at higher risk of poverty than standard workers? To address this issue, a conventional poverty threshold is used with 50% of the median equivalised household disposable income.[21] The analysis presents the proportion of *households* falling below the poverty line, for various household work types (Figure 4.18). This first confirms the importance of employment for protecting against poverty and second highlights the role of employment types. When averaged over the OECD countries for which data are available, jobless households have the highest poverty rate, at slightly over 40%, with over 50% in Germany and Australia, and 60% in Canada. At the same time, households with only non-standard workers also face a high risk of poverty, at around 22% on average across countries, while mixed households with both standard and non-standard workers have lower poverty rates (2-4%). This means that the risk of poverty depends on the combination of the type of employment with household composition, i.e. whether non-standard workers live with other non-standard workers (or jobless household members), or with standard workers. NSW poverty rates range from close to or above 30% in Canada, Greece, Portugal, Estonia and Spain to 12% or below in Belgium and Ireland.[22]

One of the striking findings of Figure 4.18 is that in some countries (e.g. Greece, Luxembourg) the poverty rate for NSW households (based on their net income) is very similar to that for jobless households. A possible reason for this is that NSW households on average pay more taxes or have less access to benefits than their jobless counterparts (see Annex 4.A3, Table 4.A3.1). In other words, low-paid NSW households have high net effective tax rates. This may create a disincentive to work, especially when non-standard jobs are the only options to find work.

Working-poor households account for around half of all poor households of working age (Figure 4.19), with most of them in NSW households. Indeed, among the working-poor households, about 60% are concentrated in households with non-standard employment. NSW households represent an important fraction of the working poor particularly in Australia, Ireland and the southern European countries (except Portugal).

**Figure 4.18. Poverty rates of households for various household employment patterns, 2012 or most recent year**




*Note:* The poverty line is calculated based on half of the median equivalised household income calculated for the entire population. "Standard work" refers to households where all adult members (16-64) are in standard work or to households with the presence of both standard worker(s) and jobless adult member(s). Similarly, "Non-standard work" refers to households where either all adult members are in non-standard work or there are only non-standard workers and non-working adult members. "Mixed SW/NSW" refers to households with both standard and non-standard workers. Jobless households refer to households without any worker during the year. Data for Japan refer to respondent and spouses aged 20-64 and there is no information on earnings for other household members.

*Source:* European Union Statistics on Income and Living Conditions (EU-SILC, 2012), Household, Income and Labour Dynamics in Australia (HILDA, 2012), Korean Labor & Income Panel Study (KLIPS, 2009), Survey of Labour and Income Dynamics (SLID, 2010) for Canada, Japan Household Panel Survey (JHPS, 2012).

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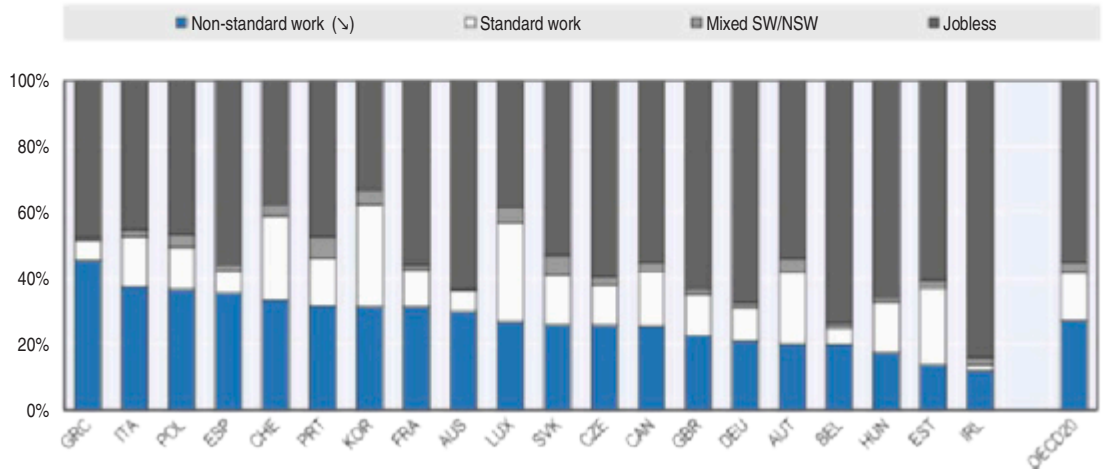
**Figure 4.19. Distribution of poor households by household employment pattern, 2012 or most recent year**




*Note:* The poverty line is calculated based on half of the median equivalised household income calculated for the entire population. "Standard work" refers to households where all adult members (16-64) are in standard work or to households with the presence of both standard worker(s) and jobless adult member(s). Similarly, "Non-standard work" refers to households where either all adult members are in non-standard work or there are only non-standard workers and non-working adult members. "Mixed SW/NSW" refers to households with both standard and non-standard workers. Jobless households refer to households without any worker during the year.

*Source:* European Union Statistics on Income and Living Conditions (EU-SILC, 2012), Household, Income and Labour Dynamics in Australia (HILDA, 2012), Korean Labor & Income Panel Study (KLIPS, 2009), Survey of Labour and Income Dynamics (SLID, 2010) for Canada.

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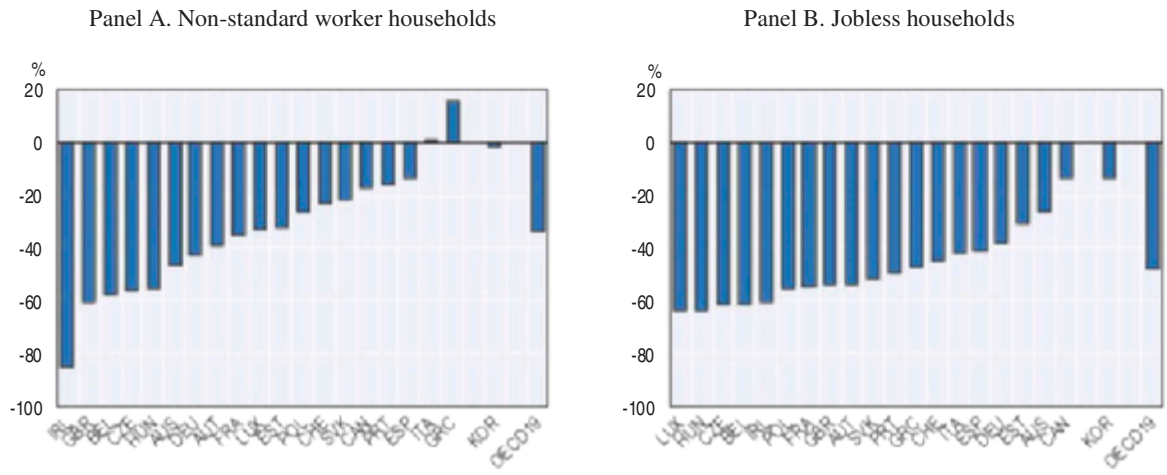
To what extent does redistribution through taxes and benefits reduce the poverty risk for non-standard worker households? Figure 4.20 presents the impact of taxes and transfers in reducing poverty, comparing NSW with jobless households. Households with non-standard workers see their poverty rates reduced by a third, from 34% to 22% on average. In comparison, taxes and transfers have a much larger impact on jobless households, halving their poverty rate from 76% to just 39% after taxes and transfers. The poverty-reducing impact of taxes and transfers for NSW households tends to be particularly large in Belgium, Ireland and the United Kingdom. For instance, NSW households in the United Kingdom have one of the highest incidences of poverty (50%) in terms of market income. Redistribution lowers their poverty risk to 20%, below the OECD average of 22%. The strong poverty-reducing effect in the United Kingdom (and other countries) reflects certain tax/benefit policies that are especially helpful to non-standard workers and their families.

By contrast, taxes and transfers have no impact on poverty reduction for NSW households in Korea and Italy. In Greece, poverty among NSW households even increases after redistribution. In other southern European countries, Portugal and Spain, poverty reduction for NSW households was also modest.

**Figure 4.20. The impact of taxes and transfers on poverty reduction**

Percentage reduction in poverty due to tax/transfer




*Note*: The poverty line is half of the median equivalised household income calculated for the entire population. Figures represent the difference between the poverty rate for disposable income and for market income in percentage points. For Korea market income refers to after tax before public social and government tranfers and is not comparable with the other countries.

*Source:* European Union Statistics on Income and Living Conditions (EU-SILC, 2012), Household, Income and Labour Dynamics in Australia (HILDA, 2012), Korean Labor & Income Panel Study (KLIPS, 2009), Survey of Labour and Income Dynamics (SLID, 2010) for Canada.

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## 4.6. The role of taxes and benefits with regard to non-standard work

Personal income taxes and cash social transfers are not neutral to the form of work. Differences in treatment result directly or indirectly from how policies are designed. Some policies are directly targeted to particular types of work by differentiating the

"eligibility" of taxes and benefits for different types of work. For example, in many countries self-employed workers are not eligible for unemployment insurance benefits. Similarly, the rules for social insurance contributions for self-employed workers are different from those for employees. Some differences in taxes and benefits between different types of workers are indirect, in the sense that they result from how different policies interact in the context of non-standard work. For example, means-tested benefits may be more generous for part-time workers as a result of their lower earnings, which is in turn due to working fewer hours.

This section analyses how the role of taxes and benefits of workers in non-standard jobs differs with respect to those in standard jobs. The analysis looks at qualitative factors (statutory differences) and quantitative indicators (net benefits, adequacy and work incentives). The quantitative analysis is carried out for part-time and self-employed workers using the results of simulations with tax-benefit models.[23] The analysis of temporary workers is limited to statutory differences.

### *Statutory differences between standard and non-standard work*

People in NSW may be subject to different tax and benefit rules. In general, self-employed workers are more likely to experience different statutory treatment than people in other forms of NSW (Table 4.6). In most cases, the benefit rules for part-time and temporary workers are the same as for standard workers. In most countries, unemployment and work injury benefits for the self-employed are different than for standard workers. Sickness and maternity, old-age, disability and survivors benefits are also different in some countries. Even family benefits are different for self-employed workers in Belgium and Italy (where benefit rules are different) and Chile, Greece and Mexico (where some family benefits are not available for self-employed workers).

The most common difference with standard workers is the exclusion of workers in non-standard work from benefits related to unemployment and work injury. In 19 out of the 34 OECD countries self-employed workers are not eligible for unemployment benefits. In three countries, some part-time workers are not eligible for unemployment benefits.[24] In ten countries, self-employed workers are not eligible for work injury benefits.

The second most common difference concerns variations in the content of the benefits (e.g. the coverage or payment level). For example, in the United Kingdom, self-employed workers are not eligible for statutory sick pay (which is paid by the employer) but for employment and support allowance, which is less generous. Benefit content differences are common for self-employed workers, particularly regarding old-age, disability and survivor, and sickness and maternity benefits. In a few countries, the content of benefits also differs for part-time and temporary workers. For example, some part-time workers in Denmark (working less than nine hours per week) and temporary workers in Canada (casual and seasonal agricultural workers) are not eligible for the earnings-related pension. Finally, in some countries, the enrolment of the self-employed in some benefits is optional. These optional schemes are particularly common for insurance benefits related to work injury, sickness/maternity, unemployment and old-age/disability/survivor.

**Table 4.6. Statutory benefit differences between non-standard and standard work, by benefit, 2010[1, 2]**

| | Part-time[3] | | | | | Temporary worker | | | | | Self-employed | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ODS | SM | WI | UB | FB | ODS | SM | WI | UB | FB | ODS | SM | WI | UB | FB |
| Australia | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | -1 | 0 | 0 |
| Austria | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | | | 0 |
| Belgium | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | | | 1 |
| Canada | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | | -1 | | | 0 |
| Chile | | | | | | | 1 | | 1 | | -1 | 1 | | | |
| Czech Republic | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | | 0 | 0 |
| Denmark | 1 | 0 | 0 | 1 | | 0 | 0 | 0 | 0 | 0 | -1 | 0 | -1 | 0 | 0 |
| Estonia | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Finland | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 1 | 0 |
| France | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | | 0 |
| Germany | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | | | -1 | 0 |
| Greece | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| Hungary | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Iceland | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ireland | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | | | 0 |
| Israel | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | | 0 |
| Italy | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | | 1 |
| Japan | 0 | 0 | 0 | 4 | | 0 | 0 | 0 | 0 | 0 | 1 | 1 | | | 0 |
| Korea | 0 | 0 | 1 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -1 | 0 |
| Luxembourg | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| Mexico | 0 | 0 | 0 | 5 | 0 | 0 | 1 | 0 | 5 | 0 | -1 | -1 | -1 | 5 | |
| Netherlands | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 |
| New Zealand | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Norway | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | -1 | | 0 |
| Poland | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | | 0 |
| Portugal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | -1 | 0 | | 0 |
| Slovak Republic | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | | | -1 | 0 |
| Slovenia | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 |
| Spain | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | -1 | | 0 |
| Sweden | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 |
| Switzerland | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | -1 | | 0 |
| Turkey | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | | 1 | | 0 |
| United Kingdom | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | | 1 | 0 |
| United States | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 1 | 0 | | | 0 |

1. FB: Family allowances; ODS: Old age, disability and survivors, SM: Sickness and Maternity, UB: Unemployment, WI: Work injury.

2. Colour code: "dark grey": no benefit, "light grey": optional enrolment, "blue": different rules from standard workers, "white": same rules as the general scheme.

3. Part-time workers are excluded if working less than nine hours a week.

4. In Japan, part-time workers are entitled to unemployment benefit if working more than 20 hours per week.

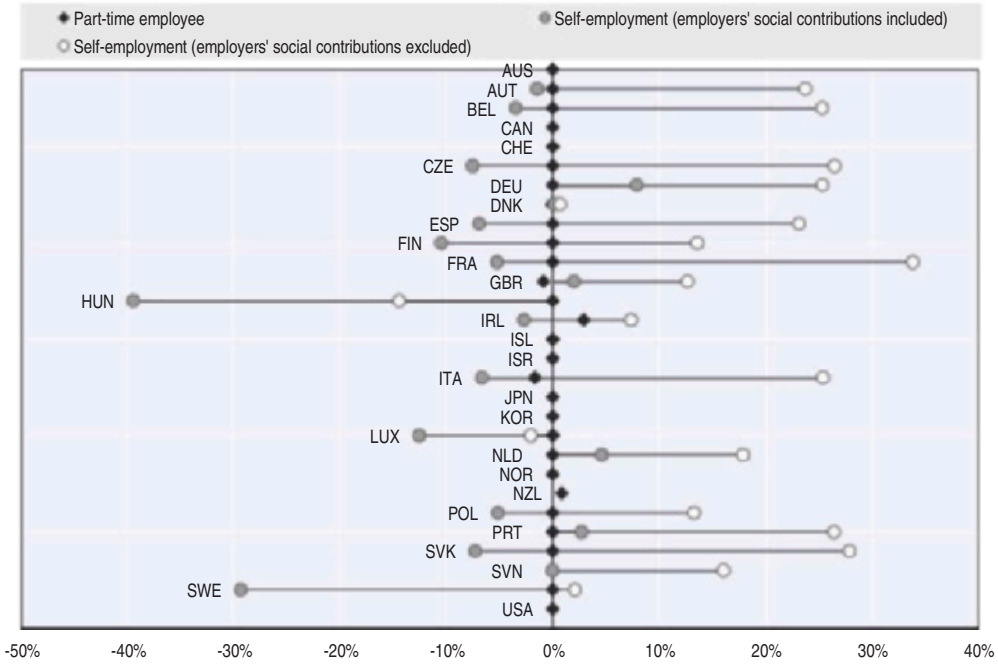
5. There is no unemployment benefit in Mexico. Labour law requires employers to pay dismissed employees a lump sum.

*Source:* Social Security Administration (2010), *Social Security Programs Throughout the World: Asia and the Pacific*, Government Printing Office; Social Security Administration. (2010), *Social Security Programs Throughout the World: Europe*, Government Printing Office; Social Security Administration (2011), *Social Security Programs Throughout the World: The Americas*, Government Printing Office.

Figure 4.21 shows that, in general, the amounts of taxes/benefits paid/received by part-time workers are similar, if not identical, to those paid/received by standard workers. In contrast, the amounts of taxes/benefits paid/received by self-employed workers are usually substantially different. Whether self-employed workers do better or worse than standard workers depends on how employer social insurance contributions are accounted. Legally, employer social insurance contributions are paid by the employer. However, the actual incidence of such contributions may effectively fall on the employer (lower profits) or be transferred to the employee (lower wages) or to consumers (higher prices).[25] Here, the scenarios in which employer contributions fall either on the employer or the employee are assessed. Generally, self-employed contributions are larger than employee contributions but smaller than the sum of employee and employer contributions. Hence,

self-employed workers tend to do worse than employees if the actual incidence of employer contributions falls on employers. Conversely, self-employed workers tend to do better than employees if the actual incidence of employer contributions falls on employees. However, there are some significant exceptions. Independently of the incidence of employer contributions, the self-employed fare worse than employees in Hungary and Luxembourg, and better than employees in Portugal, Germany, Austria, the Netherlands and the United Kingdom.

**Figure 4.21. Differences in tax-benefit amounts between part-time/self-employed workers and workers in standard jobs, 2010**




*Note*:

Differences expressed as percentage of average wages (AW) in the country.

Part-time results are for employees working between 16 and 30 hours per week and paid the average hourly wage in the country, Self-employed results are for people working full-time (40 hours per week) and earning between 40% and 160% of the average wage in the country (self-employment estimates are available only for EU countries). Four sets of typical families are considered: single adult living alone, single parent with children, single-earner couples with and without children.

*Source:* OECD tax-benefit models and EUROMOD.

StatLink http://dx.doi.org/10.1787/888933208228

### *Adequacy of net benefits for low-earning workers in non-standard jobs*

As discussed in Section 4.5, workers in non-standard jobs face a higher risk of being in poverty as their earnings tend to be lower. Taxes and benefits that are designed appropriately can reduce this risk by increasing the income that families effectively take home. The analysis below measures the adequacy of tax-benefit systems in protecting families relying on low earnings from part-time or self-employment. In either case, family earnings before taxes and benefits are equivalent to those received by a person working 20 hours per week at the country's average hourly wage. Adequacy is measured by comparing equivalised family income after taxes and benefits to the national poverty line, defined as 50% of median disposable income.

Comparisons between employment and self-employment incomes are not straightforward in practice. Self-employed income is often unpredictable as it tends to fluctuate across time considerably more than wages and salaries. Also, evidence shows that self-employed workers underreport income to the tax authorities more than employees do (Feldman and Slemrod, 2007). Bearing these differences in mind, the analysis measures the amount of taxes and benefits while assuming a scenario in which self-employed incomes are constant across the year and accurately reported to the tax and benefit authorities.

In all the countries analysed, workers working half-time (20 hours per week) and earning the average hourly wage would earn an income (before taxes and benefits) above the poverty line, if living alone (Figure 4.22, Panel A). If they live in families and are the single earner, in several countries the family income would be below the poverty line. The proportion of countries with families in poverty increases with the number of family members. Only in Germany, the Netherlands and the United Kingdom would the income of a couple with two children earning half the monthly average wage lift them above the poverty line.

Taxes and benefits considerably alter these results for families with part-time workers, redistributing income from smaller to larger families. Bearing in mind that the results are illustrative of a specific wage level, single part-timers pay more in taxes than they receive in benefits – in Slovenia, the fall in disposable income brings singles below the poverty line. In some countries, including Ireland, New Zealand and Japan, couples without children pay less in taxes than they receive in benefits, but in most countries the opposite is the case, and in some countries (Austria, Italy, Sweden and Switzerland), disposable income falls below the poverty line. In most countries, single parents who have two children and work part-time receive more in benefits than they pay in taxes, and in many of these countries the resulting increase in disposable income brings the household above the poverty line. With the exception of Korea, Spain and Switzerland, couples with children are net beneficiaries of taxes and benefits.

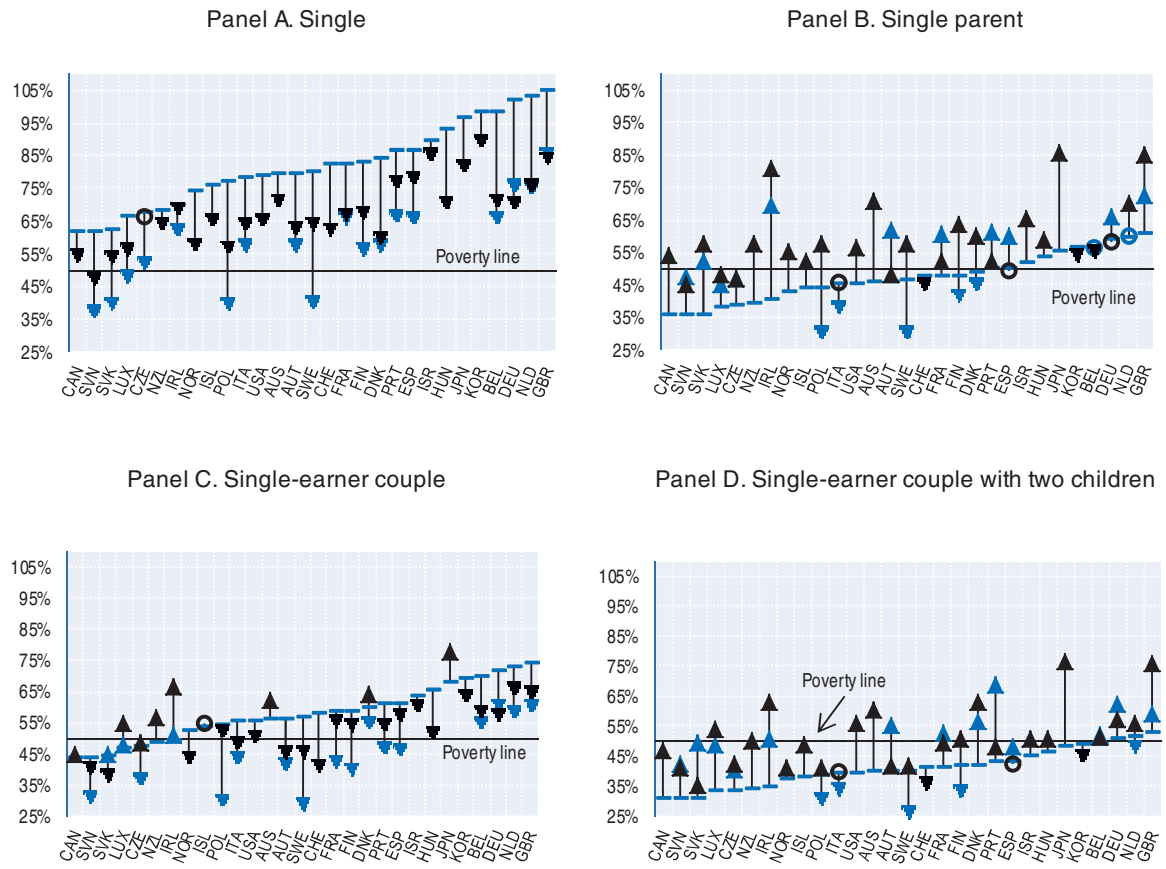
In several OECD countries, taxes and benefits are not sufficient to prevent the income of low-earning families headed by self-employed workers from falling below the poverty line. In comparison to part-time employees, a larger number of families are left in poverty. In the case of families composed by a single individual, the amount of taxes exceed the benefits in all the countries analysed, and in several of them (Luxembourg, Poland, the Slovak Republic, Slovenia and Sweden) family disposable income falls below the poverty line.

In most countries, single-earner couples without children also pay more in taxes than they receive in benefits. In 16 countries, the income of single-earner couples without children is below the poverty line, and in ten of these this is a direct effect of negative net benefits. Only in Ireland the income of single-earner couples rises above the poverty line after accounting for taxes and benefits.

As with part-time workers, net benefits tend to be more generous for families with children. In 16 countries, net benefits are positive for single parents with children. In six of these countries, this results in family disposable income rising above the poverty line. Among couples with children, net benefits are positive in 17 countries, lifting income above the poverty line in six of these. Yet in 14 countries, family income is below the poverty line, in the case of the Netherlands as the direct result of negative net benefits.

**Figure 4.22. Tax-benefit adequacy**

Part-time workers (black), self-employed workers (blue), earning half the average wage, before (bars) and after (arrows) taxes and benefits, 2010




*Note*:

The results are expressed as a percentage of the average equivalised household disposable income in the country.

*Source:* OECD tax-benefit models and EUROMOD.

StatLink http://dx.doi.org/10.1787/888933208238

## *Work incentives*

How do taxes and benefits affect the work incentives of workers in non-standard jobs? Do they encourage or deter workers in non-standard jobs from increasing their working hours or moving into standard jobs? Do they make work pay or do they reduce the financial incentives to work harder or even to work at all?

This sub-section addresses these questions by using the results of simulations computed with the OECD/EC tax-benefit models (for part-time workers) and EUROMOD (for self-employed workers).[26] Following the literature on labour supply (Heckman, 1974; Blundell and Macurdy, 1999; Brewer et al., 2010; and Blundell et al., 2011), a distinction is made between the *intensive margin* of labour supply, which measures incentives to increase the intensity of work by those at work (i.e. variations in the number of hours of work) and the *extensive margin*, which measures "qualitative shifts" from out-of-work to in-work or from NSW to standard work.

*Incentives from inactivity to part-time work*

Do taxes and benefits provide incentives for individuals out of work to move into NSW? This section assesses these incentives by measuring participation tax rates (PTR). Simulations assume that out-of-work people are "inactive", in the sense that they are not eligible for unemployment benefit but may receive social assistance and other benefits, if they are entitled. In the situation of NSW, part-time and self-employed workers are assumed to work half-time at the average hourly wage.

In many OECD countries the income incentives to move from inactivity to part-time employment are rather small (Figure 4.23). This result is in line with findings from previous studies (OECD, 2007; OECD, 2009; OECD, 2010). On average, the participation tax rate (PTR) is 70%. Put another way, 70% of the earnings obtained in moving from inactivity (in receipt of social assistance) to part-time employment are "taken away" due to higher taxes and lower benefits. Across countries, PTRs range from less than 30% in Italy[27] and the United States to more than 90% in Switzerland and Denmark. In 15 countries the PTRs exceed 80%.

The main cause of such high rates is the reduction or removal of social assistance benefits. On average, 45 percentage points of PTR are due to social assistance benefits. In some countries this effect is partly compensated by in-work benefits (or other employment-related instruments) that increase the financial returns of work (Pearson and Scarpetta, 2000; Immervoll and Pearson, 2009). In Ireland and the United States, in-work benefits reduce the PTRs by 35% and 20%, respectively. Housing benefits may also play a role in reducing the financial rewards of part-time work. With a few exceptions, social contributions play a larger role than personal income tax in increasing PTRs. Through progressive tax rates, exemption limits and other deductions, income taxes have more scope than social contributions, which usually rely solely on contribution bases and fixed rates, to modulate the tax burden on low-earning workers.

Income incentives to move from inactivity to self-employment on a part-time basis are also limited in most countries analysed. In Germany, Hungary, Portugal, Denmark and Luxembourg, people in inactivity have little income incentive to take up self-employed work, as 90% or more of their earnings are "taken away" by lower benefits or higher taxes or contributions. Participation tax rates for self-employment are higher than for employees, especially in Hungary, Ireland and Sweden, and on average by one-quarter. This is the case in all but four of the analysed countries.

Social benefits are the main driver of PTRs among self-employed workers; on average more than half of the rate is due to social benefits. About one-third of PTRs are due to social contributions. Also, predictably, social contributions are the main source of differences between the PTRs of the self-employed and employees.

## Figure 4.23. Participation tax rates for part-time workers

Participation tax rates (PTRs) for inactive persons who are receiving social assistance and move into part-time work, decomposed by taxes and benefits, 2010

*Note*:

PTRs for inactive persons (0-20): PTRs for inactive persons (working 0 hour) receiving social assistance and moving into part-time work (working 20 hours).

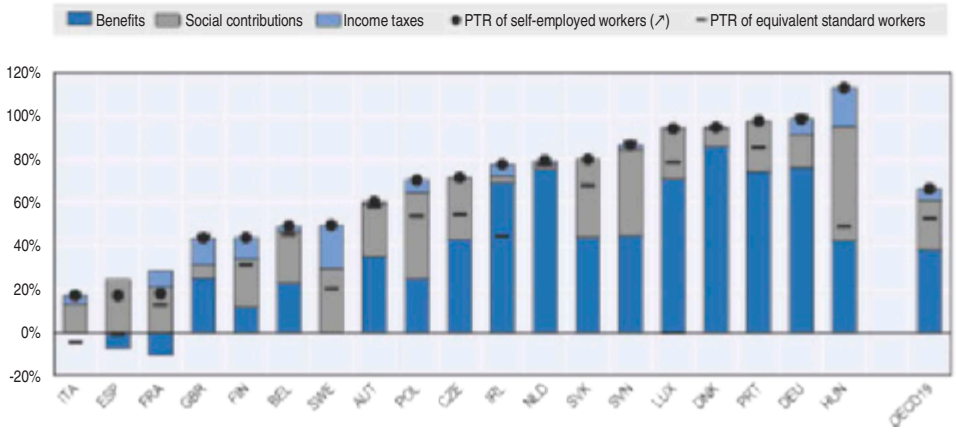
The results are computed as the average of four sets of typical families: single adult living alone, single-earner couple without children, single parent with two children, single-earner couple with two children.

*Source:* OECD tax-benefit models.

StatLink http://dx.doi.org/10.1787/888933208240

## Figure 4.24. Participation tax rates for self-employed workers

Participation tax rates (PTRs) for inactive persons receiving social assistance and moving into self-employed work, decomposed by taxes and benefits, 2010




*Note*:

The results are computed as the average of four sets of typical families: single adult living alone, single-earner couple without children, single parent with two children, single-earner couple with two children.

*Source:* EUROMOD, Tax-benefit microsimulation model for the European Union.

StatLink http://dx.doi.org/10.1787/888933208259

### *Incentives for moving from part-time to full-time work*

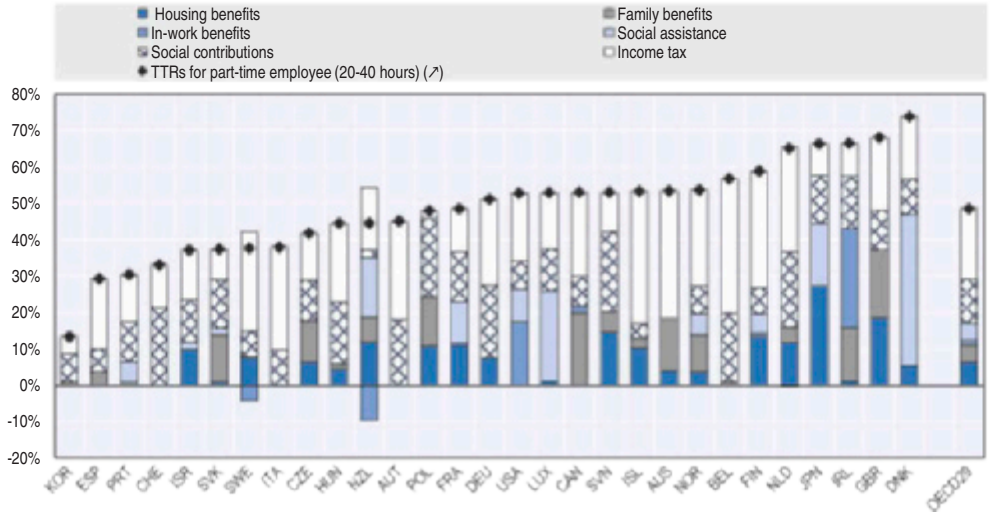
This sub-section assesses the incentives that non-standard workers would have to move into standard jobs. The indicator used to measure such incentives is referred to here as the transition tax rate (TTR) and calculates how much of the earnings increase is "taken away" through higher taxes and lower benefits.[28]

The income incentives to move from part-time to full-time employment tend to be higher than those for moving from inactivity to part-time employment. On average, the transition tax rate (TTR) for moving from working 20 hours per week to working 40 hours per week is 48%. This ranges from less than one-third in Korea, Spain and Portugal to two-thirds or more in Denmark, the United Kingdom, Ireland, Japan and the Netherlands.

Personal income taxes are the main driver, and social contributions the second largest, of TTRs, accounting for 19 and 12 percentage points, respectively, on average. The role of social benefits is scattered. Housing benefits produce rates that are well above average in Japan and the United Kingdom. Family benefits considerably reduce the work incentives of families with children in English-speaking countries (except New Zealand and the United States). Social assistance benefits, overall, play a smaller role than in the transition from inactivity to part-time employment. In-work benefits have different effects across countries. In Ireland and the United States, in-work benefits increase the TTRs, as they are withdrawn from workers with higher earnings. On the other hand, in New Zealand and Sweden, the TTRs are negative, thus rewarding transitions from part-time to full-time work.

**Figure 4.25. Transition tax rates from part-time to full-time employment**

Transition tax rates (TTRs) for part-time employee to move to full-time employment, decomposed by taxes and benefits, 2010




*Note*:

TTRs for part-time employee (working 20 hours) moving into full-time work (working 40 hours).

The results are computed as the average of four sets of typical families: single adult living alone, single-earner couple without children, single parent with two children, single-earner couple with two children.

*Source:* OECD tax-benefit models.

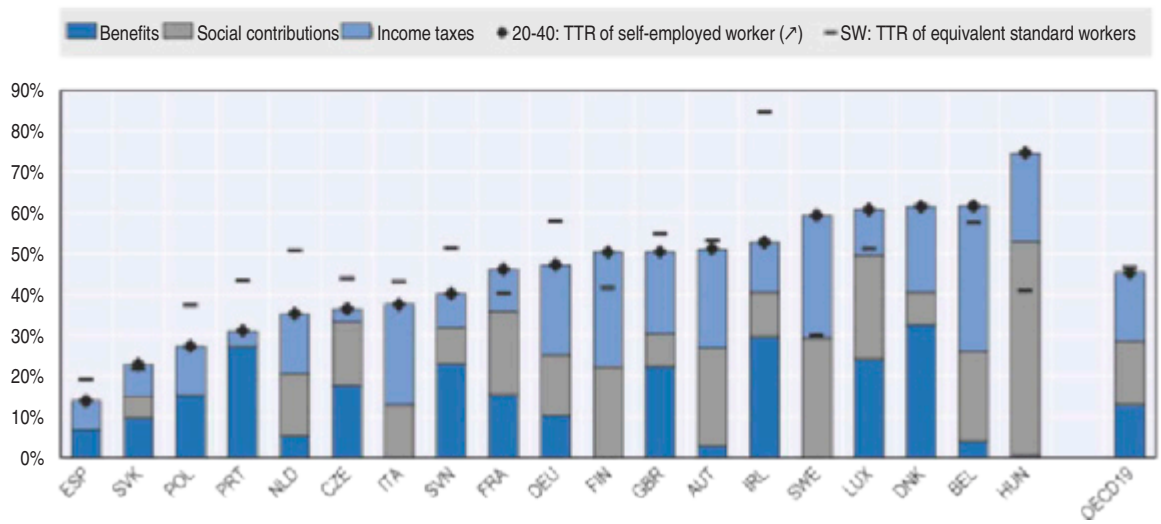
StatLink http://dx.doi.org/10.1787/888933208262

Self-employed workers face lower income disincentives to move from part-time work to full-time work than from inactivity to part-time work. On average, less than half of the earnings increase due to working full-time instead of half-time is "taken away" with lower benefits or higher taxes and contributions. In 13 out of 19 countries, families keep at least half of the increase in earnings, and in virtually all countries they keep at least 40%. The rates for self-employed workers are, on average, similar to those faced by employees, although there are significant differences across countries.

Personal income taxes, social contributions and social benefits have a similar impact on transition tax rates when all analysed countries are taken as a whole. Nevertheless, there are important differences in the impact of social contributions across countries, in particular between countries with high rates of self-employed contributions and those where self-employed contributions are set at a fixed amount.

**Figure 4.26. Transition tax rates from part-time to full-time self-employment**

Transition tax rates (TTRs) for self-employed workers to move to full-time work, decomposed by taxes and benefits, 2010




*Note*:

The results are computed as the average of four sets of typical families: single adult living alone, single-earner couple without children, single parent with two children, single-earner couple with two children.

*Source:* EUROMOD, Tax-benefit microsimulation model for the European Union.

StatLink http://dx.doi.org/10.1787/888933208274

## 4.7. Conclusion

The concept of NSW is a "fuzzy" one. As a benchmark, this chapter uses a broad definition of atypical or NSW arrangements that, following international convention, includes any temporary, part-time and own-account self-employment work: taken together, this kind of employment comprises a sizeable share (33%) of total employment in the OECD, shared roughly equally between temporary jobs, permanent part-time jobs and self-employment. The shares of non-standard employment range from a low of under 20% in some eastern European countries to 46% or more in the Netherlands and Switzerland. Part-time employment is particularly frequent in the Netherlands,

Switzerland and the Nordic countries. Self-employment is more important in Greece, the Czech and Slovak Republics and Turkey. Temporary employment is largest in relative size in Poland, Portugal, Korea and Spain.

One-quarter of men but 40% of women are in non-standard employment, mainly due to strong gender imbalances in part-time work. Youth and workers with a lower level of education are over-represented in NSW – close to half of temporary workers are under 30 years of age, and the incidence of temporary employment is 30% higher for those with lower level of education than for those with medium education. Non-standard workers are also more likely to be found in small firms. Half of all non-standard workers are the main breadwinners in a household, and a large majority of them live in two-or-more-person households, often with children.

More than 40% of the 17% increase in the number of employed people between 1995 and 2007 was attributable to non-standard jobs. In the six years since the global economic crisis, standard jobs were destroyed while part-time employment continued to increase. There has been strong growth in part-time permanent jobs over the long-term in most OECD countries, and some saw a doubling in their share. Temporary employment also increased in more than three-quarters of the OECD, especially in Poland and southern Europe. On the other hand, self-employment either declined or was stable in most countries.

Jobs are becoming polarised. The tasks-based approach, for instance, shows that the employment shares of routine-task jobs, traditionally composed of middle-skill workers, have declined from 53% to 41% between 1995 and 2010. At the same time, there has been a large increase in the employment share of abstract (from 28% to 38%), and to a lesser extent, non-routine manual jobs (from 18% to 21%). Similarly, the jobs-based approach, which that takes into consideration a particular occupation within a particular industry, finds evidence for job polarisation by showing a U-shaped pattern of employment shifts across job deciles in more than half of the countries. The shift towards job polarisation is closely related to the development of non-standard employment: much of the decline in middle-skill employment is due to a decrease in standard work contracts, while growth in high-skill and low-skill jobs is mainly associated with non-standard employment.

Having a non-standard job improves the chances of advancing into a permanent job for only a few. In particular, in most countries those on temporary contracts are more likely to move into standard employment than those who were unemployed, while being in part-time or self-employment in general does not improve the prospects of standard work compared with the unemployed. This suggests some evidence of stepping-stone effects for temporary workers, at least in the short run. At the same time, non-standard workers face higher labour market insecurity and are less likely to receive on-the-job training. In addition, temporary workers face significantly higher job strain, while this is not the case for part-time workers.

NSW is associated with wage penalties. In most countries, temporary workers earn significantly less than otherwise comparable workers in standard employment, controlling for observed and unobserved individual characteristics. The wage penalty is slightly higher for young temporary workers. Part-timers, mainly those on temporary contracts, also tend to earn lower hourly wages than their standard full-time counterparts, while no obvious wage penalty is found for those in permanent jobs. In addition, in many cases temporary workers with no change in contract type tend to suffer greater earnings instability.

Non-standard workers are more likely to be found in the lower part of the earnings distribution, particularly in the lowest three deciles, and an increase in the share of non-standard workers is associated with substantial wage penalties of 20% at the bottom of the distribution (the bottom 40%) but not at the top, thereby increasing earnings inequality. Adding households where non-standard workers are living to standard-worker households increases household earnings inequality by 3 Gini points. On average across countries, this contributes about 20% to cross-sectional household income inequality. This contribution is higher in Australia and Austria (around 30%) and lowest in Estonia (below 5%).

Non-standard workers are also more likely to live in lower *income* households. The household constellation matters, however, a lot: low-earning non-standard workers are much less likely to leave the bottom of the income distribution if they live with another non-standard worker rather than with a standard worker.

More than half of all poor working-age households are households with at least one worker. Among these "working poor" households, a large majority (60%) are made up of NSW households. The average poverty rate for households where all earnings are drawn from NSW is 21% while it is 2.5% for households where earnings from NSW are pooled with earnings from standard work. Public transfers and taxes reduce poverty risks among households comprising non-standard workers by some 35%.

There are statutory differences regarding the "access" and content of taxes and benefits (e.g. the coverage or level) for workers in non-standard jobs with respect to standard workers. The differences are larger and more widespread for self-employed workers. The most common differences include the exclusion of self-employed workers from unemployment benefits, and no or non-compulsory eligibility for work injury benefits as well as differences in the rules on sickness and maternity benefits. With the exception of a handful of countries (Ireland, Italy, New Zealand and the United Kingdom), the effective differences in the content and extent of taxes and benefits for part-time workers are related more to their particular circumstances (e.g. lower earnings due to fewer hours of work) than to structural differences in policy rules.

In most countries, taxes and benefits reduce in-work poverty gaps for families relying on earnings from non-standard jobs. Under similar circumstances, taxes and benefits are more effective in reducing the poverty gap for part-time workers than for self-employed workers. Taxes and benefits also have a considerable effect on the work incentives of workers in non-standard jobs. On average, the results suggest that taxes and benefits generate higher hurdles to moving from inactivity to part-time work than to increasing work intensity or to moving from part-time to full-time work.

All in all, the analysis in this chapter suggests that the rise in NSW arrangements and job polarisation have contributed to aggregate employment growth in the past, but have also increased both individual wage and household income inequality. Tax and benefit reforms therefore need to be focused on preventing in-work poverty among low-earning households with non-standard workers while providing sufficient incentives to take up and increase work efforts, and active labour market policies need to be designed to raise the earnings potential of non-standard workers, especially the young and people with less education.

# Notes

1. Employers are excluded from the analysis since transitions between employers and standard workers are likely to be small and employers differ from other workers in their remuneration (receiving earnings as well as business income). In the OECD they represent an average of 4% of total employment for the working-age population.

2. Student workers and apprentices are excluded from the analysis, as they may increase the share of part-time workers and temporary workers. They represent on average 2% of total employment.

3. While high levels of PMR could be detrimental to business activities, regulations can be used to protect small-sized firms from large-sized competitors (Torrini, 2005).

4. A first method to classify the skill level of a job follows a simple "task" approach to classify skills into three broad categories based on the nature of the job task (i.e. abstract, routine and non-routine manual) following Autor and Dorn (2013) among others.

5. A second method to classify the skill level of a job is to look at employment shifts using the "job-based" approach – based on Eurofound (2008, 2012) – where a job is defined as a particular occupation in a particular industry, and the skill of a job is measured by the median hourly wages of workers within the job cell.

6. The recent recession (2007-10) also plays an important role in reshaping the overall changes in employment structure for some countries. In general, the observed employment adjustments were amplified in the downturn.

7. Some noticeable examples include Belgium, France, Germany and the Netherlands.

8. The influx of migrant workers can also change the structure of employment as foreign-born workers are more prevalent in the highest and the lowest quintile of earnings and are often characterised by having NSW contracts.

9. EU-SILC and income data for European countries are used in this and the subsequent section since EU-LFS has no information on wages and income.

10. In the presence of asymmetrical information, firms cannot discriminate between high- and low-productivity workers. Therefore, they may use non-standard wage contracts (by paying low initial wages) to create a probationary stage during which they can evaluate workers' performance. But another route is to offer efficiency wages and allow workers to self-select into such jobs.

11. The baseline regressions in Tables 4.1 and 4.2 include age groups, education, marital status, the presence of children, limited health condition, region of residence, occupation and the year dummies. Results for countries using national panels added additional controls – industry, firm size and job tenure (for Australia, Germany and the United Kingdom).

12. The sum of the coefficients $b(TE)+b(TE{\cdot}age1529)$, for instance, captures the difference in (log) wages for young workers between temporary workers and their counterparts in standard jobs. The wage gap between young and prime-age

(reference) individuals among temporary workers can be obtained by *b(age1529)+b(TE·age1529.* The wage differentials between other age/skill/contract groups can be obtained in a similar way.

13. Table 4.4 provides information on annual changes of contract and the unadjusted rates of moving up/down or staying in the same earnings quintiles over any two consecutive years. As only full-time employees are considered in the analysis (since the previous section does not show wage penalties for part-time workers), there are four possible scenarios in terms of a change of employment status: workers staying in a standard job (SW-SW); workers moving from a standard to a temporary job (SW-TE); workers moving from a temporary to a standard job (TE-SW); and workers remaining in a temporary job (TE-TE). Earnings mobility is measured by examining whether an individual experienced a change in the relative quintile position in the distribution of annual earnings. Upward mobility occurs if an individual moves from a lower to a higher earnings quintile from year *t-1* to *t.* On the contrary, downward mobility refers to a transition from a higher to a lower quintile, and stay indicates that an individual remains in the same quintile over time.

14. Note that the results here refer to *marginal* effects *net* of all observable characteristics; the Korean exception may indicate some selectivity problems among temporary workers there, as individuals who are less likely to transition into a regular job – due to an unobserved effect – tend to select themselves into this group. Additionally, because of a segmented labour market, accepting a non-standard job may lead to stigma and give a negative signal to employers who may be less willing to offer permanent jobs to those on non-standard jobs.

15. This discussion draws on the OECD (2014) definition of job quality with three sub-dimensions (level of earnings, labour market security and quality of the working environment) and adds additional estimators.

16. Only part-time workers and temporary workers are included in non-standard workers when looking at the distribution of hourly wages because of inconsistencies in obtaining the hourly wages of self-employed workers.

17. Main income earner refers to the person who contributes the highest earnings in the household.

18. This may be the results of high-earning self-employed workers at the top of the distribution.

19. Equivalised household earnings are calculated as the sum of household labour earnings (wages and self-employment incomes) from all household members, dividing by the commonly used OECD equivalent scale (i.e. the square root of the household size).

20. Data for Korea could not be included in this section as it does not include information on taxes.

21. Note that the median income is calculated based on the *entire* population, not just the working-age population.

22. It is noteworthy that the poverty rate of SW households in Korea is high (12.4%), compared with other countries. This is because many SW households in Korea actually include a jobless adult member. The number of "pure" SW households – where all adult members are standard workers – is relatively limited in Korea. In 2009, for instance, SW households that have both standard worker and non-workers

accounted for 35% of all working households, while this share is lower in other OECD countries.

23. Simulations for temporary workers cannot currently be incorporated into the tax-benefit models used here.

24. Part-time workers are excluded from eligibility for job seeker's benefit or allowance in Ireland if they have worked less than three days a week; in Japan, if they have worked less than 20 hours per week; and in Korea, if they have worked less than 60 hours per month or 15 hours per week.

25. Simulations use two scenarios regarding the incidence of employer social insurance contributions. In the first scenario, the effective burden of employer contributions is assumed to fall exclusively on the employer. In the second scenario, the burden falls exclusively on the employee, the underlying assumption being that in the long run employers adjust wages in response to the level of employer contributions (see Brittain, 1971; Vroman, 1974; and Beach and Balfour, 1983).

26. See Annex 4.A4 for detailed descriptions of the OECD/EC tax-benefit simulation models and EUROMOD.

27. In Italy, PTRs are very low (3%) since no social assistance benefit is available. See Figure 2.3 in OECD (2007).

28. The indicators of work incentives used here are formally defined in Annex 4.A4.

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# *Annex 4.A1*
# Measuring job polarisation

The contributions to employment shifts due to the between- and within-sector reallocation of workers can be identified using a simple decomposition approach. Following Tuzemen and Willis (2013), the change in the employment share between any two periods for a particular task group can be decomposed as: $\frac{E_{i,s,2010}}{E_{2010}} - \frac{E_{i,s,1995}}{E_{1995}} = \frac{E_{i,2010}}{E_{2010}}\left(\frac{E_{i,s,2010}}{E_{i,2010}} - \frac{E_{i,s,1995}}{E_{i.1995}}\right) + \frac{E_{i,s,1995}}{E_{i.1995}}\left(\frac{E_{i,2010}}{E_{2010}} - \frac{E_{i,1995}}{E_{1995}}\right)$, where $E$ represents employment, $i$ represents the industry sector and $s$ represents the task. Table 4.A1.1 reports the decomposition of changes in the employment share for each of the three task groups. In sum, this exercise reveals that the results are in line with the predictions of the skill-biased/task-biased technological change hypothesis.

**Table 4.A1.1. Decomposition of changes in employment shares by task and sector, EU-23 countries average, 1995/98-2010**

| Task | *Total* | Manufacturing | Construction & electricity | Wholesale & hotels | Transport & communication | Finance & real estate | Public & community | Education & health |
|---|---|---|---|---|---|---|---|---|
| **Abstract** | ***5.25*** | -0.95 | 0.37 | 0.32 | 1.98 | 2.07 | 0.23 | 1.23 |
| Between | ***1.24*** | -1.87 | -0.01 | 0.06 | 0.40 | 1.40 | -0.39 | 1.66 |
| Within | ***4.01*** | 0.92 | 0.38 | 0.27 | 1.57 | 0.67 | 0.62 | -0.43 |
| **Routine** | ***-8.59*** | -6.02 | -0.46 | -0.66 | -0.35 | -0.28 | -0.84 | 0.02 |
| Between | ***-3.18*** | -5.11 | -0.05 | 0.11 | 0.73 | 1.11 | -0.28 | 0.30 |
| Within | ***-5.40*** | -0.91 | -0.41 | -0.77 | -1.07 | -1.39 | -0.56 | -0.28 |
| **Non-routine manual** | ***1.82*** | -0.45 | 0.12 | 0.43 | 0.18 | 0.91 | -0.41 | 1.04 |
| Between | ***1.03*** | -0.37 | 0.00 | 0.04 | 0.64 | 0.32 | -0.24 | 0.65 |
| Within | ***0.79*** | -0.08 | 0.13 | 0.39 | -0.45 | 0.59 | -0.17 | 0.39 |

*Note:* Abstract occupations (ISCO88: 12-34); Routine (ISCO88: 41-42, 52, 71-74, 81-82 and 93); Non-routine manual (ISCO88: 51 83 and 91). The sample excluded three industries (agriculture, mining and private households) as well as three occupational groups (legislators, armed forces and farm labourers) due to the lack of consistent information over time. The overall sample is restricted to workers aged 15-64, excluding employers as well as students working part-time.

*Source:* European Union Labour Force Survey (EU-LFS).

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## Job approach for polarisation

In line with Eurofound (2008, 2012), a job is defined as a particular occupation in a particular industry (e.g. a manager in the hotel sector) using the international standard classification of occupations (ISCO) and the European classification of economic activities (NACE) from the labour force surveys. To measure job quality, each job is assigned a value, based on the occupational median wages, by linking external information on wages estimated from different data sources. Two external data sources were used to estimate median wages for jobs. The main source is the Structure of

Earnings Survey (SES), which provides accurate and harmonised data on earnings in EU member states. It collects information from enterprises with at least ten employees operating in all areas of the economy except public administration (and, in some countries, also the education and health care sectors). At the time of writing, the SES data are available for only two reference years: 2002 and 2006. For sectors not covered by the SES, the median wage is supplemented by data from the European Survey of Income and Living Conditions (EU-SILC).

We then allocate jobs to deciles in each country according to a job-wage ranking for that country, weighted by the total number of employment within the job cell. That is, the bottom job decile would capture 10% of all workers employed in the lowest-paid occupations. Changes in employment share between the periods in each job decile can then be computed to examine whether the employment structure has been polarised over time.

Ideally, we would like a job to be defined in as much detail as possible by using occupation and sector classifications at a two-digit or even finer level. In practice, this may not be feasible as some of the combinations simply do not exist or contain very few observations, especially in the external sources for wage data. Doing this would result in imprecise estimates of wages for many job cells. In this study we use the combinations of occupation at the two-digit level and industry at the one-digit level. This creates a matrix of a very reasonable 338 non-agriculture "jobs" (26 occupational groups * 13 sectors). In a separate specification we also performed a more detailed level of disaggregation (i.e. 754 jobs = 26 occupations * 29 sectors). However, due to a smaller sample size of the SES, many occupation/sector combinations either do not exist or result in an imprecise estimate of median hourly wages. We therefore discard such disaggregations, as the ranking of jobs by wage cannot be established.

Labour force surveys (LFS) for three different years – 1995, 2007 and 2010 – are used to construct the level and change in the employment shares in each job decile. Since most LFS do not contain information on earnings (one exception being the Canadian LFS, which collected information on hourly wages), the data is then augmented with the European Union Structure of Earnings Surveys (SES) to obtain median hourly wages for each job defined. Note that the SES is available only since the mid-2000s. This means that the wage-to-job assignments will be the same for each of the three periods under study (1995, 2007 and 2010). By doing this we assume that the *rankings* of jobs by skill (as approximated by median wage) remain similar over time. In fact, previous studies (e.g. Goos and Manning, 2007) have found considerable stability in the occupational earnings structure over time.

# *Annex 4.A2*
# Data sources for Sections 4.4 and 4.5

The following longitudinal household surveys are used for the analysis in the first section of the chapter. All longitudinal datasets cover a wide range of subjects, including personality traits, occupational and family biographies, employment, participation and professional mobility, earnings and health.

## British Household Panel Survey (BHPS)

The British Household Panel Survey[1] (BHPS) is a nationally representative household-based yearly survey which began in 1991, interviewing every adult member of the sampled households. The wave 1 of the panel consisted of some 5 500 households and 10 300 individuals. Additional samples of 1 500 households in both Scotland and Wales were added to the main sample in 1999, and in 2001 a sample of 2 000 households was added in Northern Ireland. These same individuals are re-interviewed each successive year and, if they split-off from original households to form new households, they are followed and all adult members of these households are also interviewed.

## EU Statistics on Income and Living Conditions (EU-SILC)

The European Union Statistics on Income and Living Conditions (EU-SILC) instrument has collected annual data for 27 European Union countries, Croatia, Iceland, Norway, Switzerland and Turkey since 2004 on a cross-sectional and longitudinal basis, rotating every four years, for 130 000 households. Variables include information on income, poverty, social exclusion and other living conditions. The EU-SILC does not rely on a common questionnaire or a survey but on common guidelines and procedures, and common concepts (household and income) and classifications aimed at maximising the comparability of the information produced.

## German Socio-Economic Panel (GSOEP)

The German Socio-Economic Panel (GSOEP) is an on-going household-based yearly survey which began in 1984. The first wave consisted of 5 921 households containing a total of 12 290 individual respondents who participated in "SOEP West", containing only West Germany. In 1990, 2 179 households with 4 453 members were surveyed for the "SOEP East" sample.

## Household, Income, Labour Dynamics in Australia (HILDA)

Household, Income, Labour Dynamics in Australia (HILDA) is an ongoing household-based panel survey funded by the Department of Families, Community Services and Indigenous Affairs. The survey started in 2001 and contains at the moment seven waves. The wave 1 of the panel consisted of 7 682 households and 19 914 individuals.

## Korean Labor and Income Panel Study (KLIPS)

The Korean Labor and Income Panel Study (KLIPS) is an ongoing household survey which has been conducted annually since 1998 and consists of 5 000 households and 13 000 individuals.

## Japan Household Panel Survey (JHPS)

The Japan Household Panel Survey (JHPS) is a panel survey of around 4 000 households conducted by the Panel Data Research Center at Keio University. The first survey was conducted in 2009 and is carried out annually. The survey topics include household composition, income, expenditure, assets, and housing in addition to school attendance, employment, and health conditions of respondents.

We are very grateful to Professor Yoshio Higuchi and Associate Professor Kayoko Ishii from Keio University for providing the OECD Secretariat with the analysis form the JHPS and their expert advice.

# Note

1. The BHPS was obtained through the UK data archive (www.data-archive.uk).

# *Annex 4.A3*
# Additional tables and figures

**Figure 4.A3.1. The marginal effect of previous labour force/contract status on the probability of transition to unemployment**

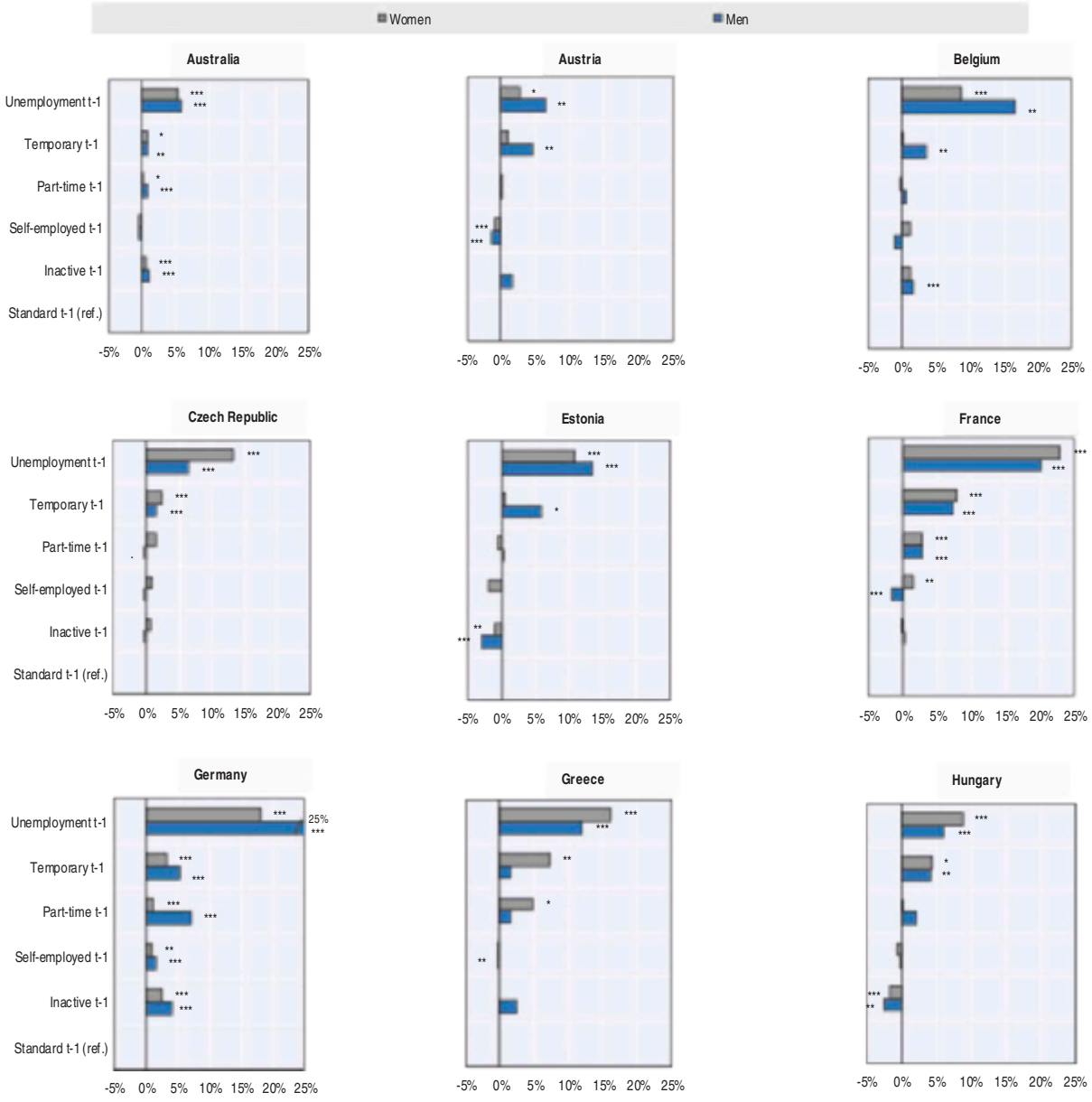
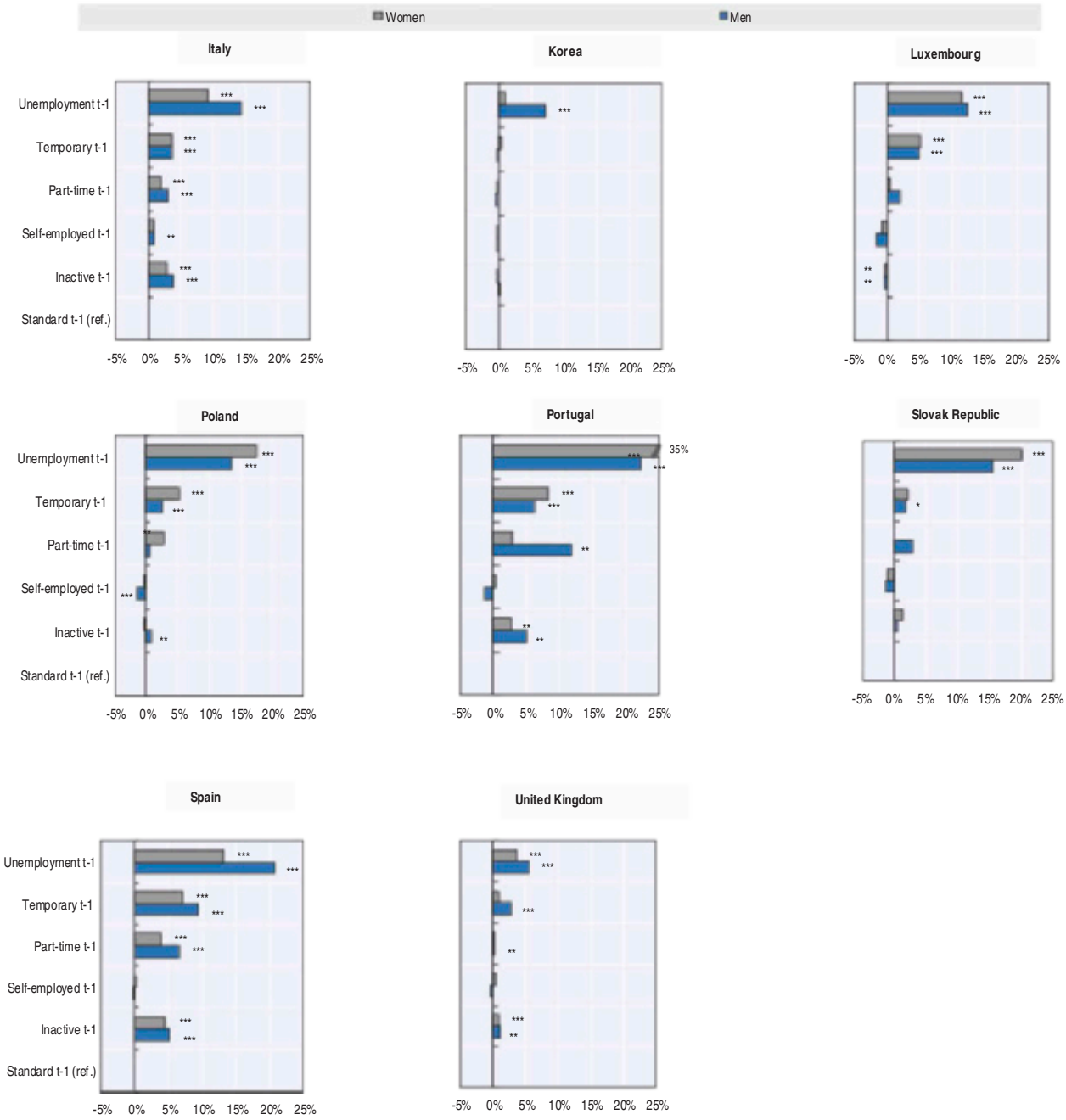


**Figure 4.A3.1. The marginal effect of previous labour force/contract status on the probability of transition to unemployment** *(cont.)*



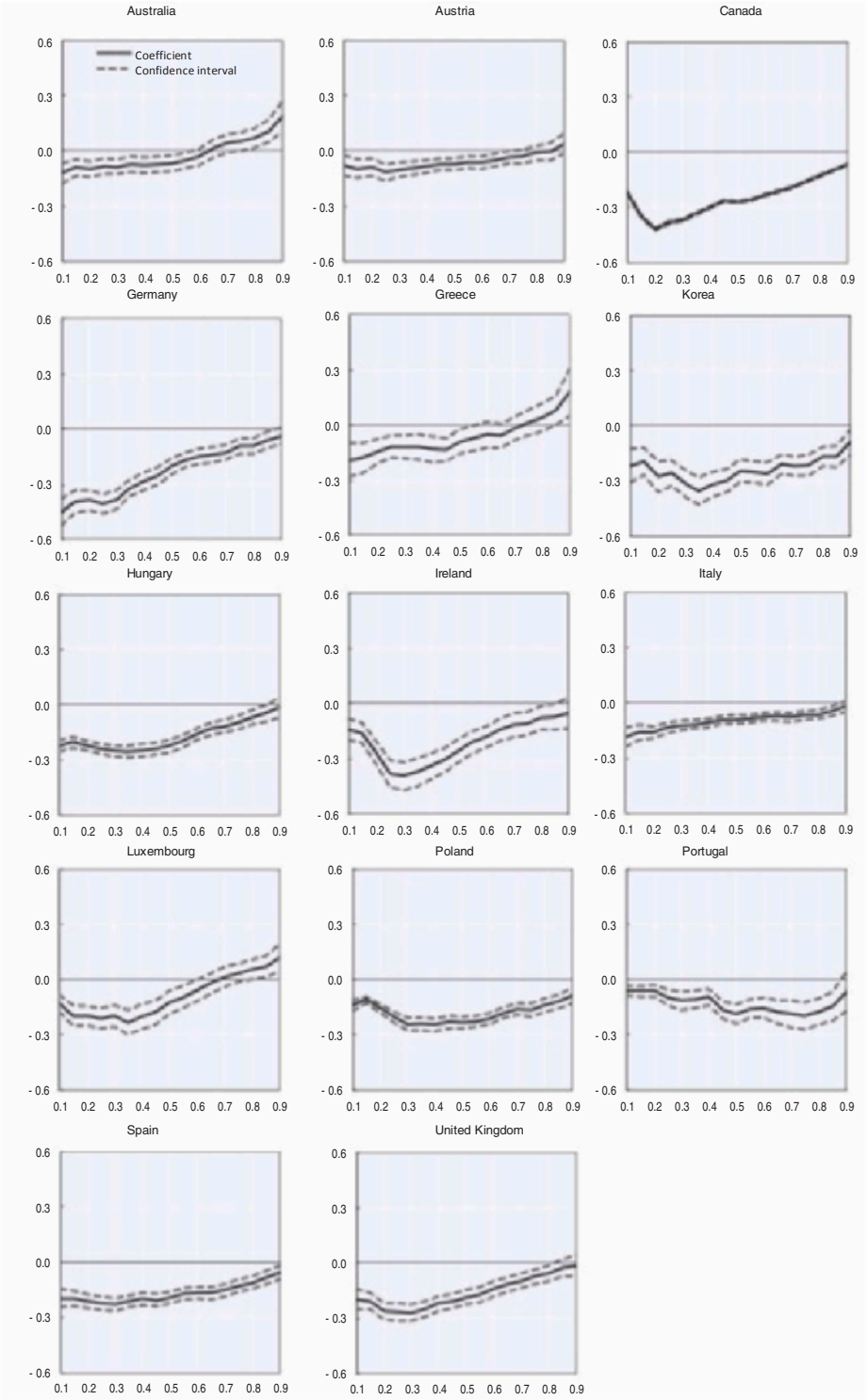

*Note:*

Marginal effects from lagged employment status on the probability of unemployment based on a random effects dynamic probit, controlling for initial conditions. See Figure 4.11 for sample and controls. ***, **, * denote significance at the 1%, 5%, 10% levels, respectively.

*Source:* British Household Panel Survey (BHPS, 2004-2009) for the United Kingdom, German Socio-Economic Panel (GSOEP, 2004-2012) for Germany, European Union Statistics on Income and Living Conditions (EU-SILC, 2004-2012) for other European countries, Household, Income and Labour Dynamics in Australia (HILDA, 2004-2012) for Australia, Korean Labor & Income Panel Study (KLIPS, 2004-2009) for Korea.

StatLink http://dx.doi.org/10.1787/888933208289

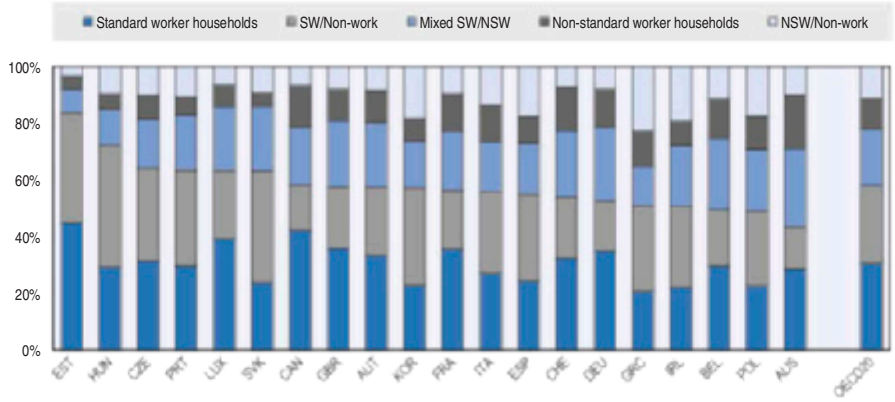
**Figure 4.A3.2. Effect of non-standard work on log hourly wages, by decile**




*Source:* Calculations based on European Union Statistics on Income and Living Conditions (EU-SILC, 2012), Household, Income and Labour Dynamics in Australia (HILDA, 2012), Korean Labor & Income Panel Study (KLIPS, 2009), Labour Force Survey (LFS, 2013) for Canada.

StatLink http://dx.doi.org/10.1787/888933208298

**Figure 4.A3.3. Household work patterns by standard work/non-standard employment, working households, 2010 or most recent year**




*Note:* Standard work (Non-standard work) refers to households with all workers in standard (non-standard) employment; SW/Non-work (NSW/Non-work) refers to households with the presence of both a standard (non-standard) worker and non-worker; SW/NSW refers to households with both standard and non-standard workers. Countries are ranked by increasing shares of households with at least one NSW.

*Source:* European Union Statistics on Income and Living Conditions (EU-SILC, 2012), Household, Income and Labour Dynamics in Australia (HILDA, 2012), Korean Labor & Income Panel Study (KLIPS, 2009), Survey of Labour and Income Dynamics (SLID, 2010).

StatLink http://dx.doi.org/10.1787/888933208303

**Table 4.A3.1. Household income components by household work pattern, pooled 15 EU countries, 2010**

| Household work pattern | Income component, in EUR (share) | | | | Number of non-workers | |
|---|---|---|---|---|---|---|
| | Earnings | Capital | Pub. transfers | Taxes | Number of kids<=17 | Number of adult non-workers |
| Jobless | 5 053 (.31) | 1 386 (.1) | 8 732 (.71) | -2 138 -(.12) | 0.37 | 1.54 |
| Standard work only[1] | 30 350 (1.22) | 801 (.03) | 1 833 (.1) | -9 115 -(.35) | 0.57 | 0.58 |
| Non-standard work only[1] | 17 009 (.94) | 1 259 (.05) | 3 688 (.24) | -5 062 -(.23) | 0.66 | 0.66 |
| SW/NSW[1] | 31 680 (1.22) | 937 (.03) | 1 836 (.08) | -9 158 -(.33) | 0.83 | 0.41 |
| Total | 23 063 (.99) | 1 026 (.05) | 3 554 (.24) | -6 980 -(.28) | 0.59 | 0.76 |

*Note:* Working-age households.

1. May include non-workers.

*Source:* European Union Statistics on Income and Living Conditions (EU-SILC, 2012).

StatLink http://dx.doi.org/10.1787/888933209023

**Table 4.A3.2. Impact on Gini by income source**

| | Sk | Gk | Rk | g * r | Contrib. s*g*r | % contrib. s*g*r/G |
|---|---|---|---|---|---|---|
| Earnings of standard work households | 0.789 | 0.554 | 0.751 | 0.416 | 0.327 | 1.050 |
| Earnings of non-standard work households | 0.211 | 0.799 | 0.336 | 0.267 | 0.057 | 0.179 |
| Earnings of non-working households | 0.093 | 0.897 | 0.326 | 0.293 | 0.028 | 0.089 |
| Investment | 0.043 | 0.892 | 0.370 | 0.327 | 0.017 | 0.049 |
| Government transfers | 0.165 | 0.683 | -0.043 | -0.023 | 0.000 | 0.000 |
| Taxes | -0.302 | -0.500 | -0.811 | 0.407 | -0.123 | -0.377 |
| Total income | | 0.308 | | | 0.308 | 1.000 |

*Source:* European Union Statistics on Income and Living Conditions (EU-SILC, 2010), Household, Income and Labour Dynamics in Australia (HILDA, 2010), Korean Labor & Income Panel Study (KLIPS, 2008).

StatLink http://dx.doi.org/10.1787/888933209038

# *Annex 4.A4*
# Tax-benefit simulations

## The OECD tax-benefit models

The aim of the OECD tax-benefit model project is to examine the effects of tax and benefit systems on families. This is a long-standing activity in the Social Policy Division of the Employment, Labour and Social Affairs Directorate. The results from this work are widely used within the OECD, as well as by many external users including other international organisations, academic researchers and national institutions that monitor developments in social and fiscal policy. The model currently contains more than a decade of information (2001-12) on the tax and benefit systems in place across 33 OECD countries, plus an additional six EU non-OECD countries. Benefits covered in the model include unemployment benefits, social assistance schemes, housing benefits, family benefits and employment conditional benefits. The tax system covers personal income taxes and social security contributions paid by employers and employees.

Using the tax-benefit model, the OECD produces regular updates for a number of key indicators. This includes measures of work incentives, benefit generosity and income adequacy. The results are presented in a standardised format to facilitate comparisons across countries and over time. They capture the effects of taxes and benefits on the incomes of working-age individuals and their families both in and out of work.

Recent work relying on the results of the tax-benefit model include analyses of activation policies and work incentives, benefit adequacy, trends in government redistribution and inequality, barriers to female employment, and countries' policy responses to the recent economic downturn (see www.oecd.org/social/benefits-and-wages.htm for further details).

## EUROMOD

The aim of EUROMOD is to estimate the effects of taxes (national and local income taxes), social contributions (paid by employees, employers and self-employed) and benefits (social assistance, family, housing and other income-related benefits) on household incomes and work incentives for each country of the European Union. While this is used in calculating the effects of existing policies, it is also used to evaluate the effects of tax-benefit policy reforms and other changes on poverty, inequality, incentives and government budgets. EUROMOD cannot take into account the numerous changes occurring in the structure of the population or in the labour market but it can capture changes in the average levels of market incomes and in tax-benefit policies (see www.iser.essex.ac.uk/euromod/resources-for-euromod-users/country-reports for further country-specific details).

## Family types

In the present chapter, results are computed for a set of four typical single-earner families plus the simple average of these families. The standard family types are: single adult living alone, single-earner couple without children, single parent with two children and single-earner couple with two children.

## Measures of work incentives

*Participation tax rate* (PTR) is the proportion of earnings that are "taken away" due to the combined effect of higher taxes and/or lower benefits when an individual moves from inactivity or unemployment into work. It is defined in a similar way as the effective marginal tax rate (EMTR):

$$PTR = 1 - \frac{\Delta y_{net}}{\Delta y_{gross}} = 1 - \frac{y_{net\,IW} - y_{net\,OW}}{y_{gross\,IW}}$$

where IW stands for in-work and OW stands for out-of-work, $\Delta y_{gross} = y_{gross_{IW}} - y_{gross_{OW}}$ and $y_{gross_{OW}} = 0$.

High levels of PTR indicate that a large share of earnings are "taken away" and therefore are associated with small work incentives.

*Transition tax rate* (TTR) is the proportion of earnings that are "taken away" due to the combined effect of higher taxes and/or lower benefits when an individual moves from part-time work into full-time work:

$$TTR = 1 - \frac{\Delta y_{net}}{\Delta y_{gross}} = 1 - \frac{y_{net\,FT} - y_{net\,PT}}{y_{gross\,FT} - y_{gross\,PT}}$$

where FT stands for full-time work and PT stands for part-time work.

High levels of TTR indicate that a large share of the earnings increase is "taken away" and therefore are associated with small work incentives.

# *Chapter 5*

# Women, work and income inequality

*This chapter first presents the trends in inequality between men and women in terms of employment and earnings before discussing the earnings dispersion among male workers and among female workers. The analysis shows that inequality in individual earnings is driven primarily by increased wage dispersion among full-time full-year workers. Looking at the household level, the chapter then presents how changes in work intensity and skill level for women have affected the level of household income inequality. The overall effect of changes in women's employment has been to make the distribution of income more equal.*

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

## 5.1. Introduction and key findings

The increasing participation of women in the labour force has a significant impact on economic growth: a 50% decrease in the gender gap in labour force participation rates has been estimated to lead to an increase in the annual growth rate (GDP per capita) of 0.3 percentage point on average (OECD, 2012).[1] Whether and how higher female labour force participation affects inequality is, however, less clear-cut. The analysis in this chapter shows that having more women in paid (full-time) work results in lower household income inequality, but policies to increase the earnings potential of lower-earning women are needed to further strengthen this effect.

A clear consensus on the importance of the channels through which women's increased labour force participation rate affects household inequality is still missing. The literature on the contribution of women's earnings to household inequality shows mixed results. Some studies found an equalising effect for married couples (Cancian et al., 1993; Cancian and Reed, 1998). Other studies (Esping-Andersen, 2009; Shorrocks, 1983; Lerman and Yitzhaki, 1985; and Karoly and Burtless, 1995) found that the increasing correlation between husbands' and wives' earnings over time led to wives' earnings magnifying family income inequality. People's tendency to live with spouses in groups at similar earnings levels ("assortative mating") and other changes in household structure, such as the rise in single-headed households, have been previously found to increase earnings inequality (OECD, 2011; Greenwood et al., 2014).

Recent studies point to an inverse relationship between female employment and income inequality (e.g. Harkness, 2010). For a sample of 23 OECD countries, OECD (2011) showed that the growth in female employment tended to have an equalising effect on household earnings in all the countries studied, despite substantial differences in employment levels and type of employment and in pay gaps across countries.

This chapter first documents the trends in gender gaps in terms of employment and pay up to the most recent year. It then examines how changes in the distribution of *female earnings and hours of work* have affected the evolution of individual earnings and household income inequality for the period from the late 1980s up to the economic crisis. While most of the literature looks at aggregate employment trends, the analyses below decompose different employment types (full-time/part-time, full-year/part-year) to analyse the impact of changing patterns of women's employment in more detail. The three pathways through which women's labour market participation affect the distribution of household income discussed here are: first, trends in individual gross earnings; second, trends in household gross earnings; and, finally, total household disposable income (after taxes and transfers).

Within this framework, inequality in individual earnings is assessed in terms of the development of both *between*-group and *within*-group inequalities (Sections 5.2 and 5.3). The former looks at gender gaps in wages and labour force participation, and the latter at changes in the dispersion of earnings among male and female workers separately. The second pathway, which describes the impact on the distribution of *household* earnings, examines the correlation of earnings between husbands and wives as well as how this has developed over time (Section 5.4). This last section uses a novel approach to decomposition to link the explanatory gender-relevant labour market factors to household income inequality.[2]

The key findings from the analysis in this chapter are:

- In the past 20 years, gender gaps in employment and earnings have declined in most OECD countries, but they persist. Women are still less likely to being in paid work, to progress in their career and are more likely to earn less in their job.
- From the mid-1980s to the late 2000s, there was a trend towards greater earnings inequality both among men and women, but the increase was lower for women because female low-wage workers increased their hours more and also because their relative earnings progressed faster than those of their male counterparts.
- Increases in individual earnings inequalities between 1985 and the late 2000s were driven by rising inequality mainly among full-time full-year workers, especially among men. This means that widening earnings inequality is driven by a widening gap in pay for full-time workers who work the whole year, rather than by a change in the composition of employment, *i.e.* more part-time workers.
- In the past two decades, there was an increase in the proportion of households with women working full-time and having a high-skilled job. The former contributed to a decline in household income inequality while the latter tended to increase it slightly. Taken together, the overall effect was towards equalisation, countering the trend for income inequality to increase.

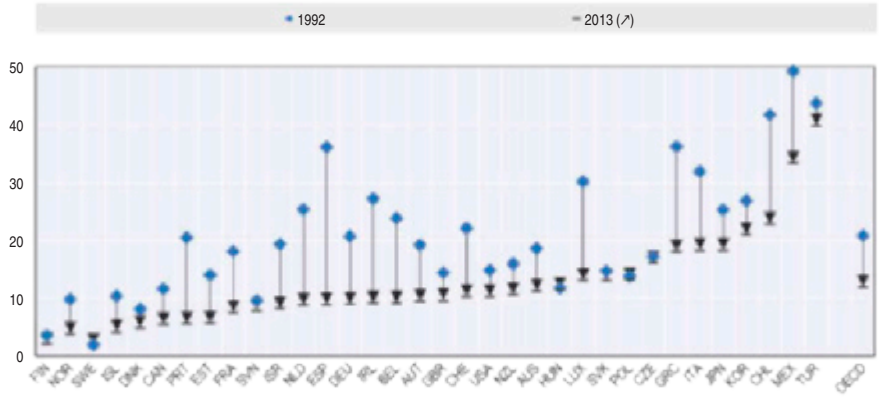
## 5.2. Trends in employment and earnings gaps between men and women

### *Women's employment rates have increased in all countries*

The gender employment gap, defined as the difference in employment rates between men and women, has narrowed in all OECD countries during the last twenty years, except in Sweden where it was negligible already in the early 1990s (Figure 5.1): on average it declined by almost 8 percentage points. The reductions in the gender employment gap were not systematically related to its size. The largest reductions were in Spain and Ireland, where the gap declined from around 30 percentage points in 1992 to below 10 percentage points in 2013. For Ireland, recent research suggests that most of the narrowing of the gap was a result of the onset of the recession in 2008-09 (McGinnity et al., 2014). Gender employment gaps were closing in most OECD countries during the early years of the economic crisis as a result of higher men's unemployment (OECD, 2013). Not surprisingly, the gender gap has not changed much in the Nordic countries, where female employment rates have been high traditionally, at 70% or more; the gender employment gap is thus small, generally less than 5 percentage points. By contrast, in some southern European, Latin American and Asian countries, it is above the OECD average of 16 percentage points. In Turkey, it is even close to 40 percentage points.

**Figure 5.1. Employment gender gap in 1992 and 2013**

Percentage-point difference between men and women employment rates (persons aged 15-64)




*Note:* Employment gender gap: difference in percentage-points between men and women employment rates (persons aged 15-64). 1992 refers to 1993 for the Czech Republic; 1994 for Austria and the Slovak Republic; 1996 for Chile; and 2002 for Slovenia.

*Source:* OECD estimates based on the *OECD Short-Term Labour Market Statistics Database* and the *OECD Labour Force Statistics Database*.

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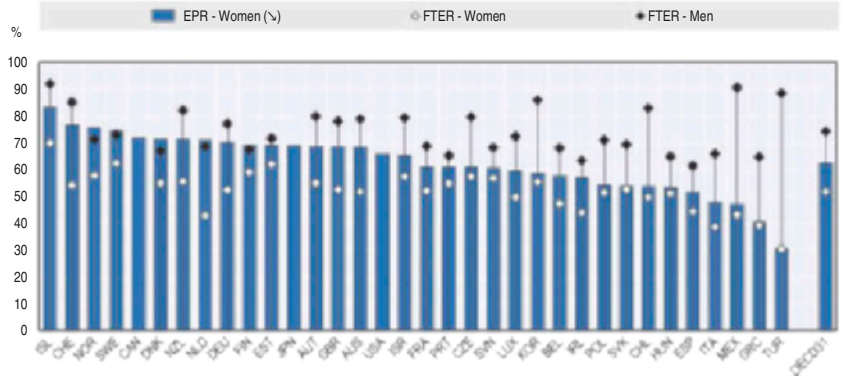
## *Substantial gender differences remain in working hours*

Even though gains in female educational attainment have contributed to improving women's conditions in the labour market, considerable differences remain in the type and quality of jobs held by women and in their working hours. Women are much more likely to work part-time. When accounting for working hours, the gender employment gap widens to 22 percentage points on average (Figure 5.2). The gap is larger in countries where the overall employment gap is very large (Chile, Mexico and Turkey) but also in Switzerland, where many women work part-time and the gap in full-time equivalent rates (FTER)[3] is three times larger than the gender gap in employment. Motherhood makes part-time work much more likely, and the share of part-time work in total female employment is greater in countries with significantly higher childcare costs (OECD, 2010).

**Figure 5.2. Employment/population ratios (EPR) and full-time equivalent employment rates (FTER), 15-64 years old, 2013**




*Note:* The employment/population ratio (EPR) is defined as the proportion of employed in the working age population. The full-time equivalent rate (FTER) is calculated as the employment/population ratio, multiplied by the average usual hours worked per week per person in employment, then divided by 40.

*Source: OECD Employment Database.*

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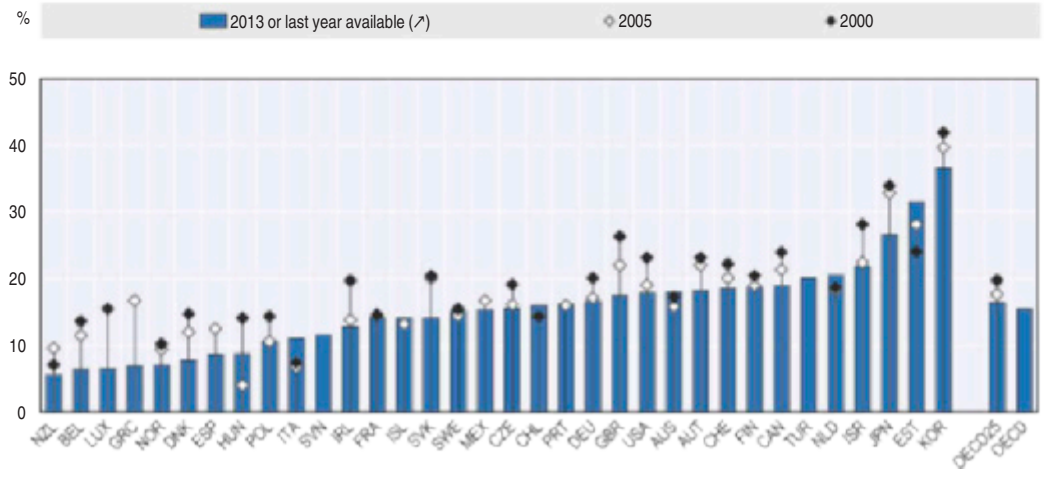
Labour markets are also segregated by occupation ("horizontal segregation"). Women and men tend to work in different sectors, and this has not changed much since 2000. Women dominate the service sector (83% of women, compared to 34% of men), while men are overrepresented in industry (OECD, 2012). Within the service sector, gender gaps are largest in health and social work, followed by education. In addition to horizontal segregation, women also face a "glass ceiling" or "vertical segregation" because they do not advance in their careers as fast or as far as men. On average, just over one-third of managers are women in 2013, with small variations across countries (OECD Gender Data Portal, www.oecd.org/gender/data/). In the public sector, where women are overrepresented and account for 58% of the total sector workforce, career opportunities for women are more comparable to men's but women still make it to the top less often (OECD, 2012).

### *Gender pay gaps have narrowed but persist*

Women are less likely than men to progress in their careers and more likely to be employed in lower-paid occupations. These are all factors that contribute to the persistence of a gender gap in pay. In all OECD countries, median wages for men are higher than those for women, although the gap has narrowed over time. Even among full-time employees, in 2013 women earned, on average, 15% less than men (Figure 5.3). This is an improvement of four percentage points from 2000. The recent decline in gender pay gaps is due to the reduction of disparities in the extra-wage components of pay, rather than the wage itself. Gender wage gaps are highest in Korea, Estonia and Japan, at between 26.6% and 36.6%.

**Figure 5.3. Gender pay gaps over time**

Gender pay gap in earnings for full-time employees 2000, 2005 and 2013 or last year available




*Note:* The wage gap is defined as the difference between male and female median wages divided by male median wages. Estimates of earnings used in the calculations refer to gross earnings of full-time wage and salary workers. Self-employed and unpaid family workers are not included in the calculations. Data for 2000 refer to 2001 for Israel and Poland and to 2002 for Estonia, the Slovak Republic, Luxembourg and the Netherlands. Data for 2005 refer to 2006 for Estonia and the Netherlands and to 2004 instead for Switzerland, Italy and Poland. The data for 2013 refer to 2010 for Estonia, France, Luxembourg, the Netherlands, Slovenia, Switzerland and Turkey, to 2011 for Chile, Iceland, Germany and Israel, and to 2012 for Belgium, Greece, Denmark, Spain, Poland, Italy, Sweden, Portugal, Austria and Finland.

*Source: OECD Database on Earnings Distribution and* OECD Secretariat estimates based on CASEN (*Caracterizacion Socioeconomica Nacional*).

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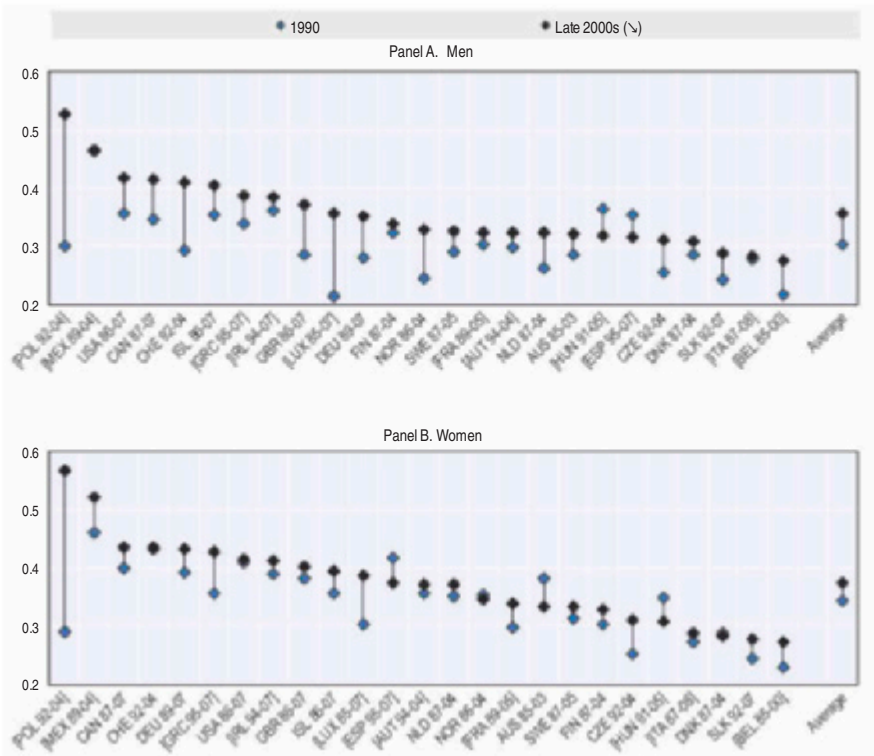
## 5.3. Trends in individual earnings inequality among male and female workers

This section analyses the changes in inequality *within* the two groups, men and women, based on analyses of micro data of the Luxembourg Income Study.[4] Greater diversity over the life course in women's employment patterns is likely to affect the distribution of women's earnings. A larger share of part-timers among women may mean that female earnings are distributed more unequally than men's. At the same time, there is little empirical evidence on changes in female earnings inequality over time. Since changes in annual earnings depend on both earnings and hours worked, this section discusses differences and similarities in trends for both of these factors for men and women.

### *Lower but more rapidly increasing earnings inequality among men*

Across the OECD, women's annual earnings[5] were slightly more unequally distributed than those for men in the late 2000s, but in most countries the differences were small (Figure 5.4). On average, the Gini coefficient (where 0 represents perfect equality and 1 perfect inequality) was two percentage points higher among women in the late 2000s. Germany showed the largest gender difference, with women's Gini being almost 8 points higher than men's, followed by Mexico and Spain. On the other hand, in Belgium, the Czech Republic and the United States there was no sizeable difference in earnings inequality between men and women. In Denmark and Finland, by contrast, earnings inequality was slightly lower among women.

**Figure 5.4. Changes in annual earnings dispersion, workers with positive earnings**




*Note:* Working-age (25-64) workers with positive annual earnings. Sample restricted to paid workers with positive wages. This excludes self-employed and those employed without income. Earnings refer to net earnings for countries in square brackets and to gross earnings for the other countries. The figures presented here include part-time, part-year employment.

*Source:* OECD Secretariat calculations from the Luxembourg Income Study (LIS).

StatLink http://dx.doi.org/10.1787/888933208349

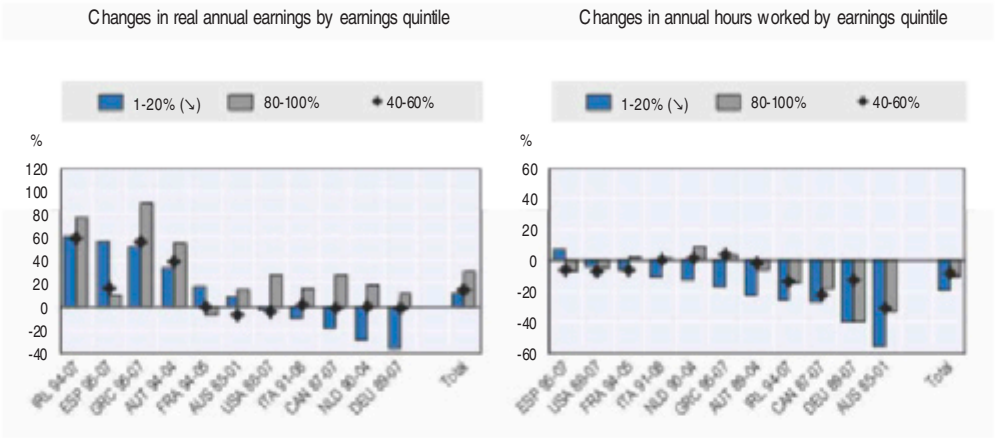
In almost two-thirds of OECD countries, the inequality in men's earnings rose more than that for women between the mid-1980s/early 1990s and the late 2000s (Figure 5.4). Male earnings inequality rose by 17%, on average, compared to 9% for females, or by 5 Gini points for men and 3 points for women. In some countries, such as Australia and Norway, earnings inequality declined for women while it increased for men. Similar though less pronounced patterns emerge for Switzerland, the United Kingdom and the United States. By contrast, earnings inequality increased by a far greater amount for women than for men in Mexico.

### *Why did earnings inequality increase less for women?*

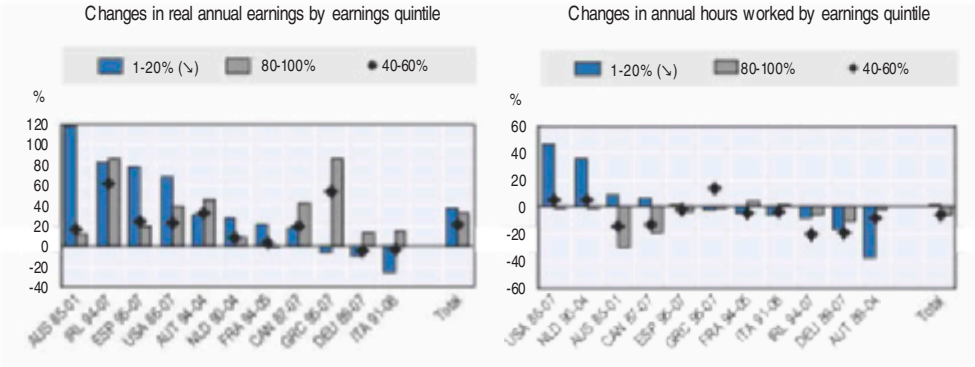
Changes in individual annual earnings inequality depend on changes in both hourly wages and annual hours worked among different groups along the income distribution. The overall effect depends on whether changes in both components reinforce each other or work in opposite directions. Figure 5.5 presents changes in real annual earnings and in hours worked, by men and women at the bottom, middle and top of their respective earnings distribution. In most countries, the gap between higher-paid workers and lower-paid workers widened for men but not necessarily for women.

**Figure 5.5. Percentage changes in real annual earnings and annual hours worked by earnings quintile**

Panel A. Men




Panel B. Women




*Note:* Working-age (25-64) workers with positive annual earnings. "1-20%" refers to bottom earnings quintile; "40-60%" refers to middle earnings quintile; "80-100%" refers to top earnings quintile. Earnings are CPI adjusted in 2005 national currency.

*Source:* OECD Secretariat calculations from the Luxembourg Income Study (LIS).

StatLink http://dx.doi.org/10.1787/888933208351

First, while at the top of the distribution trends in real earnings were similar for both men and women, at the bottom of the distribution, women's real earnings increased more (or decreased less) than men's in most countries.

Second, while men at the bottom of the earnings distribution tended to reduce their working hours between the mid-1990s and the late 2000s, women in the bottom quintile increased their hours or reduced them to a lesser extent than men in most countries. In the United States, for instance, these developments were linked to stagnating educational attainment among men and deteriorating employment prospects for less-educated males (Autor and Wasserman, 2013). In Australia, hours worked have increased mostly among part-timers, who are mostly women, in the lower part of the distribution, while working hours for full-timers have been stable and employment rates for men have declined (Greenville et al., 2013)

### *What counts more for earnings inequality: changes between men and women or within different groups of male and female workers?*

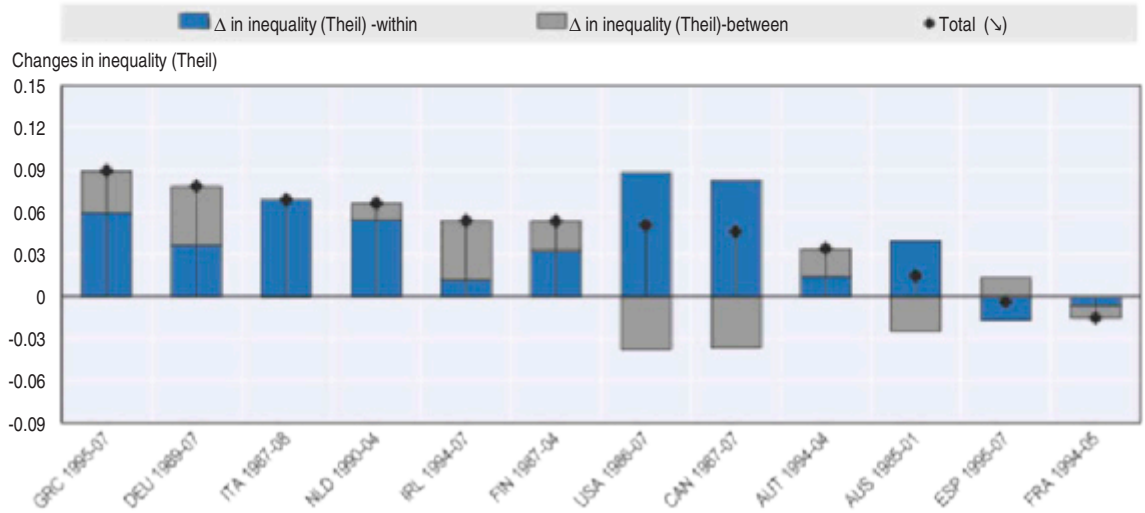
Changes in earnings inequality may reflect changes in the composition of employment (e.g. increased share of part-time or part-year work), or it may reflect widening wage dispersion within such employment-specific groups. For instance, male wages may contribute to growing overall inequality because they become more dispersed, while the composition effect, *e.g.* increased participation in part-time/part-year jobs, may be the main channel through which women affect overall inequality. To test this hypothesis, this section applies an analysis that decomposes earnings inequality (measured by the Theil coefficient)[6] by subgroup (between men and women from four different employment groups, i.e. full-time full year, full-time part-year, part-time full year and part-time part year).

Figure 5.6 reveals that changes in "within-inequality" (that is, wage dispersion within the groups) were the key driver in explaining widening earnings inequality.[7] In eight of the ten countries where inequality increased, the within-group effect was the biggest contributor to changes in inequality. In Australia, Canada and the United States, the increase in wage dispersion within the groups was even large enough to outweigh a significant negative (i.e. equalising) effect of the between-group component. In most countries increases were primarily driven by growing wage dispersion among full-time full-year (FTFY) workers, both male and female (except in the Netherlands where this concerned only men). Contributions to changes in within-inequality from other subgroups are generally very modest, with one exception: in Finland, inequality among part-time full-year (PTFY) workers (mostly men) contributed most (see Annex 5.A2, Table 5.A2.1).

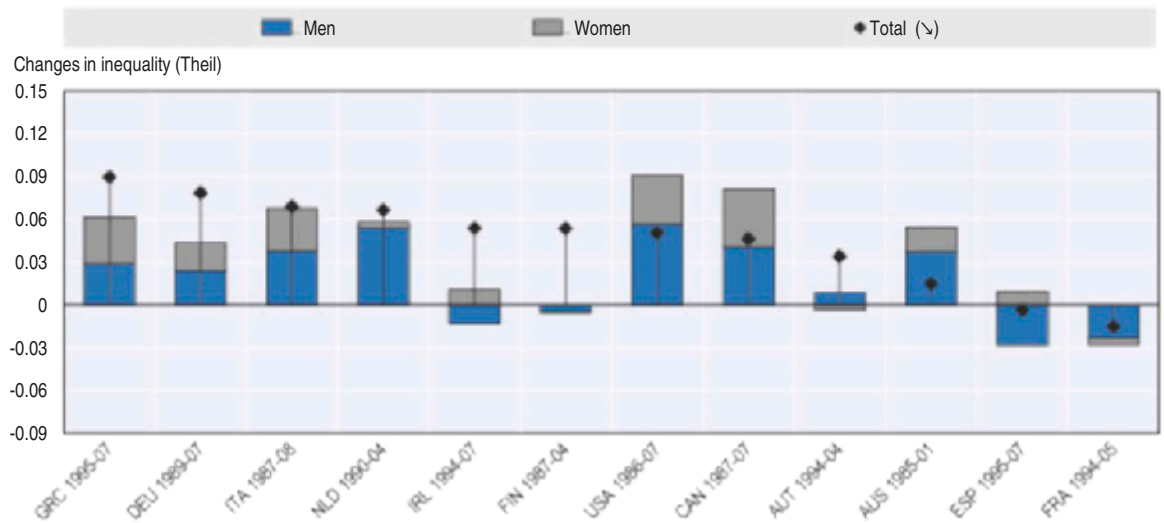
The role of gender-specific changes in inequality for overall inequality is much less important. The reason is that changes between different types of workers tend to cancel each other out: while more women in part-time work reduced individual earnings inequality in most countries studied, women in FTFY jobs contributed to an increase in between-inequality because their earnings (relative to the national average) have improved over time (Table 5.A2.1. in Annex 5.A2).[8] Austria and Ireland are the only countries where the between-group component outweighs the effect of within-group inequality, in both countries again driven by full-time full-year workers.

**Figure 5.6. Contribution to changes in individual earnings inequality by gender**

Panel A. Changes in inequality (Theil index), by between/within-group component




Panel B. Changes in inequality (Theil index), by within-group component




*Note:* Working-age (25-64) workers with positive annual earnings. Samples include only countries where information on both weeks worked per year and hours worked per week is available. Changes in Panel B reflect the impact of the within component for full-time full–year workers.

*Source:* OECD Secretariat calculations from the Luxembourg Income Study (LIS).

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## 5.4. From individual to household earnings and the income distribution

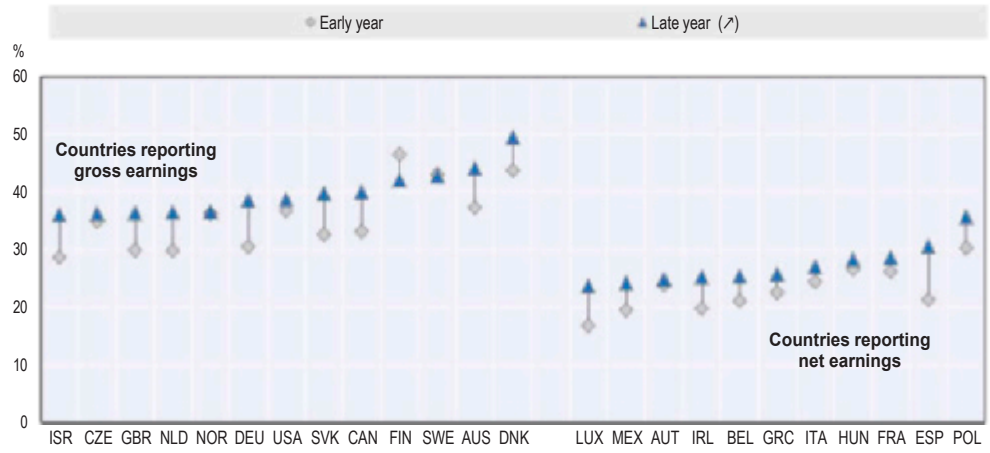
Inequality in *household* earnings depends on the joint distribution of the earnings of all persons in the family. Previous OECD work (2011) has shown that moving from the individual to the household perspective significantly reduces earnings inequality, by almost 9 Gini points in countries reporting gross income and by 12 points in countries reporting net earnings.

Inequality of household earnings is influenced by labour market factors – the earnings and employment intensity of household members – as well as the characteristics of household members, i.e. their education level, whether they are single or couple households or have children. These factors have changed over time, with more women working but also more single-person households, and they have been found to contribute to growing household earnings inequality. The following two sub-sections discuss changes to the intra-household division of labour and how these may impact on household earnings, and they present an analysis of the phenomenon of "assortative mating", a growing trend of "liking to live with like" (couples with similar education or earnings). The third and last sub-section estimates the effect on overall income inequality.

### *Changes in female participation, work intensity and job nature within the household*

With increased female labour force participation, women's contributions to household income have grown. From the mid-1980s/early 1990s to the late 2000s, the share of female earnings rose by 12% in countries reporting gross earnings and by almost 20% in countries reporting net earnings (Figure 5.7). The relative increases were largest in Spain (43%), Luxembourg (40%) and Ireland (27%). By contrast, in some Nordic countries there was either little change (Norway, Sweden) or a decline (Finland a 9% decrease).

**Figure 5.7. Female earnings as a share of total disposable household income, mid-1980s/early 1990s – mid/late 2000s**

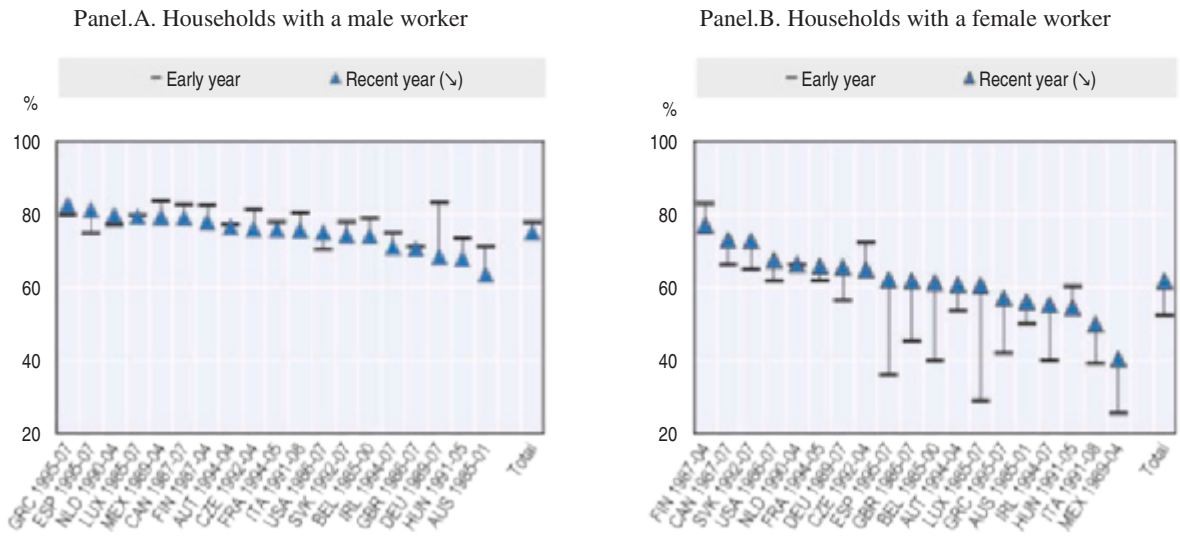



*Source:* OECD Secretariat calculations from the Luxembourg Income Study (LIS).

StatLink http://dx.doi.org/10.1787/888933208372

Figure 5.8 shows that the proportion of households with a working woman (either head or spouse) increased in nearly all OECD countries under study, on average by 9 percentage points, from 52% in the mid-1980s/early 1990s to 61% in the late 2000s (Panel B). Luxembourg, Spain and Belgium saw the largest increase in this share: more than 20 percentage points over the period studied. By contrast, the share of working-age households with a working man remained relatively stable (at 76%) over time in most countries (Panel A). Germany, nevertheless, witnessed a significant decline (by about 15 percentage points) in men's employment participation among households during this period.

**Figure 5.8. Changes in male/female labour participation among households**




*Note:*

Sample restricted to households with a working-age head (25-64).

A male/female worker refers to someone who is either the head or spouse in a household.

*Source:* OECD Secretariat calculations from the Luxembourg Income Study (LIS).

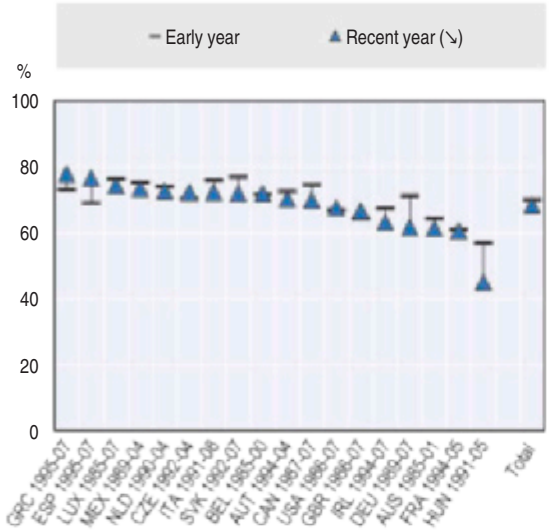
StatLink http://dx.doi.org/10.1787/888933208380

Similarly, employment intensity at the household level has also increased noticeably as more women work full-time around the year than in the past (Figure 5.9). In Spain, for instance, in 1995 only 22% (25%) of households had a woman working full-time (full-year), compared to 42% (52%) in the year prior to the crisis. Dutch women are now working more weeks per year, though not more hours per week. The share of households with a full-time working woman in the Netherlands has remained low at 20% over time, while the prevalence of women working full-year among households has gone up significantly, from 32% in 1990 to nearly 60% in 2004. The equivalent share for men was stable in most countries, although Germany and Hungary saw significant declines for full-time workers and Australia for full-year working men in the same period.

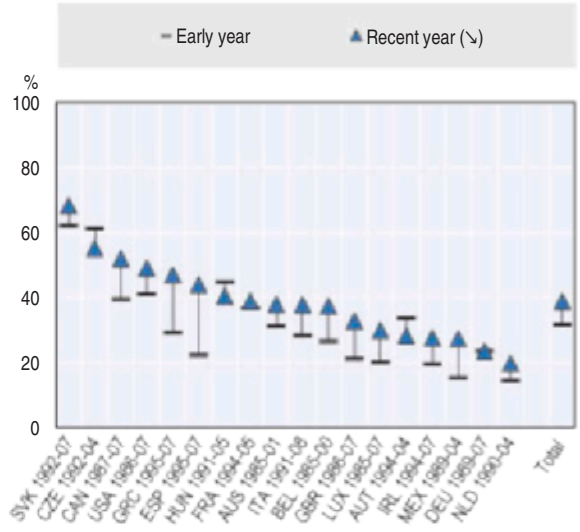
In addition to increasing participation and work intensity, women have also increasingly become more involved in high-skilled/high-paying occupations over time, primarily driven by their rising levels of educational attainment. While this development tends to reduce the gender pay gap, it may increase earnings dispersion among female workers, and in turn affect the distribution of household income. Figure 5.10 reveals that the proportion of households with a woman working in managerial-professional-technical jobs has grown, on average, by 10 percentage points (from 14% to 24%) since the mid-1980s/early 1990s. The increase is especially large (more than 15 percentage points) among households in the United States, the Netherlands, Luxembourg, Spain and Belgium. The same is true for men, albeit to a lesser degree. The share of households with male high-skilled workers has risen most in Spain and Finland (more than 20 percentage points over time).

**Figure 5.9. Changes in male/female employment intensity among households**

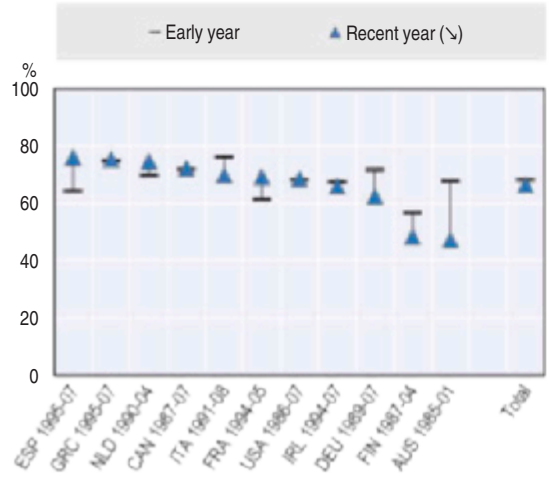
Panel A. Households with a male working full-time



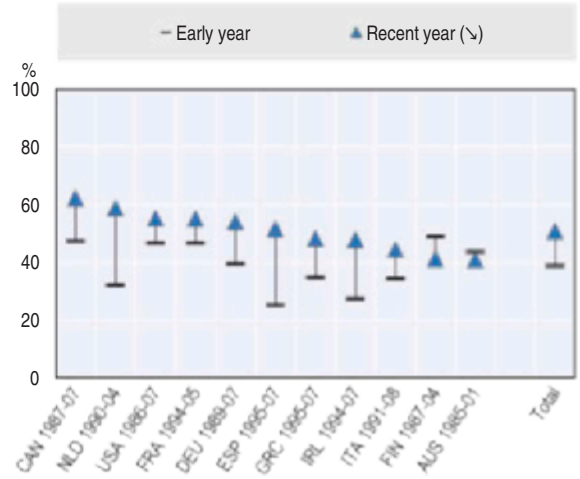

Panel B. Households with a female working full-time




Panel C. Households with a male working full-year




Panel D. Households with a female working full-year




*Note:*

Sample restricted to working-age (25-64) households.

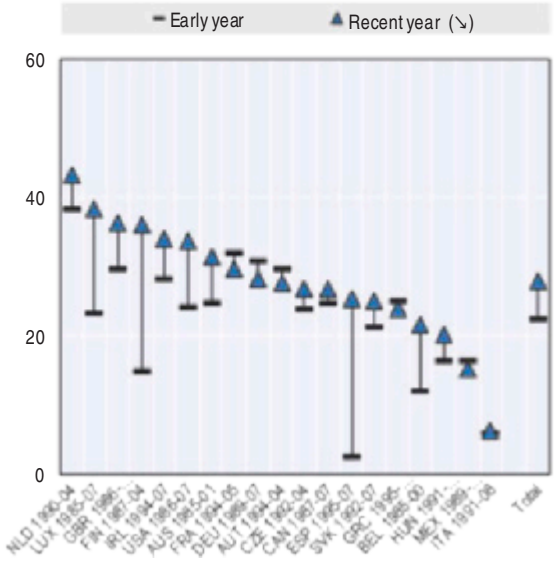
A male/female worker refers to someone who is either the head of a household or the spouse. Full-time refers to 35 or more hours worked per week, full-year refers to 45 or more weeks worked per year.

*Source:* OECD Secretariat calculations from the Luxembourg Income Study (LIS).

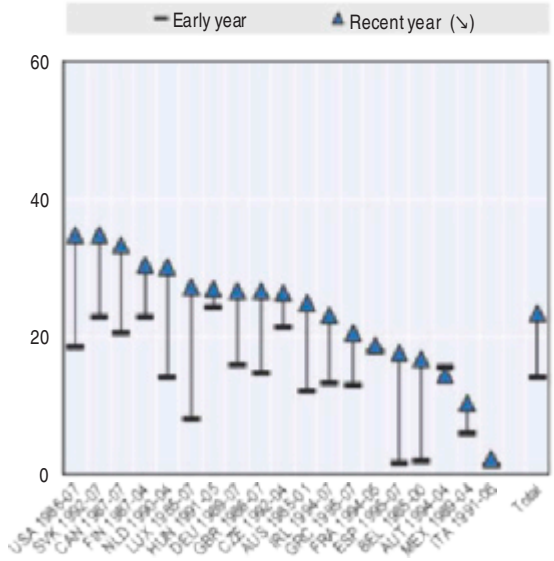
StatLink http://dx.doi.org/10.1787/888933208391

**Figure 5.10. Changes in male/female job skill nature among households**

Panel A. Households with a male in high-skilled job




Panel B. Households with a female in high-skilled job




*Note:* Sample restricted to working-age (25-64) households.

A male/female worker refers to someone who is either the head or spouse of a household. High-skilled jobs correspond to the first three categories of the 1-digit ISCO (i.e. managers, professionals and technicians).

*Source:* OECD Secretariat calculations from the Luxembourg Income Study (LIS).

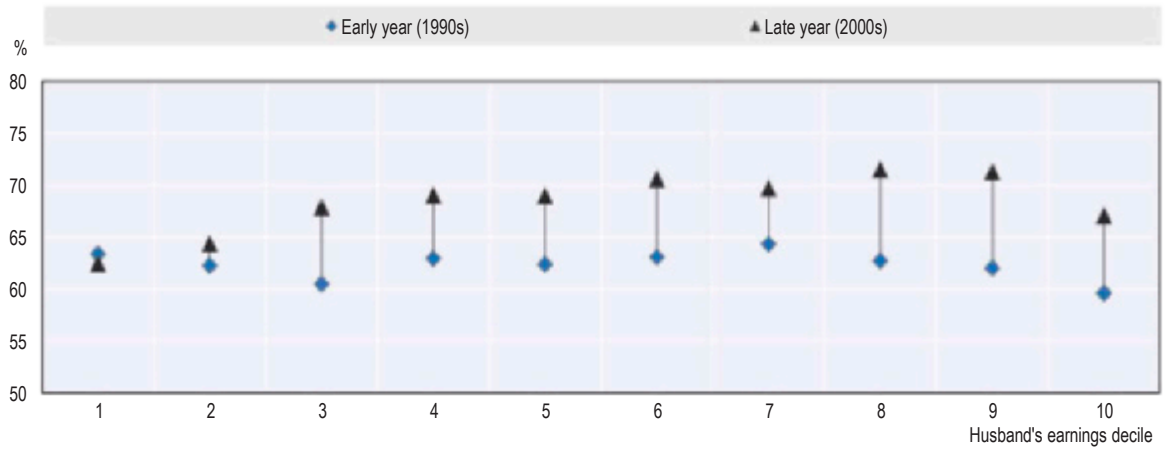
StatLink http://dx.doi.org/10.1787/888933208408

### *More couples with partners from a similar background*

A further factor explaining changes in household income inequality is the way in which families and households are formed. How a rise in women's labour earnings affects inequality in household earnings will also be influenced by the correlation between the earnings of wives and husbands. There is increasing evidence that men and women with similar characteristics are more likely to be married to each other, a phenomenon described as "assortative mating" (OECD, 2011). Evidence from the United States and Canada suggests that wives of high-paid husbands increased their employment and their hours worked more than did the wives of lower-paid husbands (Junh and Murphy, 1997; Morissette and Hou, 2008).[9]

Figure 5.11 presents one way to look at the effect of assortative mating, defined as changes in wives' employment rates by husband's earnings decile, for the OECD average (country-specific figures are shown in Figure 5.A1.1 in Annex 5.A1). Between the 1990s and the late 2000s, in two-thirds of the countries female employment rates increased more among women whose husbands were in the top earnings deciles than among those at the bottom of the distribution. In one-third of the countries (Belgium, France, Greece, Ireland, Italy, the Netherlands, the United Kingdom), the growth in employment rates of wives of the top earners was at least twice as large as for the lower earners. In certain countries, such as Italy and Mexico, the employment rates of wives of top earners increased more than for wives of low earners at the end of the 2000s while the opposite was true in the early 1990s.

**Figure 5.11. Wives' employment rates, by the husband's earnings decile, OECD average**



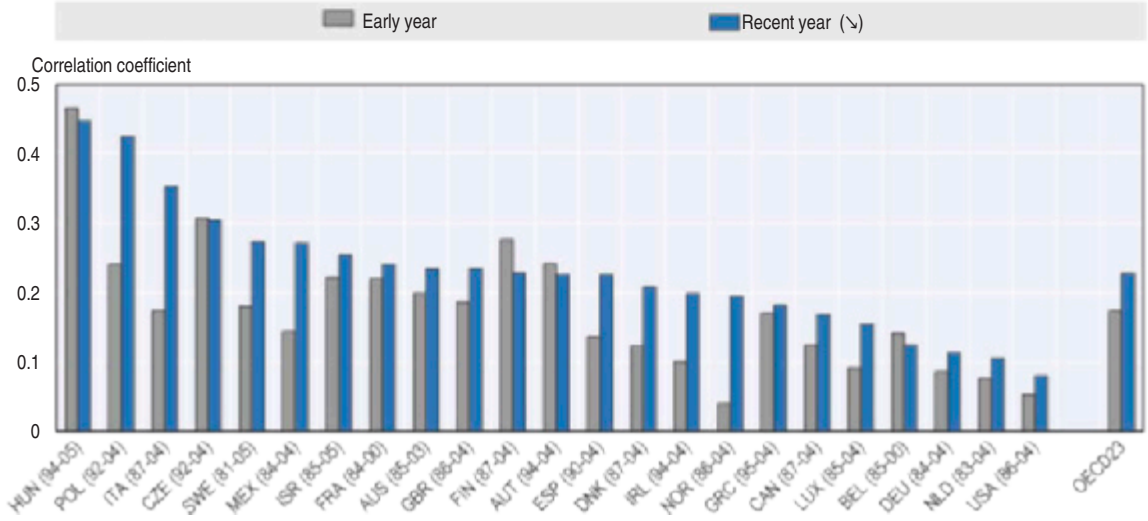

*Note:* Figures refer to couple households, with or without other people in the household. Only includes couples with one female and one male. Unmarried, cohabiting partners are included. Both are of working age (25-64).

*Source:* OECD Secretariat calculations from the Luxembourg Income Study (LIS).

StatLink http://dx.doi.org/10.1787/888933208414

Figure 5.12 shows that in all countries (except Finland) the correlation between the earnings of husbands and wives increased over this time period. While still at a relatively low level, the data show an average increase in the correlation coefficient between the earnings of husbands and wives from 0.18 to 0.22 over the past 20 to 25 years. The increase in this correlation is particularly strong in Italy, Norway and Poland but also in Denmark and Luxembourg, among others.

**Figure 5.12. Correlation between the earnings of husbands and wives, couple households with at least one person working**




*Source:* OECD Secretariat calculations from the Luxembourg Income Study (LIS).

StatLink http://dx.doi.org/10.1787/888933208422

### *How do labour market factors drive changes in household income inequality over time?*

What would be the level of overall income inequality if households today had the same proportion of women working as households 20 years ago if the pay structure remained at today's level for households with a female worker. This sub-section analyses the effect of changes in household employment patterns on household disposable income, i.e. considering income components beyond earnings (see Box 5.1). In particular, it looks at two questions: to what extent have changes in women's employment characteristics at the household level discussed in the earlier sections contributed to the increase in income inequality? And what role did female participation, employment intensity and job characteristics play in the upward trend in household income inequality? To answer these questions, it is useful to simulate a series of counterfactual distributions of household income. The counterfactual exercise builds on the results from a decomposition approach based on Firpo et al. (2007) and Fortin et al. (2010) and is described in Annex 5.A3.

Figure 5.13 suggests that in almost all countries the combined changes in women's work are found to exert a substantial effect in countering a rise in household income inequality. These effects can be broken down into four components: women's employment rates, women's work intensity, the share of females in skilled jobs, and the overall returns to female employment (wage effect).

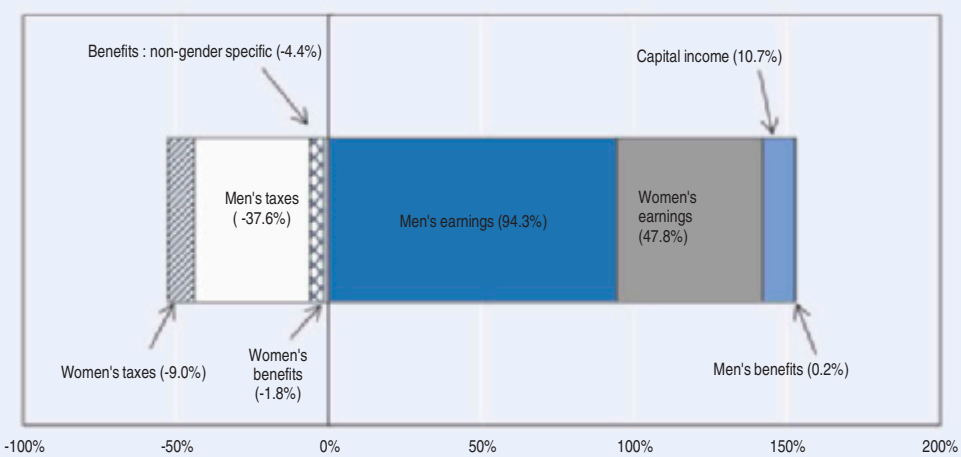
First, an increase in female employment is associated with a reduction in household income inequality. The figure shows that if the proportion of households with a working female had remained the same as in the mid-1980s, household income inequality would have increased, on average across the OECD countries, by an additional 0.8 point, i.e. an increase in the Gini from 28.2 to 31.6 instead of 30.8. The equalising impact of rising female employment was larger in countries such as Belgium, the Netherlands, Spain and the United Kingdom, where the share of working-age households with female workers increased greatly: this contributed to lowering inequality by 2.5 or more Gini points in these countries. In contrast, given men's stability in terms of employment rates, the impact of male employment at the household level was neutral overall (Annex 5.A3, Figure 5.A3.1).

## Box 5.1. Components of household income by gender

It is important to keep in mind that while earnings constitute the bulk of household income, other income components such as taxes and benefits play a role in the evolution of income. For instance, in the Nordic countries the total share of social transfers represents close to 20% of household income (25% in Sweden), while in Australia and the United States it constitutes 8% and 7%, respectively. The respective contributions of earnings and other income sources to overall inequality can be estimated (see OECD, 2011), and it is interesting to consider the extent to which the contributions of gender-specific income components can be estimated. The figure below presents the results of a decomposition analysis by income source, separating the different components that contribute positively or negatively to inequality. It examines the relative contributions of gender-specific income components to income inequality using a decomposition by income source (following Lerman and Yitzhaki, 1985). The Gini coefficient for total income, G, can be represented as $G = \sum_{k=1}^{K} C_k = \sum S_k\, G_k R_k$ where $S_k$ is the share of source k in total income, $G_k$ is the Gini coefficient corresponding to the distribution of income from source k, and $R_k$is the correlation of income from source k with the distribution of total income. The relative contribution of source k to total income inequality can then be calculated as $C_k^R = \frac{S_k G_k R_k}{G}$. This approach relies on the assumption that flat-rate distributed benefits make a neutral or "zero" contribution to inequality, and thus do not account for a decreasing marginal benefit for transfers along the income distribution.

The decomposition looks at gender-specific components for earnings and taxes components. For the analysis, household income is divided into men's labour income, women's labour income, capital income, social transfers (disaggregated into the components allocated to men and women) and overall household-related benefits, and taxes paid by men and women. Some sources, in particular capital income and some social benefits, can be recorded only at the household level. On average, four components contribute positively (i.e. increase) to inequality: men's earnings, women's earnings, capital income and men's related social benefits, although the effect of the latter is almost nil. Men's earnings are the largest contributor to inequality, while the role of women's earnings is about half that size. Taxes and social benefits tend to decrease inequality, especially men's related taxes. Taking into account the different components by gender, the share of inequality explained by men's related income components is close to 57% while the female share accounts for 37% of overall inequality.

**Decomposition of household income inequality by income source, average across 13 OECD countries, late 2000s**




*Note:* Sample includes only working-age (25-64) couple households in countries that report all components in gross terms (Australia, Canada, Czech Republic, Denmark, Finland, Germany, Ireland, Netherlands, Norway, Slovak Republic, Sweden, United Kingdom and United States).

*Source:* OECD Secretariat calculations from the Luxembourg Income Study (LIS).

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**Figure 5.13. Contribution to percentage point changes in Gini of household disposable income, RIF decomposition results**

Composition and wage structure effects (women)

*Note:* Sample includes working-age (25-64) households. RIF: Recentered Influence Function (RIF) regressions. The wage structure effects combine three covariates participation, work intensity and nature of job skill. FT: Full-time, FY: Full year.

*Source:* OECD Secretariat calculations from the Luxembourg Income Study (LIS).

StatLink http://dx.doi.org/10.1787/888933208441

Second, an increase in the work intensity of women in the past two decades is also associated with lower household income inequality in some – but not all – countries. In Canada, Ireland, the Netherlands and the United States, having more households with a female member working full-time and/or full-year was associated with a decline in the Gini coefficient of household income by between 0.6 and 1 point. In turn, in the Czech Republic and Finland the falling share of females in full-time or full-year jobs among households has resulted in a 0.4 point rise in inequality.

Third, the rising proportion of households with females in high-skilled jobs is associated with a small yet significant *rise* in household income inequality (0.3 point). The impact of skill changes is larger in Belgium, the Netherlands, Spain and the United Kingdom, where it led to an increase of between 0.7 and 1 point in inequality. The increase in inequality driven by higher skill levels was more pronounced for men (Annex 5.A3, Figure 5.A3.1), particularly in Belgium, Finland and Spain, where the increased share of households with a male member employed in a managerial, professional or technical job contributed 1.5 point to the increase in inequality over the period. One possible explanation for why more households with high-skilled workers drives inequality higher is the growing tendency of people with similar education/earnings levels to live together ("assortative mating"), as described in Section 5.2.

Finally, in almost all countries changes in the returns to women's work (the wage effect) are countering the rise in household income inequality, adding a further equalising impact to that detected from the composition effect associated with the three changes described above. In part, this may reflect a narrowing in the gender wage gap as a result of increased women's educational attainment. It may also be due to an increase in

women's average job tenure. Female workers today are more likely to have more labour market experience (and thus higher earnings) than 20 years ago. Moreover, changes in policy parameters such as legislation mandating equal pay may also contribute to reducing the gender gap. Such unobservable factors (or not controlled for) seem to play an important role in equalising the distribution of household income and are likely to be captured by the unexplained wage structure effect.

In sum, overall income inequality would have been higher if women's employment participation and work intensity had remained the same as 20 years ago, while changes in the occupations in which women work have tended to aggravate inequality somewhat. Changes in women's wages accentuated the equalising impact of women on household income inequality. The combined effect resulted in lowering income inequality by about 2 Gini points.

## 5.5. Conclusion

This chapter explored the gender aspects of earnings and household income inequality. Overall, it shows that the increased participation of women in the labour market over the past 20 to 25 years up to the economic crisis has tended to make the distribution of household earnings and income more equal.

Across the OECD, gender employment gaps and gender pay gaps have narrowed over the past two decades – but on average, gender employment gaps persist at around 16%, and gender pay gaps at around 15%. At the same time, earnings inequality *within* gender groups has increased. Earnings inequality is higher among women than among men but has been increasing at a slower pace, on average by 9% as compared to 17% for men. This is explained by two facts: first, as opposed to men, lower-wage women increased their working hours or reduced them to a lesser extent; second, lower-wage women saw their wages rise more than those of their male counterparts.

As for trends in overall *individual earnings inequality* along the gender dimension, increased wage dispersion among different groups of male and female workers ("within-group" inequality) was the key driver. This was due in particular to growing wage inequality among full-time full-year workers (especially men). On the other hand, inequalities between male and female workers contributed much less. Among those components, the growing relative shares of working women, in particular in part-time work, tended to reduce overall individual earnings inequality in most countries.

For *household income inequality*, changes in female employment participation, work intensity and the nature of job skills matter. If the proportion of households with a working female had remained the same as 20 to 25 years ago (52% rather than 61%), income inequality would have increased by almost 1 point *more* on average than it actually did. The increasing work intensity of women was also associated with lower income inequality in some – but not all – countries. On the other hand, the rising share of households with women in high-skilled occupations generally increased income inequality, but the effect was more modest. Taken together, the overall effect of changes in the labour market for women was therefore to make the income distribution more equal by reducing the Gini by 2 points, especially when not only compositional but also related wage structure effects are taken into account. Having more households with women in paid work, especially full-time work, means less income inequality. Therefore, policies that focus on increasing the earnings potential of lower-paid women can reinforce the equalising effect of women's labour market integration.

# Notes

1. Convergence in participation rates are projected with the assumption that the male participation rate remains constant at its 2010 level while the female participation rate increases to converge with the same rate of men's by 2030.
2. The chapter focuses on the contribution of women's *paid* employment to changes in income inequality. It does not discuss the impact of women's non-market or unpaid work, which has a non-negligible impact on household's income inequality as discussed in Folbre et al. (2013).
3. Differences in the full-time equivalent rates (FTER) represent the difference between men and women if they were all working for 30 hours or more per week in their main job.
4. The analyses cover 25 countries and use two points in time for each country: an "early" year, corresponding to the mid-1980s/early 1990s, and the "late year", generally corresponding to the mid/late 2000s. For Australia, the latest year available is 2003 but, for later parts, the year 2001 is used as only the latter year contains sufficient information to impute annual hours worked and hourly wage rates.
5. The figures presented here include part-time, part-year employment.
6. As in the case of the Gini coefficient, a value of zero for the Theil index indicates perfect equality. The greater the value of the index, the greater is the level of inequality. The properties of subgroup decomposability of Theil and other general entropy indices are well documented (e.g. Shorrocks, 1984; Cowell, 2005).
7. See Annex 5.A2 for a description of the decomposition method.
8. The increased disequalising effect for women in FTFY is mainly due to the increase in their relative group earnings, not due to changes in their relative employment share.
9. Some concerns about endogeneity exist in the theory of assortative mating with respect to the impact of household formation behaviour on labour market choices. In this case, some of the correlation captured here would not be explained by pre-marital household formation choices but rather by an increased norm for couple households to choose to work in similar occupations and industries, within similar wage groups. This caveat indicates that marital sorting may explain only part of the changes in intra-household labour supply behaviour.

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*OECD Short-Term Labour Market Statistics Database,* http://dx.doi.org/10.1787/data-00046-en

*OECD Labour Force Statistics Database,* http://dx.doi.org/10.1787/data-00046-en

*OECD Employment Database,* www.oecd.org/employment/database

*OECD Database on Earnings Distribution,* www.oecd.org/employment/database

Luxembourg Income Study (LIS) Database, www.lisdatacenter.org (mutilple countries: microdata runs completed between 22 April 2013 and 5 February 2014.

# *Annex 5.A1*
# Additional figures

**Figure 5.A1.1. Wives' employment rates, by husband's earnings decile**

Panel A. Countries reporting gross earnings

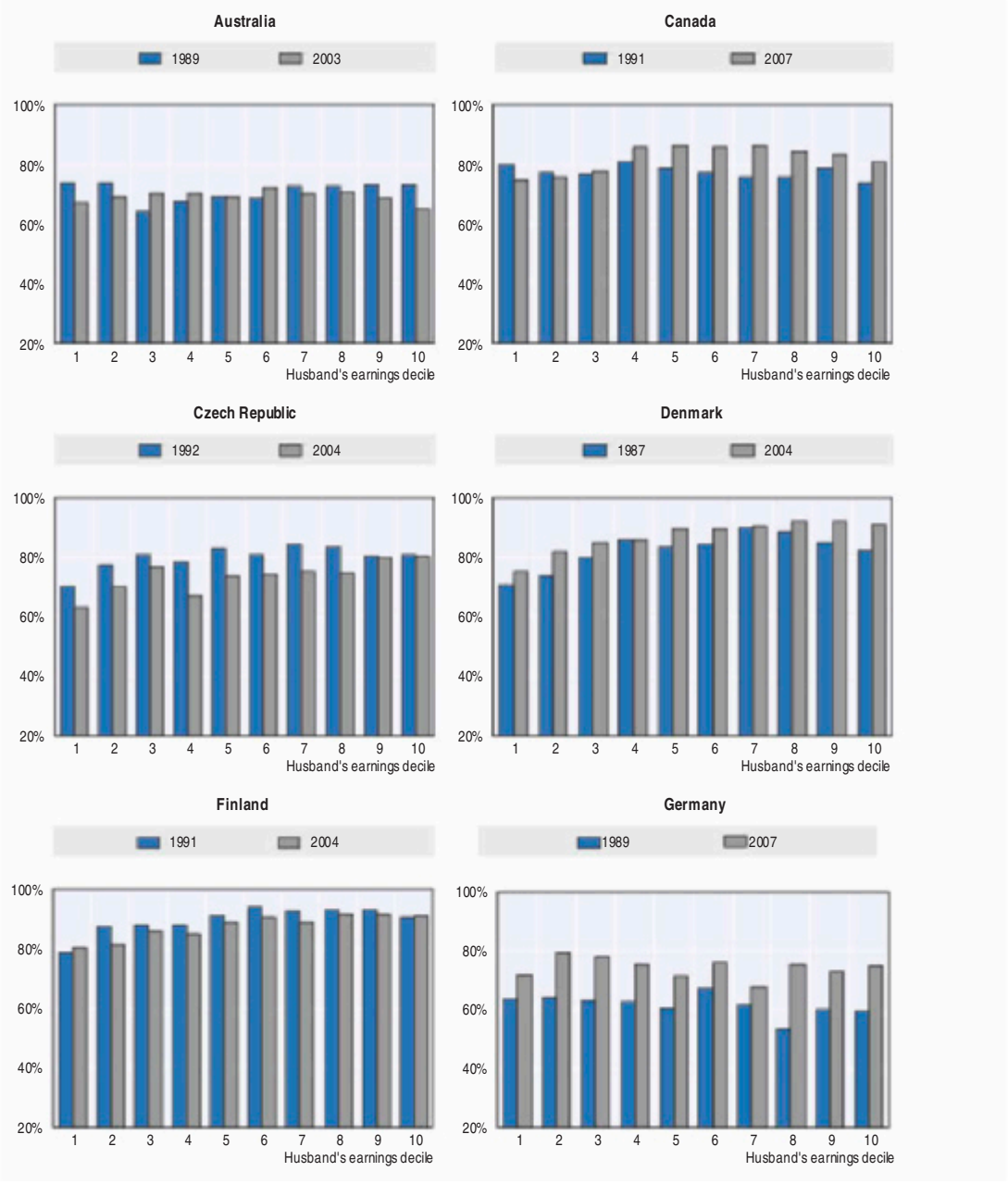


**Figure 5.A1.1. Wives' employment rates, by husband's earnings decile** *(cont.)*

Panel A. Countries reporting gross earnings *(cont.)*

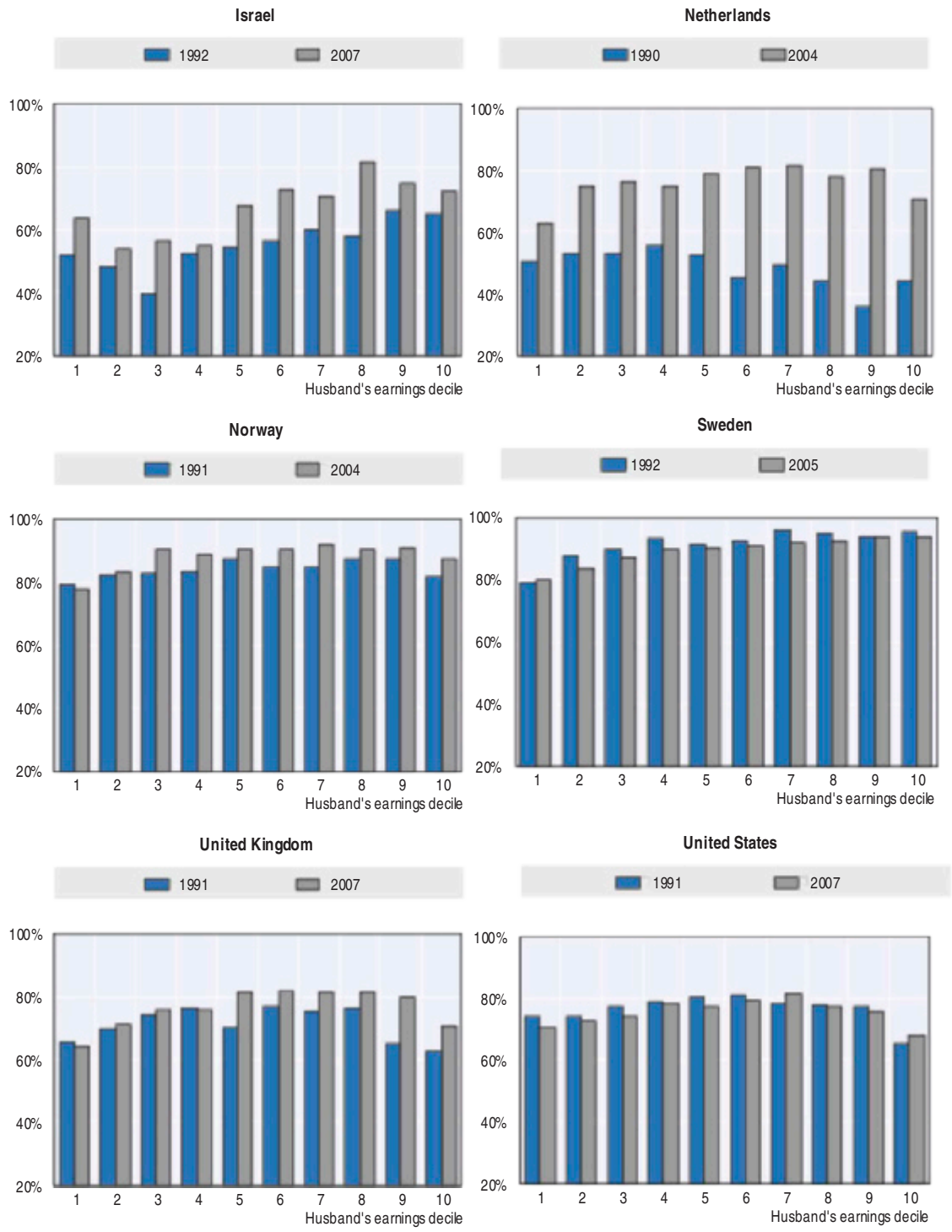


**Figure 5.A1.1. Wives' employment rates, by husband's earnings decile** *(cont.)*

Panel B. Countries reporting net earnings

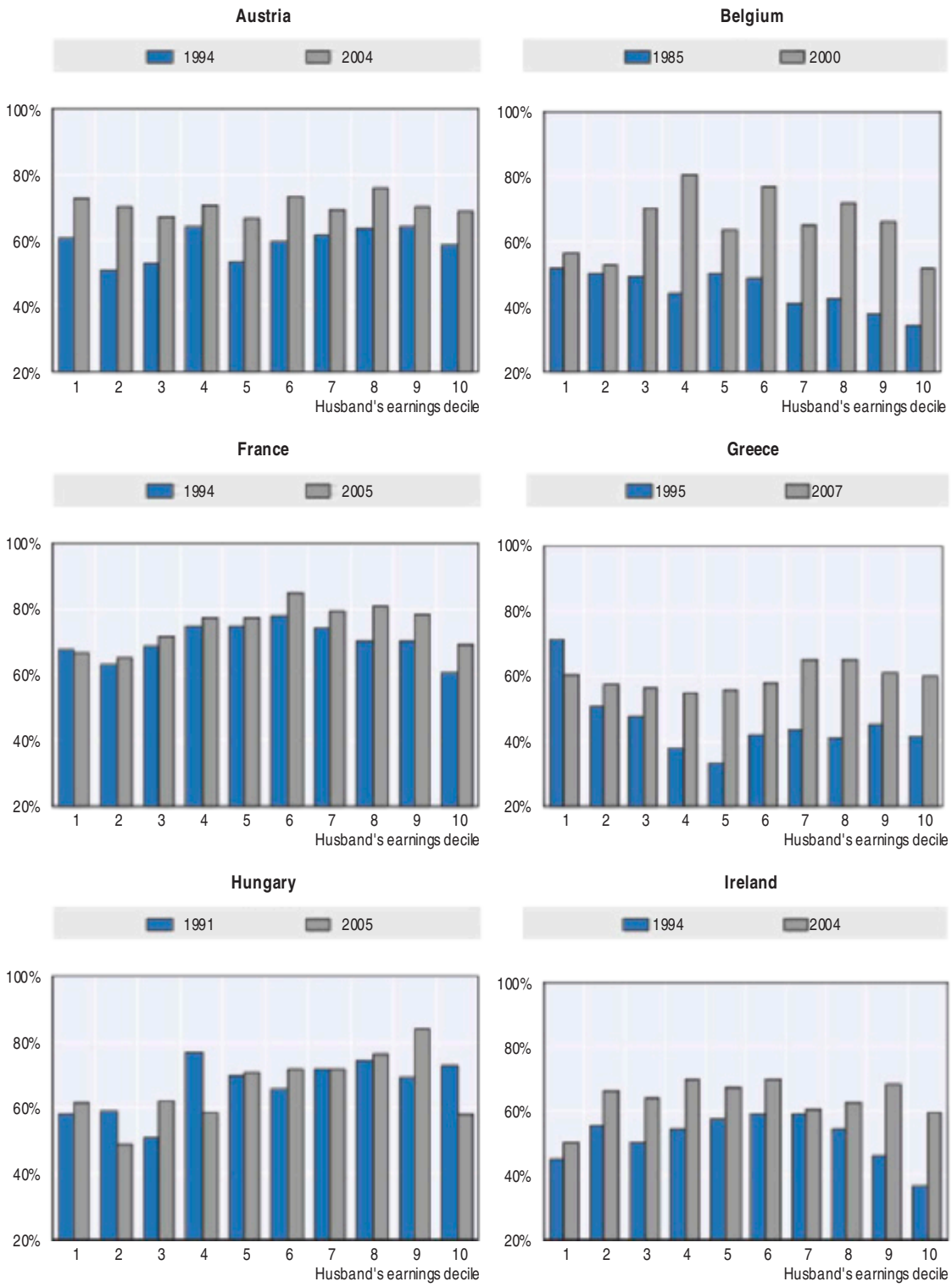
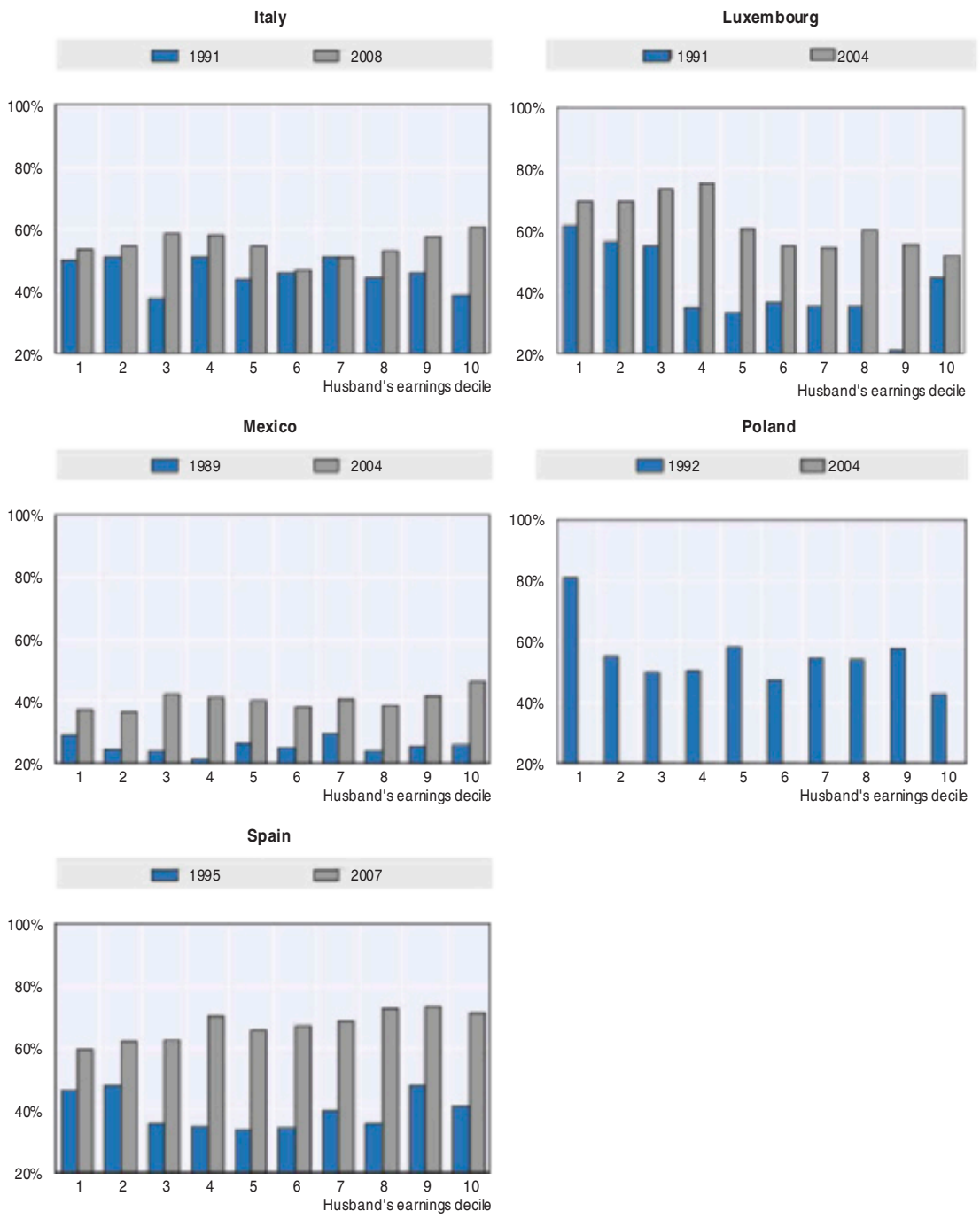


**Figure 5.A1.1. Wives' employment rates, by husband's earnings decile** *(cont.)*

Panel B. Countries reporting net earnings *(cont.)*




*Note:* Figures refer to couple households, with or without other people in the household. Only includes couples with one female and one male. Unmarried, cohabiting partners are included. Both are of working age (25-64).

*Source:* OECD Secretariat calculations from the Luxembourg Income Study (LIS).

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# *Annex 5.A2*
# Decomposition of individual earnings inequality by subgroup

Section 5.3.2 applies an analysis that decomposes inequality (measured by the Theil coefficient) by subgroup as:

$$I_1 = \sum_k s_k I_1^k + \sum_k v_k \lambda_k ln\, \lambda_k \qquad [1]$$

where:
$s_k$ is the share of income held by group *k,*
$I_{1k}$ is Theil index for group *k,*
$v_k$ is the population share of group *k,*
$\lambda_k$ is group *k's* mean earnings relative to the population mean.

The equation decomposes overall earnings inequality into a "within" and a "between" component that allows us to identify the composition and within-group inequality effects by gender. The first term on the right hand of equation (1) represents the within-group component, which is a weighted (by income share) sum of the subgroup inequality values; the second term refers to the between-group component, which depends on two factors: a) the size of the subgroup and b) its earnings relative to the national average. The between-component measures the extent of earnings inequality as explained by the difference between the mean earnings of different subgroups. In the case of the analysis below, the subgroups refer to eight mutually exclusive working populations: two gender groups and four employment groups (i.e. full-time full-year, full-time part-year, part-time full-year and part-time part-year). Changes in aggregate inequality between two years can then be expressed as:

$$\Delta Theil = \sum_k \Delta Theil_w^k + \sum_k \Delta Theil_b^k. \qquad [2]$$

## Table 5.A1.1. Decomposition of individual earnings inequality (Theil index)

Detailed contribution to changes in individual earnings inequality by gender and work status sub-groups

| Subgroup | AUS 1985-01 | AUT 1994-04 | CAN 1987-07 | DEU 1989-07 | FRA 1994-05 | FIN 1987-04 | GRC 1995-07 | IRL 1994-07 | ITA 1987-08 | NLD 1990-04 | ESP 1995-07 | USA 1986-07 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Within** | ***0.039*** | ***0.014*** | ***0.082*** | ***0.037*** | ***-0.007*** | ***0.032*** | ***0.060*** | ***0.012*** | ***0.069*** | ***0.054*** | ***-0.017*** | ***0.088*** |
| Men (FTFY) | 0.037 | 0.009 | 0.040 | 0.024 | -0.023 | -0.005 | 0.029 | -0.013 | 0.038 | 0.054 | -0.028 | 0.057 |
| Men (FTPY) | -0.002 | 0.000 | -0.003 | -0.004 | -0.007 | 0.000 | 0.001 | 0.000 | 0.001 | -0.003 | -0.002 | 0.000 |
| Men (PTFY) | 0.001 | 0.000 | 0.005 | -0.002 | 0.022 | 0.023 | -0.003 | 0.001 | -0.002 | -0.003 | -0.001 | 0.001 |
| Men (PTPY) | -0.002 | 0.002 | 0.000 | -0.002 | 0.000 | 0.002 | 0.004 | 0.005 | 0.000 | 0.001 | 0.004 | 0.000 |
| Women (FTFY) | 0.017 | -0.004 | 0.041 | 0.020 | -0.005 | 0.000 | 0.033 | 0.011 | 0.030 | 0.004 | 0.010 | 0.034 |
| Women (FTPY) | -0.002 | 0.001 | -0.001 | -0.003 | 0.000 | 0.002 | 0.001 | 0.002 | 0.001 | 0.000 | 0.000 | 0.000 |
| Women (PTFY) | -0.005 | 0.000 | 0.002 | 0.011 | 0.006 | 0.009 | -0.006 | 0.001 | 0.002 | 0.004 | -0.002 | 0.000 |
| Women (PTPY) | -0.005 | 0.006 | -0.002 | -0.008 | 0.001 | 0.002 | 0.001 | 0.006 | -0.001 | -0.002 | 0.004 | -0.004 |
| **Between** | ***-0.025*** | ***0.020*** | ***-0.036*** | ***0.042*** | ***-0.009*** | ***0.021*** | ***0.030*** | ***0.042*** | ***0.000*** | ***0.012*** | ***0.013*** | ***-0.038*** |
| Men (FTFY) | -0.038 | 0.039 | -0.052 | 0.045 | -0.021 | 0.012 | 0.045 | 0.052 | 0.013 | 0.029 | 0.013 | -0.056 |
| Men (FTPY) | 0.008 | 0.001 | 0.005 | -0.002 | 0.002 | -0.001 | -0.005 | 0.003 | 0.003 | -0.002 | 0.013 | 0.001 |
| Men (PTFY) | -0.007 | -0.008 | -0.009 | -0.012 | 0.006 | -0.006 | -0.005 | -0.014 | -0.012 | -0.001 | -0.004 | -0.013 |
| Men (PTPY) | 0.007 | -0.005 | 0.006 | -0.001 | 0.002 | -0.006 | -0.004 | -0.009 | 0.001 | -0.001 | -0.008 | 0.004 |
| Women (FTFY) | -0.001 | 0.020 | -0.004 | 0.032 | 0.008 | 0.042 | 0.010 | 0.049 | 0.003 | 0.015 | 0.022 | 0.010 |
| Women (FTPY) | 0.004 | 0.001 | 0.006 | 0.004 | 0.001 | -0.002 | -0.006 | 0.002 | 0.001 | 0.001 | 0.001 | 0.006 |
| Women (PTFY) | -0.010 | -0.019 | -0.001 | -0.024 | -0.007 | -0.010 | 0.002 | -0.030 | -0.010 | -0.034 | -0.012 | 0.000 |
| Women (PTPY) | 0.013 | -0.010 | 0.013 | 0.000 | 0.000 | -0.007 | -0.007 | -0.011 | 0.001 | 0.006 | -0.011 | 0.010 |
| **Total change** | **0.015** | **0.034** | **0.046** | **0.078** | **-0.015** | **0.054** | **0.089** | **0.054** | **0.069** | **0.066** | **-0.004** | **0.051** |

*Note*: FTFY refers to full-time full-year, FTPY to full-time part-year, PTFY to part-time full-year, PTPY to part-time part-year.

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# *Annex 5.A3*
# A counterfactual decomposition analysis of changes in income inequality

For investigating the impact on inequality of the changing composition of household employment due to the improved work status of women, we make use of a decomposition methodology introduced by Firpo et al. (2007) and further developed in Fortin et al. (2010). By using Recentered Influence Function (RIF) regressions (Firpo et al., 2009), this methodology represents a generalisation of the Oaxaca-Blinder procedure (Blinder, 1973; Oaxaca, 1973), but can be applied to any distributional parameter other than the mean, such as quantiles or the Gini.

The Oaxaca/Blinder (OB) decomposition approach allows splitting the total change in household income inequality over time into two aggregate effects. The first, which is referred to as the *composition effect*, is related to the overall changes in the distribution of observed characteristics of households (e.g. the proportion of households with a female worker), and the second is the *wage structure effect*, which captures the overall changes in the return to households with a female worker. By this setting, the wage structure effect also includes changes in the return to unobservable characteristics. It can be expressed as follows.

Oaxaca/Blinder decomposition: $\Delta\bar{Y} = \underbrace{\bar{X}_{t-1}\left(\hat{\beta}_t - \hat{\beta}_{t-1}\right)}_{\text{(wage structure)}} + \underbrace{\hat{\beta}_t(\bar{X}_t - \bar{X}_{t-1})}_{\text{(composition)}}$

Once the aggregate decomposition has been carried out, it is also possible to compute a more detailed decomposition, subdividing both the composition and wage structure effects into the contribution of each covariate. One important limitation of the OB decomposition is that it applies only to differences in the mean. While there have been different methods developed for decomposing general distributional statistics over the last 15 years, Firpo et al. (2009) recently proposed a new comprehensive approach. Their idea is to use the Recentered Influence Function (RIF) for the distributional statistic of interest instead of the usual outcome variable as the dependent variable in a regression. Consider RIF (y ; ν) is the influence function corresponding to an observed income y for the distributional statistic of interest, ν(Fy). The RIF is defined as RIF (y ; ν) = ν(Fy) + IF (y ; ν). The conditional expectation of the RIF (y;ν) can be modelled as a linear function of the explanatory variables,

$$E[RIF(Y ; \nu) \mid X] = X\gamma + \varepsilon$$

where the parameters γ represent the marginal effect of X on ν, which can be estimated by OLS. Once the RIF regression has been estimated, the estimated coefficients can be used to perform the detailed decomposition in the same way as in the standard OB decomposition. Given that RIF regressions for distributional statistics other than the mean are unlikely to be linear, Fortin et al. (2010) suggest a reweighting procedure on the RIF regression by reweighting the distribution of characteristics (X) in period 1 to have the same distribution as in period 0. That is, it is possible to first estimate the counterfactuals

($X_{10}$, $\gamma_{10}$) from the regression of RIF ($Y_1$; $\gamma$) on the reweighted sample. Then the detailed reweighted decomposition is thus obtained by the following two OB decompositions:

$$\hat{\Delta}_X = (\bar{X}_1 - \bar{X}_{10})\,\hat{\gamma}_1 + \bar{X}_{10}(\hat{\gamma}_1 - \hat{\gamma}_{10}) = \hat{\Delta}_{X,p} + \hat{\Delta}_{X,e}$$

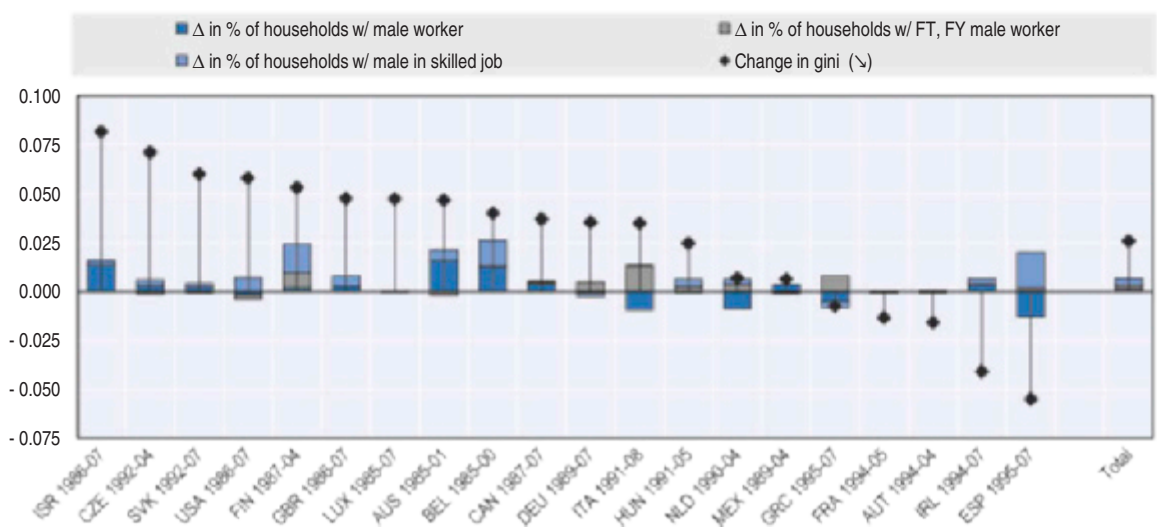
$$\hat{\Delta}_S = \bar{X}_0(\hat{\gamma}_{10} - \hat{\gamma}_0) + (\bar{X}_{10} - \bar{X}_0)\,\hat{\gamma}_{10} = \hat{\Delta}_{S,p} + \hat{\Delta}_{S,e}$$

$$\hat{\Delta}_{Overall} = \hat{\Delta}_{X,p} + \hat{\Delta}_{X,e} + \hat{\Delta}_{S,p} + \hat{\Delta}_{S,e}$$

where the composition effect $\hat{\Delta}_X$ is divided into a pure composition effect $\hat{\Delta}_{X,p}$ and the specification error $\hat{\Delta}_{X,e}$; and similarly the wage structure effect $\hat{\Delta}_S$ is the sum of the pure wage structure effect $\hat{\Delta}_{S,p}$ and the reweighting error $\hat{\Delta}_{S,e}$.

In our exercises, we use this procedure to address women's role in the context of changes in household income inequality over time.[1] Differences in the Gini coefficients between any two periods are decomposed into the composition and the wage effects, as mentioned. Nine groups of covariates of interest are considered in the decomposition: demographic, education of the head, household structure, employment (men and women), work intensity (men and women) and skilled occupation (men and women).[2] We focus, in particular, on three composition effects due to changes in women's employment characteristics. These include 1) the proportion of households with a female worker, 2) the proportion of households with a female working full-time and/or full-year, and 3) the proportion of households with a female employed in a skilled job. Composition effects due to changes in men's employment status are also discussed.

**Figure 5.A3.1. Composition effect attributed to men's work characteristics**




*Note*: FT: Full-time, FY: Full year.

*Source:* OECD Secretariat calculations from the Luxembourg Income Study (LIS).

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# Notes

1. A Stata programme *rifreg* (www.econ.ubc.ca/nfortin/hmpgfort.htm) is used to fit a regression model of the re-centered influence function (RIF) of a distributional statistic of interest (in this case the Gini coefficient) of the marginal distribution of household disposable income on a series of explanatory variables. Then a standard Stata programme *oaxaca* is used to perform a OB decomposition using the RIF as dependent variable.

2. Demographic factors include age of the head, race of the head and regional dummies; employment refers to whether a household has an adult member (man/woman) working; work intensity indicates whether a household has an adult member (man/woman) working full-time; occupation refers to whether a household has an adult member in a skilled job, which corresponds to the first three categories of the 1-digit ISCO (i.e. managers, professionals and technicians).

# *Chapter 6*

# How does the concentration of household wealth compare across countries?[1]

*This chapter describes the distribution of household wealth for 18 OECD countries, using a database collected along a set of commonly agreed conventions and classifications. Both the stocks of household wealth and their degree of concentration are compared across countries. The analysis sheds light on the demographic characteristics of households holding wealth, the composition of their assets, their debt as well as the degree of over-indebtedness among low- and middle-income households. Changes in the wealth distribution since the onset of the crisis are examined for a subset of countries.*

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

## 6.1. Introduction and key findings

As stressed in the previous chapters, economic growth in the recovery from the 2008 financial crisis has been sluggish in many OECD countries, while market income inequality has surged. Chapter 2 has highlighted that high and often growing income inequality and lower social mobility could undermine growth. In this context, whether a high concentration of household wealth cumulates to increase income inequality and further undermine long-term growth is an open question. Answering this question first requires examining the available evidence on the distribution of household wealth.[2] This chapter addresses this through a new set of data (mainly survey-based) collected by the OECD and based on a set of commonly agreed conventions and classifications (OECD, 2013a).

While inequality issues have increasingly attracted the attention of policy makers and the media – as witnessed by the debate that has followed the publication of *Capital in the 21st Century* by Thomas Piketty (2014) and by the very large number of studies documenting inequality in the distribution of household income – there is far less evidence on inequality in the distribution of household wealth, both within and between countries. The main objective of this chapter is to fill this gap and to provide some comparable information to support this discussion. To that end, the OECD has collected data on the distribution of household wealth for 18 OECD countries, which extends previous efforts in this field (OECD, 2008).[3]

This chapter is organised as follows. Section 6.2 summarises the evidence on the stocks of household wealth across countries and their degree of concentration; this section also provides evidence on the joint distribution of household income and wealth, so as to shed light on how income and wealth are associated with each other at the household level. Section 6.3 describes the demographic characteristics of households holding wealth. Section 6.4 considers the composition of their assets, while Section 6.5 focuses on debt and on the extent of over-indebtedness among low- and middle-income households, a factor that has played a critical role as a "trigger" to the crisis in many countries, and which contributed to the slowness of the recovery since then. Section 6.6 describes changes in the wealth distribution since the onset of the crisis, while Section 6.7 concludes.

The key findings of the chapter are as follows:

- Household wealth is much more unequally distributed than household income, due to the very high levels of concentration at the top of the wealth distribution. On average, across countries, the 10% of wealthiest households hold half of total wealth, the next wealthiest 50% hold almost the other half, while the 40% least wealthy households own little over 3%.
- Levels of household wealth are generally higher among households with a head who is better educated and aged 55 to 64. Non-financial assets, and in particular the principal residence, constitute the most important assets for most households and are less equally distributed than financial assets.
- In some countries (e.g. Norway and the United States), a large share of households have high levels of debt, which expose them to sizeable risks in the event of sudden changes in asset prices, with implications for the vulnerability of the economic system as a whole. While the incidence of debt increases with a household's income, over-indebtedness is highest among middle-income groups and among households headed by young people.

- The financial crisis has exacerbated wealth inequality at the top of the distribution in four of the six countries where trend data are available: the United States, the United Kingdom, the Netherlands and Italy. Inequality at the bottom of the distribution increased in five of the six countries available. Over the longer run, the increase in asset prices, especially financial assets, relative to consumer prices has been the main driver of changes in the stock of household wealth and its concentration.

## 6.2. The distribution of household wealth across OECD countries

This section describes the basic patterns in the distribution of household wealth across OECD countries, based on the data collected for the *OECD Wealth Distribution Database* (see Box 6.1 and Annex 6.A1). The section compares across countries the levels of the mean and median household wealth, several measures of wealth concentration, and the association between the distributions of income and wealth.

### Box. 6.1. The *OECD Wealth Distribution Database*

The data included in this chapter have been collected by the OECD and are available to users on the OECD dissemination platform (OECD.Stat). Estimates referring to the most recent year are currently available for 18 OECD countries, while estimates referring to more than one year are available for six of them. For seven countries, estimates have been obtained through a questionnaire sent and completed by national contact points in statistical offices and agencies (e.g. central banks) that regularly collect micro-level information on the distribution of household wealth; among these seven, estimates for Australia, Canada, Korea, the United Kingdom (limited to Great Britain) and the United States are based on dedicated household wealth surveys, while those for the Netherlands and Norway are based on tax and administrative records. For 11 countries (participants in the Eurosystem Household Finance and Consumption Survey, henceforth HFCS), estimates for the most recent year available have been computed by the OECD based on the public use file provided by the European Central Bank (complemented, in the case of Italy and the Netherlands, by estimates for earlier years provided by national contact points). This OECD data collection builds on previous efforts to provide more comparable measures of the distribution of household wealth as pursued by the Luxembourg Wealth Study (Sierminska et al., 2006) and by the European Central Bank (2013).

The data used in this chapter have the following characteristics:

- They refer to the distribution of non-financial and financial assets and liabilities across households (rather than across persons or adults), with no adjustment made to reflect differences in household size (which is the convention typically used when analysing the distribution of household income). The data also refer to the assets and liabilities held by private households resident in the country. Countries may differ in how "households" are defined (e.g. most HFCS countries rely on a relatively restricted definition, which requires household members to maintain relations of financial interdependence).
- Assets and liabilities are classified in a consistent manner across countries, based on the nomenclature proposed by the *OECD Guidelines for Micro-Statistics on Household Wealth* (OECD, 2013a). This nomenclature distinguishes between five categories of non-financial assets, eight categories of financial assets, and three categories of financial liabilities. Among financial assets, the stock held in the form of "pension schemes related to employment" is reported as a separate category: data on this category are described in Box 6.3, while the data shown elsewhere in this chapter refers to a narrower definition of household wealth that excludes these assets from the total.
- Information is collected on the net wealth of households broken down by housing status (three types of household), age of the household reference person (six groups), number of household members (five groups), household type (six groups), education of the reference person (four groups), main source of income (five groups), as well as by wealth and income quintiles (with additional breakdowns for the top 10%, 5% and 1% of the distribution). Information is also collected on the share of households holding various types of assets and liabilities; on the mean value of assets and liabilities among households holding them; on the joint distribution of household wealth and income across household quintiles; and on the extent of over-indebtedness across households (based on two measures of over-indebtedness).

**Box. 6.1. The *OECD Wealth Distribution Database* *(cont.)***

Despite efforts to ensure common treatments and classifications across countries, the micro data presented in this chapter are affected by differences that limit their comparability. Three of the most important are:

- Differences between countries in the year the data was collected (ranging between 2010 and 2013, for the most recent observation), and in the detailed period of fieldwork within the year. These differences are important, as the recent period featured significant swings in asset prices, which affect the values of net wealth reported here. While data for the most recent year shown are all expressed in constant prices referring to 2005, this does not remove this source of heterogeneity.
- Differences in the degree of oversampling of rich households across countries.* These differences (which range between no oversampling in the case of Australia and Canada to large oversampling in the United States and Spain) do matter for international comparisons of both levels and concentrations of household wealth as, in all countries, most wealth is typically held by the richest households.
- Pension wealth in the form of social security entitlements and defined benefit occupational pensions are not included in the main wealth measures provided in this chapter. (Model-based estimates of future pension wealth from public and mandatory private sources are shown in Annex 6.A3).

More generally, it should be stressed that all sources of information on household wealth have their own limits (as described in the annexes to this chapter). The hope is that, as statistical offices and agencies collecting wealth data become more aware of differences in their survey practices and of how these differences affect international comparisons, a process of convergence in statistical practices would intensify in the future, in particular as the OECD guidelines (OECD, 2013a) are more widely implemented.

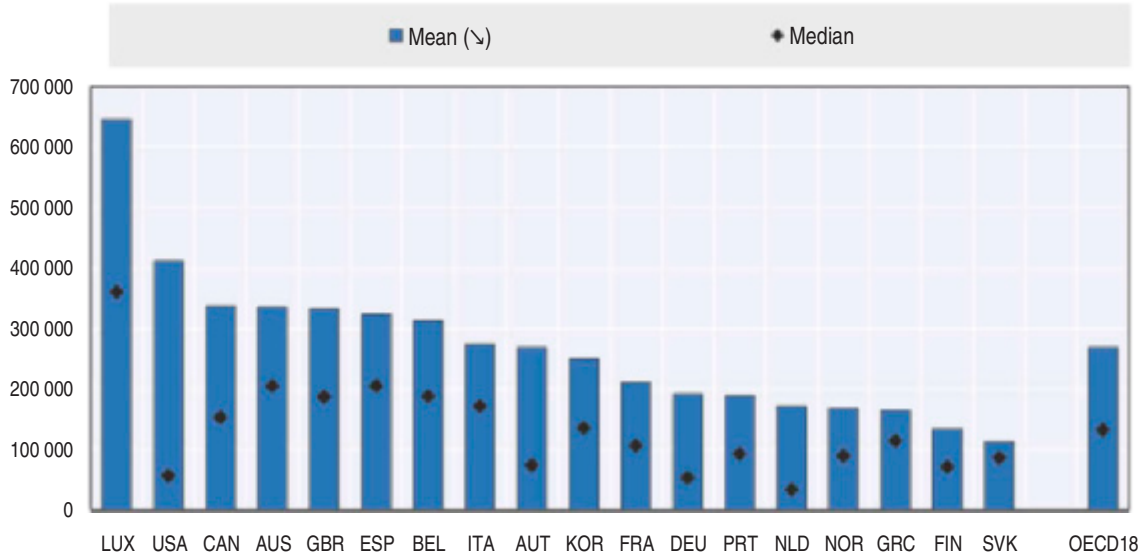
* A measure of the degree of oversampling of rich households is shown in Table 6.A1.1; this is computed as the difference between the share of wealthy households in the sample and the share in the population.

### *Levels of household wealth across countries*

The levels of household wealth are described in Figure 6.1 through measures of the mean and median household net wealth per household. The highest mean levels of wealth are observed in Luxembourg, the United States, Canada, Australia, the United Kingdom and Spain, while the Slovak Republic, Finland, Greece, Norway and the Netherlands record the lowest levels. The net wealth of the median household may be considered as more representative of the conditions of the typical household, and is less affected by inaccurate measurements of wealth at the top of the distribution.[4] Shifting from mean to median net wealth does not change the ranking of countries dramatically (the correlation between the two variables is equal to 0.79) but it does lead to strikingly large differences in country ranking for the United States, Austria and Germany: the United States falls from second in terms of mean net wealth to 16$^{th}$ in terms of median net wealth, while Germany falls from 12$^{th}$ to 17$^{th}$ and Austria from 9$^{th}$ to 14$^{th}$, suggesting that net wealth is unequally distributed in these countries (see below).[5]

**Figure 6.1. Mean and median net wealth per household in micro data**

2010 or latest available year, values in 2005 USD




*Note:* Wealth values are expressed in 2005 USD by, first, expressing values in prices of the same year (2005) through consumer price indexes and, second, by converting national values into a common currency through the use of purchasing power parities for household consumption.

*Source*: *OECD Wealth Distribution Database.*

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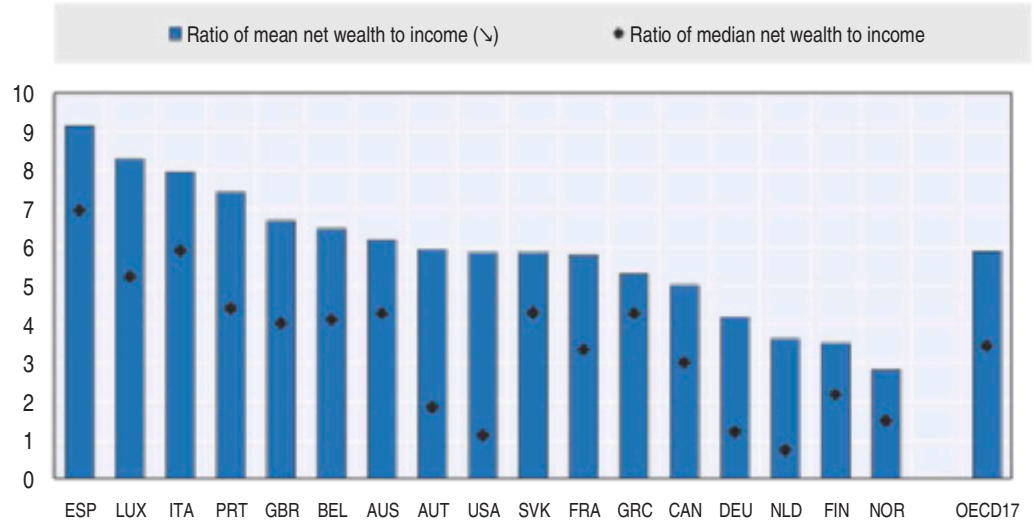
Household wealth can also be expressed in relative terms by looking at values expressed as a multiple of household income. This measure intuitively corresponds to the number of years a household could maintain its living standard (as measured by its income) in the future by drawing down its accumulated wealth.[6] Based on this measure, the stock of net wealth varies between three and nine times the value of household income on average (similar estimates are reported by Brzozowki et al., 2010; Domeij and Floden, 2010; Fuchs-Schündeln et al., 2010; Jappelli and Pistaferri, 2010; Landais et al., 2011; Maestri et al., 2014). A comparison of Figures 6.1 and 6.2 shows that the country rankings do not change radically for most countries whether one considers absolute or relative mean net wealth.[7] Similarly, considering relative rather than absolute *median* net wealth does not radically change the ranking of countries.[8]

Figure 6.3 presents the mean net wealth per household as measured from the micro data based OECD questionnaire used for this chapter and in the National Accounts statistics on household balance sheets.[9] To compare the two sources, it is critical that the same types of assets and liabilities are included in both. However, in 13 out of the 18 OECD countries covered in this chapter, OECD National Account statistics on the non-financial assets of households exclude the value of land, which represents about 50% of non-financial assets in the other five OECD countries where data are available.[10] The SNA values shown in Figure 6.3 are based on estimates of the value of land drawn from the European Central Bank (2013) and on the amounts reported in household balance sheets for the remaining countries. Conversely, the value of vehicles and other consumer durables are excluded from micro-based measures of non-financial assets as they are not considered as household wealth in the national accounts.

**Figure 6.2. Mean and median net wealth relative to household income**

2010 or latest available year, values in 2005 USD



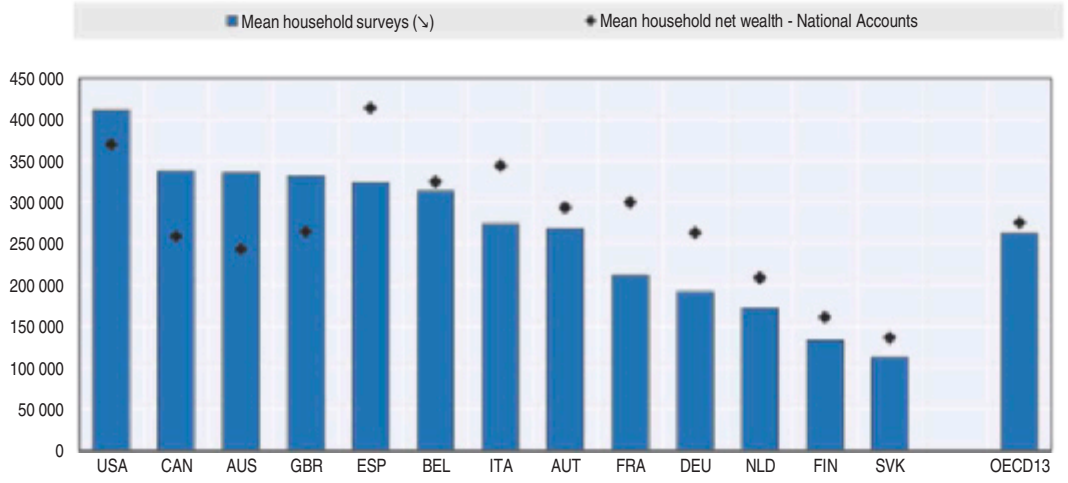

*Note:* The ratio of mean net wealth to income is calculated by dividing the mean net wealth by the mean gross income. The ratio of median wealth to income refers to the median net wealth divided by the mean gross income of the third quintile of net wealth, which is a convenient proxy for the income of the households with median wealth. Data on household income for Korea are not available.

*Source*: *OECD Wealth Distribution Database*.

StatLink http://dx.doi.org/10.1787/888933208485

**Figure 6.3. Net wealth per household in micro data and national accounts**

2010 or latest available year, values in 2005 USD




*Note:* Wealth values are expressed in 2005 USD: first, wealth values in different years are expressed in prices of the same year (2005) through consumer price indexes; and second, national values are converted into a common currency through the use of purchasing power parities for household consumption. For the 13 OECD countries shown, estimates of the value of land are included in the National Account wealth measure, while estimates of the value of consumer durables (vehicles and others) are excluded for the survey measure.

*Source*: *OECD Wealth Distribution Database*; *OECD National Accounts Database*; and European Central Bank (2013), "The Eurosystem Household Finance and Consumption Survey: Results from the First Wave", *Statistics Paper Series*, Vol. 2, April.

StatLink http://dx.doi.org/10.1787/888933208495

Overall, Figure 6.3 shows that, for the 13 countries for which comparable data can be obtained, the values of mean household wealth reported in the two sources are fairly similar (on average, net wealth per household is USD 275 000 when measured in the SNA and USD 263 000 in the micro data). These results are in line with those obtained from the European Central Bank (2013) and Fesseau et al. (2013). This comparison is however only approximate, as other factors beyond those that could be controlled affect the comparisons between macro and micro totals shown in Figure 6.3.[11]

Over a larger set of 17 OECD countries described in Table 6.1, net wealth as measured by micro sources is similarly found to be 10% lower than National Account estimates. This mostly reflects the under-estimation of financial assets in micro sources. Liabilities also appear to be under-estimated in the micro data, but this effect is not large enough to compensate for the first one. In countries for which the data is available, estimates of non-financial assets appear to be broadly consistent across the two data sources.

**Table 6.1. Ratios of household assets and liabilities between micro sources and national accounts**

2010 or latest available year, values in 2005 USD

| | Non-financial assets | Financial assets | Liabilities | Net wealth |
|---|---|---|---|---|
| Australia | 1.0 | .. | 0.7 | 1.4 |
| Austria | 1.1* | 0.4* | 0.4* | 0.9* |
| Belgium | 1.2* | 0.6* | 0.8* | 0.9* |
| Canada | 1.3 | 0.9 | 0.6 | 1.3 |
| Finland | 1.0* | 0.4* | 0.9* | 0.8* |
| France | 0.7 | 0.8 | 0.5 | 0.7 |
| Germany | 0.8* | 0.4* | 0.7* | 0.7* |
| Greece | .. | 0.3 | 0.3 | .. |
| Italy | 1.0* | 0.2* | 0.4* | 0.8* |
| Luxembourg | .. | 0.4 | 0.7 | .. |
| Netherlands | 0.8 | 0.8 | 1.0 | 0.8 |
| Norway | .. | 1.0 | 1.0 | .. |
| Portugal | .. | 0.5 | 0.4 | .. |
| Slovak Republic | 0.8* | 0.4* | 0.4* | 0.8* |
| Spain | 0.8* | 0.4* | 0.6* | 0.8* |
| United Kingdom | 1.2 | 0.7 | 0.7 | 1.2 |
| United States | 1.1 | 1.0 | 0.9 | 1.1 |
| OECD17 | 1.0 | 0.6 | 0.6 | 0.9 |

*Note:* ".." refers to non-available data. "*" refers to data from the European Central Bank (2013). SNA data on financial assets exclude voluntary life insurance and private pensions and are not available for Korea.

*Source*: *OECD Wealth Distribution Database* and European Central Bank (2013).

StatLink http://dx.doi.org/10.1787/888933209053

Several factors may explain cross-country differences in levels of household wealth, including demographic factors (i.e. the age structure of the population), the magnitude of the savings rate as well as changes in asset prices relative to consumer prices. Regarding demographic factors, Cowell (2013) conclude that, based on data from the Luxembourg Wealth Study (www.lisdatacenter.org/our-data/lws-database/), the cross-country differences in wealth distribution in Finland, Italy, Sweden, the United Kingdom and the United States cannot be explained by differences in age, working status, household

structure, education or income: the authors calculate the wealth distributions that would prevail if these countries had the same population distributions across several characteristics, and find a similar ranking of countries in terms of net wealth. A similar finding is also reported by Maestri et al. (2014).

Table 6.2 sheds light on the role played by asset prices and the savings rate. It shows the average growth rate in the prices of dwellings and listed shares (relative to the increase in the private consumption deflator) over the longest period of time available for each country, as well as the national savings rate and the savings rate of households (which is more relevant to the analysis but is typically available over a much shorter time span). Based on these data, Figure 6.4 highlights a strongly significant positive correlation between the median net wealth of households and the annual real growth rate of house prices over the period covered by Table 6.2. This suggests that the rapid appreciation of property prices vis-à-vis consumption prices in Australia, Belgium, Canada, Spain and the United Kingdom has been a key factor leading to higher median wealth compared to other OECD countries. Norway is the only country where the rapid increase in house prices has not translated into higher median net wealth, possibly due to a relatively lower household savings rate.[12] Conversely, net wealth is relatively high in Italy despite the recent fall in housing and stock prices, reflecting the high rate of household savings and home ownership (Jappelli and Pistaferri, 2000). No significant correlation appears between the real growth of asset prices, the national or the household savings rate and measures of median wealth.

**Table 6.2. Growth rate of asset prices and the savings rate, for the periods 1970-2012 and 2000-13**

| | Period | Annual growth rate of real prices | | National savings rate | Households savings rate | |
|---|---|---|---|---|---|---|
| | | Houses | Stocks | | Average | Period |
| Australia | 1970-2012 | 2.8 | 0.3 | 9.4 | 9.4 | 1970-2012 |
| Austria | 2000-2013 | 1.5 | 3.3 | 11.3 | 9.4 | 1995-2012 |
| Belgium | 1986-2013 | 4.0 | 3.0 | 10.8 | 12.1 | 1995-2012 |
| Canada | 1970-2013 | 2.5 | 2.0 | 7.3 | 7.6 | 1981-2013 |
| Finland | 1970-2013 | 1.2 | 4.5 | 10.8 | 1.4 | 1995-2012 |
| France | 1970-2013 | 2.0 | 1.9 | 7.1 | 11.5 | 1978-2012 |
| Germany | 1970-2013 | 0.0 | 2.2 | 9.7 | 10.5 | 1995-2012 |
| Greece | 1997-2013 | 0.9 | -5.3 | -3.4 | -5.4 | 2005-2012 |
| Italy | 1970-2013 | 1.2 | -1.9 | 7.8 | 11.7 | 1990-2013 |
| Korea | 1986-2012 | -1.1 | 3.5 | 20.4 | 4.4 | 2010-2013 |
| Luxembourg | 2007-2013 | 1.5 | -15.7 | 3.4 | 10.0 | 2006-2012 |
| Netherlands | 1970-2013 | 2.0 | 1.6 | 14.1 | 9.7 | 1990-2012 |
| Norway | 1986-2013 | 2.7 | 7.1 | 18.0 | 4.2 | 1978-2013 |
| Portugal | 1988-2013 | 0.2 | 0.6 | 6.7 | 3.0 | 1995-2013 |
| Slovak Republic | 2005-2013 | 1.8 | -13.0 | 2.8 | 4.0 | 1995-2008 |
| Spain | 1987-2013 | 3.5 | 4.5 | 9.8 | 6.3 | 2000-2012 |
| United Kingdom | 1970-2013 | 3.3 | 1.7 | 4.2 | 1.9 | 1990-2012 |
| United States | 1970-2012 | 1.1 | 3.0 | 5.8 | 8.1 | 1970-2012 |

*Sources*: *OECD National Accounts Statistics Database* (2014).

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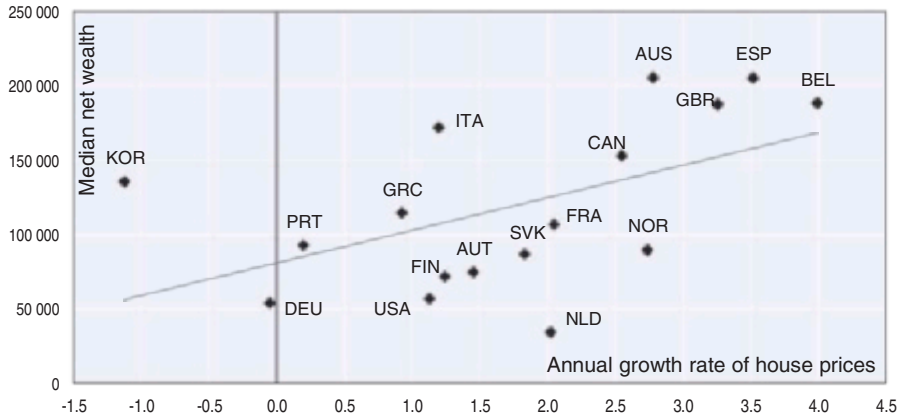
**Figure 6.4. Median net wealth and change in house prices**

2010 or latest available year, values in 2005 USD




*Note:* The median net wealth is expressed in 2005 USD; changes in house prices are measured by the annual growth rate of house prices over the period 1970-2013 for most countries (refer to Table 6.2 for corresponding periods).

*Sources*: *OECD Wealth Distribution Database* and *OECD National Accounts Statistics Database*, 2014.

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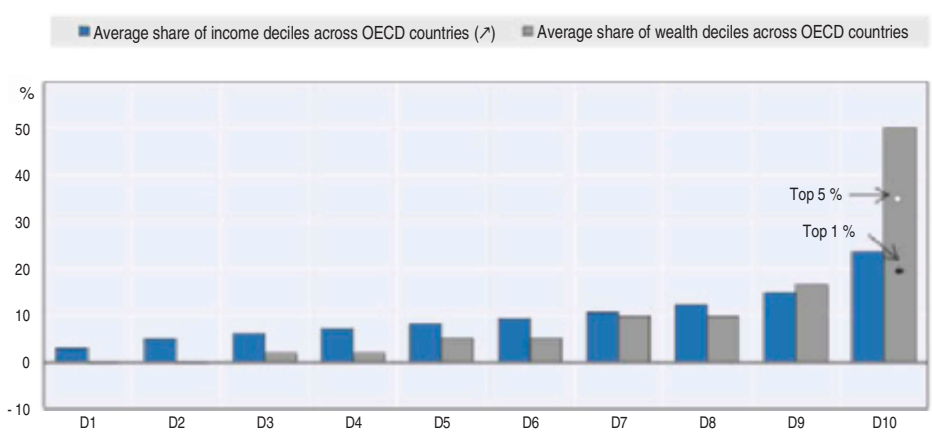
## *How does wealth inequality compare across countries?*

In all OECD countries, the wealth distribution is much more concentrated at the top than is the income distribution, and it is therefore much more unequal. Figure 6.5 shows the average shares of household disposable income and wealth for each decile of the respective distribution, across the subset of 18 OECD countries for which both data sets are available.[13] On average, the top decile of the distribution of household disposable income accounts for about 25% of total household income, while the top decile accounts for about 50% of the distribution of household wealth. The wealth share of the top *centile* in the wealth distribution is almost as large as the income share of the top *decile* of the income distribution.

**Figure 6.5. Distribution of household disposable income and net wealth across deciles**

Average of 18 OECD countries, 2010 or latest available year




*Source*: *OECD Wealth Distribution Database* and *OECD Income Distribution Database*.

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Other studies also find that wealth inequality is much greater than income inequality. For instance, Maestri et al. (2014) calculate Gini indices over the wealth distribution of between 0.55 and 0.80. However, this particular inequality index is not well-suited for the study of the wealth distribution due to the large fraction of households with zero or negative wealth; in these circumstances the Gini index is no longer bounded to one (Amiel et al., 1996; Cowell, 2013). In addition, Morrisson and Murtin (2013) show that the percentage of people with a zero outcome (e.g. wealth in this context) has a large influence on the level of the Gini, which blurs the interpretation of cross-country differences or changes in inequality over time. In practice, Table 6.3 shows that in seven countries among those analysed the first quintile of the wealth distribution has negative wealth.

**Table 6.3. Selected indicators of the distribution of household net wealth**

2010 or latest available year, values in 2005 USD

| | Net household wealth, 2010 or latest available year | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Median | Bottom quintile | Average of the three middle quintiles | Top quintile | Top 10% | Top 5% | Top 1% | Ratio (wealth of top 5% - median wealth)/ median | Ratio (median wealth - bottom quintile)/ median |
| Australia | 335 299 | 205 404 | 8 398 | 210 963 | 1 035 640 | 1 507 217 | 2 158 015 | 4 461 272 | 9.5 | 1.0 |
| Austria | 268 275 | 74 466 | -7 578 | 106 874 | 1 051 613 | 1 684 393 | 2 659 268 | 6 560 503 | 34.7 | 1.1 |
| Belgium | 313 517 | 188 149 | 2 767 | 213 541 | 1 014 312 | 1 461 306 | 2 083 538 | 4 181 874 | 10.1 | 1.0 |
| Canada | 337 238 | 152 818 | 4 906 | 177 999 | 1 147 721 | 1 697 591 | 2 461 392 | 5 219 761 | 15.1 | 1.0 |
| Finland | 133 468 | 71 762 | -7 636 | 82 060 | 440 670 | 611 660 | 831 889 | 1 685 064 | 10.6 | 1.1 |
| France | 211 330 | 106 497 | - 868 | 125 263 | 778 342 | 1 152 393 | 1 686 153 | 4 145 304 | 14.8 | 1.0 |
| Germany | 191 554 | 53 896 | -4 870 | 82 680 | 782 676 | 1 214 445 | 1 874 432 | 5 033 122 | 33.8 | 1.1 |
| Greece | 164 734 | 114 377 | 2 579 | 118 902 | 470 332 | 643 987 | 850 460 | 1 405 733 | 6.4 | 1.0 |
| Italy | 273 583 | 171 794 | 5 495 | 175 075 | 851 654 | 1 239 524 | 1 772 755 | 3 954 572 | 9.3 | 1.0 |
| Korea | 249 698 | 135 334 | 4 178 | 153 624 | 783 330 | .. | .. | .. | .. | 1.0 |
| Luxembourg | 644 850 | 360 251 | 2 125 | 366 654 | 2 208 512 | 3 403 744 | 5 325 290 | 14 800 000 | 13.8 | 1.0 |
| Netherlands | 172 004 | 34 194 | -28 495 | 70 460 | 677 137 | 1 024 772 | 1 534 568 | 4 105 305 | 43.9 | 1.8 |
| Norway | 168 740 | 89 449 | -43 260 | 100 325 | 586 002 | 845 275 | 1 221 517 | 3 124 719 | 12.7 | 1.5 |
| Portugal | 189 213 | 92 699 | 1 090 | 102 344 | 652 251 | 1 012 934 | 1 569 351 | 4 095 892 | 15.9 | 1.0 |
| Slovak Republic | 112 608 | 86 642 | 18 470 | 90 820 | 278 106 | 374 125 | 498 284 | 902 533 | 4.8 | 0.8 |
| Spain | 324 087 | 205 238 | 10 422 | 217 442 | 987 304 | 1 434 765 | 2 049 090 | 5 003 514 | 9.0 | 0.9 |
| United Kingdom | 331 722 | 187 380 | 8 935 | 199 419 | 1 051 419 | 1 544 346 | 2 267 314 | 5 789 661 | 11.1 | 1.0 |
| United States | 411 044 | 56 724 | -19 059 | 87 430 | 1 811 626 | 3 138 331 | 5 199 815 | 15 043 278 | 90.7 | 1.3 |
| OECD18 | 268 498 | 132 615 | -2 356 | 148 993 | 922 703 | 1 411 224 | 2 120 184 | 4 654 302 | 20.4 | 1.1 |

*Note:* ".." refers to non-available data. Values are expressed in 2005 USD based on purchasing power parities and consumer price indexes.

*Source*: *OECD Wealth Distribution Database*.

StatLink http://dx.doi.org/10.1787/888933209076

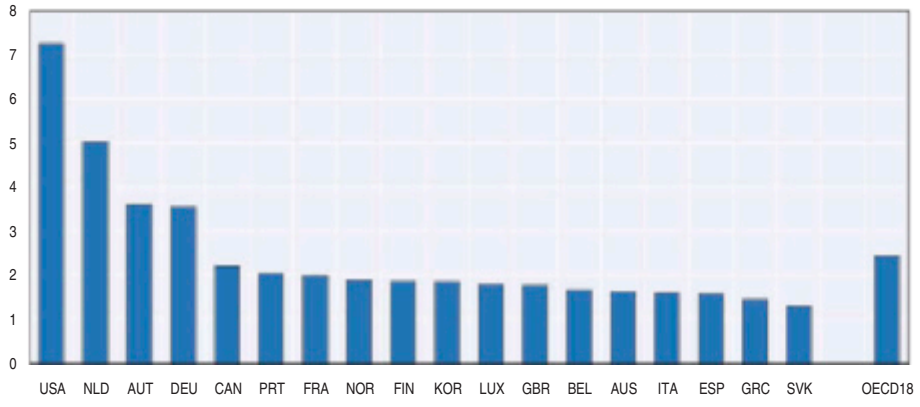
A more convenient, albeit partial, measure of wealth inequality within countries is the ratio between mean and median net wealth. As is shown on Figure 6.6, mean net wealth is 2.5 times larger than median net wealth across the 18 OECD countries covered in this chapter; the ratio between the two measures is above seven in the United States, around five in the Netherlands, four in Germany and Austria, and close to two in most other OECD countries. This compares to values of around 1.2 in the case of household income for most OECD countries (1.1 in Nordic countries, 1.3 in the United States).

To complement the inequality measure for the entire wealth distribution shown above, it is of interest to consider measures of inequality in the bottom and top part of the wealth distribution. In Table 6.3, inequality in the top half of the wealth distribution is

measured by the difference in wealth between the top 5% and the median household, as a share of median wealth; this relative difference is, on average, equal to 20 across the 18 OECD countries but much higher in the United States, the Netherlands, Austria and Germany (with ratios of 91, 44, 35 and 34 respectively).[14] Hence, the higher degree of wealth inequality observed in these four countries is mainly due to high wealth concentration at the top of the distribution. Conversely, the relative difference between the wealth of the median household and the average wealth of households in the bottom quintile of the distribution captures inequality at the bottom part of the distribution. On average, this ratio is equal to 1.1, about one-twentieth of the relative difference between the top 5% and the median. Hence, inequality at the bottom of the distribution is much smaller than inequality at the top, as measured by these wealth relative differences. Inequality in the lower half of the distribution is the largest, by decreasing order, in the Netherlands, Norway and the United States.

**Figure 6.6. Ratio of mean and median net wealth per household in survey data**

2010 or latest available year




*Source*: *OECD Wealth Distribution Database*.

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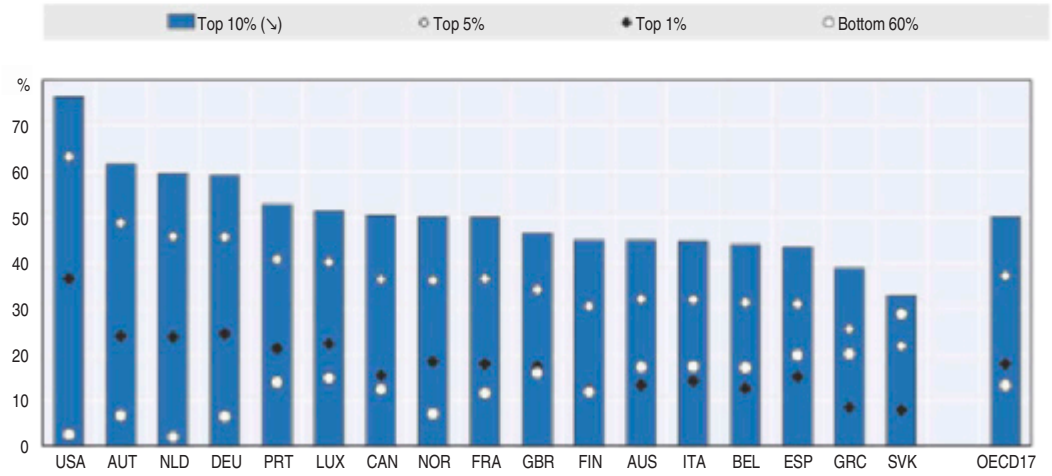
Table 6.3 also reports the absolute values of wealth at the top of the distribution in the various countries. For both the top 10% and top 1% of wealthiest households, the largest wealth levels are recorded in the United States, Luxembourg and Austria. Figure 6.7 presents the wealth shares of the top percentiles in the wealth distribution. On average, across the 17 countries shown, the top 10%, 5% and 1% wealthiest households own 50%, 37% and 18% of total household wealth, respectively. By comparison, the bottom 60% of the wealth distribution owns only 13% of total household wealth, on average. Based on the latter measures, wealth is the most concentrated at the top of the distribution in the United States, Austria, the Netherlands and Germany. In some but not all countries, these measures probably underestimate the wealth shares of very rich households, as other studies report larger figures for the top percentiles, although they are not necessarily using the same concept for household wealth (Box 6.2).

The ownership of financial assets features prominently in the set of factors that have a large influence on wealth inequality and most particularly on its concentration at the top. As depicted on Figure 6.8, the real appreciation of stock prices is associated with a relatively larger wealth share of the top 10%, and a similar relationship is found with the

top 1% and 5%.[15] This suggests that higher prices of financial asset have contributed to higher wealth inequality and concentration at the top end of the distribution. The data presented here, however, capture only partially the rebound of asset prices since the end of the Great Recession.

**Figure 6.7. Wealth shares of top percentiles of the net wealth distribution**

2010 or last available year



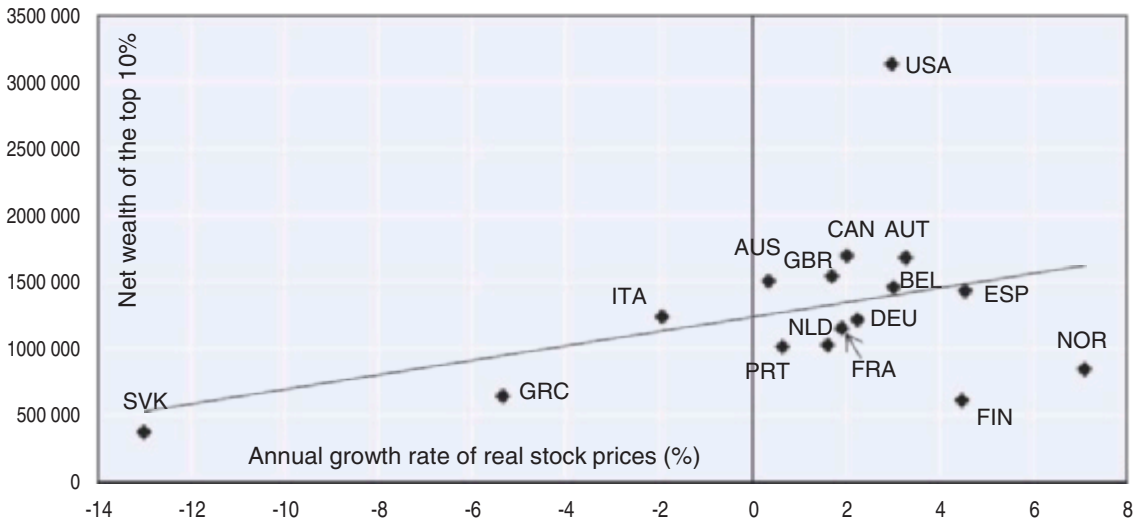

*Note*: The bottom 60% refers to the share of quintiles I, II and III in the total wealth.

Source: *OECD Wealth Distribution Database.*

StatLink http://dx.doi.org/10.1787/888933208539

**Figure 6.8. Net wealth of the top 10% and annual growth rate of real stock prices**

2010 or latest available year




*Note:* The mean net wealth for the top 10% distribution is expressed in 2005 USD and the growth rate of stock prices is provided for the period 1970-2012.

*Source*: *OECD Wealth Distribution Database* and *OECD National Accounts Statistics Database*, 2014.

StatLink http://dx.doi.org/10.1787/888933208541

## Box 6.2. Top wealth shares across economic studies

A number of recent studies on household wealth – based on different indicators, units of analysis, data sources and wealth concepts – suggest a higher degree of wealth concentration at the top of the distribution than that found using the data collected by the OECD and presented in this chapter. The table below summarises the available information on the wealth shares of the top decile and top centile (as well as the average net wealth) provided by the Crédit Suisse Reports (2010, 2011, 2012, 2013, 2014), Piketty (2014) and Vermeulen (2014).

Piketty's study presents historical time series stretching back to the 19th century on the level and distribution of private wealth. The data on shares for the top 10% and top 1% begin in 1810 and cover France, Great Britain, Sweden and the United States. Piketty's estimates of the top wealth shares are generally based on administrative records, e.g. tax returns (for France) and estate returns (for Great Britain). For these two countries, the estimates of the wealth shares of the top 10% and 1% reported by Piketty are slightly lower than those reported in this chapter, reflecting, *inter alia,* the inclusion of pension wealth held in occupational pension funds in Piketty's analysis. Data on the United States are from the SCF survey, which is the source also used in this chapter, and as a consequence both estimates are relatively close.

Measuring wealth at the top of the wealth distribution through household surveys is intrinsically difficult, as wealthy households typically under-report their wealth. Moreover, household surveys suffer from various degrees of non-response, and the non-response bias is particularly large when looking at the top 1% of the distribution (Vermeulen, 2014). The combination of under-reporting and under-sampling (or unit non-response) tends to reduce the measured degree of concentration at the top of the distribution. To address this issue, Vermeulen relied on the same type of extrapolation used by Piketty and Crédit Suisse, assuming that the distribution for the top 1% follows a Pareto distribution, which displays a heavy right tail. For the countries covered by the three studies, estimates of the wealth share of the top 1% are close, but above those reported in this chapter.

The under-sampling bias is addressed in 14 out of 18 OECD countries covered in this chapter, as households from the top 10% of the distribution are typically oversampled in wealth surveys (and 11 countries oversample the top 1% percentile, see Table 6.A1.1). This raises the possibility that the measured degree of wealth concentration at the top may simply reflect the design features of the surveys. To gauge the influence of oversampling on wealth concentration, the figure below plots the relationships between the wealth shares of the top 10% (left-hand panel) and of the top 1% (right-hand panel) and the degree of oversampling. No significant correlation shows up when considering the top 10%, while the positive correlation observed for the top 1% falls to zero when the United States is excluded from the sample. These results suggest that the different sampling practices of the various national surveys do not systematically bias cross-country comparisons of wealth concentration at the top of the distribution presented in this chapter.

As a consequence, the result that the wealth shares of the top categories in the *OECD Wealth Distribution Database* are lower than in other studies should reflect either under-reporting problems in household surveys or differences in methodological assumptions (e.g. the use of households or individuals – as in Crédit Suisse reports – as units of analysis, or the use of an *extended* net wealth concept in Piketty). This conclusion is further highlighted by the fact that, although the same SCF source is used across the four studies for top shares in the United States, OECD's measures are ten percentage points below the others: differences in scope and methodology across the various studies, rather than different in sources, appear to represent the bulk of the difference in the estimated top shares.

## Box 6.2. Top wealth shares across economic studies *(cont.)*

### The concentration of household wealth at the top of the distribution in different studies

| | Top 10 % | | | TOP 1 % | | | | Average net wealth (USD) | |
|---|---|---|---|---|---|---|---|---|---|
| | OECD | Crédit Suisse (2014) | Piketty | OECD | Crédit Suisse (2014) | Piketty | Vermeulen | OECD (2012 or latest available year) | Crédit Suisse (2014)[1, 2] |
| Australia | 45% | 51% | .. | 13% | 21% | .. | .. | 335 299 | 430 777 |
| Austria | 62% | 64% | .. | 24% | 29% | .. | .. | 268 275 | 142 675 |
| Belgium | 44% | 47% | .. | 13% | 17% | .. | .. | 313 517 | 181 083 |
| Canada | 50% | 57% | .. | 15% | 22% | .. | .. | 337 238 | 176 848 |
| Finland | 45% | 55% | .. | 12% | 21% | .. | .. | 133 468 | 112 937 |
| France | 50% | 53% | 62% | 18% | 21% | 24% | 19% | 211 330 | 201 245 |
| Germany | 59% | 62% | .. | 25% | 28% | .. | 33% | 191 554 | 211 049 |
| Greece | 39% | 56% | .. | 8% | 27% | .. | .. | 164 734 | 111 405 |
| Italy | 45% | 51% | .. | 14% | 20% | .. | 20% | 273 583 | 255 890 |
| Luxembourg | 51% | .. | .. | 22% | n.a | .. | .. | 644 850 | 340 836 |
| Netherlands | 60% | 57% | .. | 24% | 27% | .. | 17% | 172 004 | 210 233 |
| Norway | 50% | 66% | .. | 19% | 29% | .. | .. | 168 740 | 358 655 |
| Portugal | 53% | 58% | .. | 21% | .. | .. | .. | 189 213 | 98 428 |
| Slovak Republic | 33% | .. | .; | 8% | .. | .. | .. | 112 608 | 28 630 |
| Spain | 43% | 56% | .. | 15% | 27% | .. | .. | 324 087 | 134 824 |
| United Kingdom | 47% | 54% | 71% | 17% | 23% | 28% | .. | 331 722 | 292 621 |
| United States | 78% | 75% | 72% | 38% | 38% | 34% | 37% | 419 815 | 347 845 |

*Note*: "..." refers to non available data.

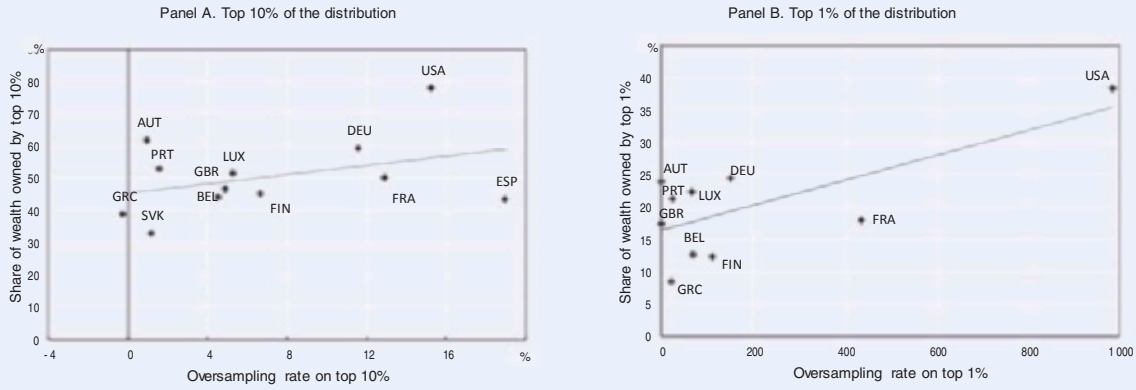
1. Crédit Suisse reports average net wealth at individual levels.

2. For most countries, Credit Suisse estimated wealth levels for missing years by inflating data on the latest year available with house prices, financial assets or GDP per capita growth.

*Source*: OECD *Wealth Distribution Database*; Crédit Suisse, *Global Wealth Databook*, various issues; Piketty, T. (2014), *Capital in the 21st Century*; and Vermeulen (2014), "How Fat Is the Top Tail of the Wealth Distribution?", *ECB Working Paper No. 1692*.

StatLink http://dx.doi.org/10.1787/888933209130

### Top wealth shares and the degree of oversampling




*Source: OECD Wealth Distribution Database.*

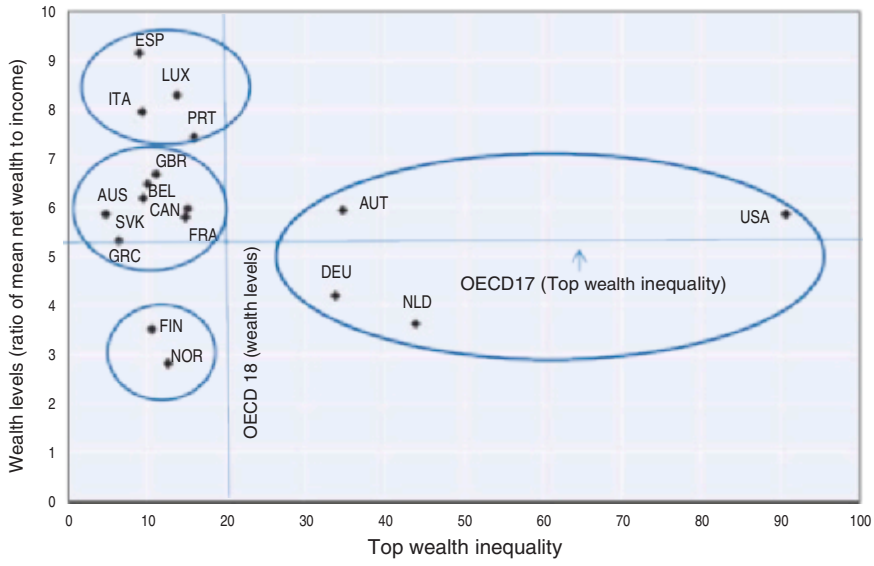
StatLink http://dx.doi.org/10.1787/888933208685

To provide a synthetic overview of wealth patterns among the sample of OECD countries analysed here, countries are clustered along the two dimensions of average wealth and wealth inequality. Figure 6.9 plots mean net wealth as a share of income (on the vertical

axis) against the ratio of the mean wealth of the top 5% to the median wealth as a measure of wealth inequality (on the horizontal axis).[16] This suggests four clusters of countries:

- Austria, Germany, the United States and the Netherlands, with average or low wealth-to-income ratios but high wealth inequality.
- Spain, Italy, Luxembourg and Portugal, with high wealth-to-income ratios and low wealth inequality.
- Australia, Belgium, Canada, France, Greece, the Slovak Republic and the United Kingdom, with average wealth-to-income ratios and low inequality.
- Finland and Norway, with low mean wealth-to-income ratios and low inequality.

**Figure 6.9. Mean net wealth and top wealth inequality**




*Note:* Wealth inequality is measured by the difference between the wealth of the top 5% and median wealth, which is then divided by median wealth.

*Source*: *OECD Wealth Distribution Database.*

StatLink http://dx.doi.org/10.1787/888933208556

### *What is the relationship between income and wealth inequality?*

To shed light on how income and wealth inequalities are jointly determined and interact with each other, the joint distribution of the two variables across households is examined. As an example, Table 6.4 shows the joint distribution of income and wealth in the United States in 2013: for each quintile of the wealth distribution, the table reports the shares of households belonging to the various quintiles of the income distribution. A perfect correlation between income and wealth would translate into a concentration of people on the diagonal cells, while a zero correlation would spread wealth quintiles equally across income quintiles. *A priori*, it may be expected that income and wealth are positively correlated as higher wealth holdings, especially financial assets, generate higher income from capital and, conversely, higher income can be used to accumulate more wealth. But it is also possible that high wealth reflects elements that are only poorly correlated to household income (such as inheritances or changes in asset prices). For the United States, Table 6.4 shows that households in the bottom quintile of the wealth

distribution are five times more numerous in the bottom of the income distribution than in the top quintile. Conversely, households in the top quintile of the wealth distribution are ten times more numerous in the top of the income distribution than in the bottom quintile.

**Table 6.4. The joint distribution of income and wealth in the United States, 2013**

| | Wealth quintile I | Wealth quintile II | Wealth quintile III | Wealth quintile IV | Wealth quintile V | **Total** |
|---|---|---|---|---|---|---|
| Income quintile I | 0.08 | 0.05 | 0.04 | 0.03 | 0.01 | **0.20** |
| Income quintile II | 0.05 | 0.06 | 0.04 | 0.03 | 0.02 | **0.20** |
| Income quintile III | 0.04 | 0.05 | 0.05 | 0.04 | 0.02 | **0.20** |
| Income quintile IV | 0.02 | 0.03 | 0.05 | 0.05 | 0.04 | **0.20** |
| Income quintile V | 0.01 | 0.01 | 0.03 | 0.04 | 0.11 | **0.20** |
| **Total** | **0.20** | **0.20** | **0.20** | **0.20** | **0.20** | **1.00** |

*Note:* For each income (wealth) quintile, the sum of values across wealth (income) quintile equals 0.20.

*Source*: *OECD Wealth Distribution Database.*

StatLink http://dx.doi.org/10.1787/888933209082

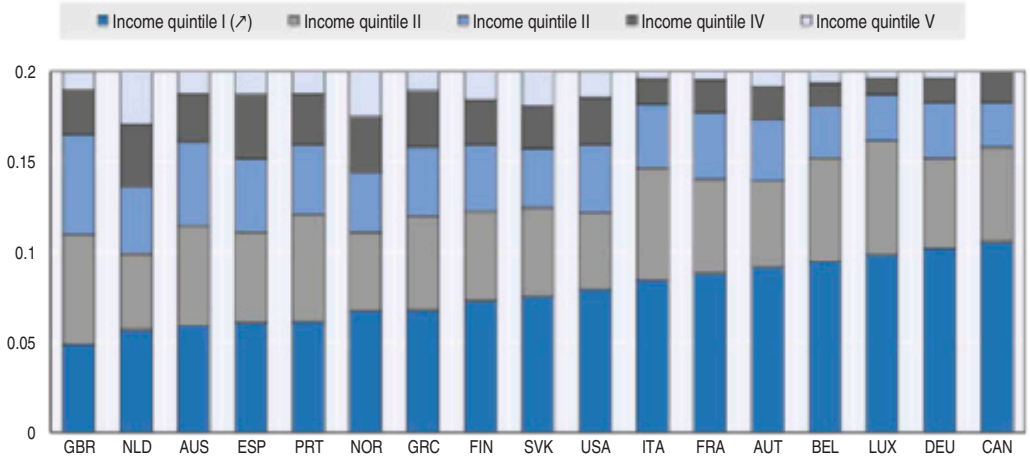
The observation made for the United States can be generalised to all OECD countries. As shown in Figure 6.10, low-wealth households are also more likely to be low-income households (Panel A) while, conversely, high-wealth households are also typically high-income (Panel B). The concentration of households that are both income-poor and wealth-poor is largest in Canada, Germany and Luxembourg (Panel A); while the concentration of high-wealth and high-income households is largest in Canada, France, Italy and the United States. The United Kingdom, the Netherlands and Australia display a relatively low degree of correlation between income and wealth for both poor and rich households.

A synthetic measure of association between income and wealth that considers all groups of the two distributions is presented in Figure 6.11. It shows the rank correlation across quintiles of households in the income and wealth distributions. The correlation between the two distributions would be one if all households ranked in the bottom quintile of the wealth distribution fell in the bottom quintile of the income distribution, and similarly for all subsequent quintiles; a zero rank correlation between quintiles in the income and wealth distributions would, on the contrary, imply that these shares were both equal to 20%.[17]

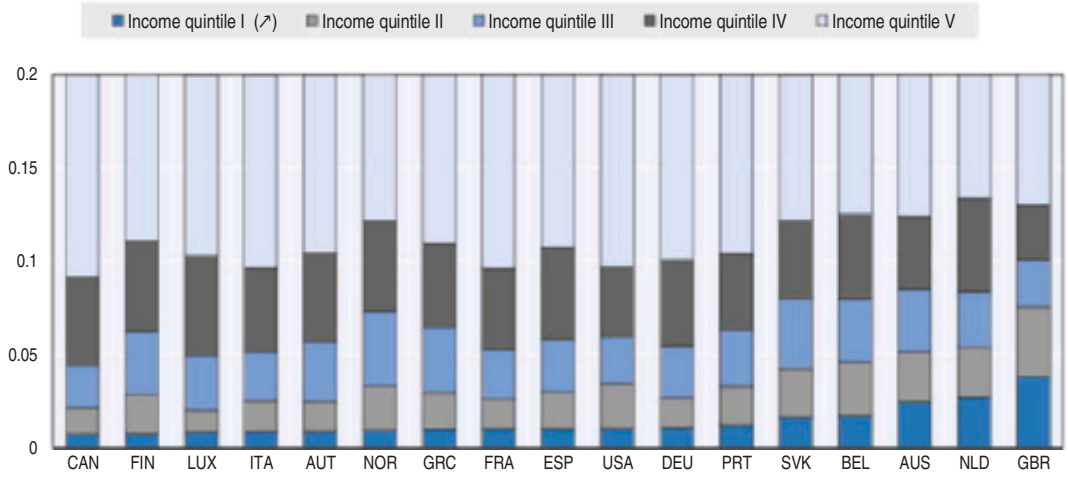
In practice, the rank correlation is positive and significant in all countries. The rank correlation across the 17 countries for which data are available is equal to 0.37, which suggests a moderate degree of mobility across wealth and income. On average, about 36% of the households belonging to the bottom 20% of the income distribution are also located in the bottom 20% of the wealth distribution, while 45% of households belonging to the top 20% of the income distribution belong to the top 20% of the wealth distribution. However, 18% of households in the bottom wealth quintile belong to the two highest income quintiles, while a similar share of households in the top wealth quintile belong to the two lowest quintiles of the income distribution. Consistently with the results shown in Figure 6.10, the correlation between wealth and income is the highest in Canada, Germany, Luxembourg, France and Italy, while it is the lowest in the United Kingdom, the Netherlands and Australia.

**Figure 6.10. Income distributions of the bottom and top wealth quintiles across OECD countries**

Panel A. Income distribution of the bottom wealth quintile[1]




Panel B. Income distribution of the top wealth quintile



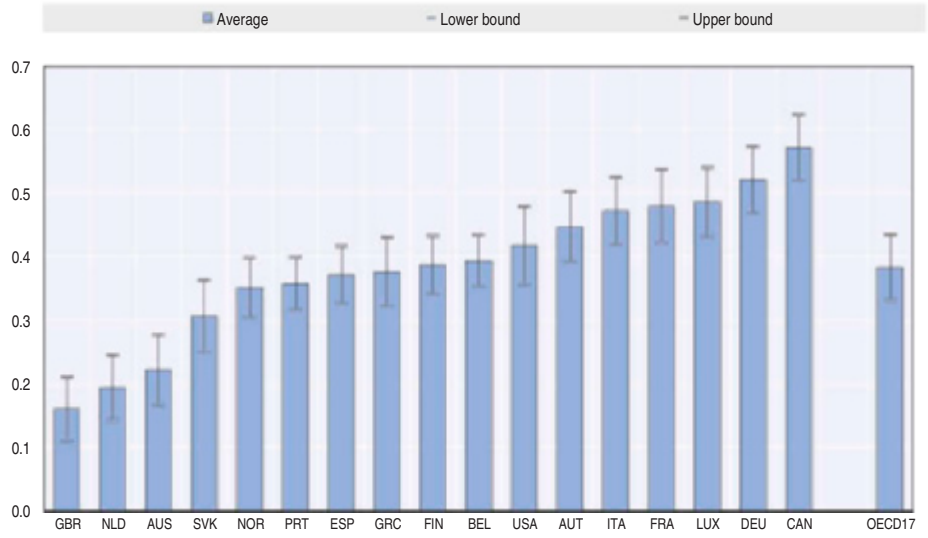

1. Data on Canada for the quintile IV and V are not available separately.

*Source*: *OECD Wealth Distribution Database*.

StatLink http://dx.doi.org/10.1787/888933208563

While the relationship between income and wealth inequality is positive (i.e. countries with a larger degree of income inequality also tend to display a higher concentration of wealth), this link is not very robust.[18] Across the 17 OECD countries, there is a positive and significant relationship between the income ratio of the 90th and 10th percentiles of the income distribution and the wealth share of the top 1% in the wealth distribution.[19] Perhaps due to measurement problems or the small sample size, this empirical relationship is, however, weak.

**Figure 6.11. Rank correlation between the distribution of net wealth and disposable income**




*Note:* The confidence interval (upper/lower bound values) is obtained from Monte Carlo simulations run on a smoothed joint distribution of income and wealth within each country.

*Source*: *OECD Wealth Distribution Database.*

StatLink http://dx.doi.org/10.1787/888933208576

## 6.3. Demographic characteristics of households with positive wealth

The demographic characteristics of the wealth distribution can be examined by looking at the patterns of wealth holding by age, education, housing status, income source and household type. Following the prevailing practice used in other studies of this issue, the indicator used in this section is the mean net wealth of various household categories.[20]

Figure 6.12 (Panel A) shows a hump-shaped pattern of mean net wealth by age of the household head. These curves (which are normalised relative to the wealth holding of people in the 55-64 age group) reach a maximum at age 55-64 in 11 out of the 18 countries, and at age 65-74 in Belgium, Luxembourg, Norway and the United States. On average, young households (those with a head under age 34) own about one-fifth as much wealth as older households (55-64 year-old), with the largest disparities observed in Germany, the Netherlands, Norway and the United States, and the lowest ones in the Slovak Republic, Portugal and Spain.

Similar to overall wealth, mean housing wealth (net of liabilities) is relatively modest among the youngest households, but housing wealth is more evenly distributed across age groups than overall wealth (Figure 6.12, Panel B). Mean housing wealth increases with the age of the household head until one reaches households with a head age 55-64, with a moderate decline in net housing wealth for older households. The young age group holds on average 40% as much housing wealth as the 55-64 age group, but only 20% as much overall wealth. The gap in housing wealth is much smaller for households with the head aged 35-44, who hold 80% as much housing wealth as older workers and retirees. Indeed, home ownership in most countries rises quickly with the age of household heads before their early 40s, reaching a maximum for household heads in their 50s and 60s before declining after age 75, when their health deteriorates. Age disparities in housing wealth are substantially higher in Germany and the United States.

Mean net financial wealth is more unequally distributed across age groups than housing wealth (Figure 6.12, Panel C), peaking between 55 and 64 years old (OECD, 2013b). Germany and the United States record the largest gap for the younger age group, and also experience large gaps in mean wealth for the groups aged 35-44 and 45-54. Older households (those with a reference person aged 75 and over) tend to use their financial wealth to support their living standards during retirement; hence their wealth is substantially lower than for older workers (those aged between 55 and 64). Converting financial wealth into supplemental income during retirement is common among the elderly,[21] while housing wealth is typically left for bequests (OECD, 2013b): exceptions to this pattern include Luxembourg and the Netherlands, where financial wealth is continuously higher for each higher age cohort group.

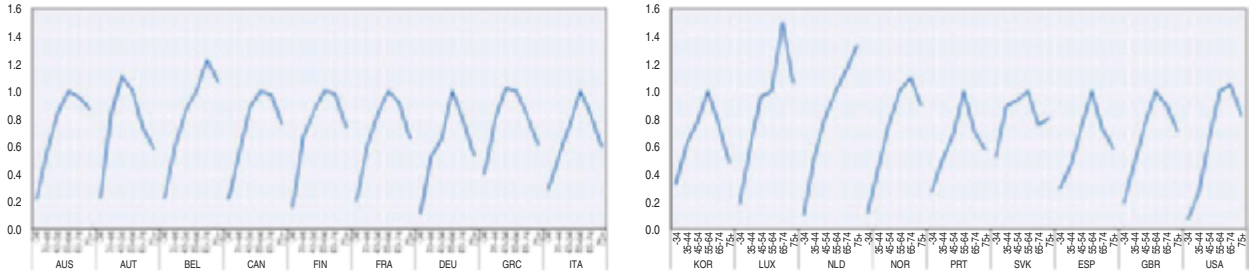
Large differences in mean wealth holdings also appear when looking at other household characteristics. Households headed by a college graduate have a net wealth that, on average, is around 70% higher than households whose head has an upper secondary education and more than three times (+230%) higher than those of households with only a primary education (Figure 6.13, Panel A). In the United States, households headed by college graduates own as much as 3.3 times the wealth of households with upper secondary, a finding that is consistent with previous studies highlighting the rise in the college premium and of a category of "working rich" in the United States (Piketty and Saez, 2006). On average, households who own their principal residence (i.e. outright owners) have 1.6 times the wealth of owners with a mortgage and 8.5 times the wealth of renters (Panel B).

When looking at net wealth according to the number of persons in the household and the presence of children, the highest mean wealth among those with a head of working age (Figure 6.13, Panel C) is among those composed of two adults and no child (the sole exceptions are Austria and Luxembourg), while single persons both with and without children typically have very low wealth; among households with a retirement-aged head (Panel D), those with two adults have higher net wealth than those with two working-age adults and no children, while there is more diversity across countries among older households composed of a single person. Finally, when considering the main income source of the household (Panel E), in the large majority of countries the wealthiest households are those whose main income is represented by property income: households whose main income comes from self-employment have, on average, a mean wealth that is twice as large as those who depend mainly on wages and salaries, but about 42% of the mean wealth of households relying mainly on property income.

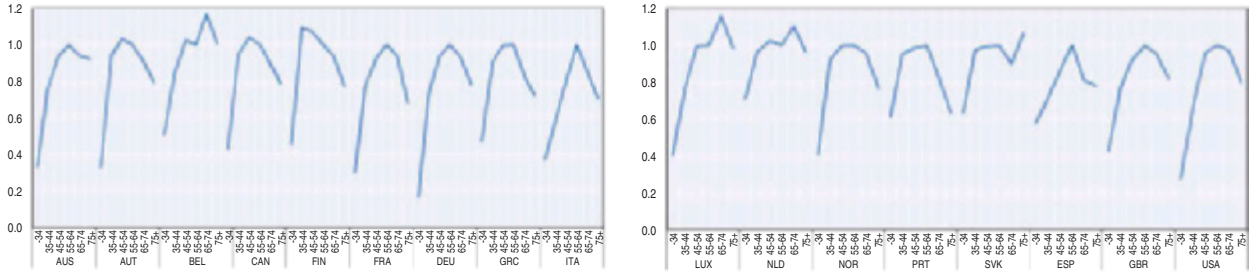
**Figure 6.12. Mean net wealth per household by age of the reference person and by broad component**

Wealth holdings of different age groups, normalised relative to those of the 55-64 age group.

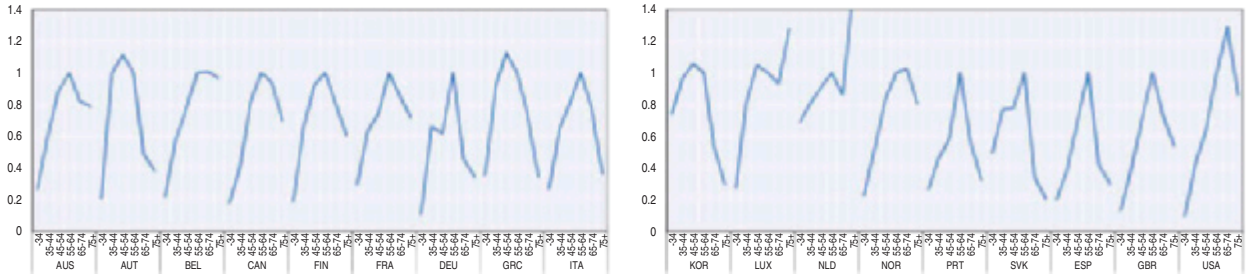
Panel A. Mean wealth




Panel B. Mean housing wealth[1]




Panel C. Mean financial wealth



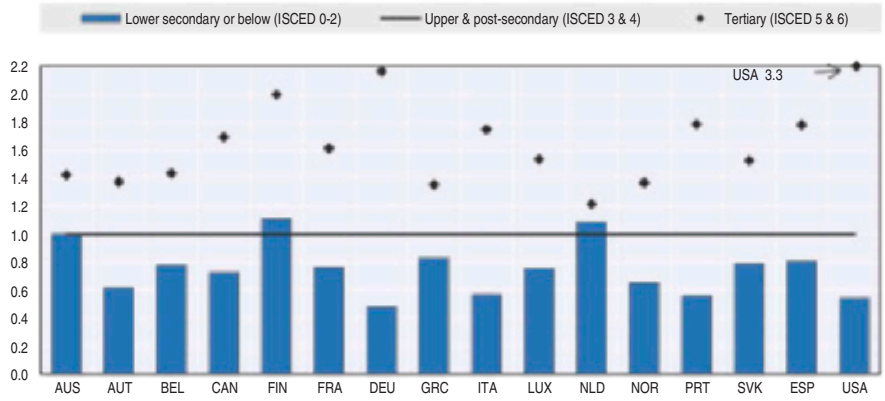

1. Data on net housing wealth refers to data on housing wealth net of liabilities.

*Source*: *OECD Wealth Distribution Database.*

StatLink http://dx.doi.org/10.1787/888933208581

**Figure 6.13. Mean net wealth by education, housing status, household type and main income source**

Panel A. Education of the household reference person[1]




Panel B. Housing tenure

Panel C. Household with a head of working age by type

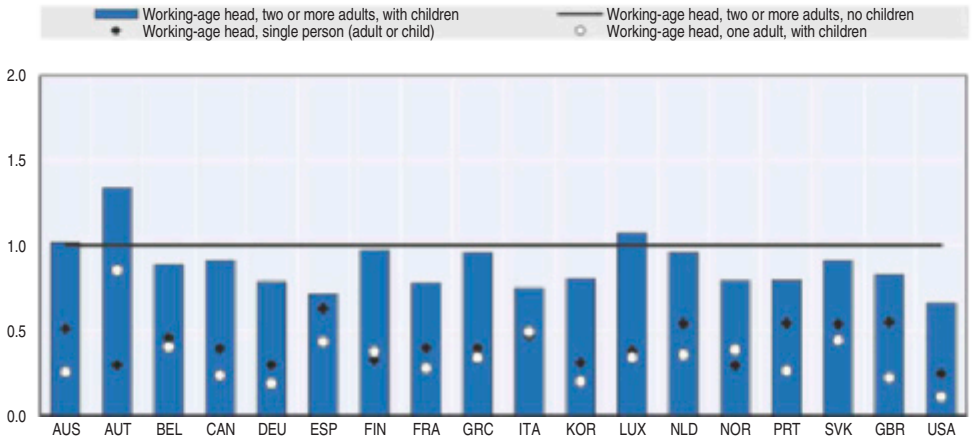
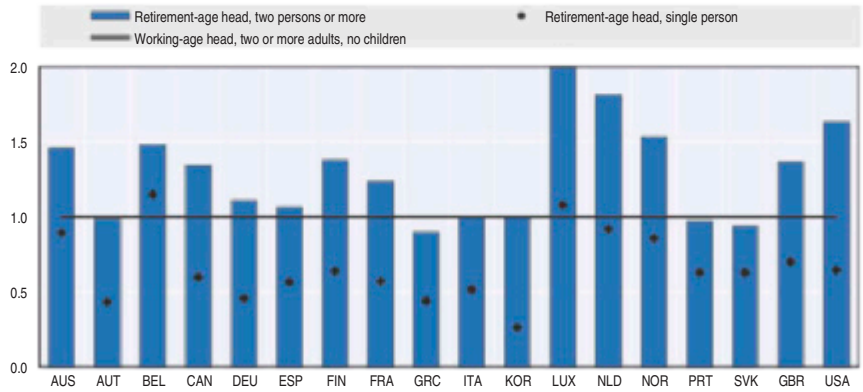


**Figure 6.13. Mean net wealth by education, housing status, household type and main income source** *(cont.)*

Panel D. Household with a head of retirement age by type




Panel E. Household by main income source

1. Data on education is not available for Korea and United Kingdom.

*Source*: *OECD Wealth Distribution Database*.

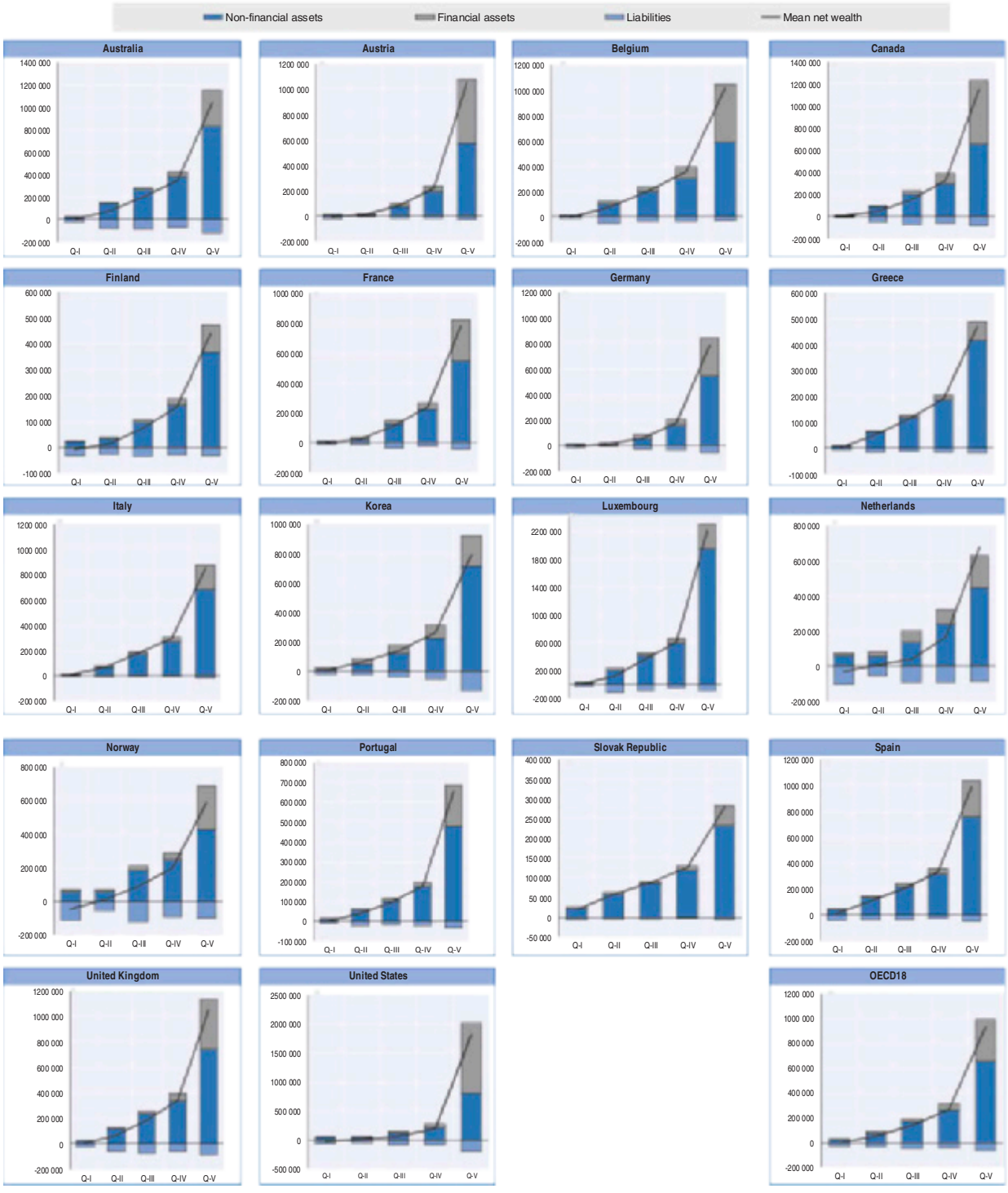
StatLink http://dx.doi.org/10.1787/888933208596

## 6.4. The composition of assets

The composition of household portfolios across different asset types differs significantly across countries and across the wealth distribution. An overview of the composition of net wealth by quintile is provided by Figure 6.14. On average, the mean household wealth for households in the first wealth quintile includes USD 22 000 of non-financial assets, USD 5 000 of financial assets, and USD 3 000 of liabilities. The mean values of both types of assets increase when moving along the wealth distribution, with the fifth quintile holding a value of non-financial assets that is 30 times larger than the value of the first quintile. The gap in financial assets is even wider: households in the top wealth quintile have a mean value of financial wealth that is about 70 times the value of those in the first quintile. Total liabilities also increase along the wealth distribution, but they are only twice as large for the top quintile compared with the bottom one. The total liabilities for the fifth quintile represent 7% of its total assets, while the corresponding share for the first quintile is 11%. Financial wealth is very unevenly distributed in the United States and Canada but much less so in Korea and the Slovak Republic. Differences in mean real assets across quintiles are small in Norway and the Netherlands (which is likely to be related to the high level of liabilities for less wealthy households) but particularly large in Canada, France and Belgium.

**Figure 6.14. Wealth composition and average net wealth by quintile in OECD countries**

2010 or latest available year, values in 2005 USD[1]



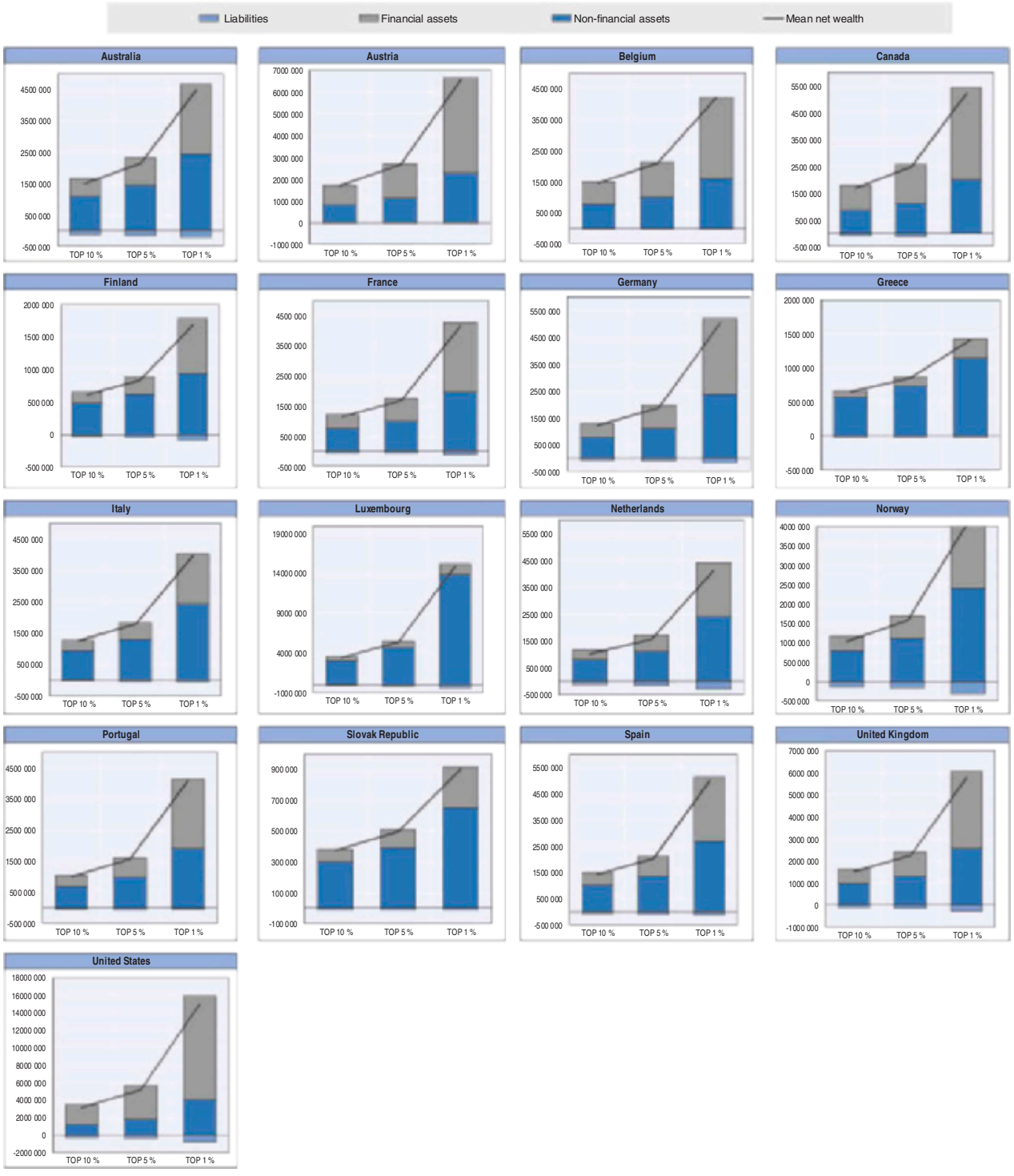

1. Financial assets data are not available for Korea.

*Source*: *OECD Wealth Distribution Database*.

StatLink http://dx.doi.org/10.1787/888933208607

**Figure 6.15. Wealth composition and average net wealth for the top 10%, 5% and 1% in OECD countries**

2010 or latest available year, values in 2005 USD




*Source*: *OECD Wealth Distribution Database*.

StatLink http://dx.doi.org/10.1787/888933208610

The importance of financial assets increases with the size of net wealth also at the very top of the distribution (Figure 6.15). Mean financial wealth for the top 1% is 3.7 times higher than for the top 10%, while the gap is smaller for non-financial assets (the level held by the top 1% is three times the level held by the top 10%). For the top 10% and top 5%, financial assets represent about 40% of total assets, while financial and non-financial assets are equally important for the top 1%.

### *Non-financial assets*

Table 6.5 describes the asset composition of household portfolios. With the exception of the United States, non-financial assets constitute the most important category, with a share of total assets of 75% on average; close to 90% in Greece and the Slovak Republic; and 50% to 80% in most Nordic and southern European countries, as well as in Australia and the United Kingdom. The principal residence is the most important asset owned by households, but the cross-country variation in the value of the principal residence as a share to total assets is wide, ranging from just over 30% in the United States to just over 70% in the Slovak Republic.[22] At the same time, self-reported values for the principal residence may be overestimated by households, in particular during a period of falling housing prices. While a number of approaches may be used to correct this valuation bias (e.g. information on the purchase price, mortgage value, property tax valuation and price indexes), it is unclear to what extent they are used in various countries.

Part of the cross-country difference in the share of the principal residence in total assets is related to household ownership rates and to the policies promoting them. For instance, in Austria and Germany, fewer than 50% of households own their principal residence (Andrews and Caldera Sanchez, 2011), while 90% of households do so in the Slovak Republic. On the other hand, ownership rates in the United States are equal to 65%, while housing wealth is much lower than in most other countries with similar ownership rates (e.g. Norway). Similarly, the home ownership rate is over 80% in Spain, which translates into a wealth share of around 54%.

While the principal residence represents the bulk of non-financial assets, other real estate property is also important, accounting on average for 17% of overall assets. In Korea and Luxembourg, households hold over 30% of their assets in the form of "other real estate property", a share that is also high in Greece, Spain and Portugal. In some southern European countries (Italy, Spain), holiday homes are common, and the period between the mid-1990s and 2007 witnessed a surge in residential investment, mainly in Greece and Spain (Andrews et al., 2011), with an ownership rate for other real estate of at least 30%. On the other hand, other real estate property represents a small share of wealth in the Netherlands and the Slovak Republic, amounting to less than 7% of total assets.

Other types of real assets beyond housing are of less importance and constitute between 6% and 7% of total assets. While most households own a vehicle (close to 75%), these represent only around 3.5% of overall wealth (slightly more in Finland and the Slovak Republic). Other valuables are however significant in Australia and France (at around 9% and 5% of assets, respectively).

## Table 6.5. Household portfolio composition

Percentage share of total assets

| | Australia | Austria | Belgium | Canada | Finland | France | Germany | Greece | Italy | Korea | Luxembourg | Netherlands | Norway | Portugal | Slovak Republic | Spain | United Kingdom | United States | OECD18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Non financial assets** | **80.7** | **59.1** | **66.6** | **62.9** | **81.7** | **72.2** | **65.8** | **88.3** | **81.7** | **73.3** | **85.9** | **71.2** | **73.2** | **75.6** | **87.1** | **80.7** | **79.7** | **48.5** | **74.1** |
| Principal residence | 51.0 | 43.7 | 51.6 | 43.1 | 54.6 | 47.6 | 40.9 | 55.9 | 60.8 | 36.3 | 51.9 | 61.3 | 60.9 | 47.8 | 74.4 | 53.9 | 54.8 | 31.5 | 51.2 |
| Other real estate property | 17.8 | 10.9 | 11.9 | 12.3 | 22.4 | 20.0 | 20.5 | 27.8 | 16.4 | 31.4 | 30.2 | 6.4 | 10.2 | 23.0 | 6.7 | 23.7 | 9.3 | 12.8 | 17.4 |
| Vehicles | 2.9 | 3.5 | 2.3 | 3.3 | 4.7 | .. | 3.3 | 4.3 | 3.0 | 2.5 | 2.6 | 2.9 | 2.1 | 4.0 | 5.5 | 2.6 | 2.3 | 3.4 | 3.2 |
| Other non financial assets | 9.1 | 1.1 | 0.8 | 4.1 | 0.0 | 4.7 | 1.0 | 0.3 | 1.5 | 3.0 | 1.2 | 0.6 | 0.1 | 0.9 | 0.6 | 0.4 | 13.3 | 0.8 | 4.5 |
| **Financial assets** | **19.3** | **40.9** | **33.4** | **37.1** | **18.3** | **27.8** | **34.2** | **11.7** | **18.3** | **26.7** | **14.1** | **28.8** | **26.8** | **24.4** | **12.9** | **19.3** | **20.3** | **51.5** | **25.9** |
| Deposits | 5.7 | 10.4 | 11.4 | 4.6 | 7.8 | 6.5 | 9.4 | 5.6 | 4.7 | .. | 4.9 | 9.0 | 12.5 | 8.8 | 6.3 | 5.3 | 9.7 | 7.0 | 7.6 |
| Bonds and other debt securities | 0.0 | 1.3 | 4.3 | 0.3 | 0.1 | 0.3 | 1.2 | 0.2 | 2.0 | .. | 0.7 | 1.2 | 0.1 | 0.2 | 0.0 | 0.2 | 2.0 | 2.0 | 0.9 |
| Mutual funds | 3.7 | 2.0 | 3.8 | 3.2 | 1.7 | 1.1 | 2.2 | 0.2 | 1.0 | .. | 2.3 | 1.7 | 1.3 | 0.5 | 0.2 | 0.8 | 1.1 | 7.6 | 2.0 |
| Net equity in own unincorporated enterprises | 2.8 | 24.3 | 4.3 | 2.7 | 3.3 | 8.4 | 13.0 | 4.8 | 8.3 | .. | 3.0 | 2.2 | 0.8 | 11.9 | 4.5 | 9.0 | .. | 4.5 | 6.7 |
| Stocks | 2.5 | 0.5 | 3.0 | 2.7 | 3.9 | 2.2 | 1.4 | 0.2 | 0.5 | .. | 0.8 | 0.9 | 9.6 | 0.8 | 0.0 | 0.9 | 2.9 | 5.7 | 2.3 |
| Unlisted shares and other equity | 4.4 | 0.2 | 0.5 | 8.7 | .. | 0.9 | 0.2 | 0.0 | 0.4 | .. | 0.1 | 0.0 | .. | 0.0 | 0.4 | 0.8 | 0.6 | 14.2 | 2.1 |
| Other non pension financial assets | 0.1 | 0.7 | 1.3 | 2.2 | .. | 0.7 | 1.2 | 0.2 | 0.6 | .. | 0.3 | 0.7 | 1.8 | 0.8 | 0.4 | 0.7 | 0.8 | 1.1 | 0.9 |
| Voluntary individual life insurance and private pension funds | .. | 1.5 | 4.9 | 12.7 | 1.4 | 7.5 | 5.7 | 0.5 | 0.9 | .. | 2.1 | 13.1 | 0.6 | 1.3 | 0.9 | 1.6 | 3.3 | 9.4 | 4.2 |
| **Liabilities** | **17.9** | **5.9** | **8.2** | **14.0** | **18.4** | **9.6** | **12.2** | **7.5** | **4.1** | **24.4** | **10.3** | **32.5** | **36.2** | **10.2** | **4.0** | **10.1** | **15.7** | **18.7** | **14.4** |
| Principal residence loans | 10.3 | 4.3 | 6.6 | 10.9 | 13.2 | 5.0 | 7.1 | 4.5 | 2.7 | 5.6 | 7.0 | 25.0 | .. | 8.2 | 3.1 | 6.1 | 12.1 | 13.0 | 8.5 |
| Other real estate loans | 5.8 | 0.7 | 0.8 | 2.8 | .. | 2.3 | 3.5 | 1.3 | 0.3 | 2.4 | 2.3 | 2.0 | .. | 1.2 | 0.2 | 2.6 | 2.2 | 2.9 | 2.1 |
| Other loans | 1.8 | 1.0 | 0.9 | 0.3 | 5.1 | 2.4 | 1.5 | 1.6 | 1.1 | 16.4 | 1.0 | 5.5 | .. | 0.8 | 0.8 | 1.4 | 1.5 | 2.8 | 2.7 |

*Note:* "..." refers to non-available data.

*Source*: *OECD Wealth Distribution Database.*

StatLink http://dx.doi.org/10.1787/888933209098

### *Financial assets*

Financial assets include deposit accounts, bonds, listed shares, mutual investment funds, life insurance, investment and other financial assets.[23] Household wealth in the form of financial assets is high in the United States (52% of total assets) and in Canada (37%), where a high share of households invest in the financial market, as well as in Austria (40%).

Bank deposits are households' most important financial asset, with almost all households having a deposit (except in Greece). Deposits account for around 8% of total assets (and 30% of financial assets) on average, with larger shares in Finland, the Slovak Republic and the United Kingdom.

In addition to deposits, net equity in own unincorporated enterprises and voluntary life insurance and personal pension funds are also sizeable, constituting on average between 4% and 6% of overall wealth.[24] Net equity in unincorporated enterprises is particularly important in Austria, Germany, France and southern Europe (except Greece). On the other hand, unlisted shares, other equity and individual life insurance and pension funds represent the most important type of financial asset in English-speaking countries (except the United Kingdom). Unlisted shares represent 4%, 9% and 14% of assets in Australia, Canada and the United States, respectively. Life insurance and private pensions account for a large share of financial assets in the Netherlands and Canada, and (to a lesser extent) in the United States, France and Germany.

### *Pension wealth*

Pension wealth is an important component of individual or household wealth. However, in contrast to other wealth components, pension wealth has characteristics that make its measurement very complex due to differences in the institutional arrangements of various countries. Pension wealth measures the capitalised value of the flows of pension benefits that people may expect to receive in the future; hence its value will reflect cross-country differences in pension replacement rates (i.e. the ratio of pension benefits to previous earnings), in the duration over which benefits are paid (which depend on country-specific mortality rates), in retirement ages, and in the indexation of pensions in payment (Box 6.3).

Wealth from pension systems may take three different forms: 1) a first-tier of public pensions ensuring a basic or minimum pension; 2) a second-tier, in the form of mandatory or quasi-mandatory contributions to either private or public schemes; and 3) a third tier, which comprises private voluntary pension savings. Across OECD countries, only Ireland and New Zealand do not have mandatory second-tier schemes, while in 13 countries, private pensions are either mandatory or quasi-mandatory. Private pension coverage tends to be lower in countries where private pensions are voluntary (with coverage rates ranging from 13% to 50% of the working-age population, as compared to coverage rates of around or above 70% in countries with mandatory private pension systems (OECD, 2013b).

Household wealth surveys collect information on the amount of voluntary private pensions outstanding (included among financial assets in Table 6.5 above); they sometimes include the amounts outstanding in mandatory or quasi-mandatory occupational pension plans (although reporting is less systematic); but they always exclude first-tier public pensions, as well as pensions on account of mandatory contributions to public pensions schemes. As the mix of different types of pension wealth varies across countries, household wealth data of the type used in this chapter provide only a partial picture of the amount (and distribution) of pension wealth across countries.

An alternative approach to assessing the amount of household pension wealth is through models that provide an estimate of the stream of pension benefits that people with different characteristics may expect to receive in the future, based on the eligibility conditions of the different pension systems. This approach is implemented by the OECD pension models (OECD, 2013b), and the results are discussed in Annex 6.A3.

**Box. 6.3. Measurement of household wealth from pensions**

Pension wealth refers to "the discounted value of the lifetime flows of pension benefits measured at the point of retirement" (OECD, 2013b). Contrary to the stream of pension benefits that are paid over time until some contingency occurs, pension wealth is a "stock" concept generally measured at the point of retirement.

This stock measure is computed by discounting the lifetime flows of pension benefits, thus taking into account the opportunity cost to delaying consumption. The present value of these flows depends on the probability of being alive to claim the pension in a given period, which is inferred from mortality tables. Any adjustment of pensions in payment that reflect changes in costs or standards of living should also be taken into account ("indexation" or "uprating" policy).

Survey questionnaires on wealth generally do not include information on public pension wealth nor on private pension wealth from defined-benefit occupational programmes. By contrast, they generally report some information on private wealth from funded (generally private) pensions. This is, for example, the case for the concept of "extended net wealth" in the OECD wealth questionnaire, which includes pension wealth in funded pension schemes related to employment. The comparability of net extended wealth across countries is limited. Even though funded private pensions related to employment might play an increasingly important role in the income of future retirees, their coverage varies greatly across OECD countries. Private pensions are mandatory or quasi-mandatory in 13 OECD countries. In most of them, payments occur as monthly benefits, which are captured by income measures. For voluntary pensions, lump-sum withdrawals are more common.

Information on pension wealth derived from both social security schemes and defined-benefit occupational pension programmes will be enhanced in the future as new rules for reporting pension liabilities in National Accounts are implemented. In the recently endorsed standards for national accounts, SNA 2008 and ESA 2010, the debate focused on the measurement of pension entitlements/liabilities, especially for programmes sponsored by the government. The "compromise" solution finally agreed is that national statistical offices are required to report on the value of all pension entitlements in an additional SNA table (Table 17.10). This table would cover both pension entitlements that are recognised in the core system of national accounts and those that are not recognised (implicit). Similarly, a new European regulation for the European System of Accounts (ESA 2010) requires European countries to report their accrued-to-date pension liabilities starting from 2017. The collection of these data might allow the computation of some sort of public pension wealth indicator in the future.

## 6.5. The incidence of debt and over-indebtedness

### *Debt and over-indebtedness across OECD countries*

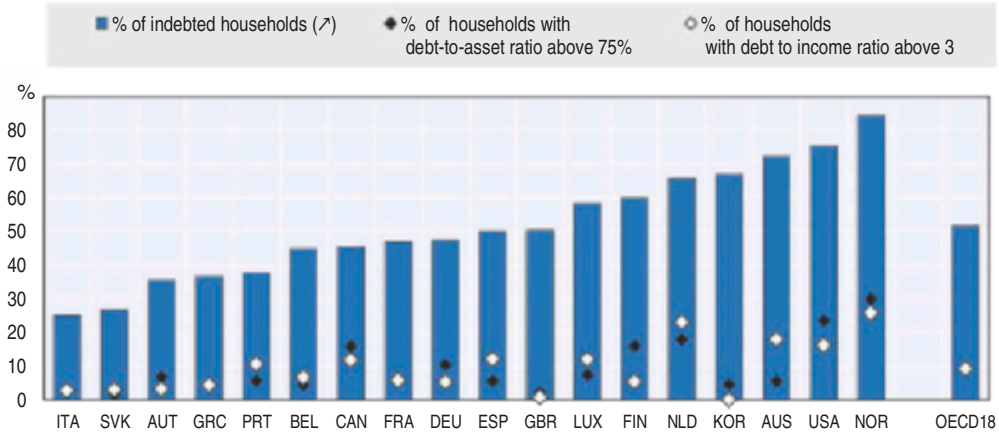
The importance of household liabilities (as a share of total assets) varies largely across OECD countries, ranging from 4% in Italy and the Slovak Republic, to over 30% in the Netherlands and Norway (Table 6.5). The higher level of debt in these latter countries is often related to rising housing prices in the period preceding the crisis, which led more households to take on higher mortgages to become homeowners. In Norway, house prices rose by around 85% in real terms between 2000 and mid-2013, and aggregate household debt is now over 200% of disposable income (OECD, 2014). In the Netherlands, large tax deductions on interest payments encourage households to hold mortgages as either interest-only or as a form of savings/investment where only interest is paid until the end of the mortgage loan, when the capital is then reimbursed.

Most household liabilities (two-thirds) are mortgages on the purchase of a principal residence, but in some countries loans on other residential property and other types of loans represent a substantial fraction of total liabilities. Close to 80% of household liabilities are principal residence loans in Belgium, Canada, the Netherlands, the Slovak Republic and the United Kingdom. In Australia, Germany and Spain, loans on other property constitute 30% of total liabilities. In Korea, households also hold other types of loans with a value of 70% of total liabilities (and more than 10% of total assets). In Korea, a large part of household liabilities takes the form of a deposit paid to the landlord (the "chonsae" system, a rental market system in which a tenant pays a deposit upfront with no additional periodic rent payments, and receives the nominal value of the deposit from the landlord upon maturation, see Cho, 2010).

While debt facilitates consumption smoothing over the life cycle, the concentration of household debt on some households, even when matched by higher assets, may expose them to high risks in the event of sudden changes in asset prices, with implications for the vulnerability of the economic system as a whole. Figure 6.16 shows the percentage of indebted and over-indebted households among the 18 countries for which data are available: while no general definition of over-indebtedness currently exists, over-indebted households are defined in Figure 6.16 as those with a debt-to-asset ratio exceeding 75%. On average, about 55% of households are indebted, ranging from 25% in Italy to 80% in the United States and Norway. Based on the criteria used here, about 12% of all households are over-indebted across the 18 OECD countries for which data are available, ranging from 2% in the United Kingdom and Italy to 24% in the United States and 30% in Norway.[25]

An alternative measure of over-indebtedness is the share of people with a ratio of debt to income (rather than assets) above a given threshold. This measure offers a different perspective of household over-indebtedness as it focuses on the ability to reimburse the debt. The threshold used here is equal to three, implying that a household that saves one-third of its income each year would reimburse its debt in around 12 years based on prevailing interest rates. This alternative measure (also shown in Figure 6.16) yields very similar results to the previous one: on average, 11% of households are over-indebted, ranging from 1% or less in the United Kingdom to 26% in Norway.[26]

**Figure 6.16. Percentage of indebted and over-indebted households**




*Source*: *OECD Wealth Distribution Database*.

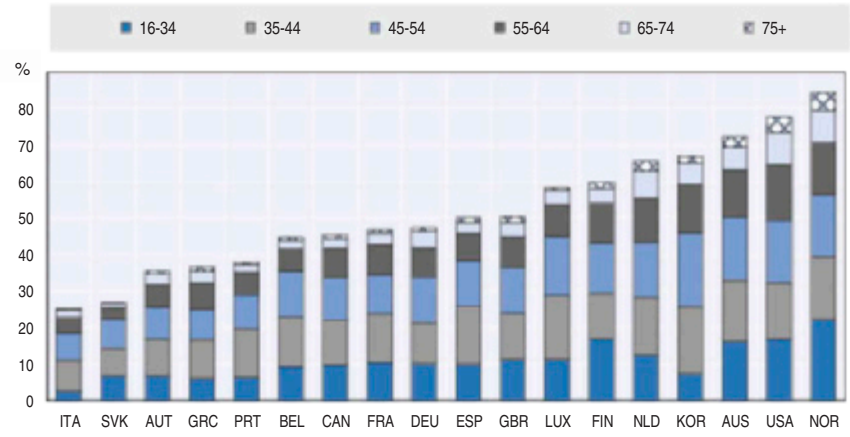
StatLink http://dx.doi.org/10.1787/888933208624

### *Demographic characteristics of indebted and over-indebted households*

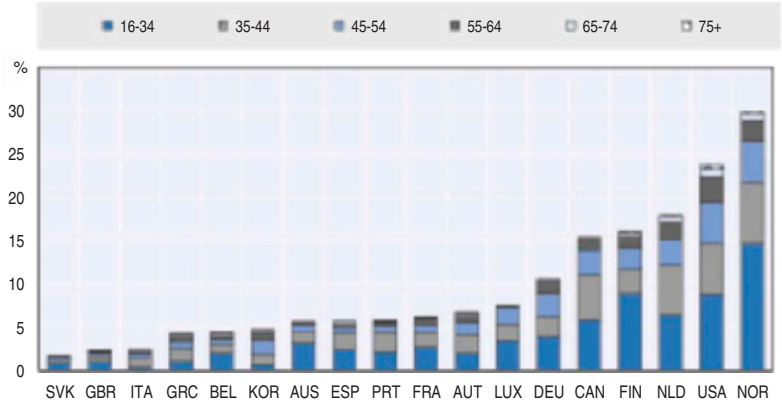
Figure 6.17 depicts the age characteristics of indebted and over-indebted households, with over-indebtedness measured in terms of households' debt-to-income ratio. Panel A shows that indebtedness is almost equally spread across young (age 16-34) and prime-age adults (35-44 and 45-54), while being marginal among households with a reference person over age 65. In contrast, over-indebtedness falls disproportionately upon young people: on average 40% of over-indebted households are headed by a person under age 34, and 30% by one in the 35-44 age band. Over-indebtedness is therefore primarily a concern for young people.

**Figure 6.17. Age composition of indebted and over-indebted households**

Panel A. Indebted households




Panel B. Over-indebted households




*Note:* Countries are ranked from left to right, in increasing order of total number of indebted households.

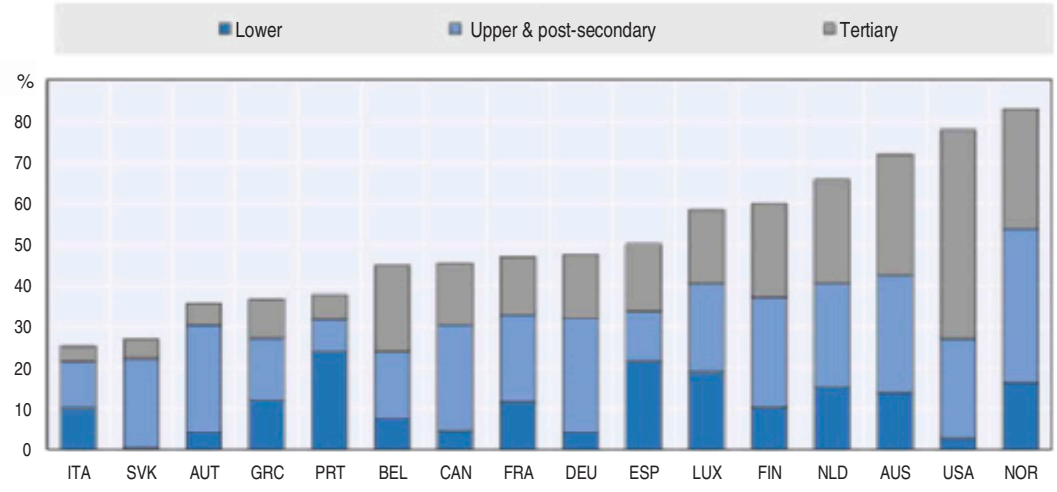
*Source*: *OECD Wealth Distribution Database*.

StatLink http://dx.doi.org/10.1787/888933208635

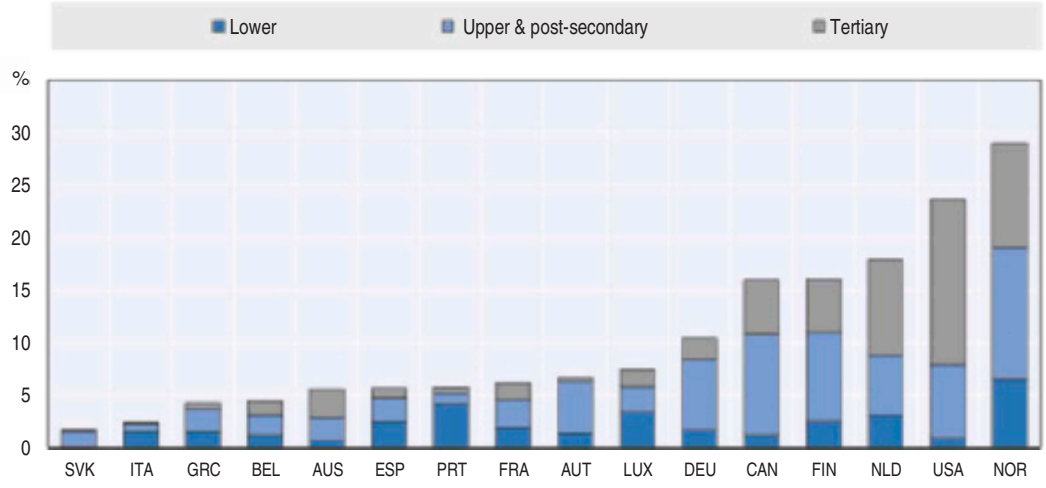
Turning to the distribution of debt and over-indebtedness by education, Figure 6.18 shows that households headed by a person with an upper secondary or post-secondary non-tertiary degree represent about half of indebted and over-indebted households, while those with lower and tertiary education represent about one-quarter. However, in the Netherlands and the United States, two countries with high levels of debt and over-indebtedness, households with tertiary education are the most (over) indebted.

**Figure 6.18. Percentage of indebted and over-indebted households, by education**

Panel A. Indebted households by education of household head




Panel B. Over-indebted households by education of household head




*Note:* Countries are ranked from left to right in increasing order of total of indebted households in Panel A and B.

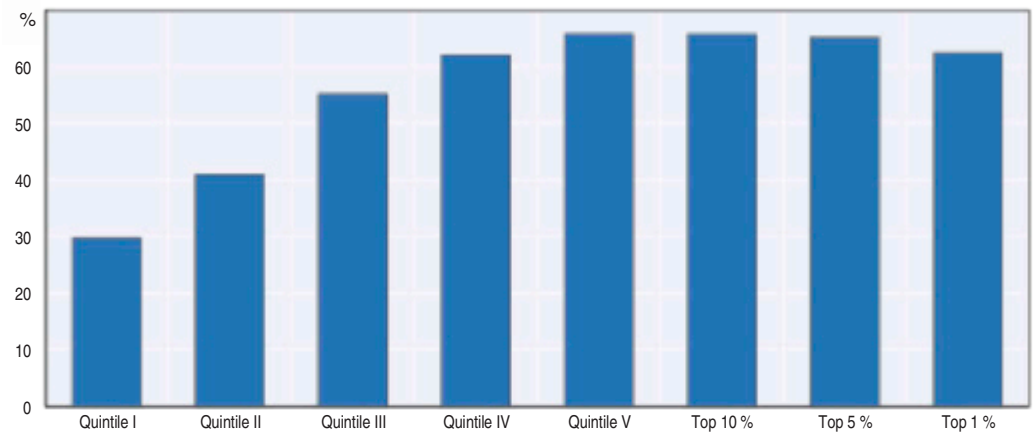
*Source*: *OECD Wealth Distribution Database*.

StatLink http://dx.doi.org/10.1787/888933208641

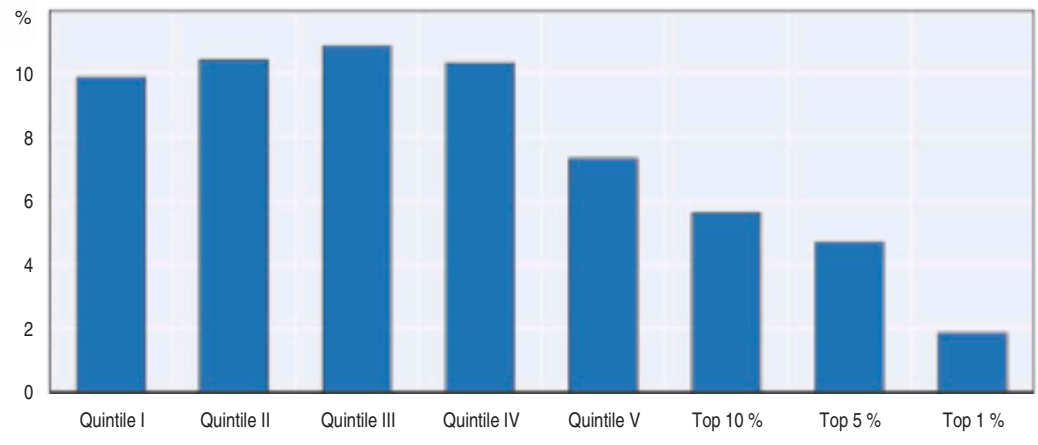
Figure 6.19 displays the average shares of indebted (Panel A) and over-indebted households (Panel B) for each quintile (and the top percentiles) of the income distribution across the 16 OECD countries for which data are available. In general, the share of indebted households increases with income levels in all countries. On average, about one-third of households from the bottom income quintile have debts, as compared with more than two-thirds for the top quintile and the top percentiles: this suggests the existence of credit constraints for lower-income households. Perhaps due to this limited access to the credit market, the largest share of over-indebted households is observed among the "middle class", namely quintiles II, III and IV, rather than among lower or higher-income groups (Panel B): Norway, the Netherlands, Austria and Germany are exceptions to this pattern.

**Figure 6.19. Percentage of indebted and over-indebted households by income quintile and top distribution**

Panel A. Indebted households




Panel B. Over-indebted households




*Note:* Data refer to OECD18 average.

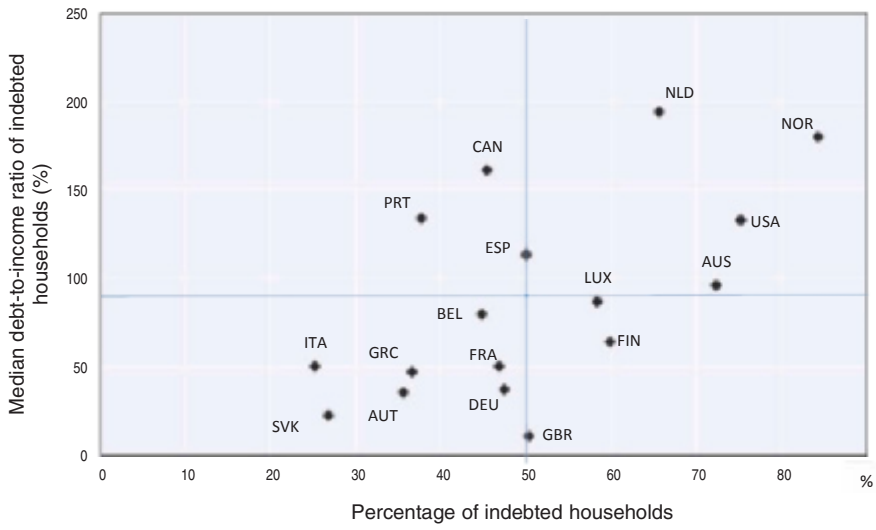
*Source*: *OECD Wealth Distribution Database*.

StatLink http://dx.doi.org/10.1787/888933208654

High levels of indebtedness are particularly problematic in countries where a large fraction of households is indebted. To measure the depth of indebtedness, the median debt-to-income ratio is used in Figure 6.20 to highlight how the depth of indebtedness varies significantly across countries. The stock of household debt represents as much as 94% of household disposable income, on average, ranging from 11% in the United Kingdom to more than 160% in Canada, Norway and the Netherlands. The Netherlands, Norway and the United States combine a large fraction of households having debts and a large level of indebtedness. Households in these countries (which are also those with the highest levels of over-indebtedness) may thus be the most exposed to the risk of large swings in asset prices. Conversely, Italy, Austria and Greece appear to be less vulnerable to large asset price changes.

**Figure 6.20. Depth of indebtedness for indebted households**

2010 or latest available year




*Source*: *OECD Wealth Distribution Database*.

StatLink http://dx.doi.org/10.1787/888933208667

## 6.6. Trends in household wealth since the Great Recession

This section describes trends in household wealth in a few OECD countries where time-series information is available. The impact of the 2008 financial crisis on stocks of household wealth is examined with the data collected by the OECD, while long-term rises in wealth-to-income ratios are described in Box 6.4 drawing on the data and analysis in Piketty (2014).

Two major patterns emerge from the examination of trends in household wealth in the six OECD countries for which comparable data are available before and after 2008 (Australia, Canada, Italy, the Netherlands, the United Kingdom and the United States, shown in Table 6.6).

- First, the mean net wealth per household has changed in very different ways across countries in the aftermath of the Great Recession. Mean net wealth has increased in Australia and Canada, but it has declined in Italy, the Netherlands, the United Kingdom and the United States.
- Second, trends in wealth inequality have been different across countries throughout the Great Recession. In Australia and Canada, the median net wealth has increased at a faster rate than the wealth of the upper percentiles, so that inequality at the top of the distribution has receded. Conversely, the median net wealth has fallen at a faster rate than the net wealth of the top percentiles in Italy, the Netherlands and the United States, implying an increase in wealth inequality at the top of the distribution. Finally, median net wealth has decreased in the United Kingdom, while the net wealth of the top percentiles has increased, so that inequality at the top of the wealth distribution has unambiguously risen. Inequality at the bottom of the wealth distribution has increased in all countries except the United Kingdom.

**Table 6.6. Changes in mean net wealth between 2006 and 2012**

Annual percentage changes

| | Mean | Median | Bottom quintile | Middle three quintiles | Top quintile | Top 10% | Top 5% | Top 1% | Top w ealth inequality | Bottom w ealth inequality | Observed period |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Australia | 1.0 | 1.0 | -4.0 | 1.1 | 1.0 | 0.8 | 0.3 | -2.7 | -0.7 | 0.3 | 2006-2012 |
| Canada | 5.1 | 5.9 | 3.4 | 6.0 | 4.7 | 4.1 | 3.5 | 1.3 | -1.8 | 0.1 | 2005-2012 |
| Italy | -1.3 | -2.2 | -25.3 | -2.1 | -0.8 | -0.6 | .. | .. | .. | 0.4 | 2006-2012 |
| Netherlands | -1.6 | -6.0 | 1.9 | -3.6 | -0.8 | -0.5 | -0.3 | 0.3 | 9.3 | 2.8 | 2006-2012 |
| United Kingdom | -0.1 | -2.5 | 5.0 | -1.9 | 1.1 | 2.0 | 3.1 | 8.4 | 7.2 | -0.3 | 2006-2012 |
| United States | -2.3 | -7.1 | -26.4 | -5.6 | -1.7 | -1.5 | -1.5 | -1.2 | 9.9 | 4.0 | 2007-2013 |

*Note:* Data for Canada and on United States refer to the period 2005-12 and 2007-13, respectively. Top wealth inequality refers to the difference between the mean wealth of the top 5% and the median wealth, divided by the median wealth. Bottom wealth inequality refers to the difference between median wealth and the mean wealth of the bottom quintile, divided by the median wealth.

*Source*: *OECD Wealth Distribution Database.*

StatLink http://dx.doi.org/10.1787/888933209105

Figure 6.21 describes wealth changes by group of households, showing that the least wealthy groups have taken the biggest hit from the Great Recession. In most countries, the change in net wealth has been lower for households whose head was younger than 34 (Panel A), and for households with low educational attainment (Panel B). Box 6.4 provides an historical perspective on changes in *private wealth*, based on the estimates provided in Piketty (2014).[27]

**Figure 6.21. Change of mean net wealth between 2006 and 2012**

Annual percentage changes

Panel A. Households headed by a young and old reference person[1]

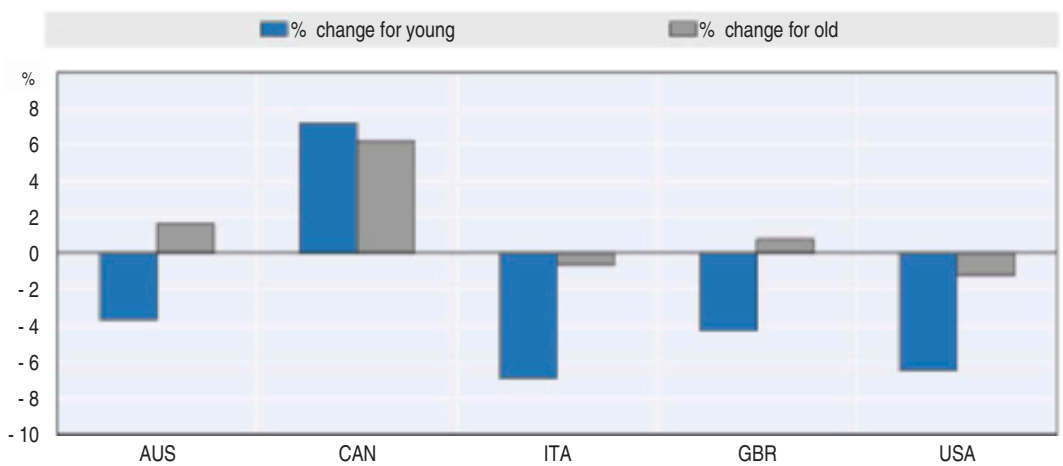
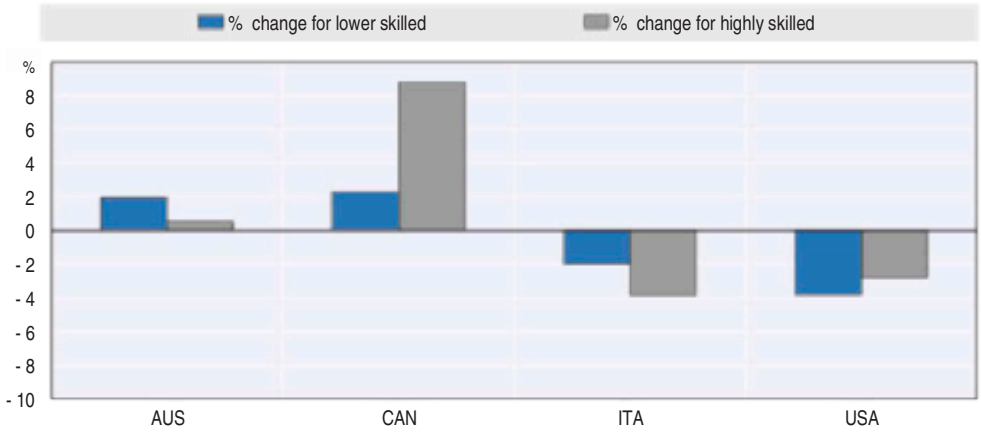


**Figure 6.21. Changes in mean net wealth by household characteristics, 2006 and 2012** *(cont.)*

Panel B. Households whose reference person has low or high education[2]




1. Young household heads are those under 34 years of age, while the old heads are those above 65.

2. The low education group refers to household heads with lower secondary education or below (ISCED 0-2), while the high education group refers to household heads with tertiary education (ISCED 5 & 6).

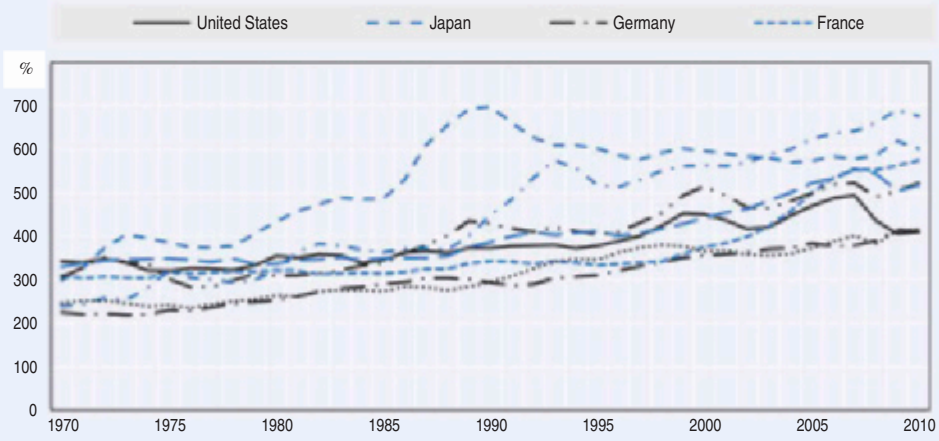
*Source*: *OECD Wealth Distribution Database.*

StatLink http://dx.doi.org/10.1787/888933208671

## Box 6.4. Piketty's historical perspective on trends in household wealth

In a longer-term perspective, the evidence presented by Piketty (2014) suggests that both private wealth and its concentration have increased markedly over the last four decades. As shown in the figure below, private wealth as a share of national income almost doubled in eight OECD countries since 1970. Similarly, according to Piketty's estimates, the concentration of wealth (as captured by the shares of the top decile and the top centile of the wealth distribution) has increased in France, Sweden, the United Kingdom and the United States since 1970. The rise recorded over this period stands in sharp contrast to the long-term decline recorded in the interwar period.

**Private wealth in eight OECD countries since 1970, as a percentage of national income**




*Source*: Piketty, T. (2014), *Capital in the 21st Century*, Harvard University Press.

StatLink http://dx.doi.org/10.1787/888933208692

**Box 6.4. Piketty's historical perspective on trends in household wealth** *(cont.)*

Piketty (2014) identifies four factors that could explain this long-term increase in private wealth since the 1970s, while a fifth one accounts for persistent deviations from this long-term trend:

- First, as private wealth is measured as a share of national income, the slowdown of economic growth in the aftermath of the 1973 oil shock mechanically increased this share.
- Second, over the long-term, savings rates have remained relatively stable and translated into a higher stock of private wealth.
- Third, the price of assets in the form of property or stocks dramatically increased (relative to consumer prices) in a majority of countries from 1980 onwards.
- Fourth, privatisation programmes in the 1980s and the 1990s induced a transfer of assets (which includes firm's net wealth) from the public to the private sector.
- Fifth, real estate bubbles in Japan in the 1980s and stock market bubbles in the United States in 2000-01 entailed a generally persistent deviation in private wealth's share of national income from its long-term growth path.

The empirical analysis described in Annex 6.A2 confirms the relevance of the factors listed above for the eight OECD countries for which Piketty provides data since 1970. Taking stock of the long-term series of private wealth available in Piketty (2014), analysis shows significant correlations between, on the one hand, the stock of private wealth and, on the other hand, per capita GDP growth and asset prices (i.e. price indices of quoted shares and dwellings relative to the price of private consumption). Conversely, there is no robust correlation between the stock of private wealth and the national savings rate; this may reflect the erratic changes in national savings rates. As expected, economic growth is negatively related to private wealth, while increases in stock or housing prices relative to private consumption prices are associated with an increase of private wealth.

## 6.7. Conclusion

The main objective of this chapter has been to highlight patterns in the distribution of household net wealth within a sample of OECD countries that regularly collect statistics on this issue. This provides a basis for comparative analyses, extending previous OECD work (OECD, 2008) and complementing academic studies that have provided a long-term perspective for a smaller number of countries (Piketty, 2014). While several factors limit the comparability of the wealth data used in this chapter, a number of stylised patterns emerge from this review.

- First, household wealth is much more concentrated than household income: the 10% of wealthiest households hold about 50% of all household wealth on average in the sample of OECD countries, while the 10% of people with the highest income earn about 25% of total income. At the bottom of the wealth distribution, 40% of households hold little over 3% of all household wealth. Looking at the joint distribution of income and wealth, most wealthy households are high-income households, and *vice versa*. But there is also a significant minority of wealthy households that report low income, and a similar share of low-wealth households that report high income, with significant differences across countries.

- Second, households holding wealth share some common characteristics. They are generally headed by a person who is in the 55-64 age band and has a higher-education degree. In terms of the composition of net wealth, non-financial assets, and in particular the principal residence, constitute the most important assets for most households (75% on average and up to 90% in some countries); only a minority of households hold financial assets, whose degree of concentration is generally higher than in the case of non-financial assets.
- Third, there are significant differences across countries in terms of debt and over-indebtedness, which has implications for the economic well-being of households and for the vulnerability of the economic system as a whole. Even after the crisis, there appears to be a large proportion of households with debts reaching very high levels relative to income in countries such as the United States, Norway and the Netherlands.
- Finally, over the longer run, the increase in the price of shares and housing relative to consumer goods was one of the main drivers of higher household wealth, and this has likely increased wealth concentration over the last 40 years. This trend was not reversed by the financial crisis in the United States, the Netherlands and the United Kingdom, where wealth inequality (at the top) has grown markedly, while smaller changes have been observed in Australia, Canada and Italy.

Beyond these broad empirical findings, which should inform discussion on how best to respond to concerns about greater inequality in economic well-being, significant challenges confront the statistical community in terms of improving the information base on the level and distribution of household wealth, through initiatives to:

- Collect information on the distribution of wealth in those countries that currently lack statistics in this field
- Improve the comparability of the available information through better alignment to the existing international guidance in this field.[28]

Through the collection of the data presented in this chapter (which the OECD plans to pursue regularly in the future), the OECD has engaged in a process similar to the one followed for statistics on income distribution, which – over a period of around 20 years – led to a much improved comparative reporting by countries. While the comparative information on household wealth used in this chapter has its limits, the hope is that – as statistical offices and agencies collecting wealth data become more aware of differences in their survey practices – a significant convergence in statistical reporting will occur in the near future.

# Notes

1 Helpful comments on a previous version of this chapter were provided by Martine Durand, Stefano Scarpetta, Marco Mira d'Ercole, Michael Förster, Hervé Boulhol and Kate Lancaster (all from the OECD) as well as Tim Smeeding (University of Wisconsin-Madison); by Martin Schuerz (Austrian National Bank), Philip Vermeulen (European Central Bank), Martin Tambour (Statistics Germany), Anna Gunnarsdottir (Statistics Iceland), Chris Kim (Statistics Korea), Conceição Veiga (Statistics Portugal); and by country delegates to the OECD Committee on Statistics and Statistical Policy. The OECD wishes to acknowledge the essential contribution of a number of country specialists who contributed to gathering the empirical evidence presented in this chapter. Veli-Matti Törmälehto, Statistics Finland, contributed to the design of the standard tabulations used to collect country data, and to the choice of comparable definitions and methodological approaches. Estimates drawn from the micro-data files of various countries were provided by: Caroline Daley and Heather Burgess, Australian Bureau of Statistics; Paul Roberts and Brian Murphy, Statistics Canada; Rosalinda Coppoletta and Maud Romani, INSEE; Giovanni D'Alessio and Andrea Neri, Bank of Italy; Woonjoo Suh and You Kwon Park, Korean National Statistical Office; Wim Bos, Statistics Netherlands; Jon Epland, Statistics Norway; Alan Newman and Elaine Chamberlain, Office for National Statistics, United Kingdom; and Arthur B. Kennickell, Federal Reserve Board, United States. The chapter also uses data from the Eurosystem Household Finance and Consumption Survey. The OECD wish to acknowledge their essential contribution.

2. Household wealth (the concept used in this chapter) is different from private wealth (which includes the wealth of private corporations) and, a fortiori, from total wealth (which includes the wealth of other institutional sectors, such as the public sector). The concept of wealth used in this chapter refers to assets that are owned and transferrable across units. Hence, it differs from other concepts of wealth (i.e. assets that are not owned and not transferrable, such as human capital).

3. The countries included in the chapter are Australia, Austria, Belgium, Canada, Finland, France, Germany, Greece, Italy, Korea, Luxembourg, the Netherlands, Norway, Portugal, the Slovak Republic, Spain, the United Kingdom and the United States. In the case of the United Kingdom, the geographical coverage of the data is limited to Great Britain (excluding Northern Ireland). In the case of the Netherlands, the data on wealth levels and distribution are based on administrative records, while the data on the demographic characteristics of households with wealth and on the composition of assets and liabilities are based on survey data.

4. However, the composition of the median household may differ across countries. D'Alessio et al. (2013) argue that cross-country differences in mean net wealth are less sensitive to differences in household size.

5. These results are broadly consistent with findings from other sources and economic studies, even if the methodologies differ. See Annex 6.A2 for a discussion.

6. The income concept used in this chapter to compute wealth-to-income ratios is that of "gross" household income, i.e. household income before income and wealth taxes paid by the household (but after monetary transfers received), as collected in the wealth sources used here. While a measure of household disposable income (i.e. net of taxes and contributions) would have been more appropriate, this measure is only available for a minority of countries (Australia, Canada, Finland, Italy, Norway and the United States).

7. The correlation of country rankings between absolute and relative mean net wealth is 0.66. However, the ranking of the United States, Canada, Portugal and Italy changes significantly (the United States falls from the second position for absolute mean wealth to the 10th position for relative mean wealth and Canada from third to 13th, while Portugal rises from 12th to fourth and Italy from eighth to third.

8. The correlation of country rankings between absolute and relative median net wealth is 0.75. Relative median wealth is calculated as the ratio of median net wealth to the average disposable income of households in the third quintile of the wealth distribution, which is used as a proxy for the income of the household with median net wealth.

9. The definition of a household differs across the two sources, as national accounts data combine households and non-profit institutions serving households, while micro-data refer to private non-institutional households.

10. The National Accounts of most OECD countries measure the value of dwellings based on the Perpetual Inventory Method (PIM) applied to historical investment costs; changes in house prices are hence reflected in changes in the value of the land underlying the dwelling.

11. For example, the System of National Accounts (SNA) data shown in Figure 6.3 include the wealth of non-profit institution serving households, while the micro-data sources refer to private households.

12. Data provided by Statistics Netherlands confirm that changes in median net wealth largely reflect changes in the value of the principal residence: for instance, the median net wealth increased by 24% between 2006 and 2008, while the value of the principal residence increased by 10% over the same period; conversely, median net wealth declined by 43% between 2008 and 2012, a period when the value of the principal residence fell by 11%. The correlation between the two series over the period 2006-12 is 0.88.

13. Income data are drawn from the *OECD Income Distribution Database*, and refer to distribution across individuals (rather than across households, as in the case of the wealth distribution) based on a concept of "equivalised" (i.e. with an adjustment for household size) disposable income (rather than non-adjusted amounts as in the case of the wealth distribution).

14. Data on the wealth share of the top 10, 5 and top 1% of the distribution are not available for Korea.

15. These correlations are significant at a 5% confidence level.

16. Other wealth-concentration measures (such as the share of the top 1% or top 20%) highlight the same pattern but in a less clear-cut way. Focusing on inequality at the top of the wealth distribution also avoids using a wealth ratio with a denominator (the average wealth of the less-wealthy households) that is close to zero or even negative.

17. This synthetic measure and a confidence interval are obtained from Monte-Carlo simulations run on a smoothed joint distribution of income and wealth within each country.

18. In theory, the correlation of ranks in the income and wealth distributions and their respective degree of inequality are completely independent of the statistical measures. A large correlation of ranks could co-exist with low inequality in the marginal distributions of income and wealth, and *vice-versa*.

19. Due to the small number of countries, this correlation is however significant only at a 10% confidence level. When one looks at the wealth shares of the top 5% and top 10%, the p-values of the latter correlation drop to 0.12 and 0.15.

20. Age and education are those of the household reference person.

21. This study uses cohort data and not longitudinal data that would follow households as they age.

22. This ratio is significantly higher among the middle class (e.g. it is equal to 72% among households in the third quintile of the wealth distribution in the United States).

23. In the classification used in this chapter, financial assets include life insurance and private pension wealth. See Box 6.3 for a more detailed discussion.

24. While "net equity in own unincorporated enterprises" is considered a non-financial asset in National Accounts, the *OECD Guidelines for Micro Statistics on Household Wealth* (OECD, 2013a) recommends including this among financial assets, alongside the value of shares in listed companies.

25. In principle, it would be important to disentangle non-secured debt from secured debt, namely debt contracted for the acquisition of an asset in the form, for instance, of real estate or human capital. However, such a breakdown of liabilities into "pure debt" and "leveraged debt" is not available in the micro-data sources used for this chapter.

26. The correlation between the two measures is 0.74.

27. The concept of private wealth used by Piketty (2014) aggregates household and corporate wealth, as compared to the narrower concept of household wealth used in this chapter. This loss of comparability is balanced by the long-term perspective provided by Piketty's estimates.

28. No statistical standard currently exists to inform the efforts of the statistical community in this field. A first step in this direction is represented by the OECD *Guidelines for Micro Statistics on Household Wealth* (OECD, 2013a).

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*OECD Income Distribution Database,* www.oecd.org/social/income-distribution-database.htm.

# *Annex 6.A1*
# Methodological features of household wealth data

## Data sources and characteristics

Table 6.A1.1 describes the data sources used for this study, the national institution responsible for data collection as well as a few characteristics of the data. For most of the countries covered, the data are based on household surveys, which implies that, as in the case of all household surveys, surveys on wealth suffer from data quality problems due to sampling and misreporting. The high skewedness of the wealth distribution makes sampling errors especially important. Misreporting is typically caused by the fact that the wealthiest households are less likely to respond, in particular about financial wealth. In most countries, the wealthiest households are more likely to invest in financial assets but are also those with the least propensity to respond to surveys (OECD, 2013a).

Adjustments are typically made to compensate for errors of sampling and misreporting. To correct for item non-response, most countries use imputation methods (Table 6.A1.1). In the HFCS survey, such adjustments include both multiple and simple imputation. The HFCS dataset provides five imputed values for every missing value corresponding to a variable entering the composition of household wealth. Data included in the OECD dataset are based on the average of the five imputed values.

Some fraction of the population such as the wealthiest households might not be well captured by the survey, which will affect measures of the wealth at the top of the distribution, as well as of mean wealth levels and wealth distribution.[1] Various possibilities exist to improve the measurement of the wealth data at the top of the distribution, for example by using information from other sources such as the *Forbes List* of very wealthy people, or fitting the top end of the wealth distribution with a Pareto distribution, following Vermeulen (2014). Several countries conducting wealth surveys (but not all the countries reviewed here) rely on oversampling the very rich (as indicated in Table 6.A1.1), with oversampling based on different methods: for example, Austria oversampled households in Vienna because of a higher non-response rate; Spain and France used individual data on net wealth based on other sources; and Belgium and Germany oversampled based on regional-level income.

## Comparison of *OECD Wealth Distribution Database* with other sources

Several non-official compilations of household wealth data have become available in recent years. Among these, the Crédit Suisse report is the most comprehensive in terms of country coverage and wealth indicators. The data from Crédit Suisse differ in various aspects from the data used here, which are based on standardised tabulations provided from national statistical offices and central banks. First, the Crédit Suisse data aim to describe the *global distribution* of household wealth, across individuals, countries and regions in the world, as opposed to the much narrower remit of the data presented in this

chapter. Second, they are based on a combination of SNA household balance sheet and survey data, aimed at providing a consistent description of both the level and the distribution of household wealth.

The Crédit Suisse estimates of *levels* of household wealth (which are reported per *adult person*, rather than per household) are mainly based on national accounts. This implies that, for countries where both balance sheet and survey data are available, balance sheet data are preferred, while surveys are used for those countries where these are the only source of available information, and econometric and other techniques are used for other countries. Also, when the available data from national sources are not up-to-data, Crédit Suisse constructs estimates of current wealth by adjusting previous data by indexes of house prices, financial assets or GDP per capita growth. The Crédit Suisse data on the *distribution* of household wealth are based on survey data for around 20 countries, estimated from income distribution data for most countries, and for the remaining countries imputed based on data from other countries with similar income in the same region; wealth values across the distribution are scaled to match the levels of total household wealth and adjusted in the top tail to match the number of *Forbes* billionaires by country.

The wealth levels reported by Crédit Suisse (2010, 2011, 2012, 2013, 2014) are broadly similar to those reported in Figure 6.1, but there are some noticeable exceptions. In both sources, mean wealth is higher in Luxembourg, the United States, the United Kingdom and Canada, and lower in the Slovak Republic, the Netherlands and Greece. However, there are significant differences in country rankings across the two sources for Spain, Norway and Australia.

Comparative information on wealth distribution has been reported recently by both Crédit Suisse and a range of academic studies (e.g. Piketty, 2014[2]; Maestri et al. 2013). When looking at wealth concentration at the top of the distribution, most of these studies identify the United States as one of the most unequal countries, but there is less consensus for the other countries. For instance, Crédit Suisse (2014) reports a very high wealth concentration at the top of the distribution for Norway relative to other countries, which is even higher than those reported in this chapter. Conversely, Maestri et al. (2013) report above-average Gini indices of wealth inequality for Australia, Canada, Norway and the United States, countries that are also identified as high-inequality in this chapter. Estimates of wealth inequalities for individual countries are strongly affected by specific methodological choices. For example, studies by Beer et al. (2006) and Eizinger et al. (2008) for Austria report very large wealth concentrations at the top of the distribution (68% for the top 10%, and 34% for the top 1%) after including privately-held company assets in total household wealth.

## Table 6.A1.1. Data sources and characteristics

| | Source | Organisation undertaking the survey | Frequency of collection | Years used in the analysis | Sample size (number of households) | Response rate | Oversampling of rich households | Oversampling rate on top 10%[1] | Imputation for item non-response |
|---|---|---|---|---|---|---|---|---|---|
| Australia | Survey of Income and Housing (SIH) | Australian Bureau of Statistics | Every 2 years | 2006, 2012 | ~ 14 500 | 0.84 | No | .. | Yes |
| Austria | Household Finance and Consumption Survey (HFCS-AT) | Oesterreichische Nationalbank | Every 2 or 3 years | 2010 | | | Yes | 0.01 | Yes |
| Belgium | Survey of the Financial Behaviour of Households (HFCS-BE) | National Bank of Belgium | Every 2 or 3 years | 2010 | ~ 11 400 | 0.22 | Yes | 0.05 | Yes |
| Canada | Survey of Financial Security (SFS) | Statistics Canada | Every 6 or 7 years | 1999, 2005, 2012 | ~ 20 000 | 0.69 | No | .. | Yes |
| Finland | Household Finance and Consumption Survey (HFCS-FN) | Bank of Finland / Statistics Finland | Every 2 or 3 years | 2010 | ~ 13 500 | 0.82 | Yes | 0.07 | Yes |
| France | Enquête Patrimoine (HFCS-FR) | INSEE | Every 2 or 3 years | 2010 | ~ 24 000 | 0.69 | Yes | 0.13 | Yes |
| Germany | German Panel on Household Finances (HFCS-GE) | Deutsche Bundesbank | Every 2 or 3 years | 2010 | ~ 20 000 | 0.19 | Yes | 0.12 | Yes |
| Greece | Household Finance and Consumption Survey (HFCS-GR) | Bank of Greece | Every 2 or 3 years | 2010 | ~ 6 500 | 0.47 | No | .. | Yes |
| Italy | Survey of Household Income and Wealth (HFCS-IT) | Bank of Italy | Every 2 or 3 years | 2010 | ~ 15 500 | 0.52 | No | .. | Yes |
| Korea | Survey of Household Finances (SHF) | Statistics Korea | Every 5 years | 2013 | ~ 20 000 | 0.91 | No | .. | No |
| Luxembourg | Household Finance and Consumption Survey (HFCS-LX) | Banque Centrale du Luxembourg | Every 2 or 3 years | 2010 | ~ 5 000 | 0.20 | Yes | 0.05 | Yes |
| Netherlands | Wealth Statistics | Central Bureau of Statistics | Annual | 2010 | – | – | – | – | Yes |
| | DNB Household Survey (HFCS-NL) | Netherlandsche Bank | Every 2 or 3 years | | ~ 2 000 | 0.58 | | | |
| Norway | Income Statistics for Households | Statistics Norway | Annual | 2012 | – | – | – | – | No |
| Portugal | Survey on the Financial Situation of Households (HFCS-PG) | Banco de Portugal / Statistics Portugal | Every 2 or 3 years | 2010 | ~ 8 000 | 0.64 | Yes | 0.02 | Yes |
| Slovak Republic | Household Finance and Consumption Survey (HFCS-SV) | Národná banka Slovenska | Every 2 or 3 years | 2010 | ~ 2 000 | .. | Yes | 0.01 | Yes |
| Spain | Financial Survey of Households (HFCS-SP) | Banco de España | Every 2 or 3 years | 2010 | ~ 12 000 | 0.57 | Yes | 0.19 | Yes |
| United Kingdom[2] | Wealth in Great Britain (WGB) | Office for National Statistics | Every 2 years | 2012 | ~ 20 000 | 0.64 | Yes | 0.05 | Yes |
| United States | Survey of Consumer Finances (SCF) | Board of Governors of the Federal Reserve System | Every 3 years | 2007, 2010, 2013 | ~ 9 000 | 0.68 | Yes | 0.15 | Yes |

*Note:* ".." means "not available" ; "-" means "does not apply".

1. The oversampling rate is calculated as the difference between the number of wealthy households in the sample and in the population.

2. Data on the United Kingdom are limited to Great Britain.

*Source*: *OECD Wealth Distribution Database.*

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## *Annex 6.A2*
## Long-term determinants of private wealth in eight OECD countries

The long-term determinants of the stock of private wealth, as constructed by Piketty (2014), have been assessed in eight OECD countries (Australia, Canada, France, Germany, Italy, Japan, United Kingdom, United States) over the period 1970-2010. Piketty's wealth series relate to private wealth (including firms' wealth) as a share of GDP, rather than to the narrower concept of household wealth used in this chapter. When describing his "second fundamental law of capitalism", Piketty argues that private wealth converges towards a fundamental level that is determined by the ratio of the savings rate and the rate of economic growth. In addition, Piketty identifies a number of factors that may lead to an appreciation of financial and property assets relative to consumer prices. To capture the importance of the factors identified by Piketty, the following econometric model has been used:

$$Y_{i,t} = a_i + d_t + \alpha S_{i,t} + \beta g_{i,t} + \gamma p^a_{i,t} + \eta p^h_{i,t} + u_{i,t}$$

where $Y_{i,t}$ stands for private wealth, $S_{i,t}$ for gross national savings as a share of GDP, $g_{i,t}$ for the rate of economic growth, $p^a_{i,t}$ for an index of stock market prices divided by the deflator of private consumption, $p^h_{i,t}$ for an index of house prices divided by the deflator of private consumption, $u_{i,t}$ for a statistical residual, $a_i$ for country fixed-effects and $d_t$ for time dummies. The results are described in the Table 6.A2.1.

**Table 6.A2.1. Long-term determinants of private wealth in eight OECD countries, 1970-2010**

| | (1) | (2) | (3) |
|---|---|---|---|
| | Dependent variable is private capital as a share of GDP per capita | | |
| Gross national savings rate | -0.054*** | -0.014 | -0.007 |
| | (0.008) | (0.010) | (0.009) |
| Economic growth | -5.389*** | -5.673*** | -5.006*** |
| | (0.946) | (1.261) | (1.158) |
| Relative house prices | 1.890*** | 1.315*** | 1.015*** |
| | (0.157) | (0.174) | (0.150) |
| Relative stock prices | 0.696*** | 0.487*** | 0.491*** |
| | (0.082) | (0.105) | (0.094) |
| Lagged dependent variable | | | 0.334*** |
| | | | (0.049) |
| Country dummies | Yes | Yes | Yes |
| Time dummies | No | Yes | Yes |
| N | 298 | 298 | 274 |
| $R^2$ | 0.91 | 0.94 | 0.99 |

*Note*: To avoid unit roots problem, the fifth lag of the dependent variable is used. Estimates are significant at the 10% level *, 5% level ** and 1% level ***.

*Source*: OECD Wealth Distribution Database.

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The estimates suggest that private wealth as a share of GDP per capita is negatively related to the pace of economic growth, while the national savings rate displays no robust association with it. The relative prices of dwellings and stocks always have strongly significant positive signs. When household-level variables are used for savings and income, the effect of relative house price remains significant; this regression, however, is based on many fewer observations and the results are therefore not reported here.

Overall, these results indicate that there is empirical support for most of the factors identified by Piketty (2014), with the exception of the national savings rate. This latter finding is probably explained by the fact that the regression uses country dummies to identify the effects of the change of variables over time, and that the savings rate typically follows erratic movements from one year to another around some constant threshold.

As a second step, it is possible to calculate the contributions of economic growth, relative house prices and relative stock prices to changes in the ratio of private wealth to GDP over time. To do so, decennial averages of the three factors (over the periods 1970-79, 1980-89, 1990-99, and 2000-10) are calculated first; then, their change between the 1970s and the 2000s is multiplied by the corresponding coefficients reported in the table above, and related to the observed change in the private wealth-to-GDP ratio. This analysis suggests that economic growth, relative house prices and relative stock prices each explain about 20% of the variation in the share of private wealth-to-GDP ratio on average among the eight OECD countries between the 1970s and the 2000s. The rest of the change in private wealth reflects unobserved factors that are not taken into account in the above regression. Overall, the cumulative effects of the three factors explain 86% and 98% of the increase in private wealth in the United Kingdom and in the United States respectively. The increase in house prices explains a larger share of private wealth's increase in the United Kingdom (38%) and in the United States (45%), while stock prices account for 32% of the increase in private capital in the United States.

# Notes

1. Nevertheless, the impact on the most important indicators produced by the survey for the other fractions of the population should be limited.

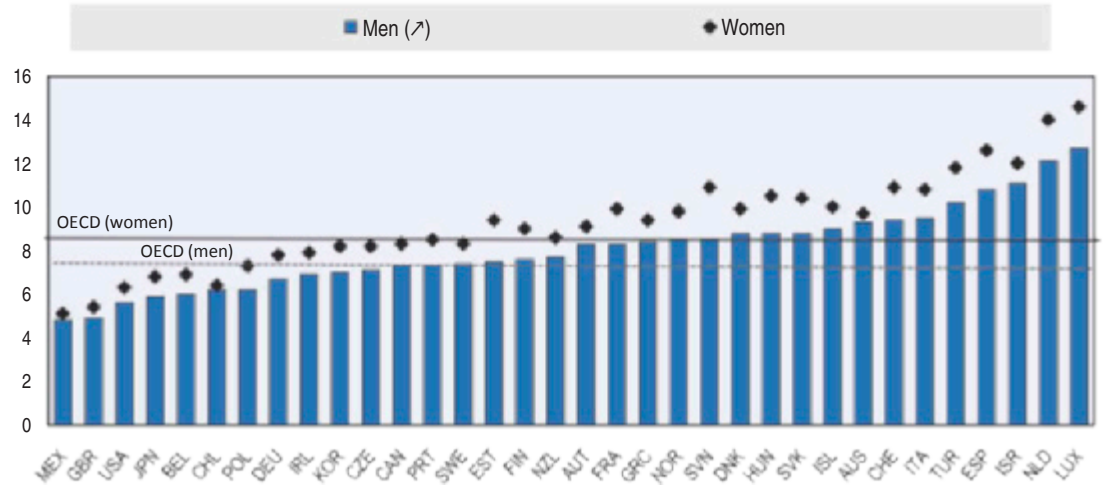
2. Piketty's (2014) historical analysis is mainly based on a combination of national accounts and tax data. For some countries, the existence of wealth and estate tax returns since early times allows examining historical trends on wealth concentration. Estate returns used for taxing inheritances generally contain a complete listing of the assets and debts of the deceased, as well as information on his/her demographic characteristics. However, data of this type are typically available only irregularly and for a limited number of countries. Also, estate data reflects the wealth of the deceased population, who are predominantly older persons, implying that the living and the deceased population are not directly comparable. To use estate returns to derive information on the distribution of wealth among the living, researchers use "mortality multipliers" (i.e. the inverse of mortality rates by age groups, with some adjustments to weights to reflect differential mortality by gender and social status.

# *Annex 6.A3*
# Estimations of future pension wealth

An alternative approach to assessing the amount of household pension wealth is provided by models that provide an estimate of the stream of pension benefits that people with different characteristics may expect to receive in the future. The indicator presented in the OECD reports *Pensions at a Glance* and shown below refers to the projected pension wealth of future retirees and is based on the lifetime flows of all pension benefits (public and private) for a "typical individual". It does not illustrate the current pension wealth of real individuals. Calculations use country-specific mortality rates and a uniform discount rate of 2%. According to OECD pension models, the net pension wealth for individuals entering the labour market in 2012 (net of the taxes and social security contributions paid on pension income) is highest in Luxembourg (at 12 and 14 times average annual earnings for men and women, respectively) and lowest in Mexico, the United Kingdom and the United States (Figure 6.16). At the same time, voluntary private pensions (which are not considered in OECD pension models) are significant sources of income in countries such as Canada, Ireland, the United Kingdom and the United States.

In most OECD countries, mandatory or quasi-mandatory public pension plans account for almost the totality of pension wealth (Figure 6.17). Mandatory private pensions account for about 50-60% of the total mandatory pension package in Australia, Denmark, Israel and the Netherlands, and are significantly larger in Chile, Iceland and Mexico.

**Figure 6.A3.1. Net pension wealth for future retirees as a multiple of individual annual gross earnings, OECD countries**

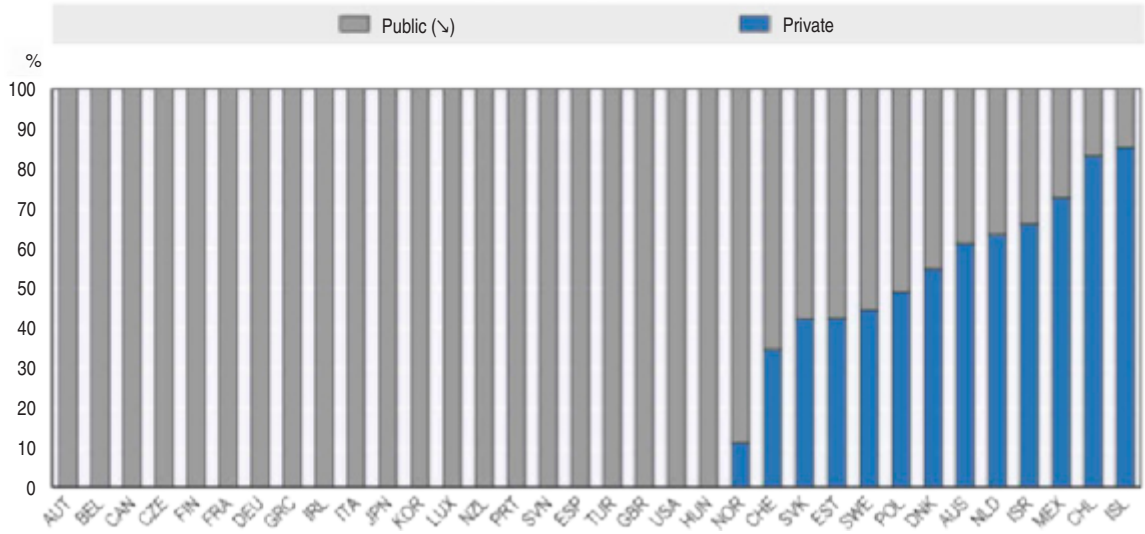



*Source*: OECD (2013), *Pensions at a Glance 2013: OECD and G20 Indicators*, OECD Publishing, Paris, http://dx.doi.org/10.1787/pension_glance-2013-en.

StatLink http://dx.doi.org/10.1787/888933208701

**Figure 6.A3.2. Balance between public and private provision of mandatory pensions**

Percentage share of pension wealth




*Source*: OECD (2013), *Pensions at a Glance 2013: OECD and G20 Indicators*, OECD Publishing, Paris, http://dx.doi.org/10.1787/pension_glance-2013-en.

StatLink http://dx.doi.org/10.1787/888933208713

# *Chapter 7*

# Inequality and fiscal redistribution in emerging economies[1]

*This chapter looks at income inequality and fiscal redistribution in emerging economies. The first part describes overall levels and trends in inequality as well as in social spending and taxation in selected emerging economies, comparing them to those typically recorded in the OECD area. It also highlights some prominent redistributive policies recently implemented in major emerging economies and OECD key partner countries. The second part of the chapter provides an in-depth analysis of redistribution in seven middle-income countries that are part of the Commitment to Equity (CEQ) project: Brazil, Chile, Colombia, Indonesia, Mexico, Peru and South Africa. Using a common method of fiscal incidence analysis, it examines the redistributive impact and effect on poverty of fiscal policy, comprising direct taxes, cash transfers, net indirect taxes and in-kind benefits in the form of education and health services.*

Sections 7.1 and 7.2 of this chapter were prepared by the Social Policy Division of the Directorate for Employment, Labour and Social Affairs, OECD. Section 7.3 of this chapter and its annexes were written by Nora Lustig, Tulane University and are based on Lustig (2015b).

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The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

## 7.1. Introduction and key findings

This chapter looks at income inequality and redistribution in emerging economies. Levels of inequality in these countries tend to be higher than in most OECD countries, although there is a great diversity in trends over the recent decade. Notably, middle-income countries in the Latin American region have recorded promising signs of decreasing inequality (Lustig et al., 2012), and the trend towards greater inequality appears to have come to a halt in a number of other countries, including China (OECD, 2015a).

In contrast to recent trends in much of the OECD area where austerity measures have been implemented in the frame of fiscal consolidation, most emerging economies have *strengthened* social protection and intensified redistribution measures in order to address concerns about high levels of poverty and inequality. In some countries, income redistribution measures have become a key pillar of the growth model (OECD, 2014a).

Section 7.2 of this chapter summarises differences in the overall levels and trends in inequality as well as in social spending and taxation in emerging economies, comparing key indicators with those typically recorded in the OECD area. It also highlights some prominent examples of redistribution policies recently implemented in major emerging economies and OECD key partners.

The bulk of the chapter (Section 7.3) examines the redistributive impact of fiscal policy for seven middle-income countries that are part of the Commitment to Equity (CEQ) project,[2] for a year around 2010: Brazil, Chile, Colombia, Indonesia, Mexico, Peru and South Africa.[3] "Fiscal policy" in this chapter is defined to include the following main fiscal interventions: direct taxes, direct cash transfers, net indirect taxes and transfers in-kind (benefits in the form of education and healthcare services). The analysis uses a common methodology across countries, which is designed to be as comprehensive as possible without sacrificing detail in any particular component of the analysis. The method of fiscal incidence analysis is described in detail in Lustig and Higgins (2013) and summarised in Box 7.2 and Annex 7.A1. In essence, the method uses an "accounting approach" to estimate the average incidence of fiscal interventions. As is common in most such benefit-tax incidence analyses, the results do not take into account behavioural, lifecycle, or general equilibrium effects.

This chapter makes several important contributions. First, it updates and extends the discussion on inequality trends and redistribution policies in major emerging economies and OECD key partner countries. Second, results from the fiscal incidence analysis are comparable across countries because the seven country studies in Section 7.3 apply a common methodology. Third, this analysis presents results not just for inequality but also for poverty. Fourth, the analyses estimate the contributions of the main fiscal interventions to the overall reduction in inequality. Finally, sensitivity analyses present results for an alternative scenario in which contributory pensions are considered as deferred income rather than as a government transfer.

The main findings can be summarised as follows.

- Inequality levels are generally higher in emerging economies. However, in contrast to the OECD area, some follow a downward trend, especially in the Latin American region – although this decline slowed as from 2010, especially in terms of poverty alleviation. Other countries, such as China, Indonesia and South Africa, have become more unequal over the long run.

- The level of social spending and taxation is still relatively low in emerging economy countries, though there is large country diversity. Social spending levels are very low in India and Indonesia, while in Brazil, Latvia and Russia they are just below the OECD average. Tax levels follow a similar pattern. General consumption taxes (mainly VAT and sales taxes) account for the bulk of tax revenue, and their share is considerably larger than the OECD average.
- Redistribution policies have been strengthened in many EEs, with several countries making their cash transfers more generous and others aiming at widening their coverage of unemployment benefits and health insurance, and expanding educational opportunities. At the same time, there is considerable scope to make the tax system more progressive and to increase tax revenues by promoting formal employment and enlarging the tax base.
- Among the seven country case studies in Section 7.3, overall fiscal policy lowers income inequality to various degrees, with the largest redistributive effect in South Africa and the smallest in Indonesia. South Africa's result can be attributed to the combination of a large redistributive effort with transfers targeted to the poor and direct taxes targeted to the rich. In spite of this, South Africa remains the most unequal of the seven countries.
- Income redistribution tends to be higher in more unequal countries to start with: redistribution is considerable higher in countries with higher market income inequality such as South Africa and Brazil than in countries with relatively lower inequality such as Indonesia and Peru.
- As expected, the level of income redistribution is related in part to the size of the budget allocated to social spending (as a share of GDP). Redistribution is considerably larger in countries with high social spending, such as Brazil and South Africa, than in Colombia, Indonesia and Peru, where social spending is more limited. However, differences across countries suggest that institutional, political and demographic factors also affect the level of redistribution.
- Direct taxes and direct transfers generally exercise an equalising force. Indirect taxes are equalising in Chile, Mexico and Peru, neutral in the case of South Africa but increase inequality in Brazil, Colombia and Indonesia.
- Contributory pensions are equalising in Brazil, Colombia and Indonesia and unequalising in Mexico and Peru, and very slightly so in Chile.
- Total per capita spending on public education tends to be higher for poorer households (i.e., pro-poor) in all countries except for Indonesia, where the per capita benefit is roughly the same for all households. Government spending on tertiary education increases with income in all countries, but only in Indonesia it increases inequality.
- Health spending is pro-poor (that is, per capita spending declines with income) in Brazil, Chile, Colombia and South Africa. In Mexico, the per capita benefit is roughly the same across the income scale. In Indonesia and Peru, health spending per person tends to increase with income but still reduces inequality.
- Although education and health spending have the highest redistributive effect of the different components of fiscal policy, the existing information cannot disentangle to what extent the progressivity or pro-poorness of education and health spending is a result of differences in household or personal characteristics

that could explain a more intense use by poorer households (e.g., having more children and worse health) or the "opting-out" of those better-off.

- While fiscal policies overall unambiguously reduce income inequality, in terms of poverty reduction, the outcome is less auspicious. In Chile, Indonesia, Peru and South Africa poverty after cash transfers, net direct taxes and net indirect taxes is lower than market income poverty. In Colombia, however, income poverty increases after taxes and cash transfers are taken into account, a result driven by the impact of indirect taxes. Also, in Brazil income poverty would be higher if public pensions are considered as deferred income rather than a public transfer, which means that a portion of the poor who are not pensioners are net payers into the fiscal system.

This chapter is organised as follows. Section 7.2 provides an overview of inequality and redistribution policies in emerging economies. Section 7.3 offers a detailed analysis of the redistributive effect of fiscal policies in seven middle-income countries.

Section 7.2 is divided into four sub-sections. The first gives an overview of inequality levels and trends in the seven middle-income countries studied in detail in Section 7.3 as well as other major emerging economies in comparison to the OECD area. The second sub-section presents the composition of public social spending and public revenue patterns for the same set of countries. The third sub-section highlights recent examples of redistribution policies that have been developed and implemented in selected countries and the final sub-section concludes.

Section 7.3 is divided into seven sub-sections sections which provide a detailed analysis of the impact of fiscal policy on inequality and poverty in seven middle-income emerging economies. The section also examines the degree of "pro-poorness" of government spending on education and health, and a final sub-section concludes.

## 7.2. Inequality trends and policy responses in emerging economies (EEs)

### *Income inequality in emerging economies*

As documented in Chapter 1 of this report, income inequality has risen in most OECD countries over the past three decades, in some cases reaching historical levels. Emerging economies – where inequality levels are often higher than in OECD economies – have also followed this pattern during the earlier decades of the 1980s and 1990s; but there have been more promising trends over the past decade in some of them.

There is great variation in inequality levels between the world's main regions (as defined in Ferreira et al., 2015; Lopez-Calva and Lustig, 2010). Latin America and the Caribbean is the region with by far the highest level of inequality. Inequality is also above average in Sub-Saharan Africa. It stands at an average level in East Asia, while eastern Europe, Central and South Asia are the most equal geographical areas. Among emerging and developing economies, generally speaking, inequality is lower in low-income countries, and the highest in upper-middle income countries.

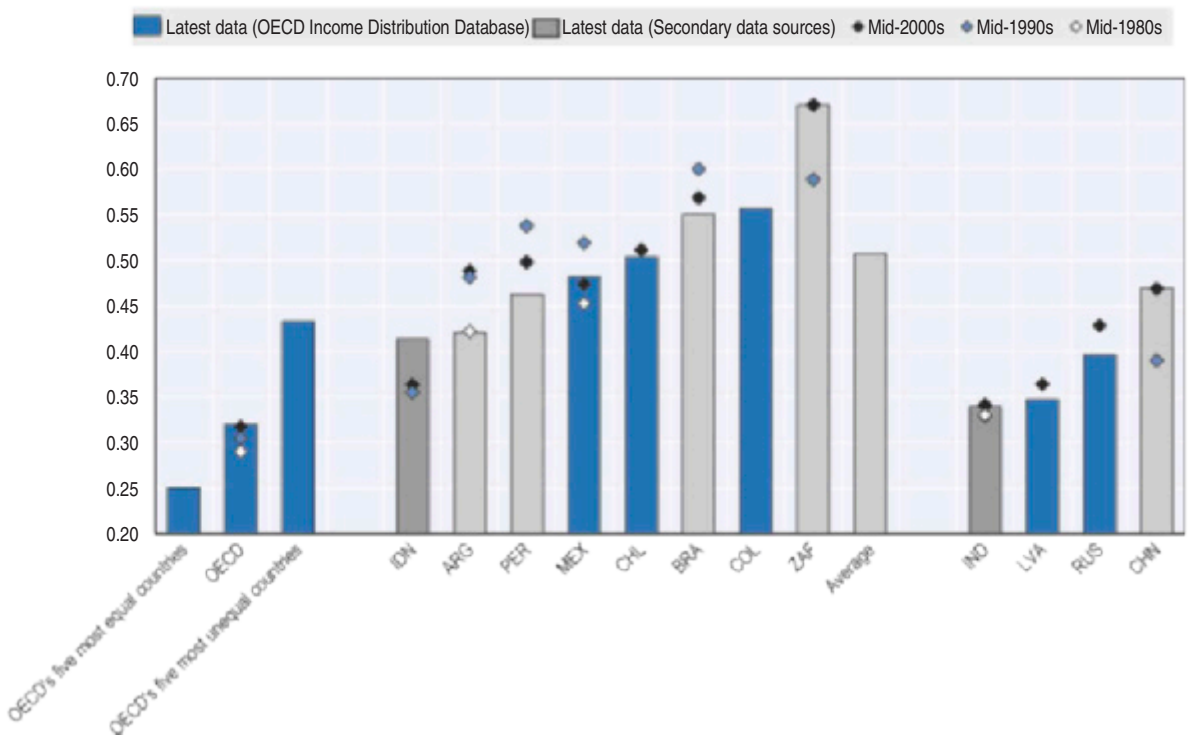
Based on the latest data available, the level of inequality in emerging economies is higher than in the OECD region on average, and close to or above the level in high-inequality OECD countries. Figure 7.1 compares the Gini coefficients for the OECD average, as well as for the OECD's most equal and most unequal countries, with the inequality levels in the seven countries studied in Section 7.3 and a selection of key emerging economies. While the average Gini coefficient is 0.32 in the OECD area – 0.25 among the most equal countries and 0.4 among the most unequal ones – it is between 0.34

and 0.4 in India, Indonesia and the Russian Federation; around 0.45 to 0.56 in China, Peru, Mexico, Chile, Brazil and Colombia; and reaches the highest level in South Africa (0.67).

It is important to bear in mind in this comparison that not all data are perfectly comparable. The data for the OECD countries, the Russian Federation and Colombia (blue bars) are based on the OECD standardised income concept, while other data are based on different concepts, in particular for Indonesia and India, which are consumption-based and likely to underestimate the level of inequality (see Box 7.1).

**Figure 7.1. Gini coefficients in selected emerging economies and OECD countries, total population**

Level of income inequality (Gini coefficient), 2013 or latest year available




*Note*:

Data for Indonesia, Argentina, Peru, Brazil, South Africa, India and China (grey bars) are based on secondary data sources and are not strictly comparable with *OECD Income Distribution Database* (IDD) data (blue bars). The Gini coefficients are based on equivalised incomes for OECD countries, Colombia, Latvia and the Russian Federation and per capita incomes for other partner countries, except India and Indonesia for which per capita consumption was used. Mid-1980s data for Argentina and Mexico refer to 1986 and 1984 respectively. Mid-1990s data for Mexico, Peru and Indonesia refer to 1994, 1997 and 1996 respectively. Mid-2000s data for Mexico, Chile and Russian Federation refer to 2004, 2006 and 2008.

*Source*: *OECD Income Distribution Database* for OECD countries, Latvia, Russian Federation and Colombia; World Bank, Poverty and Inequality Database for India; Statistics Indonesia (Susenas) for Indonesia; OECD (2015), *All on Board: Making Inclusive Growth Happen in China, OECD Publishing* for China; SEDLAC (Socio-Economic Database for Latin America and the Caribbean) Database for Argentina, Brazil and Peru. For South Africa, data refer to Leibbrandt, M., I. Woolard, A. Finn and J. Argent (2010), "Trends in South African Income Distribution and Poverty since the Fall of Apartheid", O*ECD Social, Employment and Migration Working Papers*, No. 101, OECD Publishing, Paris; and to Finn, A. and M. Leibbrandt (2013), "Mobility and Inequality in the First Three Waves of NIDS", *SALDRU Working Pape*r, No. 120, University of Cape Town, *NIDS Discussion Paper*, No. 2013/2 for 2012.

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While inequality has been continuously increasing in most OECD countries in the last three decades, it has tended to decrease since the mid-1990s in several emerging economies, especially in Latin America and the Caribbean (Lopez-Calva and Lustig, 2010). Inequality decreased in particular in Peru, Mexico, Brazil and Argentina (since the 2000s), and to a lesser extent in Chile. Nevertheless, the decline of inequality in this region tended to be much more modest as from 2010, especially in terms of poverty alleviation. Inequality also decreased in the Russian Federation. By contrast, Indonesia and South Africa have become more unequal over time. Inequality has also increased over the long run in China, especially in the years following the opening-up of the economy in the 1990s, but has tended to stabilise since 2010 (OECD, 2015a). Inequality in India was broadly stable.

These developments took place in a context of increasing real household incomes in many countries, such as the Russian Federation, Brazil, India and South Africa. In China, rapid economic expansion did not translate into equivalent gains in aggregate household disposable income until around 2010 (OECD, 2015a). This illustrates that income growth as such is not a guarantee for smoothing the income distribution.

The underlying forces driving inequality trends in the emerging economies are strongly related to the role of the labour market, as is also the case in the developed economies. One of the main drivers of declining income inequality in a number of countries has been the reduction in labour earnings inequality associated with decreasing wage dispersion and/or increasing numbers of adults participating in the labour force. In Argentina, Brazil, Mexico and Peru, wage effects are found to account for a great deal of the reduction in inequality (Lopez-Calva and Lustig, 2010). In contrast, in the Russian Federation, labour market changes might have hampered the decrease of inequality (ILO, 2015).

The reduction in inequality in Latin America results from a joint reduction of non-labour income inequality, due to the increase and better targeting of government transfers, and – above all – labour income inequality, due to a decline in the gap between high- and low-skilled earnings (the so-called "education premium", see Lopez-Calva and Lustig, 2010). In Brazil, for example, but also in Argentina, Mexico and Peru, the traditionally high education premium has narrowed. The reduction of the education premium has been driven – among other reinforcing factors – by increased access to education (Lopez-Calva and Lustig, 2010; OECD, 2014a). In contrast, in South Africa, the increase in income inequality is related to the combination of rising unemployment and an increase in wage disparities (Leibbrandt et al., 2010; ILO, 2015).

While the underlying causes of pressures on the income distribution – technological change, globalisation, structural labour market changes – are characteristic of OECD and non-OECD countries alike, some key drivers are specific to emerging economies. First, the structure of the labour market differs from developed economies. In particular, the informal sector is sizeable. The share of informal workers in total employment is above 60% in Colombia and Peru, 50% in Brazil and Mexico, 40% in Argentina and Chile;[4] it reaches 80% in India, 70% in Indonesia, and 30% in China and South Africa.[5] The informal sector has a major impact on income distribution through many channels, such as wage penalties, low career progression, exclusion from the labour market and social protection regulations (OECD, 2011a). High shares of workers outside the formal sector implies lower progressivity of personal income tax and social transfers (see for example OECD, 2015d). Since the crisis, the risk of becoming informal increased, particularly for disadvantaged groups (OECD, 2010a).

**Box. 7.1. Inequality measurement in emerging economies**

The baseline measure to estimate income inequality in OECD countries is the net equivalised household disposable income, with income standard concepts and definitions following the Guidelines of the Canberra Group Handbook on Household Income Statistics (United Nations, 2011). The resulting indicators are available at the *OECD Income Distribution Database* (www.oecd.org/social/income-distribution-database.htm). This database also covers a number of OECD member and non-member emerging economies. Assessing the extent of income inequality and its evolution over time in other emerging economies is challenging due to differences in the standard concepts and definitions and in the underlying databases.

First, in some cases (e.g. India, Indonesia), inequality measures are based on consumption, which generally results in lower levels of inequality than do income-based measures (Morelli et al., 2015). Deininger and Squire (1996) suggest that, on average, Ginis computed on a consumption expenditure basis are some 6.6 points lower than when computed on an income basis. Moreover, differences in the definitions of consumption itself make international comparisons even more difficult. Among the main obstacles, it could be mentioned the variation in the number of consumption items, whether survey participants record their consumption themselves or are interviewed, the length of the recall period, and differences in the methods used to impute housing, durables and home production, which alters the impact of in-kind consumption.

Second, the definition of income can also vary – and usually does – between different datasets, depending, for instance, on whether and how in-kind income, imputed rents and home production are treated, and whether specific income sources such as remittances, private transfers, or property income are properly captured. Further, incomes may be reported on a net or gross income basis. In the latter case (such as for the data on Argentina), inequality measures are based on pre-tax income and do not reflect the impact of redistribution policies. This typically leads to higher levels of reported inequality.

Finally, as a welfare indicator, income can be adjusted for economies of scale with so-called equivalence scales (see www.oecd.org/els/soc/OECD-Note-EquivalenceScales.pdf). While all OECD estimates rely on calculations of equivalised household incomes, the data available for most emerging economies use income per capita as a standard, which assumes away any economies of scale within households.

Several projects were recently developed to improve cross-country comparisons in the field of inequality, with the aim of building "secondary inequality data sets". Not only do they collect existing data sources, but they also reshape the data to improve their comparability (for example, by trying to reach common definitions when there is no ex-ante comparability). They also propose best second-order choices among alternative data sources when no first best option can be isolated, as is usually the case. Prominent examples of such databases are the Luxembourg Income Study (LIS), the United Nations University-World Institute for Development Research (WIDER), the World Income Inequality Database (WIID), the World Income Distribution (WYD), PovCal and the World Development Indicators (WDI) World Bank datasets, and the Chartbook of Economic Inequality Data (Atkinson and Morelli, 2014). The Journal of Income Inequality (2015 special issue) and Förster and Tóth (2015) provide a detailed review and discussion of the strengths and weaknesses of these and other datasets.

Access to education and educational quality also substantially influence income inequality trends in emerging economies. PISA results show that several emerging economies still lag considerably behind OECD countries with regard to educational achievement. Significant gaps remain also in educational outcomes for different socio-economic backgrounds. They hamper the employability and competence of the workforce and add to greater overall inequality.

Gender, race and discrimination against migrants are important factors behind the high levels of earnings inequality in many emerging economies. In India, for instance, occupational segregation weighs on gender inequality (Kapsos et al., 2014). In South Africa, income poverty persists at acute levels for the African and Coloured racial groups and in urban areas (Leibbrandt et al., 2010). In South Africa, inequality within the labour market – due to high unemployment, informality and earnings inequality – have contributed for the labour market playing a negative role in the distribution of income.

Last, widespread regional divides play an important role in some emerging economies. They often overlap with regional imbalances due to unequal resource endowments, distance from markets, long-standing power imbalances, ethnic and racial disadvantage and institutional weaknesses. In China, for example, spatial inequality remains high, reflecting the persistently vast differences between urban and rural incomes within provinces. However, recent developments indicate that poorer provinces have grown faster than richer ones in recent years (OECD, 2015a), contributing to a decline in inequality. In Indonesia, persistent regional disparities, exacerbated by a process of decentralising policy during the 2000s, caused substantial – and increasing – differences in inequality levels between geographical areas and persistent disparities between levels of rural and urban poverty (Miranti et al., 2013).

### *Budget size, social spending and taxation*

The redistributive potential of a country is determined first and foremost by the size and composition of its budget and how government spending is financed. Public social spending as a share of GDP tends, on average, to be considerably lower in emerging economies than in OECD countries. Also, there is a wide variation across countries, ranging from comparatively low levels in Indonesia and India[6] to levels close to the OECD average in Brazil, Latvia and Russia. Public social spending in China is considerably lower than in the OECD and other EEs, but comparable to average social spending in the Asia/Pacific region (OECD, 2014b).

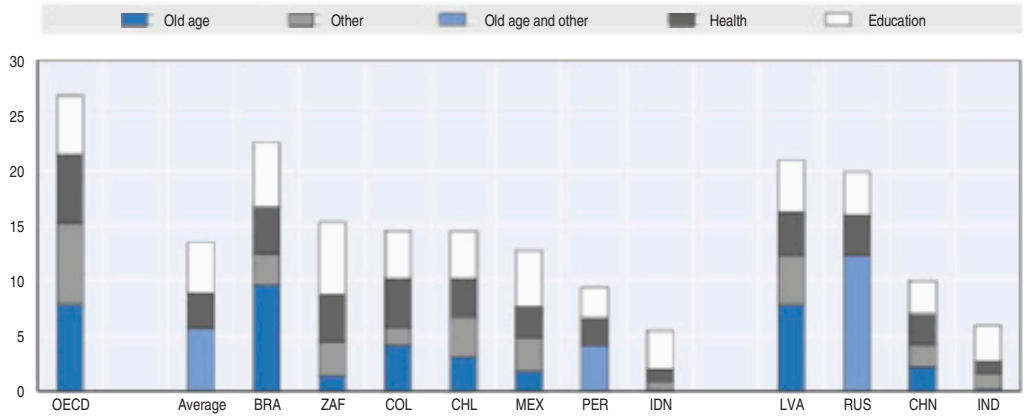
Public spending on cash benefits (such as old-age pensions and income support to the working-age population[7]) is on average much lower in emerging economies than in OECD countries and explains the bulk of the differences in overall public social spending. Furthermore, spending on cash benefits tends to vary much more than does spending on health and education both across emerging economies and in comparison to the OECD average. Spending on cash benefits is particularly high in Brazil, Latvia and Russia. In Brazil, public pension benefits account for most of such spending. In fact, public pension spending as a share of GDP in Brazil is higher than the OECD average. This is quite remarkable since the Brazilian population is relatively young, with eight persons aged 20-64 to each person aged 65 or more, double the OECD average (OECD, 2014a, OECD, 2014d). Similarly, in Colombia, where the population is also young and pension coverage is low, pensions account for the largest share of public spending on cash benefits (OECD, 2015b).

In South Africa, public spending includes important support programmes for the working-age population, such as the Community Work Programme, the Extended Public Works Programme and the Child Support Grant. Public pension spending is low in comparison with some other emerging economies, as it is focused on social pensions with basic amounts paid to the poor elderly (OECD, 2014c). Contributory pensions are available only to public servants who belong to the Government Employees Pension Fund (Inchauste et al., 2015). Peru allocates relatively little to income redistribution through its signature cash transfer *Juntos*. In Indonesia, a considerable part of public social protection tends to be provided through energy subsidies rather than cash transfers (Afkar et al., 2015). However, the energy subsidies were scrapped in early 2015 and Indonesia plans to use such social savings for development.

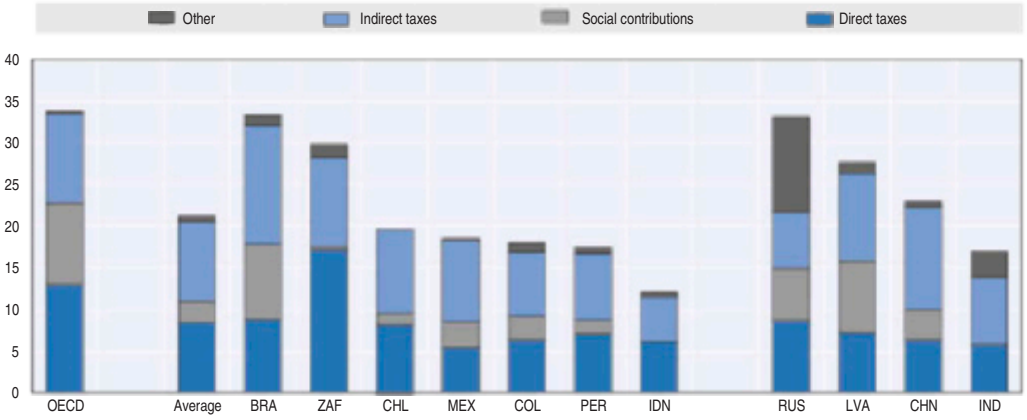
In most countries spending on health and education ranges between 3% and 5% of GDP, which is slightly less than the OECD average of around 6%. The main exceptions are South Africa, which spends considerably more on education, and India and Indonesia, which spend significantly less on health (see Figure 7.2).

**Figure 7.2. Size and composition of government budgets**

Panel A. Public primary and social spending as a share of GDP in 2012 or latest year available




Panel B. Composition of total government revenue as a share of GDP in 2010




*Note*:

*Panel A:* For OECD countries, data for Australia, Canada, Chile, Israel, Korea, New Zealand, the United States refer to 2012 otherwise they refer to 2011. Data for Brazil and Colombia refer to 2010, and to 2009 for China, India and Indonesia. Data on public spending on Education are not available for Greece, Luxembourg and Turkey, data are therefore not comparable with other countries. Data for Brazil refer to Federal social expenditure from Ipea (Instituto de Pesquisa Econômica Aplicada) report (Abrahão de Castro, J., J. Aparecido Carlos Ribeiro, J. Valente Chaves and B. Carvalho Duarte (2012), *Gasto Social Federal: prioridade macroeconômica* no *período 1995-2010*, No. 9, Brasília, September) except for health where data are for general government expenditure on health from WHO. Data exclude social spending by local authorities, including on non-federal civil servants. Benefits for civil servants (mostly pensions) amounts to 2.3% of GDP (from the description of the Brazilian system from Ministério da Previdência Social, 2009, *Overview of Social Welfare in Brazil*, 2nd Edition, January as in www.previdenciasocial.gov.br/arquivos/office/3_091113-150152-707.pdf%20–%202009 – 2009), it shows that there are as many local government pensioners as civil servant pensions. Hence an estimation of 2 to 2.5% of GDP from the data in not taken into account. The policy areas covered include old age, survivors, incapacity-related benefits, family, health, active labour market policies, unemployment, housing and other social policy areas. Old age refers to cash old age and survivors pensions.

*Panel B:* Data for South Africa are not comparable as they do not include social security. Data for India and Indonesia refer to cash taxes collected by general government as a percentage of GDP.

*Source*: *Panel A*: OECD (2014), *Social Expenditure Database* (www.oecd.org/social/expenditure.htm). Data for South Africa are from National Budget 2014, Estimates of National Expenditure, National Treasury and World Health Organisation (WHO). Data for China, Indonesia and India refer to Asian Development Bank's Social Protection Index (SPI) Database except for Health where they refer to World Health Organisation Global Health Expenditure Database (WHO) and Education from China Census Bureau and Unesco respectively. Data for the Russian Federation refer to Federal State Statistics service Rosstat. Data for Peru refer to ECLAC (United Nations Economic Commission for Latin America and the Caribbean). Data for Brazil refer to Federal social expenditure from Ipea (Instituto de Pesquisa Econômica Aplicada). *Panel B*: OECD Revenue Statistics 2014, China, India and Indonesia: Government Finance Statistics, IMF, 2010, Latvia: Eurostat and Euromod 2010; Brazil, Chile, Mexico, Colombia, Peru: Revenue statistics in Latin America, OECD 2015; South Africa, National Treasury, 2013/2014; Russian Federation, Government at a Glance OECD (2013) and Federal state statistics service, 2012.

StatLink http://dx.doi.org/10.1787/888933208730

Although still below the OECD level, on average tax revenue as a proportion of national income has increased steadily in Latin American countries[8] and China since the 1990s, as well as in Russia, India and Indonesia up until the 2007/08 economic crisis. There is wide variation in the tax burden across emerging economies, from 12% of GDP in Indonesia to 33% in Brazil (Figure 7.2, Panel B). Except for South Africa, general consumption taxes (mainly VAT and sales taxes) account for the largest share of tax revenue, considerably higher than the OECD average. Taxes on income and profits are the second-largest source of revenue, with corporate income taxes usually playing an important role (larger than in most OECD countries). The third largest source of public revenues is social security contributions. In addition to taxes, Brazil, Colombia and Mexico rely on non-tax revenues from natural resources (OECD/ECLAC/CIAT/IDB, 2015).

Among the seven middle-income countries studied in detail in Section 7.3, given the size and structure of their public budgets, Brazil and South Africa have the largest amount of resources at their disposal to engage in fiscal redistribution. At the other end of the spectrum are Indonesia and Peru. Whether Brazil and South Africa achieve higher redistributive outcomes, however, depends on how the burden of taxation and the benefits of social spending are distributed. This will be discussed in Section 7.3.

### *Redistributive policies in emerging economies: An overview*

While the subsequent section provides an in-depth comparative analysis of the redistributive impact of fiscal policy in seven selected emerging economies, previous OECD work has discussed the role of policies in tackling high inequality in emerging countries more generally, and in a broader and more qualitative way (OECD, 2010b, 2011a). This work suggested that direct fiscal redistribution (direct taxes and cash benefits) had a limited but increasingly strong role in easing inequality. High levels of self-employment and sizeable informal sectors have up to now been limiting the capacity of the tax authorities to verify taxpayers' declared income, and there have also been administrative bottlenecks in tax collection on personal income. On the other hand, and related to the former, lower levels of social protection and social safety nets have put brakes on the capacity of policy to reduce high disparities.

In this context, the policy focus on simultaneously reducing inequality while promoting inclusive employment deals with four key areas, in which many emerging economies have recently redoubled their efforts (OECD, 2014d):

1. Improving social protection and moving towards a more universal welfare system.
2. Increasing equality of opportunity through public health and education services.
3. Better incentives for more formal employment and enhancing job quality.
4. Expanding the redistributive capacity of the tax system.

#### *Improving social protection*

All emerging economies have in place cash transfers that play an important role in equalising distribution and alleviating poverty. These programmes can be unconditional, such as the Child Support Grant (CSG) in South Africa or the *Dibao* minimum subsistence benefit in China, or conditional, such as Brazil's *Bolsa Familia* and Mexico's *Prospera* (former *Oportunidades*) schemes, which provide cash transfers to low-income households that are conditional on school attendance and health check-ups. In Indonesia, a similar conditional cash transfer (the *Bantuan Siswa Miskin*, BSM) exists together with a cash transfer targeting vulnerable households and promoting the completion of higher education (the *Program Keluarga Harapan*, PKH; OECD, 2015d).

Cash transfers are an important instrument to redistribute resources to the lower end of the distribution. Conditional cash transfers may be particularly well suited to reducing inequality and promoting social mobility in emerging economies (EEs). The recent refinements to the programmes in Mexico and Brazil have further increased the programmes' generosity, effectively lifting all participants whose income was below the national poverty line above that threshold. There is also evidence that such programmes have contributed positively to growth, by freeing women from their caring duties and bringing them into the labour force (Del Valle Suarez, 2014).

Social welfare programmes could be further strengthened by appropriate targeting and payment mechanisms, better management structures and better design of the conditionalities. In practice, however, the task of appropriately identifying the population in need is difficult. In addition, there are often trade-offs between reducing exclusion errors and improving efficiency. In South Africa, the take-up rate of CSG is only 60%. In the case of the Indonesian Program Keluarga Harapan (PKH), which delivers a cash benefit to the poorest families with children and/or with pregnant women, only 13% of households who live below the poverty line received the actual benefit (Miranti et al., 2013). To tackle such issues, some countries such as Indonesia rely on "proxy" means-tests that use available information on household characteristics while efforts to develop single registries of vulnerable households could result in better cost-effectiveness (OECD, 2015d). South Africa and Brazil use income declarations, which may be less effective as they are more prone to errors or under-declaration.

In many emerging economies, the coverage of the unemployment insurance system needs to be widened to help workers cushion against a transitory loss of income. The share of the unemployed effectively covered by unemployment benefits is much lower than in advanced economies, generally less than 15%, except for Chile and the Russian Federation where the share ranges from 20 to 25%, respectively (OECD, 2011b). Furthermore, these schemes tend to be less generous than the OECD average, with lower replacement rates and shorter duration of entitlements in most emerging economies (OECD, 2015a). In many countries income support for the unemployed is restricted to formal workers: in Brazil, it applies only to formal workers who are dismissed without just cause and workers who lost their jobs when their firms closed down, thus excluding the majority of the unemployed.

There have been many initiatives to widen coverage of unemployment in recent years. For instance, in 2014 Mexico announced the introduction of a nation-wide unemployment benefit scheme. In other countries with unemployment insurance, fragmentation remains a challenge. In China, many workers covered by insurance do not receive benefits, and many local governments do not require employers to affiliate migrant workers to unemployment insurance schemes. As a result, the unemployment benefit system covers less than half of the urban working population. As a policy response, provincial governments have been asked to take more responsibility for social insurance from local city schemes (OECD, 2015b).

### *Increasing equality of opportunities through public health and education services*

Improving equitable access to health care services is an important element for greater equality of opportunities. Recently, China, India, Indonesia and South Africa committed themselves to providing universal health care for their populations. Often, the main challenges in achieving this include the organisation of adequate financing and improving the delivery of healthcare. Indonesia created an insurance programme for the poor in 2005 and in 2014 launched a universal health care programme, *Jaminan Kesehatan Nasional* (JKN), to be rolled out by 2019 (EIU, 2015). In India, the expansion of the national

health insurance RSBY system for the poor is an important step, as large out-of-pocket expenses associated with private hospital stays have long been a barrier to health care access (OECD, 2014b). In 2012, China achieved near universal health care coverage, but migrant workers typically pay higher out-of-pocket expenses, and the country still needs to broaden the scope of health care to provide a more comprehensive set of services (OECD, 2015b).

Another important policy avenue to decrease disparities is to continue investing in policies that promote the up-skilling of the workforce. Argentina and Brazil are interesting examples of countries that have been successful over the past two decades in promoting more equal access to education, while broadening the distribution of school attainment (Lopez-Calva and Lustig, 2010). In both countries, the expansion of basic education – supported by non-school family policies to improve early childhood health and nutrition programmes, and progress in the service infrastructure – has contributed to narrowing the earnings gap between skilled and low-skilled workers. Investments in education in India and Indonesia have likewise increased access to education, even though progress so far in reducing income gaps has been less tangible, particularly among the most disadvantaged. India still has low literacy levels but it is now approaching near-universal enrolment in elementary education, spending on secondary education has risen significantly in recent years, and the 2009 "Secondary Education for All Action Plan" aims to provide universal access to secondary education by 2017 (OECD, 2014b).

Overall, in many EEs investment in education has paid off in terms of educational attainment but the quality of education is still lagging. While this may be partly related to low public spending in many countries, efficiency of public spending on education is also key as, for instance, in Indonesia public spending, increased substantially in the past decade but outcomes have remained largely static (OECD, 2015e). Countries that have improved their performance in PISA, like Brazil, or Colombia, for example, have established policies to improve the quality of their teaching staff (OECD, 2014e). In this respect, soft skills such as teachers' expectations of their students' futures but also the type and level of teacher certification were found to matter for Latin American educational outcomes (OECD, 2015f). In secondary education, performance seems also to be affected by students' socio-economic background and the way the school operates and there is thus a need to improve both equity and quality.

Recent OECD work suggests that wider access to vocational pathways in secondary education can keep youth who are disaffected with academic education engaged in the educational process (Quintini and Manfredi, 2009). More vocational education could be a particularly interesting option for emerging economies, insofar as this could not only improve nationwide graduation rates, but also play a considerable role in smoothing the transition from school to work. Yet, only low percentages of students are generally involved in vocational education: for instance, no more than 10% of upper secondary students attend vocational courses in India and Mexico (OECD-ILO, 2011a). The National Policy on Skill Development in India is an interesting example in this respect: it encompasses the creation of a private-public partnership to strengthen the engagement of industry in skills development and promotes greater employer involvement in the country's Industrial Training Institutes (OECD-ILO, 2011b). In Brazil, the Federal Pronatec programme launched in 2011 aims to expand the federal network of technical schools, to provide free training places for youth from disadvantaged backgrounds and to include bursaries and loans (OECD, 2013).

Youth who leave school without an upper secondary qualification as well as youth facing multiple disadvantages find it difficult to access stable, formal employment. In recent years, access to safety nets in advanced economies has been made conditional on

an active job-search and training. In Mexico, the *Oportunidades* programme has been replaced by a new programme, *Prospera*. Children can now receive scholarships for college or technical college; and those looking for a job have priority in the National Employment Service (OECD, 2015d). In Argentina and a number of other Latin American countries, youth programmes that combine training with other services, such as job readiness and job-search assistance, have shown that these improve the employment and earnings prospects of participants (Elias et al., 2004; Pagés et al., 2009).

### *Better incentives for formal employment and improved job quality*

Faced with high levels of informality, one important priority is to widen the coverage of the formal sector in order to enhance the distributive capacity of the tax system. This would require special emphasis on improving revenue-collection procedures and strengthening labour inspections (OECD, 2011a). But this requires sufficient resources to enable the labour inspection system to carry out its work effectively. The number of workers per labour inspector remains very high in countries like Colombia, Turkey and Mexico (30 000, 39 000 and about 192 000 respectively while the ILO benchmark for transition countries is 20 000 workers per inspector (OECD 2015a). Labour inspectors should be adequately qualified and able to use modern statistical techniques in order to be more effective. These techniques include the statistical profiling of workers and firms who are most at risk of informality and selective targeting of enforcement actions. Almeida and Carneiro (2011), for instance, show that frequent labour inspections in Brazil have made it "more" attractive to be a formal worker. In addition to better enforcement, reforms that increase transparency and the efficiency of how revenues are used (to which the quality of public services is vital) might help to increase tax morale and therefore tax compliance (Daude et al., 2012).

Both employers and employees need to have better incentives for formal employment. The costs of formality could be lowered for employers and the self-employed by simplifying tax and administrative systems. Over the past two decades, Brazil adopted a number of policy measures to reduce the costs of formality, such as the "Simples Law" that introduced a more progressive tax structure and simplified the collection of taxes and social security contributions. It is estimated that these measures contributed to the formalisation of 500 000 micro-enterprises accounting for 2 million jobs from 2000 to 2005 (Delgado et al., 2007). In India, recent efforts at the central government and state levels to modernise labour regulations and reduce compliance requirements are steps in the right direction to help the expansion of formal employment (OECD, 2014b). The Mexican government has started to address the problem of informality through the creation of a new tax regime for micro and small enterprises, which seeks to promote the formalisation of the workforce, and through a comprehensive strategy launched in 2014 to "Go Formal", which pools the benefits and resources of different programmes. Mexico's new fiscal regime for small firms (RIF), which started to operate in January 2014 and replaced an earlier small-taxpayer regime (REPECOS), substantially reduces the obligations on personal, social security and value added and excise tax in the initial decade of operation, to induce informal firms to regularise their status and start paying taxes (OECD, 2015d).

### *Expanding the redistributive capacity of the tax system*

Enhancing the distributive capacity of the tax system would require an emphasis on improving revenue collection procedures and strengthening the extent to which taxpayers comply voluntarily with their obligations. A focus on the fight against corruption would also help improve tax collection. In Colombia, for instance, the tax administration has

little effective control over customs administration due to a lack of personnel and other constraints, which has led to very high levels of VAT evasion on imports. More inspection of taxpayers requires more technical capacity and personnel to take advantage of information technologies to detect potential tax fraud. Tax fraud penalties could also be increased, by following general practice in OECD countries and by making domestic and offshore tax evasion a criminal offence (OECD, 2015c).

In the mid-term, greater redistribution in emerging economies requires a change in the structure of the tax system. Special attention should be given to striking a better balance between tax revenue from personal income and property taxes, on the one hand, and consumption taxes, on the other. Broadening tax bases could also contribute to meeting objectives on efficiency, growth and distribution. South Africa is an example of a country that, since the end of apartheid, focused on broadening the tax base and building an efficient tax administration to generate the resources it needed to progressively expand the social safety net for the poor. As a result, South Africa relies more on direct taxes – personal income tax (PIT), corporate income tax, and payroll tax – than do other similar EEs, while the top earners pay a much higher fraction of the overall PIT (Inchauste et al., 2015).

Finally, in many EEs the personal income tax could be made more progressive and exemptions could be removed for higher income groups. Colombia took a step in this direction with the 2012 reform, which implemented an alternative minimum personal income tax (IMAN) that acts as a cap on some exemptions, increasing the effective tax rate paid by high-income households (OECD, 2015c). India had ambitious plans to reform income tax and make its system more progressive, via a proposed Direct Tax Code Bill that aimed at reducing the corporate income tax rate to 30%, removing some tax allowances and widening income brackets. For individuals, currently the lowest marginal tax rate is applied at over 2.5 times the average wage, or three times GDP per capita, a very high level compared to Brazil, China, Indonesia and South Africa (Gandullia et al., 2012). The Direct Tax Code Bill lapsed, however (OECD, 2014b). China has recently strengthened redistribution by enacting measures for better tax collection and implementing property taxes. The guidelines issued in 2013 also called for increased social expenditure (from 36% of government outlays in 2011 to 38% by 2015), with an emphasis on low-income regions through intergovernmental transfers. As in South Africa, effective implementation at the local level is likely to be critical to effectively functioning redistributive policies, especially in big, expanding urban areas.

## *Conclusions*

Emerging economies face generally higher levels of inequality than OECD countries. Income inequality rose in most emerging economies during the decades of the 1980s and early 1990s, as it did in most OECD countries. However, the trend has been more contrasted since the 2000s. Latin America and the Caribbean, which remains the most unequal region by far, became less unequal, as was the case in Russia. Indonesia, China and South Africa faced increases in inequality over the long run but this trend seems to have come to a halt in the latter two countries in the recent decade.

While the underlying causes of pressure on the income distribution – technological change, globalisation, structural labour market change – affect OECD and non-OECD countries alike though through different channels, some key drivers are specific to emerging economies. In particular, the size and persistence of the informal sector, access to and the quality of education, discrimination based on gender or ethnic origin or widespread regional divides all heavily weigh on inequality.

Many emerging economies have progressed in enhancing their social protection systems (unemployment compensation, social assistance programmes such as cash transfers and healthcare benefits). Improving educational attainment and the school-to-work transition are other avenues for making a long-term impact on inequality and poverty. Sizeable informal sectors together with administrative bottlenecks on the collection of personal income tax limit its redistributive capacity. Some important areas for future reform include promoting formalisation through tax simplification, better monitoring and enforcement, and improving incentives for both employers and workers. In addition, emerging economies face the challenge of broadening the tax base while making taxation more progressive.

## 7.3. Fiscal policy and income redistribution in Brazil, Chile, Colombia, Indonesia, Mexico, Peru and South Africa[9]

### *Fiscal policy components, income inequality and redistribution*

Different components of fiscal policy contribute to changes in income inequality across countries in different orders of magnitude. Figure 7.3 shows the level of inequality, measured by the Gini coefficient, for different income definitions: market income, disposable income, post-fiscal income and final income.[10] Following Box 7.2, each income definition includes a set of components of fiscal policy. The order in which the components appear may or may not correspond to an institutional sequence. For example, to include the component of net indirect taxes after disposable income makes sense institutionally since individuals are likely to pay consumption taxes based on their disposable – and not their market income. However, whether education and health spending should go at the end of the income accounting framework or not depends more on the fact that it is desirable to separate the cash from the in-kind component of social policy rather than at which point these transfers in kind exercise their effect on the individual's decision to consume them.

**Box 7.2. Measuring fiscal incidence and income accounting framework**

Fiscal incidence analysis assesses the distributional impact of a country's taxes and transfers. Essentially, fiscal incidence analysis allocates taxes (personal income tax and consumption taxes, in particular) and public spending (social spending in particular) to households or individuals so that one can compare their impact on the distribution of income (Box 7.4 discusses indicators to measure the impact of taxes and transfers on the distribution of income). Transfers include both cash transfers and benefits in kind such as publicly-provided government services in education and healthcare. Transfers may also include consumption subsidies such as food, electricity and fuel subsidies.

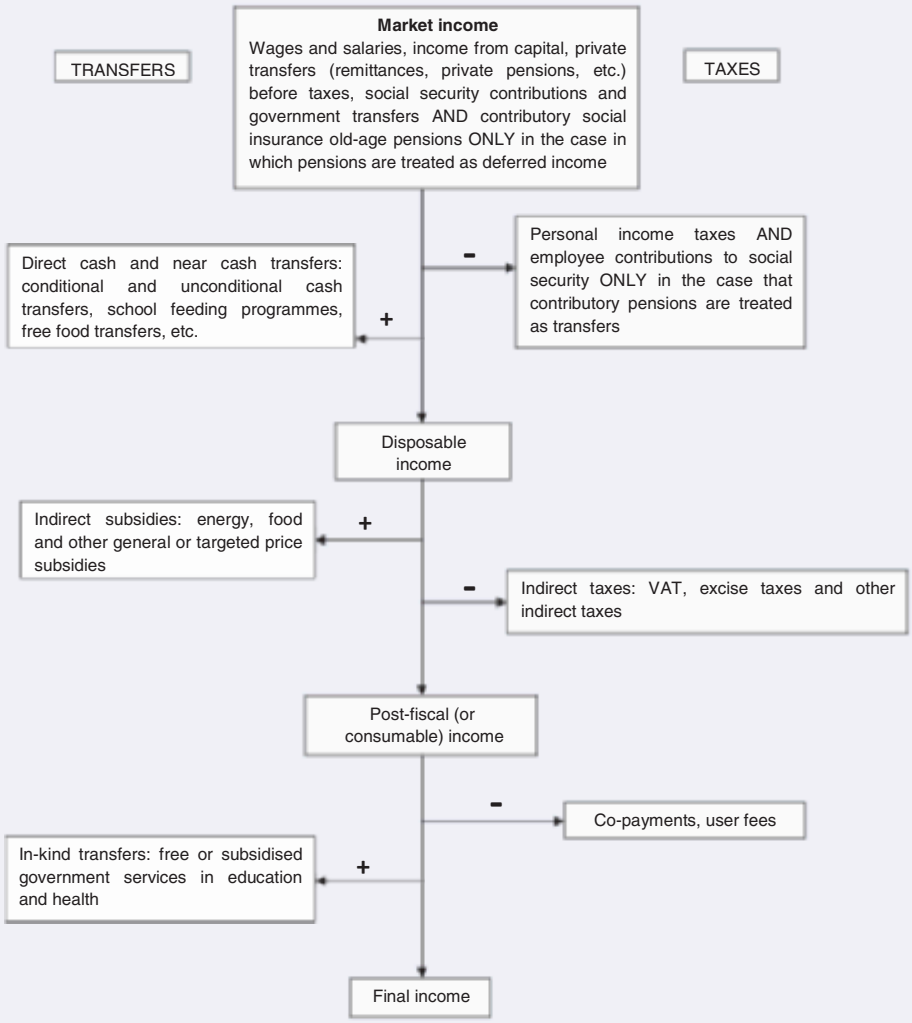
**Income concepts**

The diagram below summarises the four income concepts used throughout this chapter. Starting from *market income* (mainly, income from labour and capital), each new income concept adds another element of the fiscal system to the previous one. Hence, *disposable income* subtracts direct personal income taxes and adds cash transfers, *post-fiscal income* subtracts indirect taxes and adds subsidies and *final income* adds public health and education. The particular issue of including public contributory pensions with market income or cash transfers (i.e. disposable income) is discussed in Box 7.3.

In broad terms, *disposable income* measures how much income individuals may spend on goods and services as well as save. *Post-fiscal* income measures how much individuals are able to actually consume. For example, a given level of disposable income could mean different levels of actual consumption depending on the size of indirect taxes and subsidies. *Final income* includes the value of public services in education and health if individuals would have had to pay for those services at the average cost to the government. For details regarding assumptions for the seven countries analysed here, see Lustig (2015b).

## Box 7.2. Measuring fiscal incidence and income accounting framework *(cont.)*

### The income accounting framework




### Income measurement

In this chapter, the welfare indicator used in the fiscal incidence analysis is income per capita. This indicator differs from the one used in other chapters – based on equivalised income (see Box 7.1). The analysis used here is point-in-time and does not incorporate behavioural or general equilibrium effects. It is a first-order approximation that measures the average incidence of fiscal interventions. The analysis is based on economic rather than statutory tax incidence. For example, it is assumed that personal income taxes and contributions by employees and employers are borne by labour in the formal sector. Individuals who are not contributing to social security are assumed to pay neither direct taxes nor contributions. Consumption taxes are fully shifted forward to consumers. The analyses take into account the lower consumption tax incidence associated with own-consumption, rural markets and informality. Finally, it is worth noticing that CEQ data is aimed at incidence analysis and does not necessarily coincide with that found in other sources, in particular National Accounts.

**Box 7.2. Measuring fiscal incidence and income accounting framework** *(cont.)*

Due to data limitations and country specificities, particular data adjustments had to be applied in some countries. In Indonesia, the household survey reports consumption rather than income. Disposable income was imputed as equal to consumption and market income was generated "backwards" applying a "net to gross" conversion (see Immervoll and O'Donoghue, 2001). Furthermore, the Indonesian survey does not include individuals with income levels beyond the threshold at which direct taxes begin to apply (see Afkar et al., 2015). In the data for South Africa, Free Basic Services are assumed as direct transfers. The only contributory pensions in South Africa are for public servants who must belong to the Government Employees Pension Fund. Since the government made no transfers to the GEPF in 2010/11, there is no scenario in which contributory pensions are treated as a transfer. Also, survey data on own-consumption (which is part of market income) were not considered reliable in the case of South Africa (see Inchauste et al., 2015). In Chile, contributions to the old (pay-as-you-go) pension system are not available as a separate item in National Accounts (Ruiz-Tagle and Contreras, 2014). See Annex 7.A1 for details about the household surveys used.

**Imputing income from public health and education**

The imputation of income from public health and education relies on a series of assumptions in three areas: i) how to value public services (usually done via a production cost approach); ii) how to allocate these services across households (either with an "actual consumption approach" or an "insurance value approach" in the case of health); and iii) how to account for differences in needs (use of particular equivalence scales).

In this chapter, the value of education was imputed as the benefit accrued to an individual going to public school, estimated as the per beneficiary input costs (for example, the average government expenditure per primary school student obtained from administrative data is allocated to the households based on how many children are reported attending public school at the primary level). In the case of health, the approach was analogous. The value of public health is imputed as the average cost to the government of delivering healthcare services to the beneficiaries. In the case of Colombia, however, the method used was to impute the insurance value to beneficiary households rather than base the valuation on utilisation of healthcare services. Thus, this approach measures how much a household would have had to pay for the public service at the full cost to the government. No adjustments for differences in needs were made here.

Similarly, OECD (2008; 2011a) examined the distributive effects of in-kind public transfers (services in health, education, housing and care) in OECD countries. Such analysis typically makes use of a methodology of "extended income", i.e. the value of public services is imputed into household income. Broadening disposable income to account for services have been found to increase households' economic resources by as much as 30% to 40% in OECD countries, with notable effects on income inequality and poverty.

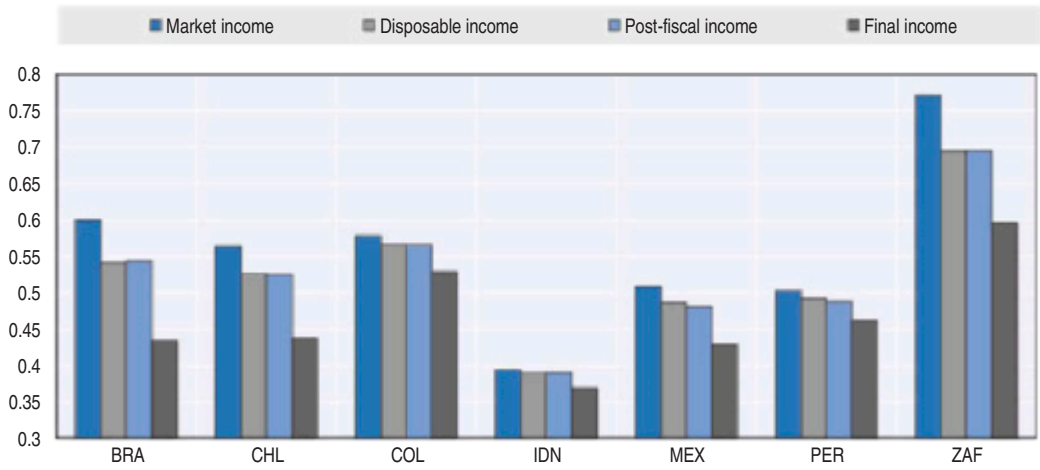
Differences in the quality of services between but also within countries can typically not be accounted for. Also, consumers may value services quite differently from what they cost. Furthermore, the indirect effects of services (such as the increase in income through higher labour supply) cannot be taken into account. These issues are discussed in detail in Verbist et al. (2012).

*Source*: Lustig, N. and S. Higgins (2013), "Commitment to Equity Assessment (CEQ): Estimating the Incidence of Social Spending, Subsidies and Taxes. Handbook", *CEQ Working Paper*, No. 1, July 2011, revised January 2013, New Orleans, United States.

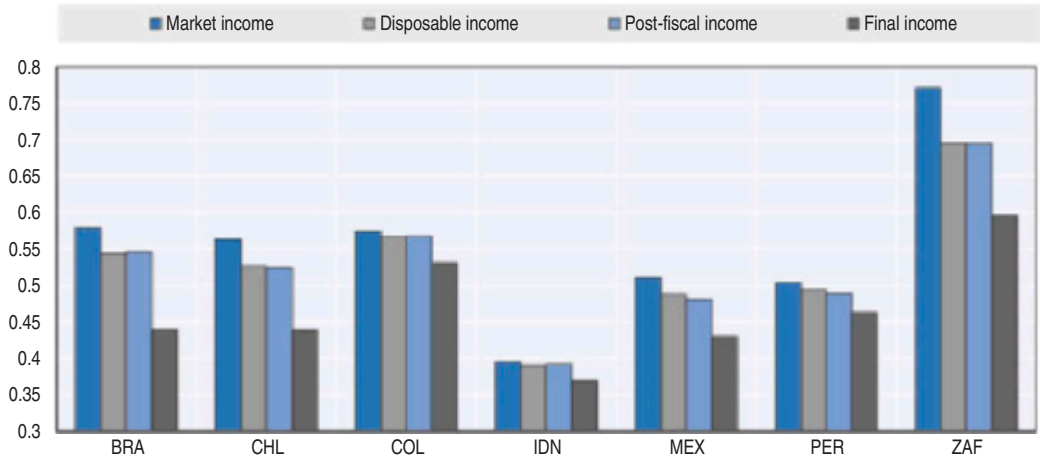
As can be observed in Figure 7.3, in Colombia, Indonesia and Peru, fiscal income redistribution is quite limited while in South Africa, Chile and Brazil, it is of a relevant magnitude. Mexico is in the middle of these two groups. One can observe that South Africa is the country that redistributes the most but it still remains the most unequal of all seven. It is interesting to note that although Brazil, Chile and Colombia start out with similar market income inequality, Brazil and Chile reduce inequality considerably while Colombia does not. Similarly, Mexico and Peru start out with similar levels of market income inequality but Mexico reduces inequality by more. Indonesia is the less unequal of all seven and fiscal redistribution is also the smallest in order of magnitude.

**Figure 7.3. Fiscal policy components and income inequality**

Panel A. Gini coefficient for market, disposable, post-fiscal and final income (pensions as transfers) 2010




Panel B. Gini coefficient for market, disposable, post-fiscal and final income (pensions as market income) 2010




*Note*:

Brazil, Chile and Peru refer to 2009, Colombia, Mexico and South Africa refer to 2010 and Indonesia refers to 2012. For Indonesia, the fiscal incidence analysis was carried out adjusting for spatial price differences. This adjustment, however, does not affect figures on this figure. In South Africa, the only statutory contributory pension scheme is the Government Employees Pension Fund, which is mandatory for officials in national and provisional government. These pensions were not included in the analysis for South Africa and are not shown here. The scenario for South Africa assumed free basic services are direct transfers.

*Source*: Lustig, N. (2015), "Inequality and Fiscal Redistribution in Middle Income Countries: Brazil, Chile, Colombia, Indonesia, Mexico, Peru and South Africa. Evidence from the Commitment to Equity Project (CEQ), *CEQ Working Paper*, No. 31, Center for Inter-American Policy and Research and Department of Economics, Tulane University and Inter-American Dialogue.

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The largest change in inequality occurs between post-fiscal and final income, thus suggesting that health and education are the main drivers of income redistribution in these countries. This is not surprising given the fact that governments spend more on education and health than on direct transfers and pensions. The difference between post-fiscal and final income inequality is particularly large in Brazil, South Africa and Chile, where they account for almost 10 percentage points of Gini coefficient. This is somewhat expected since spending on education and health tends to be larger than on direct transfers and pensions in most of these countries (see Figure 7.3, Panel A). However, given the strong assumptions underlying the imputation of the value of in-kind transfers on household final income (see Box 7.2) such finding must be considered with caution.

Comparing results in Panel A (where pensions are counted as public transfers) and Panel B (where pensions are counted with market income) reveal that the patterns of inequality decline are similar whether one looks at the scenario in which contributory pensions are considered deferred income (and, thus, part of market income) or with pensions as transfers. In Brazil and Colombia, and to a lesser extent in Indonesia, the redistributive effect is larger when pensions are treated as a transfer, while in Mexico and Peru it is somewhat lower. Pensions as transfers have most of an effect in Brazil where redistribution between market and disposable income would be 2.4 percentage points less if pensions were not counted as transfers (see also Box 7.3).

**Box 7.3. Public contributory pensions as deferred income or social transfers**

Public pensions from pay-as-you-go contributory systems may be considered either as deferred income (i.e., private savings) or as a social transfer (i.e., a public cash transfer). If considered as deferred income, public pensions are included as part of market income and therefore excluded from the fiscal incidence analysis. If considered as social transfers, public pensions are added, together with other social cash transfers, to disposable income and therefore are included as one of the components of fiscal income redistribution. For consistency, when pensions are treated as deferred income, pension contributions are accounted as private savings and deducted from market income, while when pensions are treated as social transfers, pension contributions are included as part of market income and deducted from disposable income as a direct tax.

It is important to note that the treatment of contributory pensions not only affects the amount of spending and how it gets redistributed, but also the ranking of households by original income or pre-fiscal income. For example, in the scenario in which contributory pensions are considered a government transfer, households whose main (or sole) source of income is pensions will have close to zero income before taxes and transfers and hence will be ranked at the bottom of the income scale. When contributory pensions are treated as deferred income, in contrast, households who receive contributory pensions will be placed at a (sometimes considerably) higher position in the income scale. Thus, the treatment of contributory pensions in the incidence exercise may have significant implications for the order of magnitude of the "pre-fisc" and "post-fisc" inequality and poverty indicators.

*Source*: Lustig, N. and S. Higgins (2013), "Commitment to Equity Assessment (CEQ): Estimating the Incidence of Social Spending, Subsidies and Taxes. Handbook", *CEQ Working Paper*, No. 1, July 2011, revised January 2013, New Orleans, United States.

### *The redistributive effect of fiscal policy: Do more unequal countries redistribute more?*

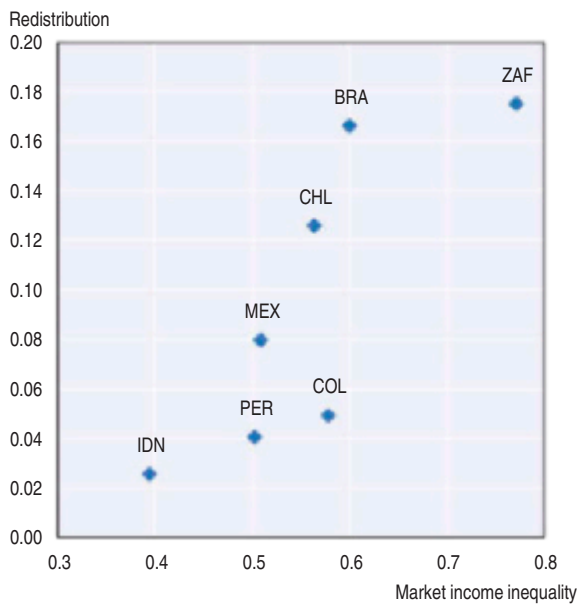
Income redistribution tends to be higher in more unequal countries to start with: redistribution is considerable higher in countries with higher market income inequality such as South Africa, Brazil and Chile than in countries with relatively lower inequality, such as Indonesia, Peru and Mexico (see Figure 7.4, Panel A). Among these countries, Colombia stands as an outlier with a rather low degree of redistribution given its high

level of market income inequality. Previous studies also generally suggest a positive correlation between market income inequality and measures of redistribution. Lustig (2015a) finds this in an analysis for thirteen developing countries. An OECD study (2011a, Chapter 7) illustrates that more market income inequality tends to be associated with higher redistribution, for a sub-set of OECD countries, both within countries (over time) and across countries. The findings in Ostry et al. (2014) confirm that this relationship is particularly strong among OECD countries and weaker, although still significant, in non-OECD countries.

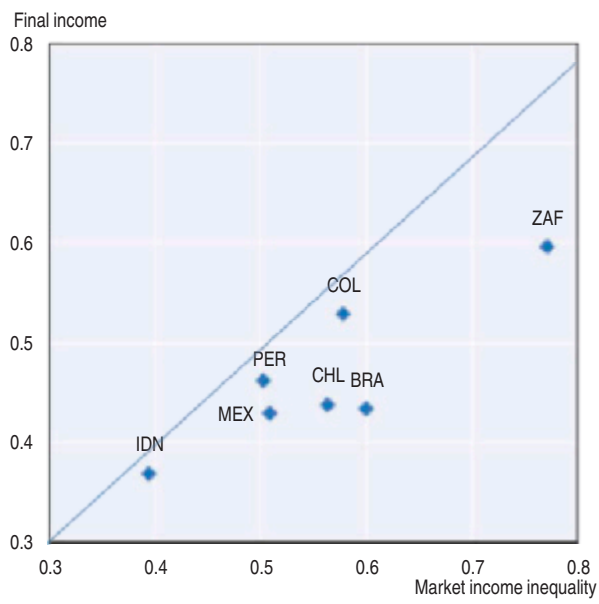
Differences in redistribution change the relative ranking of countries by inequality level. Figure 7.4, Panel B displays the levels of income inequality before (horizontal axis) and after (vertical axis) accounting for fiscal policies. Fiscal policies reduce inequality in all countries, as none of the countries fall above the 45°-line, which indicates no effect from redistribution. While South Africa is the most unequal country and Indonesia the least unequal country based on either definition of income, due to lower redistribution Colombia and Peru are more unequal than Brazil, Chile and Mexico, once fiscal policies are considered.

**Figure 7.4. Inequality and redistribution, 2010**

Panel A. Redistribution and market income inequality




Panel B. Final income inequality and market income inequality




*Note*:

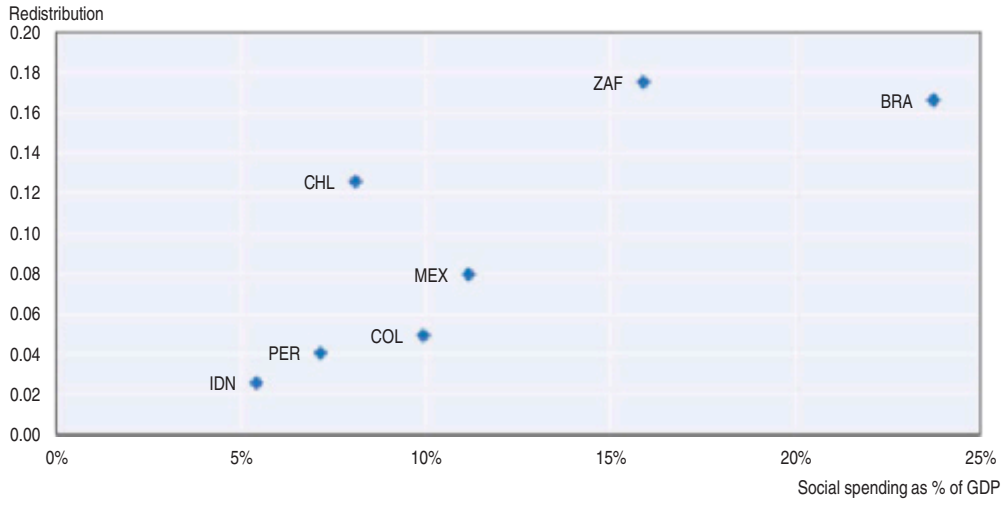
Brazil, Chile and Peru refer to 2009, Colombia, Mexico and South Africa refer to 2010 and Indonesia refers to 2012. For Indonesia, the fiscal incidence analysis was carried out adjusting for spatial price differences. This adjustment, however, does not affect figures on this figure. The only contributory pensions in South Africa are for public servants who must belong to the Government Employees Pension Fund; they were not included in the analysis for South Africa and are not shown here. The scenario for South Africa assumed free basic services are direct transfers. Redistribution measures the difference between Gini of market and final incomes.

*Source*: Lustig, N. (2015), "The Redistributive Impact of Government Spending on Education and Health: Evidence from 13 Developing Countries in the Commitment to Equity Project", Chapter 17 in B. Clements, R. de Mooij, S. Gupta and M. Keen (eds.), *Inequality and the Role of Fiscal Policy: Trends and Policy Options*, International Monetary Fund, Washington, forthcoming.

StatLink http://dx.doi.org/10.1787/888933208758

As expected, the level of income redistribution and the size of the budget allocated to social spending (as a share of GDP) are associated. However, differences across countries suggest that institutional factors such as the composition and design of such policies and their interaction with socio-economic circumstances also affect the level of redistribution. Figure 7.5 presents the level of redistribution and social spending measured in the CEQ database. Redistribution is considerably larger in countries with high social spending, such as Brazil and South Africa, than in Colombia, Indonesia and Peru, where social spending is more limited. Given the level of social spending, income redistribution is particularly high in South Africa and Chile.

**Figure 7.5. Redistribution and social spending, 2010**




*Note:*

Brazil, Chile and Peru refer to 2009, Colombia, Mexico and South Africa refer to 2010 and Indonesia refers to 2012. For Indonesia, the fiscal incidence analysis was carried out while adjusting for spatial price differences. This adjustment, however, does not affect figures in this figure. The only contributory pensions in South Africa are for public servants who must belong to the Government Employees Pension Fund; they were not included in the analysis for South Africa and are not shown here. The scenario for South Africa assumed free basic services are direct transfers. Redistribution measures the difference between Gini of market and final incomes.

*Source*: Lustig, N. (2015), "The Redistributive Impact of Government Spending on Education and Health: Evidence from 13 Developing Countries in the Commitment to Equity Project", Chapter 17 in B. Clements, R. de Mooij, S. Gupta and M. Keen (eds.), *Inequality and the Role of Fiscal Policy: Trends and Policy Options*, International Monetary Fund, Washington, forthcoming.

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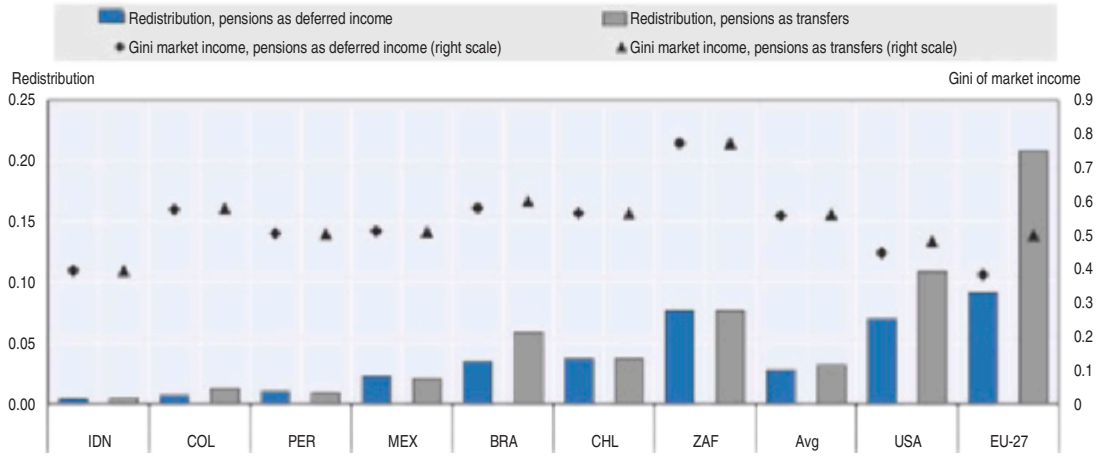
### *Redistribution in comparison to the United States and the European Union*

How does fiscal redistribution in these seven middle income countries compare to that in the United States and the European Union? Although there is no data for an exact comparison between these groups of countries, results based on somewhat similar methodologies are available. In the case of the European Union, the EU tax-benefit model (EUROMOD) estimates the distributive incidence of fiscal policies of 27 member states.[11] In the case of the United States, results are drawn from Higgins et al. (2015, forthcoming). The scope of policies included by EUROMOD (direct taxes, social security contributions and direct transfers) is equivalent to that used here to measure the redistributive effect from market to disposable income. Post-fiscal (i.e., after indirect taxes) and final income (i.e., after health and education) analyses are not possible.

There are three important differences between the United States and the European Union on the one hand and the seven middle-income countries analysed here, on the other. First, market income inequality is considerably higher for the middle income countries than in the European Union and the United States. One important aspect to note, however, is that taking contributory pensions as either deferred income or as social transfers (see Box 7.3) changes considerably the extent of market income inequality and the redistributive effect in the European Union and, somewhat less, in the United States while it makes a relatively small difference in the seven middle income countries (Figure 7.6). Second, the redistributive effect is much larger in the EU countries and, to a lesser extent, in the United States. Third, while in the European Union and the United States, contributory pensions have a significant equalising effect, in some of the seven middle income countries pensions have a small or even unequalising effect.

**Figure 7.6. Redistributive effect in Brazil, Chile, Colombia, Indonesia, Mexico, Peru, South Africa, the European Union and the United States**

Change in Gini points: Market to disposable income, 2010




*Note:*

Brazil, Chile and Peru refer to 2009, Colombia, Mexico and South Africa refer to 2010 and Indonesia refers to 2012b. For Indonesia, the fiscal incidence analysis was carried out while adjusting for spatial price differences. This adjustment, however, does not affect the figures on this figure. The only contributory pensions in South Africa are for public servants, who must belong to the Government Employees Pension Fund; they were not included in the analysis for South Africa and are not shown here. The scenario for South Africa assumed free basic services are direct transfers.

*Source*: Lustig, N. (2015), "Inequality and Fiscal Redistribution in Middle Income Countries: Brazil, Chile, Colombia, Indonesia, Mexico, Peru and South Africa. Evidence from the Commitment to Equity Project (CEQ), *CEQ Working Paper*, No. 31, Center for Inter-American Policy and Research and Department of Economics, Tulane University and Inter-American Dialogue. EUROMOD statistics on Distribution and Decomposition of Disposable Income, accessed at www.iser.essex.ac.uk/euromod/statistics/ using EUROMOD version No. G2.0. Higgins, S., N. Lustig, W. Ruble and T. Smeeding (2015), "Comparing the Incidence of Taxes and Social Spending in Brazil and the United States", *Review of Income and Wealth*, forthcoming.

StatLink http://dx.doi.org/10.1787/888933208778

### *The contribution of taxes and cash transfers to changes in income inequality*

Figure 7.7 shows the marginal contributions of direct and indirect taxes and cash transfers to changes in inequality between market and post-fiscal income.[12] Contributions that reduce inequality (equalising) are presented with a positive sign and contributions that increase inequality (unequalising) with a negative sign (see Box 7.4). Direct taxes and transfers have an equalising effect in all countries. The equalising effect of direct

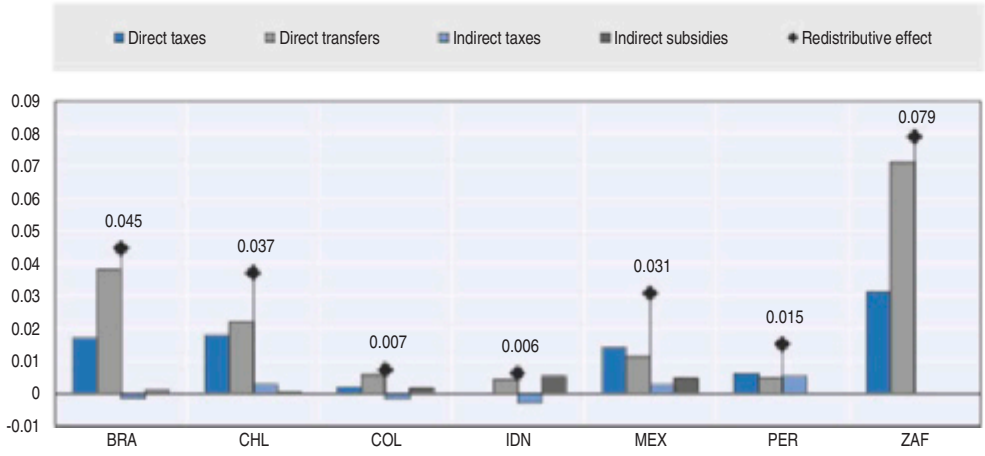
transfers is particularly high in South Africa and Brazil. Income redistribution through direct taxes is also considerable in South Africa, Chile and Brazil.

The redistributive effect of direct transfers is higher than that of direct taxes in most of the countries analysed. Only in Mexico and Peru is the marginal contribution of direct taxes higher than that of direct transfers. Similar results are found in the OECD context. In most OECD countries, direct transfers play a higher redistributive role than direct taxes. A noticeable exception is the United States, where direct taxes contribute more to income redistribution than direct transfers (OECD, 2008, OECD, 2015b).

In all analysed countries, the contribution of indirect taxes and transfers to income redistribution is much lower than that of direct taxes and transfers, except for Indonesia where direct taxes are not available and direct transfers are small. Indirect taxes have an unequalising effect in Brazil, Colombia and Indonesia, while the marginal contribution of indirect taxes is equalising in Chile, Mexico and Peru and neutral in South Africa. This result is quite remarkable since indirect taxes are usually found to be regressive and to have an unequalising effect when measured against the distribution of income (OECD/KIPF, 2014). Furthermore, in the case of Chile and South Africa this takes place despite the fact that indirect taxes are regressive in these countries (see Lustig et al., 2015). This apparently paradoxical result is consistent with "Lambert's conundrum" (see Lambert, 2001 and Annex 7.A1). If taxes are regressive vis-à-vis the original income but progressive with respect to the less unequally distributed post-transfers income, regressive taxes *may* exert an equalising effect over and above the effect of progressive transfers (Lambert, 2001).

**Figure 7.7. Fiscal policy components and income redistribution**

Marginal contributions of fiscal policy types to income redistribution (in Gini points), 2010




*Note:*

Brazil, Chile and Peru refer to 2009, Colombia, Mexico and South Africa refer to 2010 and Indonesia refers to 2012. For Indonesia, the fiscal incidence analysis was carried out while adjusting for spatial price differences. This adjustment, however, does not affect figures on this figure. The only contributory pensions in South Africa are for public servants, who must belong to the Government Employees Pension Fund; they were not included in the analysis for South Africa and are not shown here. The scenario for South Africa assumed free basic services are direct transfers.

*Source*: Lustig, N. (2015), "Inequality and Fiscal Redistribution in Middle Income Countries: Brazil, Chile, Colombia, Indonesia, Mexico, Peru and South Africa. Evidence from the Commitment to Equity Project (CEQ), *CEQ Working Paper*, No. 31, Center for Inter-American Policy and Research and Department of Economics, Tulane University and Inter-American Dialogue.

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### *The contribution of health and education to changes in income inequality*

Health and education reduce income inequality in all countries and disproportionately benefit the less well-off in most countries. Panel A in Figure 7.8 presents the concentration coefficients of health and education spending for each country (see Box 7.4). The distribution of public health spending is progressive in all countries (i.e. the concentration coefficient is lower than the Gini coefficient of market income). However, in Indonesia and Peru (and to a lesser extent Mexico), health spending per capita tends to increase with household income (i.e. pro-rich). On the other hand, health spending is pro-poor (i.e., spending per capita tends to decrease with income) in Brazil, Chile, Colombia and South Africa. Such pro-poor distribution is particularly large in Chile.

Total spending on education is pro-poor in all countries except for Indonesia, where the amount per capita is approximately the same throughout the income distribution. Public spending on pre-school education tends to be pro-poor in all countries for which there is data, particularly in South Africa. Primary school spending is pro-poor in all countries. Public spending on secondary education is pro-poor in Brazil, Chile, Colombia, Peru and South Africa, neutral in Mexico and pro-rich (although progressive) in Indonesia. Public spending on tertiary education is pro-rich in all countries. However, it is only in Indonesia that it is also regressive. Compared with their respective levels of market income inequality, spending on tertiary education is most progressive in South Africa, followed by Colombia and Chile.

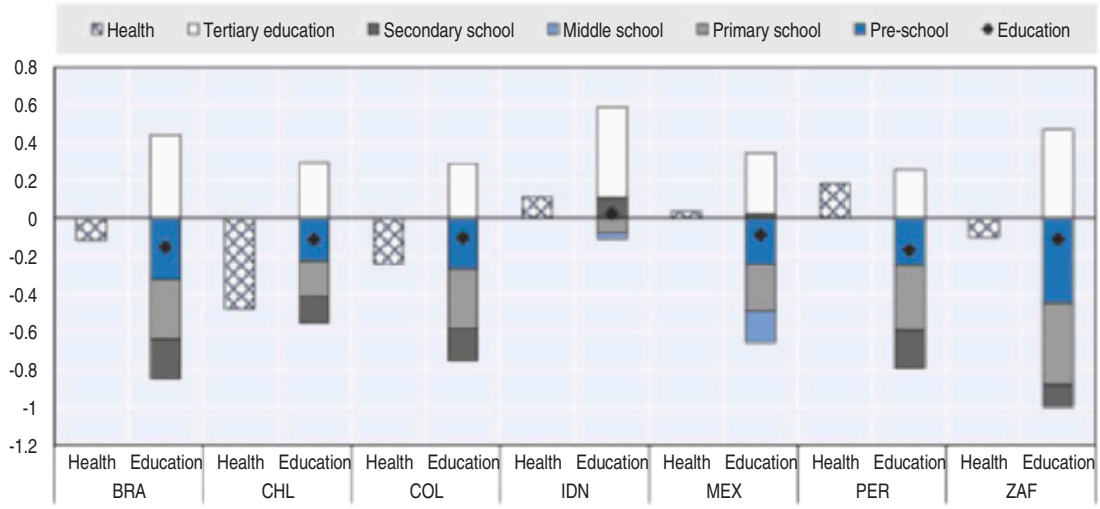
Results regarding the pro-poorness of spending on education and health are encouraging, as they suggest that use of public education and health services is quite intensive among low-income households. However, these results do not say anything about the quality of such services.[13] If the quality of the schooling and healthcare provided by the government is low, distortive patterns will produce major obstacles to the equalisation of opportunities. For example, one of the reasons why tertiary education mostly benefits the middle-classes and the rich is that their children are better equipped to pass the entrance examination, as they receive better (often private) primary and secondary education.

Furthermore, the existing information cannot disentangle the extent to which the progressivity or pro-poorness of education and health spending is a result of differences in household or personal characteristics that could explain a more intense use by poorer households (e.g., having more children and worse health) or simply the "opting-out" of the better-off.

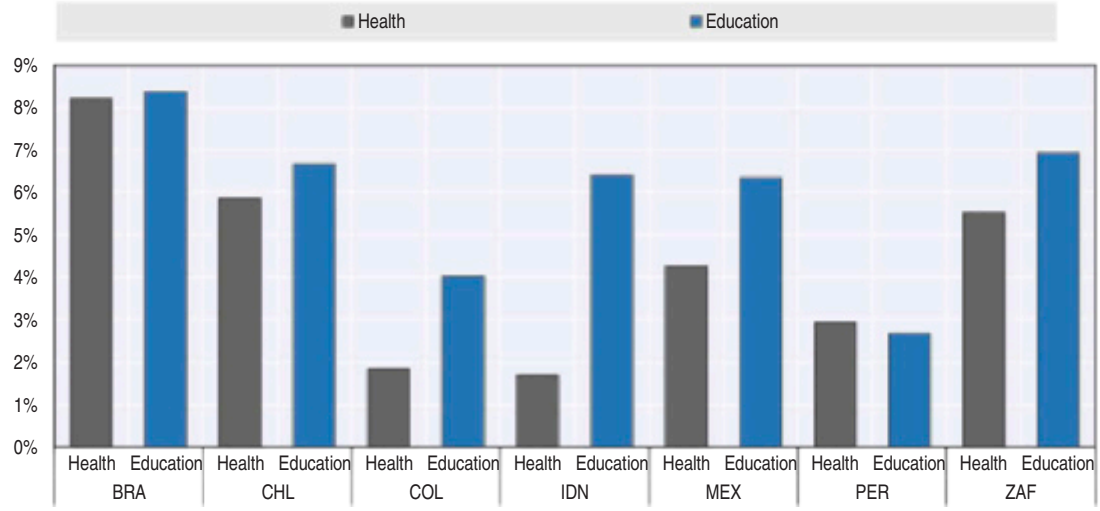
Besides its distribution, in the case of these sizeable transfers, the final redistributive effect of a transfer also depends on its size. Panel B in Figure 7.8 presents health and education spending as a share of household market income. While in Brazil and South Africa this result is driven primarily by the level of spending on education and health and its progressivity, in Chile the level of spending is lower but its progressivity, especial in health spending, is much higher.

**Figure 7.8. Concentration coefficients and budget shares for education and health**

Panel A. Concentration coefficients for education and health, 2010




Panel B. Education and health spending as a share of household market income, 2010




*Note:*

Brazil, Chile and Peru refer to 2009, Colombia, Mexico and South Africa refer to 2010 and Indonesia refers to 2012. For Indonesia, the fiscal incidence analysis was carried out while adjusting for spatial price differences. This adjustment, however, does not affect figures on this figure. The only contributory pensions in South Africa are for public servants, who must belong to the Government Employees Pension Fund; they were not included in the analysis for South Africa and are not shown here. The scenario for South Africa assumed free basic services are direct transfers.

*Source*: Lustig, N. (2015), "The Redistributive Impact of Government Spending on Education and Health: Evidence from 13 Developing Countries in the Commitment to Equity Project", Chapter 17 in B. Clements, R. de Mooij, S. Gupta and M. Keen (eds.), *Inequality and the Role of Fiscal Policy: Trends and Policy Options*, International Monetary Fund, Washington, forthcoming.

StatLink http://dx.doi.org/10.1787/888933208792

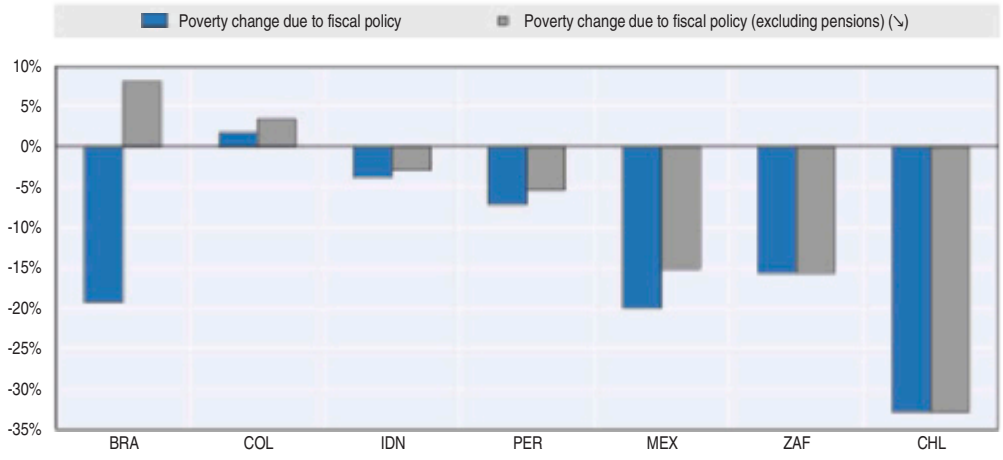
### *Fiscal policy and the poor*

The above discussion has concentrated on the impact of fiscal policy on *inequality*. This section focuses on the impact of fiscal policy on *poverty*. Although related, inequality and poverty outcomes do not necessarily go in the same direction. The method most widely used to assess the effect of fiscal policy on poverty is the change in the headcount ratio. This method compares the percentage of the population below the poverty line before and after taxes and transfers. While the OECD generally measures poverty using a relative poverty line (see Chapter 3), in the context of emerging economies an absolute poverty line is usually used. Here, a poverty line equivalent to USD PPP 2.50 per day is used. This is a rather low income level and is used by Ferreira et al. (2013) to measure "extreme poverty". Unlike the discussion on income inequality and redistribution, the analysis is based on comparisons between market income and post-fiscal income, thus measuring the impact of direct and indirect taxes and cash transfers, but excluding health and education.

Fiscal policies in terms of cash transfers and direct and indirect taxes[14] reduce income poverty in most, but not all, the countries analysed. Income poverty rates decline significantly after accounting for fiscal policies in Chile, Mexico, Brazil and South Africa. However, in Colombia income poverty increases after taxes and cash transfers are taken into account. Similarly, in Brazil income poverty also rises if public pensions are excluded from public social spending (i.e. considered as deferred income, see Box 7.3). These results are mainly driven by the regressive impact of indirect taxes (see Figure 7.7). Higgins and Pereira (2014) suggest that in the case of Brazil, this result is due to the heavy taxation on basic foodstuffs.

**Figure 7.9. Fiscal policy and reduction of extreme poverty**

Percentage change in headcount ratio from market to post-fiscal Income 2010




*Note:*

Brazil, Chile and Peru refer to 2009, Colombia, Mexico and South Africa refer to 2010 and Indonesia refers to 2012. Poverty is measured with the international poverty line of USD PPP 2.50/day (with 2005 PPP). Countries are ranked by the change in poverty for the scenario where contributory pensions are included in market income. Data for Indonesia is consumption-based, but income-based for the rest. The South Africa scenario assumes Free Basic Services as direct transfers. The fiscal incidence analysis for South Africa does not include a scenario with contributory pensions as transfers, and hence is not shown above.

*Source*: Lustig, N. (2015), "Inequality and Fiscal Redistribution in Middle Income Countries: Brazil, Chile, Colombia, Indonesia, Mexico, Peru and South Africa. Evidence from the Commitment to Equity Project (CEQ), *CEQ Working Paper*, No. 31, Center for Inter-American Policy and Research and Department of Economics, Tulane University and Inter-American Dialogue.

StatLink http://dx.doi.org/10.1787/888933208806

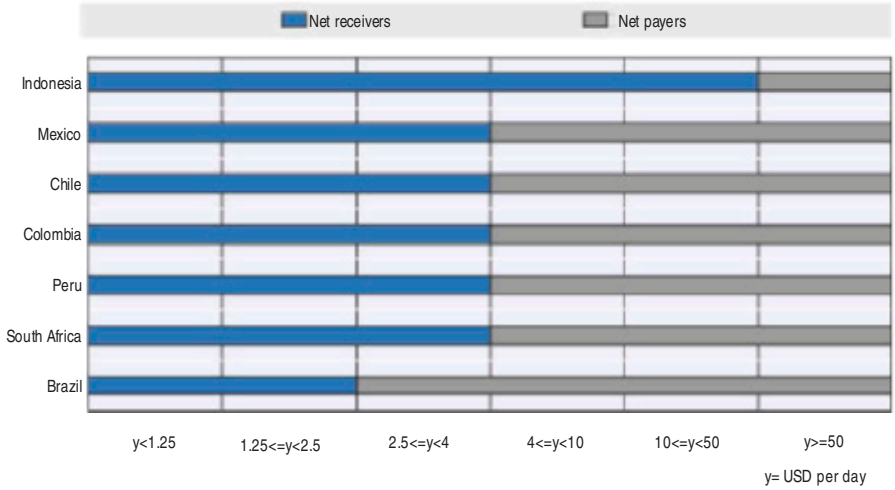
Who gains and who loses with fiscal policies? Figure 7.10 shows the distribution of net payers (i.e. those who pay more in taxes than they receive in transfers) and net recipients (i.e. those who receive more in transfers than they pay in taxes) across market income categories. These categories are based on Ferreira et al. (2013) and Lopez-Calva and Ortiz-Juarez (2014), who use them to identify the "extreme poor" (USD 0 to 2.50 per day), the "moderate poor" (USD 2.50 to 4 per day), "the vulnerable" (USD 4 to 10 per day) and the "middle class" (USD 10 to 50 per day). The results presented below take public pensions as deferred income and thus exclude them from the public social spending on cash transfers (see Box 7.3).

The distribution of net payers and net recipients indicates that lower income households tend, on average, to benefit from fiscal policies. In particular, in all countries the most vulnerable income groups (those earning less than USD 1.25 or USD 2.50 per day) are net recipients. Above that income threshold, the net effect of fiscal policies differs considerably across countries. In Brazil, only those in "extreme poverty" are on average net recipients of fiscal policies. Households in "moderate poverty" are net contributors to the fiscal system, mainly due to indirect taxes. As already mentioned, consumption taxes on basic foodstuffs have a strong negative effect on the incomes of low-income households in Brazil.

In Chile, Colombia, Mexico, Peru and South Africa, households in "moderate poverty" are also net recipients. In Indonesia, the "middle class" are also, on average, net recipients. Due to the combination of low direct and indirect taxes and untargeted energy subsidies, only the "rich" are net contributors to the fiscal system in Indonesia.

**Figure 7.10. Winners and losers of the fiscal system**

Net receivers and net payers to the fiscal system, 2010




*Note:*

Brazil, Chile and Peru refer to 2009, Colombia, Mexico and South Africa refer to 2010 and Indonesia refers to 2012. Poverty is measured with the international poverty line of USD PPP 2.50/day (with 2005 PPP). Countries are ranked by the change in poverty for the scenario where contributory pensions are included in market income. Data for Indonesia is consumption-based, but income-based for the rest. The South Africa scenario assumes Free Basic Services as direct transfers. The fiscal incidence analysis for South Africa does not include a scenario with contributory pensions as transfers, and hence is not shown above.

*Source*: Lustig, N. (2015), "Inequality and Fiscal Redistribution in Middle Income Countries: Brazil, Chile, Colombia, Indonesia, Mexico, Peru and South Africa. Evidence from the Commitment to Equity Project (CEQ), *CEQ Working Paper*, No. 31, Center for Inter-American Policy and Research and Department of Economics, Tulane University and Inter-American Dialogue.

StatLink http://dx.doi.org/10.1787/888933208810

## Box 7.4. Measuring redistribution, progressivity and "pro-poorness"

A typical indicator of the redistributive effect of fiscal policy is the difference between the Gini coefficient of market income before and after taxes and transfers. If the redistributive effect is positive (negative), fiscal policy is equalising (unequalising).

### Measuring the contribution of individual fiscal policies to redistribution

There are several ways of calculating the contribution of a particular fiscal intervention to the change in inequality (or poverty), taking account of path dependency. The most commonly used in the literature are the methods of *marginal contribution* and *sequential contribution*. A less commonly used measure is the "total average contribution", which is calculated by considering all the possible paths and taking, for example, the so-called Shapley value (Shorrocks, 2013).

The *sequential contribution* is calculated as the difference between inequality indicators with fiscal interventions ordered in a path according to their presumed institutional design. For example, if direct transfers are subject to taxation, the sequential contribution would first measure the effect of transfers on market income and then of taxes on market income plus transfers (usually known as gross income). This approach requires detailed knowledge about the interactions between the different fiscal interventions. OECD (2011a, Chapter 7) and Immervoll and Richardson (2011) adopted a sequential approach to examine the redistributive effects of taxes and transfers, identifying the most suitable sequence for each country. However, getting the institutional sequencing right is close to impossible – especially as the analysis becomes more granular in terms of individual components of fiscal policy. Moreover, the issue of path dependency described in the annex may not go away even if the institutional sequencing is perfect.

The *marginal contribution* is calculated by taking the difference between the inequality indicator *without* and *with* a given policy with regard to a fixed income concept.* This indicator is equivalent to asking the question: what would inequality be if the system did not have a particular tax (or transfer) or if a tax (or transfer) was modified? Would inequality be higher, the same or lower with the tax (or transfer) than without it?

One drawback of the marginal contribution method is that the sum of all the marginal contributions is not equal to the total redistributive effect, due to the interaction between policies, thus limiting the accuracy of the magnitude of each contribution (Shorrocks, 2013).

In this chapter, marginal contributions are calculated based on decile rather than sample micro-data. Since this measure ignores intra-decile inequality, the overall redistributive effect level is larger than the one computed using micro-data (and shown in the sections above). Furthermore, the decile-based analysis assumes no re-ranking. Since public pensions produce a substantial re-ranking, the results based on pensions as transfers are not included. For the scenario with pensions as market income, the extent of re-ranking caused by redistributive policy is small, so the decile-based analysis is a good approximation.

### Progressivity and pro-poorness

The distribution of public spending on healthcare and education is measured here using the concentration coefficient, which is an indicator calculated in a way analogous to the Gini coefficient (see Lambert, 2001). A transfer is defined as *progressive* whenever its share of market income tends to fall as market income rises, which is the case when the concentration coefficient is lower than the Gini coefficient for market income. Conversely, a transfer is re*gressive* whenever its share of market income tends to increase as market income rises, which is the case when the concentration coefficient is higher than the Gini coefficient for market income. If a transfer as a share of market income is constant (i.e. proportional), it is defined as neutral.

A transfer is defined as *pro-poor* whenever its absolute amount tends to fall with market income (i.e. progressive in absolute terms) – this takes place when the concentration coefficient is negative. Conversely, a transfer is defined as *pro-rich* whenever its absolute amount tends to rise with market income (i.e. regressive in absolute terms) – this takes place when the concentration coefficient is positive.

**Box 7.4. Measuring redistribution, progressivity and "pro-poorness"** *(cont.)*

Note that in the analysis presented here, households are ranked by per capita market income and no adjustments are made to their size because of differences in the composition. In some analyses, the pro-poorness of education spending, for example, is determined by using children as the unit of analysis instead of all household members. Given that, on average, poorer families have a larger number of children, the observation that concentration curves are pro-poor is a reflection of this fact and not that poorer families receive more resources per child.

*. The marginal contribution should not be confused with the marginal incidence, the latter being the incidence of a small change in spending. The marginal contribution is not a derivative. Note that, because of path dependency, adding up the marginal contributions of each intervention will not be equal to the total change in inequality. Clearly, adding up the sequential contributions will not equal the total change in inequality either. One approach that has been suggested to calculate the contribution of each intervention so that they add up to the total change in inequality is to use the Shapley value. The studies analysed here do not have estimates for the latter.

*Source*: Lustig, N., A. Enami and R. Aranda (2015), "The Analytics of Fiscal Redistribution", Chapter in N. Lustig and S. Higgins (eds.), *Commitment to Equity Handbook: Estimating the Redistributive Impact and Pro-poorness of Fiscal Policy*, forthcoming.

## *Conclusions*

Section 7.3 of this chapter examines the redistributive impact of fiscal policy in Brazil, Chile, Colombia, Indonesia, Mexico, Peru and South Africa. In particular, it addresses the following questions: What is the impact of fiscal policy on inequality and poverty? What is the contribution of direct taxes and transfers, net indirect taxes and spending on education and health to the overall reduction of inequality? How pro-poor is spending on education and health?

In order to analyse the impact of fiscal policy on income inequality it is useful to separate the "cash" portion of the system (direct and indirect taxes, direct transfers and indirect subsidies) from the "in kind" portion (the monetised imputed value of the use of government education and health services). The results show that the reduction in inequality induced by the cash portion of the fiscal system is quite heterogeneous, with South Africa redistributing the most and Indonesia the least. Redistribution levels are determined primarily by the amount of resources devoted to (collected from) direct transfers (direct taxes) and their progressivity, and the presence of unequalising net indirect taxes.

While the cash portion of the net fiscal system is always equalising, the same cannot be said with respect to poverty. In Brazil and Colombia, the headcount ratio measured with the international extreme poverty line of USD PPP 2.50 per day is higher for post-fiscal income than for market income. In these two countries, fiscal policy *increases* poverty, meaning that a significant number of households with income around the poverty line are made poorer (or poor) by taxes and transfers. This startling result is primarily the consequence of high consumption taxes on basic goods.

The equalising effect of direct taxes is higher than of direct transfers in Chile, Mexico and Peru, while the converse is true in Brazil, Colombia, Indonesia and South Africa. Net indirect taxes increase inequality in Brazil, Colombia, Indonesia and South Africa but reduce it in Chile, Mexico and Peru. If taken as social transfers, public contributory old-age pensions are equalising in Brazil, Colombia and Indonesia but unequalising in Chile, Mexico and Peru. Education and health have an equalising and rather large effect in all

countries. Total spending on education decreases with income (i.e., is pro-poor) in all countries except for Indonesia, where it is neutral in absolute terms. Pre-school and primary school tend to be pro-poor in all countries, and particularly so in South Africa. Secondary school is progressive in all countries and pro-poor in most. Spending on secondary school per capita is neutral in Mexico, and it increases with income in Indonesia. Public spending on tertiary education per capita increases with income (i.e.., is pro-rich) in all countries. However, only in Indonesia it is also regressive (and unequalising). Compared with their respective levels of market income inequality, spending on tertiary education is most progressive in South Africa, followed by Colombia and Chile.

Public health spending is progressive in all countries. However, in Indonesia and Peru (and to a lower extent Mexico) health spending per capita tends to increase with household income (i.e. pro-rich). On the other hand, health spending is pro-poor in Brazil, Colombia, South Africa and, particularly, in Chile.

# Notes

1. Section 7.3 of this chapter and its annexes are authored by Nora Lustig, Tulane University. Nora Lustig would like to thank Luis Felipe Munguia and Rodrigo Aranda, for their research assistance.
2. www.commitmentoequity.org/, see Annex 7.A1.
3. The background information for the analyses comes from the following fiscal incidence analyses: Brazil (Higgins and Pereira, 2014), Chile (Ruiz-Tagle and Contreras, 2014), Colombia (Melendez, 2014), Indonesia (Jellema et al., 2014), Mexico (Scott, 2014), Peru (Jaramillo, 2014) and South Africa (Inchauste et al., 2015); and Lustig, Pessino and Scott (2014) and Lustig (2015a and b).
4. *Source*: SEDLAC, http://sedlac.econo.unlp.edu.ar/eng/index.php.
5. *Source*: ILO, http://laborsta.ilo.org/informal_economy_E.html.
6. The available data on public social spending in India and Indonesia is likely to underestimate the public social effort, as outlays by state and other local governments are under-reported (OECD, 2014a).
7. For a discussion on the treatment of pensions in the income accounting framework, see Box 7.2 and Box 7.3.
8. Revenue and spending differences between OECD and LAC economies are smaller if natural resources and private pension schemes are taken into account (see OECD/ECLAC/CIAT/IDB, 2015, Equivalent Fiscal Pressure).
9. This section and its corresponding annex are authored by Nora Lustig, Tulane University. Nora Lustig would like to thank Luis Felipe Munguia and Rodrigo Aranda, for their research assistance.
10. Other measures of inequality such as the Theil index or the 90/10 ratio are available in the individual studies. Requests should be addressed directly to the authors.
11. The model for Croatia is currently being developed under the project EUROMODupdate2 (www.iser.essex.ac.uk/euromod/developing-euromod/euromodupdate2).
12. Pensions are counted here with market income rather than with transfers, as the results are not available under both definitions.
13. OECD/CAF/ECLAC (2014) offers a detailed analysis of quality indicators for education systems in Latin American Countries.
14. The effect of in-kind benefits of education and health services cannot be taken into account in this analysis.

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*OECD Social Expenditure Database,* www.oecd.org/social/expenditure.htm.

# Annex 7.A1
# The CEQ project and underlying household survey data

Directed by Nora Lustig since 2008, the CEQ was designed to analyse the impact of taxation and social spending on inequality and poverty in individual countries, and provide a roadmap for governments, multilateral institutions, and nongovernmental organisations in their efforts to build more equitable societies.

The main purpose of CEQ is to inform governments of how their fiscal policy affects their equity goals, recommend practical measures, and enhance accountability and transparency through better data collection and evaluation systems. In order to achieve this, CEQ assessments use incidence analysis and a specially-designed diagnostic questionnaire to address three questions:

- How much inequality and poverty reduction is being accomplished through social spending, subsides and taxes?
- How equalising and poverty reducing are specific taxes and transfers?
- Within the limits of fiscal prudence, what could be done to increase redistribution and poverty reduction through changes in taxation and spending?

The CEQ assessment provides the first comprehensive analysis of how taxes and social spending (including indirect subsidies and taxes, and education and health expenditures) affect income inequality and poverty in a country. The assessments are comparable across countries and over time. The country-level studies examine the distributional effects of individual programmes and policy measures – and the net effect of each country's mix of policies and programmes. The results will give policy makers, multilateral institutions, and nongovernmental groups the data and analysis necessary to determine what changes in tax and spending policies will lead to greater equality and poverty reduction.

The CEQ diagnostic questionnaire examines whether governments collect and allocate enough resources to support a minimum living standard for all; whether they collect and redistribute fiscal resources progressively; whether their expenditures are fiscally sustainable and their programmes of reasonable quality; and whether they are responsibly transparent, i.e., they collect and make public sufficient information, and are subject to independent evaluations.

The CEQ provides new opportunities for civil society organisations to monitor the distributional effects of government taxes and spending. It will also provide a critical source of information and analysis for international donors regarding external resources needed to meet specific goals in low-income countries. And the CEQ results can also be used to monitor the situation of minority and other excluded groups – including for example, Afro-descendants and indigenous groups – and determine the extent to which government taxes and spending affect their incomes and well-being.

The CEQ project is an initiative of the Center for Inter-American Policy and Research (CIPR) and the Department of Economics, Tulane University, the Center for Global Development and the Inter-American Dialogue. The project's main output is the CEQ assessment, a methodological framework designed to analyse the impact of taxation and social spending on inequality and poverty in individual countries.

Since its inception, the CEQ has received financial support from the Bill & Melinda Gates Foundation, the Inter-American Development Bank (IADB), the World Bank, the United Nations Development Programme's Regional Bureau for Latin America and the Caribbean (UNDP/RBLAC), the African Development Bank, the International Fund for Agricultural Development (IFAD), the Development Bank of Latin America (CAF), the Canadian International Development Agency (CIDA), the Norwegian Ministry of Foreign Affairs, and the General Electric Foundation.

The surveys used in the fiscal incidence analysis are the following:

| Country | Survey | Year | Data |
|---|---|---|---|
| Brazil | Pesquisa de Orçamentos Familiares | 2009 | Income |
| Chile | Encuesta de Caracterización Social (CASEN) | 2009 | Income |
| Colombia | Encuesta de Calidad de Vida | 2010 | Income |
| Indonesia | Survei Sosial-Ekonomi Nasional | 2012 | Consumption |
| Mexico | Encuesta Nacional de Ingreso y Gasto de los Hogares | 2010 | Income |
| Peru | Encuesta Nacional de Hogares | 2009 | Income |
| South Africa | Income and Expenditure Survey and National Income Dynamics Study | 2010-2011 | Income |

# Annex 7.A2
# Lambert's conundrum

(Excerpts from Lustig et al., 2015, forthcoming)

Suppose one observes that fiscal policy has an equalising effect. Can one measure the influence of specific taxes (direct vs. indirect, for example) or transfers (direct transfers vs. indirect subsidies or in-kind transfers, for example) on the observed result?[1] A fundamental question in the policy discussion is whether a particular fiscal intervention (or a particular combination of them) is equalising or unequalising. In a world with a single fiscal intervention (and no re-ranking), it is sufficient to know whether a particular intervention is progressive or regressive to give an unambiguous response, using typical indicators of progressivity such as the Kakwani index.[2] In a world with more than one fiscal intervention (even in the absence of re-ranking), this one-to-one relationship between the progressivity of a particular intervention and its effect on inequality breaks down. As Lambert (2001) so eloquently demonstrates it, depending on certain characteristics of the fiscal system, a regressive tax can exert an equalising force over and above that which would prevail in the absence of that regressive tax.[3]

An example borrowed from Lambert (2001, Table 11.1, p. 278) helps illustrate this point in the case of a regressive tax (Table 7.A2.1). The table below shows that "…taxes may be regressive in their original income… and yet the net system may exhibit more progressivity" than the progressive benefits alone. The redistributive effect for taxes *only* in this example is equal to -0.0517, highlighting their regressivity.[4] Yet, the redistributive effect for the net fiscal system is 0.25, which is higher than the redistributive effect for benefits *only* equal to 0.1972. If taxes are regressive vis-à-vis the original income but progressive with respect to the less unequally distributed post-transfers income, regressive taxes *may* exert an equalising effect over and above the effect of progressive transfers.[5]

**Table 7.A2.1. Lambert's conundrum**

| | 1 | 2 | 3 | 4 | Total |
|---|---|---|---|---|---|
| Original income x | 10 | 20 | 30 | 40 | 100 |
| Tax liability t(x) | 6 | 9 | 12 | 15 | 42 |
| Benefit level b(x) | 21 | 14 | 7 | 0 | 42 |
| Post-benefit income | 31 | 34 | 37 | 40 | 142 |
| Final income | 25 | 25 | 25 | 25 | 100 |

*Source*: Lambert, P. (2001), *The Distribution and Redistribution of Income*, Third Edition, Manchester University Press, Table 11.1, p. 278.

StatLink http://dx.doi.org/10.1787/888933209145

Note that Lambert's conundrum is not equivalent to the well-known (and frequently repeated) result that efficient regressive taxes can be fine as long as, when combined with transfers, the net fiscal system is equalising.[6] The surprising aspect of Lambert's conundrum is that a net fiscal system *with* a regressive tax (vis-à-vis market income) is *more* equalising than *without* it.[7]

The implications of Lambert's "conundrum"[8] in real fiscal systems are quite profound. It means that in order to determine whether a particular intervention (or, a particular policy change) increases inequality or reduces inequality – and by how much – one must resort to numerical calculations that include the *whole* system. As Lambert mentions, his example is "not altogether farfetched".[9] Two renowned studies in the 1980s found this type of result for the United States and the United Kingdom.[10] It also made its appearance in a 1990s study for Chile.[11] In the present analysis, Lambert's conundrum is found for indirect taxes in the cases of Chile and to a smaller extent in South Africa. This counter-intuitive result is the consequence of path dependency: a particular tax can be regressive vis-à-vis market income but progressive vis-à-vis the income that would prevail if all the other fiscal interventions were already in place.

# Notes

1. Note that the influence of specific interventions may not be equalising, even if the overall effect of the net fiscal system is.
2. The Kakwani index for taxes is defined as the difference between the concentration coefficient of the tax and the Gini for market income. For transfers, it is defined as the difference between the Gini for market income and the concentration coefficient of the transfer. See, for example, Kakwani (1977).
3. See Lambert (2001), pp. 277 and 278. Also, for a derivation of all the mathematical conditions that can be used to determine when adding a regressive tax is equalising or when adding a progressive transfer is unequalising, see Lustig et al. (2015, forthcoming).
4. Since there is no re-ranking, the R-S equals the difference between the Ginis before and after the fiscal intervention.
5. Note that Lambert uses the term progressive and regressive differently than other authors in the literature on theoretical and empirical incidence analysis. Thus, he calls "regressive" transfers that are equalising. See the definitions in earlier chapters of his book.
6. As Higgins and Lustig (2015) mention, "efficient taxes that fall disproportionately on the poor, such as a noexemption value added tax, are often justified with the argument that spending instruments are available that are better targeted to the pursuit of equity concerns" (Keen and Lockwood, 2010, p. 141). Similarly, Engel et al. (1999, p. 186) assert that "it is quite obvious that the disadvantages of a proportional tax are moderated by adequate targeting" of transfers, since "what the poor individual pays in taxes is returned to her". Ebrill et al. (2001, p. 105) argue that "a regressive tax might conceivably be the best way to finance pro-poor expenditures, with the net effect being to relieve poverty".
7. It can also be shown that if there is re-ranking, a pervasive feature of net tax systems in the real world, making a tax (or a transfer) more progressive can *increase* post-tax and transfers inequality. In Lambert's example, regressive taxes not only enhance the equalising effect of transfers, but making taxes more progressive (i.e.., more disproportional in the Kakwani sense) would result in higher (!) inequality; any additional change (towards more progressivity) in taxes or transfers would just cause re-ranking and an increase in inequality.
8. This is Lambert's choice of words (p. 278).
9. Quotes are from Lambert (2001), p. 278.
10. Ruggles and O'Higgins (1981a) for the United States and Ruggles and O'Higgins (1981b) for the United Kingdom.
11. Engel et al. (1999). Although the authors did not acknowledge this characteristic of the Chilean system in their article, in a recent interaction with the lead author, it was concluded that the Chilean system featured regressive albeit equalising indirect taxes.

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# In It Together

## Why Less Inequality Benefits All

The gap between rich and poor keeps widening. Growth, if any, benefited disproportionally higher income groups while lower-income households were left behind. This long-run increase in income inequality does not only raise social and political but also economic concerns: it tends to drag down GDP growth, and it is the rising distance of the lower 40% from the rest of society which accounts for this effect. Lower-income people cannot realise their human capital potential, which is bad for the economy as a whole. This book highlights the key areas where inequalities originate and where new policy approaches are required, including the consequences of the recent period of crisis and consolidation policies on household incomes; structural labour market changes with rising non-standard work and job polarisation; persisting gender gaps; the challenge of high wealth concentration, and the role for redistribution policies.

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Chapter 5. Women, work and income inequality

Chapter 6. How does the concentration of household wealth compare across countries?

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