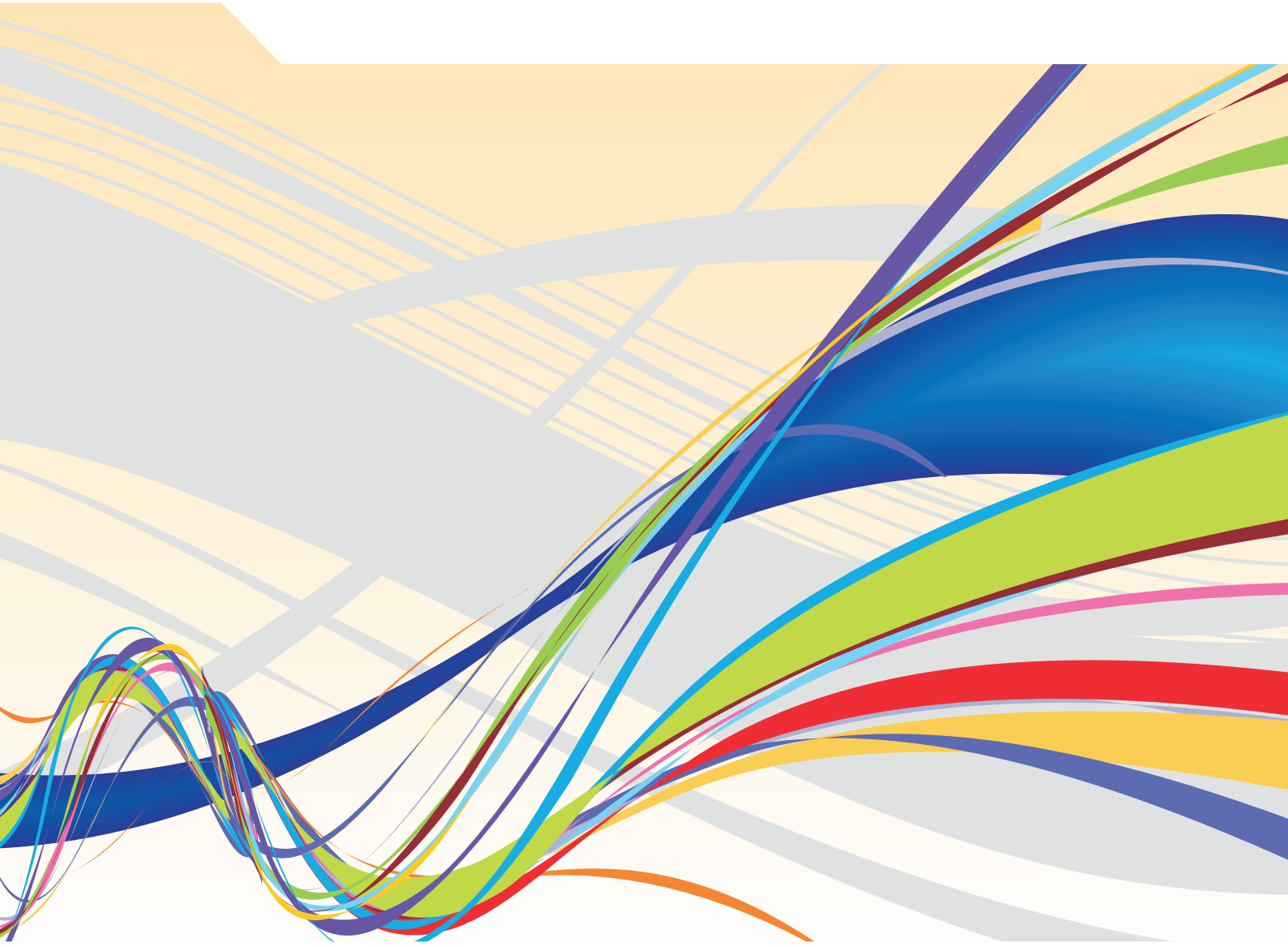
OECD Employment Outlook 2017



OECD

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Foreword

The OECD Employment Outlook *provides an annual assessment of key labour market developments and prospects in OECD member countries. Each edition also contains several chapters focusing on specific aspects of how labour markets function and the implications for policy in order to promote more and better jobs. This year's chapters cover a comparison of labour market performance in different countries in terms of the quantity and quality of job and inclusiveness, the policy determinants of labour market resilience following the 2008 economic crisis, an assessment of how technology and globalisation are transforming the labour market, and a rich description of collective bargaining in OECD countries.*

The 2017 OECD Employment Outlook *is the joint work of staff of the Directorate for Employment, Labour and Social Affairs. The staff of the OECD Economics Department also contributed to the preparation of Chapter 2. It has greatly benefited from contributions from national government delegates. However, the* Outlook*'s assessments of each country's labour market prospects do not necessarily correspond to those made by the national authorities concerned.*

This report was edited by Paul Swaim, and is based on contributions from Andrea Bassanini, Pascal Marianna and Paul Swaim (Chapter 1), Alexander Hijzen, Andreas Kappeler, Mathilde Pak and Cyrille Schwellnus (Chapter 2), Paolo Falco and Andrea Salvatori (Chapter 3), and Sandrine Cazes and Andrea Garnero (Chapter 4). Research assistance was provided by Dana Blumin, Sylvie Cimper, Duncan MacDonald, Sébastien Martin and Agnès Puymoyen. Editorial assistance was provided by Gabriela Bejan, Natalie Corry, Monica Meza-Essid and Marlène Mohier.

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The populist backlash against globalisation fundamentally challenges employment policy

2016 was a paradoxical year for employment policy. While an expanding majority of OECD countries had finally closed the massive jobs gap that opened during the Great Recession and unemployment continued to fall, people in a number of countries expressed increased dissatisfaction with economic performance and, in some of them, clearly indicated they did not believe that policy makers were effectively representing their interests. While the Great Recession left deep scars in many countries, the economic discontent also centres on the perception that deeper international economic integration disadvantages many workers while offering the lion's share of the benefits to large corporations and a cosmopolitan elite. The perception that the international economic system is "rigged" clearly challenges the democratic legitimacy of current policies and thus needs to be taken seriously. It also challenges the policy advice offered by international organisations like the OECD, which has long emphasised the economic benefits of global integration, but only recently adopted an inclusive growth approach that pays due attention to the distribution of those benefits across the population. In view of the current scepticism about the policy orthodoxy, this editorial begins the process of reassessing which choices labour market policy makers have got more or less right and which they have got wrong and where a change of approach is required. These reflections are intended to contribute to the broader rethinking of the full range of economic policies that is currently underway at the OECD and elsewhere.

The topics that are addressed in this edition of the *OECD Employment Outlook* provide valuable new evidence about the extent to which the populist backlash is grounded in a real failure of existing policies to promote inclusive growth. They also identify a number of policy directions that should allow governments to better address the legitimate concerns driving the recent backlash against globalisation. However, much additional research and dialogue will be required to fully flesh out an adequate policy response and restore public trust.

Many of the concerns underpinning the backlash against globalisation are real

Since the economic crisis of 2008, both OECD and non-OECD economies have been on a lower growth trajectory than before the crisis. Indeed, the cumulative loss in output per capita in the OECD area, relative to the pre-crisis trajectory, amounts to about 50% of annual GDP per capita. This slower pace of economic growth has aggravated the stagnation of real income growth that people on lower and middle incomes were already experiencing due to the longer-term trend increase in inequality. Across the OECD area, the average

disposable income of the richest 10% of the population is now more than nine times that of the poorest 10%, up from seven times 25 years ago. Labour market trends – particularly rising pay differentials between workers on the upper and lower rungs of the jobs ladder – have played an important role in increasing income inequality. Accordingly, it is important to assess whether labour market policy choices – including those consistent with OECD policy advice – have inadvertently contributed to a growth model that has not prevented a disproportionate share of the gains from economic growth to benefit already high-income segments of the population.

This *Outlook* analyses questions at the heart of the growing backlash against globalisation, examining how globalisation and technological change have interacted with labour market policies to affect the distribution across the workforce of the benefits and costs associated with economic change. Notably, almost all OECD countries have been experiencing occupational polarisation during recent decades – that is, a decline in the share of total employment attributable to middle-skill/middle-pay jobs, which has been offset by increases in the shares of both high- and low-skill jobs. In the OECD area, the middle-skill share of employment fell by 7.6 percentage points between 1995 and 2015, while the employment shares of high- and low-skill occupations rose by 5.3 and 2.3 percentage points respectively. About one-third of overall polarisation can be attributed to shifts in employment away from manufacturing and towards services, leading to factory workers who have lost their jobs often being forced to take up lower paying jobs in the service sector. However, the remaining two-thirds reflect rising polarisation within industries.

Popular perceptions tend to exaggerate the role of trade in inequality, but new technologies have had an effect

Rising polarisation has coincided with both the rapid development and deployment of information and communication technologies (ICT) and the deepening of global value chains (GVCs), i.e. the location of different stages of production in different countries. The empirical evidence suggests that both of these factors are at play, but not equally. Technology and trade are mutually reinforcing and their effects can be hard to separate. Nonetheless, the evidence suggests that technological change almost certainly played a major role in increasing labour market polarisation, whereas the impact of deepening GVCs is difficult to detect and probably small. There is, however, some indication that rising import penetration from China has a small effect in depressing employment in manufacturing. Other research has shown a stronger adverse effect on employment and earnings from rising import penetration from China, especially in local labour markets specialised in the products directly competing with Chinese imports. The analysis also shows that the size of the impact of new technologies on polarisation depends on labour market policy settings – overly strict employment protection tends to strengthen the link between the introduction of new technologies and greater polarisation, whereas strong unions and a higher minimum wage tend to weaken that link.

An integrated policy strategy is needed to better share the benefits of globalisation and new technologies

An integrated policy strategy spanning product market competition and financial market regulation, in addition to labour market policies, is required to address the labour market concerns underlying the backlash against globalisation. This strategy will need to foster job creation, by better harnessing the potential gains from trade, while also ensuring

that all workers have the resources and support they need to successfully navigate the ongoing transformation of the labour market and benefit from the opportunities opened up by new technologies and deepening international economic integration. The new OECD Jobs Strategy – which was requested by OECD ministers at their meeting in 2016 and will be put to member governments for their endorsement in 2018 – will provide such a comprehensive framework. Work is already well under way and this *Outlook* presents the conceptual framework for the new Jobs Strategy. This framework stresses the need to analyse labour market policy strategies in terms of their ability to improve a broad range of outcomes that encompass many of the concerns underlying the backlash against globalisation, namely: i) the quantity but also the quality of jobs; ii) labour market inclusiveness; and iii) labour market resilience and adaptability.

The new Jobs Strategy will provide a comprehensive framework for responding to the concerns underlying the backlash against globalisation and achieving good labour market performance more generally. However, the devil is in the details and the challenge will be to identify the concrete policy steps that will be needed to achieve the desired results. The rest of this editorial fills in some of these policy details, drawing on results presented in this publication, while also signalling areas where further research is needed.

Help workers to build the right skills and adapt them during their working lives

One key to helping workers navigate a rapidly transforming labour market is to enable them to build the right skills and adapt these throughout their working lives in response to new demands. This is not a new challenge, but one that has gained even more importance because of the rapid pace of change in the skills demanded in many if not all occupations. Education and training systems need to better assess changing skill needs in order to adapt curricula and guide students towards choices that lead to good labour market outcomes. Even when workers have sufficient skills, inefficient use of their skills or skills mismatches result in lower productivity and pay. Promoting the use of high-performance work practices (e.g. team work, job rotation, bonus pay and flexibility in working hours) can play a crucial role in improving skill use on the job, while more effective recognition of skills learned informally at work (e.g. via credentialing) can reduce mismatch. Another priority is to reduce the number of workers lacking basic digital skills, both by ensuring that initial education provides these skills to all future labour market entrants and by expanding opportunities for existing workers to acquire these skills and participate in lifelong learning more generally. This is a daunting challenge in all countries – the OECD Survey of Adult Skills shows that more than 50% of the adult population in OECD countries can only carry out the simplest set of computer tasks, such as writing an email and browsing the web, or have no ICT skills at all. At the same time, despite the increasing need for workers to adapt their skills in the face of structural transformations, low- and medium-skill workers are the least likely to receive training in all OECD countries, even though they may be facing the greatest risk of job loss. This is partly the reflection of limited opportunities offered to these groups, and partly the result of lower returns on training, which weaken incentives for workers' participation.

Scale-up active employment programmes for laid-off workers and adapt social protection to the emergence of new forms of work

A second policy priority is to adapt activation and social protection policies so that they can more effectively assist workers to cope with economic changes that are potentially disruptive. Doing so will not change the basic principles of activation and social protection,

but it will require them to be organised and applied in new ways. It is particularly important to adapt social protection systems to rapid structural change and emerging forms of employment, potentially by making entitlements more portable from one job to the next or by making it easier to cumulate contributions from multiple jobs. It is also necessary to more effectively assist workers who lose their jobs due to economic change to move from declining sectors and occupations to the sectors and occupations where new jobs are being created. Some of the most successful examples of re-employment assistance for these workers are those – such as Job Security Councils in Sweden – where the social partners play an active role in providing adjustment assistance to workers who will be laid-off, tailoring the assistance offered to the specific needs of the affected workers and beginning to deliver that assistance during the notification period prior to the workers becoming unemployed.

Collective bargaining can contribute to worker-friendly adjustments to potentially disruptive change

While labour market adaptability depends, in considerable part, on providing individual workers with the skills and other resources they need to navigate a rapidly evolving labour market, it also requires employers and workers to collaborate in adapting to changing conditions. In particular, labour market adjustment to structural change is likely to proceed more smoothly and leave fewer workers behind if trade unions or other forms of worker representation allow workers' interests to be taken more fully into account. This edition of the *Employment Outlook* provides an exceptionally rich overview of collective bargaining institutions and practices, as they function today. Profound changes in the process of collective representation and negotiation have occurred over the past decades, in response to technological and organisational changes, globalisation, the decline of the manufacturing sector, the emergence of new forms of work and population ageing. In many OECD countries, these factors – sometimes in combination with important policy reforms – have led to a decentralisation of collective bargaining. Decentralisation, together with a long-standing decline in union membership rates and increasing individualisation of employment relationships, has severely tested the relevance and functioning of collective bargaining systems in some countries, even as effective forms of co-ordination, including multi-level bargaining, have emerged in others. At the same time, new forms of social dialogue, collective organisation and bargaining are emerging to meet the challenges posed by new forms of work.

A resilient labour market is also a necessity

The economic crisis of 2008 illustrates the importance of fostering labour market resilience, that is, the capacity of the labour market to withstand temporary adverse shocks. Resilience is related to, but distinct from, the adaptability of labour markets to secular trends such as digitalisation and globalisation. The important role of international financial markets in causing and propagating the crisis also illustrates how deepening globalisation can create high volatility and hence undermine worker well-being, if economic policy does not react appropriately.

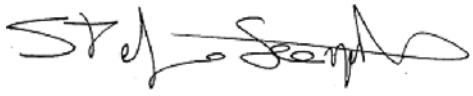
Almost all OECD countries experienced a significant rise in unemployment in the wake of the crisis, but the size and persistence of that increase varied dramatically across countries. For example, unemployment rose less sharply in countries where the adverse shock to aggregate demand was absorbed to a greater extent by wage moderation and reductions in hours worked, an adjustment pattern that is more common in countries where

collective bargaining is either quite centralised or effectively co-ordinated. While the OECD average unemployment rate is now back to its pre-crisis level, it remains well above this level in a number of countries, including those with deeply segmented labour markets and a weak capacity to respond to the rise in unemployment because of insufficiently developed employment policies or severe budget constraints. Even in most of the countries where the post-crisis increase in unemployment has fully reversed, productivity growth remains depressed, resulting in lower wage growth than would have occurred if the pre-crisis trend had continued. To some extent, resilience in unemployment (i.e. the absence of a long-lasting effect through a rise in the structural rate of unemployment) may have been achieved at the cost of some reduction in job quality.

Policy choices can make a contribution to enhancing labour market resilience. Large gaps in employment protection between permanent and temporary contracts can reduce resilience, while collective bargaining – provided it is quite centralised or co-ordinated – can increase resilience. There is a need for a whole-of-government approach to achieving labour market resilience. In particular, expansionary fiscal policy during economic downturns can play a key role in shoring up the economy and, hence, also the labour market. Counter-cyclical fiscal policy is particularly effective at limiting the rise in unemployment during a downturn, when it takes the form of public investment and expanded spending on active labour market programmes.

The road ahead

The key remaining challenge in developing the new OECD Jobs Strategy is to map different policy choices against the different aspects of national labour market performance and then to identify the most effective policy packages to achieve inclusive growth in each country. As is illustrated by the labour market performance scoreboard presented in this *Outlook*, the starting point for meeting this challenge differs widely across OECD economies and these differences will affect policy priorities. The resulting policy guidelines will also need to be forward looking and reinforce the adaptability and resilience of labour markets. If this is the case, then the new Jobs Strategy could go some way towards assuaging the legitimate concerns fuelling the backlash against globalisation and hence contribute to a less divisive political environment, while also promoting better labour market performance.



Stefano Scarpetta,
OECD Director for Employment,
Labour and Social Affairs

Acronyms and abbreviations

AI	Artificial intelligence
ALMP	Active labour market programme
CPS	Current Population Survey
CPS MORG	Current Population Survey Monthly Outgoing Rotation Group
EPL	Employment protection legislation
EU KLEMS	Statistical and analytical research project financed by the European Commission
FVA	Foreign value added
GDP	Gross domestic product
GVC	Global value chain
HPWP	High-performance work practice
ICIO	OECD Inter-Country Input-Output
ICT	Information and communication technology
IDD	OECD Income Distribution Database
ISCO	International Standard Classification of Occupations
ISIC	International Standard Industrial Classification of All Economic Activities
LFS	Labour Force Survey
MOOC	Massive open online course
NAIRU	Non-accelerating inflation rate of unemployment
OER	Open educational resource
PIAAC	International Survey of Adult Skills
PPP	Purchasing power parity
RBTC	Routine-biased technological change
R&D	Research and development
SES	European Union Structure of Earnings Survey
SME	Small and medium-sized entreprise
TiVA	Trade in value added
UB	Unemployment benefit
WTO	World Trade Organization

Executive summary

Employment policy must address the concerns underlying the populist backlash against globalisation

While an expanding majority of OECD countries have finally closed the massive jobs gap that opened during the Great Recession of 2008-09, people in a number of countries are expressing rising dissatisfaction with core economic policies, including the promotion of international trade and investment. The populist backlash against globalisation challenges the policy advice offered by international organisations like the OECD, which have long emphasised the benefits of global integration. In view of the growing scepticism about policy orthodoxy, it is important to reassess economic policy stances, including which choices labour market policy makers have got more or less right and which they have got wrong and where a change of approach is required. While a definitive assessment is not yet available, it is already clear that many of the concerns underpinning the backlash against globalisation and trade are real and that they highlight areas where employment, skills and social protection policies need to be reinforced and adapted to a changing economic environment.

Labour market performance needs to be understood broadly

Labour market policy choices should be assessed in light of the many ways that employment outcomes affect well-being. Labour market performance has often been judged primarily in terms of employment and unemployment rates, because these are important outcomes and easily measured. However, other labour market outcomes also matter and can also be measured. These include job quality (pay, security, working environment) and the inclusiveness of the labour market (income equality, gender equality, employment access for potentially disadvantaged groups). This edition of the *OECD Employment Outlook* contains a new comparative scoreboard of labour market performance encompassing job quantity, job quality and labour market inclusiveness that provides a rich overview of the strengths and weaknesses of different national labour markets. It shows that during the past decade, the majority of OECD countries managed to better integrate women and potentially disadvantaged groups into the labour market and improve the quality of the working environment, whereas the unemployment rate and earnings quality were more or less stable, and labour market security and the low income risk worsened. The scoreboard also shows that there is a group of countries that score well on most or all indicators, implying that there are no hard trade-offs that prevent countries from performing well in all areas.

Labour market resilience in the wake of the crisis differed greatly across OECD countries

The Great Recession was a severe stress test for OECD labour markets. The OECD unemployment rate has returned to close to its pre-crisis level, but the unemployment cost of the Great Recession has nonetheless been very large and long lasting in a considerable

number of countries. Moreover, as the recovery in output has been weak relative to the recovery in employment, labour productivity and wage growth remain low. Sound macroeconomic and labour market policies are important determinants of labour market resilience. Macroeconomic policies are highly effective in limiting employment declines during economic downturns and preventing cyclical increases in unemployment from become structural. Spending on active labour market policies needs to respond strongly to cyclical increases in unemployment to promote a quick return to work in the recovery and preserve the mutual-obligations ethos of activation regimes. Overly strict employment protection for regular workers reduces resilience by promoting the use of temporary contracts and slowing job creation in the recovery. Co-ordinated collective bargaining systems can promote resilience by facilitating wage and working-time adjustments.

Technological change and globalisation are transforming labour markets

The *Outlook* examines the impact of technological progress and globalisation on OECD labour markets over the past two decades, focusing on job polarisation and de-industrialisation. Both are associated with severe disruption in workers' lives and rising inequality, and uncovering their root causes is of fundamental importance for policy. Almost all OECD countries have experienced occupational polarisation during recent decades – that is, a decline in the share of total employment attributable to middle-skill/middle-pay jobs – which has been offset by increases in the shares of both high- and low-skill jobs. About one-third of the rise in polarisation reflects a shift in employment away from manufacturing and towards services, while the larger part reflects occupational shifts within industries. Technology displays the strongest association with both polarisation and de-industrialisation. The role of globalisation is less clear cut, but there is some indication that international trade has contributed to de-industrialisation. Skills policies, activation measures and up-to-date social protection systems can play a key role in helping workers to successfully navigate the ongoing transformation of the labour market and reap the benefits of technological progress.

Collective bargaining is evolving quite rapidly in OECD labour markets

To assess whether collective bargaining is maintaining its efficacy in the context of rapidly changing labour markets, this *Outlook* includes a comprehensive and up-to-date review of collective bargaining systems for OECD countries and a selected group of emerging economies that are in the process of accession to the OECD. Comparable estimates of membership to trade unions and employer organisations as well as collective bargaining coverage indicate that collective bargaining still has an important role, although the share of workers whose terms of employment are set through collective bargaining fell during the past three decades. There has also been a trend toward more decentralised bargaining, with firm-level bargaining tending to expand at the expense of sectoral or national bargaining, often through mechanisms such as derogations and opt-out clauses that allow lower-level negotiators to deviate from terms set at higher levels of bargaining. The different ways that decentralised bargaining can be co-ordinated, the effective level of contract enforcement and the multiple types of worker representation that can be present within firms also play important roles in collective bargaining. The overall quality of labour relations, as assessed by senior executives or as indicated by the public's level of trust in trade unions, varies markedly across OECD countries, but is not found to be linked to any specific model of bargaining. A summary comparison of national collective bargaining systems illustrates how the different aspects of collective bargaining in a country fit together into an interconnected whole.

Chapter 1

How are we doing? A broad assessment of labour market performance

This chapter develops a framework for assessing labour market performance and applies it to OECD countries and a number of emerging economies. The framework is multi-dimensional and is intended to help guide the reassessment and updating of the OECD Jobs Strategy. The framework covers not only the quantity and quality of jobs, but also different aspects of labour market inclusiveness, a topic that has received less attention from researchers. After a short review of the key indicators of the quantity and quality of jobs, the chapter analyses the measurement of labour market inclusion in much greater detail. In particular, three complementary indicators of different aspects of inclusiveness are proposed, namely, the low income rate for the working-age population, the gender gap in labour income, and the employment gaps for five disadvantaged groups. The performance of a number of countries shows that it is possible to do well in creating more and better jobs that benefit all segments of society.

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.

Key findings

This chapter assesses labour market performance in OECD countries, along with countries in the process of accession to the OECD (Costa Rica, Colombia and Lithuania), and key partner countries (Argentina, Brazil, China, India, Indonesia and South Africa). Performance is measured along a number of dimensions encompassing the quantity and quality of jobs that are available and the overall inclusiveness of the labour market in providing good employment opportunities for all. It uses a measurement framework developed as part of the new OECD Jobs Strategy.[1]

Key findings include:

- The short-term labour market outlook for OECD countries is subdued yet generally favourable. Employment and unemployment rates are expected to continue to slowly improve in most OECD countries in the context of moderate growth. The OECD average unemployment rate is projected to inch downwards from 6.2% in Q4 2016 (39 million unemployed persons) to 5.7% in Q4 2018. While employment is projected to grow at an annualised rate of just over 1%, a considerable part of this growth will be absorbed by rising labour force participation, muting the impact in lowering the unemployment rate. Nevertheless, ten years after the onset of the global financial and economic crisis, the unemployment rate for the OECD area will have returned to approximately its pre-crisis level, while the employed share of the working-age population will be moderately higher.
- Despite these positive developments, not all segments of society are benefitting from the labour market recovery. A broader and deeper benchmarking of labour market performance is needed, going beyond aggregate developments in employment and unemployment. Therefore this chapter presents a conceptual framework that has been developed for the new OECD Jobs Strategy which defines labour market performance along three dimensions: the quantity and quality of employment (dimension 1); labour market inclusiveness (dimension 2); and resilience and adaptability (dimension 3). This chapter presents the framework and a performance scoreboard showing how countries compare based on the first two dimensions. The performance scoreboard will be updated regularly to monitor future progress in improving labour market performance.
- The three indicators adopted for the quantity of jobs are the overall employment rate, the full-time equivalent employment rate and the unemployment rate, all of which have long served as key measures of labour utilisation. The three indicators adopted for job quality are taken from the OECD Job Quality framework that was first presented in the *2014 Employment Outlook* and subsequently adopted also by the G20. These are the indicators for earnings quality, labour market security and the quality of the working environment. As proposed in the *2015 Employment Outlook*, an alternative measure of the quality of the working environment is also considered, so as to allow better coverage of emerging economies.

- The chapter develops a new measurement framework for labour market inclusiveness that captures the multi-dimensional character of this concept while being operational. Three inclusiveness indicators are proposed:
  - The low income rate for the working-age population;
  - The gender gap in labour income;
  - The average employment gap for five disadvantaged groups.
- The three indicators, each, for the quantity of employment, job quality and labour market inclusiveness are combined in a scoreboard of labour market performance. Based on data for 2015 and changes in those indicators over the previous decade (i.e. since the last reassessment of the Jobs Strategy in 2006), the following elements emerge:
  - Countries do not face strong trade-offs between performing well in one dimension and less well in another. For example, high rates of employment do not come at the expense of job quality. Generally, most countries perform at a similar level (in terms of their cross-country ranking) across the nine performance indicators. Nonetheless, there are a few notable exceptions where certain countries perform very well on some indicators and near the bottom of the distribution on others.
  - The Nordic countries score relatively well on most or all indicators along with Switzerland, while Germany and the Netherlands score in the upper third of the distribution on more than one-half of the indicators. Among the OECD countries scoring in the bottom third of the distribution on the majority of indicators are a number of Mediterranean (Greece, Italy, Spain and Turkey) and Latin American (Chile and Mexico) countries. Belgium, Korea, Japan and several Central European countries combine strong performance in several areas with much weaker performance in other areas.
  - Over the past decade, the deep and prolonged economic crisis led to a worsening of labour market security that has not yet fully reversed and low income rates increased. At the same time, however, most countries managed to narrow the gender labour income gap, better integrated disadvantaged groups into the labour market and raised the quality of the working environment, while earnings quality was more or less stable. Those European countries that were badly hit by the financial crisis and had to exercise significant fiscal restraint experienced worsening performance in many indicators. By contrast, Germany, Israel and Poland stand out for having achieved significant improvements along at least five of the nine performance dimensions, while being approximately stable along the other dimensions. Finally, many Anglo-Saxon countries are characterised by the stability of their performance over time.

Introduction

The OECD is currently reviewing and expanding its Jobs Strategy, a comprehensive set of employment policy guidelines for national governments. A precondition for analysing labour market policy choices is to accurately assess labour market performance. This, in turn, requires a conceptual framework for measuring performance in order to study how outcomes are affected by policy choices and the changing economic, technological and demographic context. In order to meet this need, this chapter develops such a framework and applies it to assess recent labour market performance in OECD countries, along with accession and key partner countries.

This chapter is organised as follows. Section 1 provides a brief overview of aggregate labour market conditions, both current conditions and the short-term outlook according to OECD projections. However, this only provides a very partial picture of labour market performance and therefore the rest of the chapter focusses on the presentation and empirical application of a measurement framework capable of providing a broader and more detailed analysis which can inform the reassessment and updating of the OECD Jobs Strategy. Section 2 presents the conceptual framework that has been adopted for the new Jobs Strategy. The framework adopts a multi-dimensional concept of labour market performance that encompasses the quantity and quality of employment, labour market inclusiveness, and the resilience and adaptability of labour markets. Section 3 continues with a succinct review of the key indicators of the quantity and quality of jobs, which are already well established in the policy research literature. Section 4 then analyses the measurement of labour market inclusion, which has hitherto received relatively little attention from researchers.[2] Three complementary indicators of different aspects of inclusiveness are proposed. Section 5 pulls together the material in Sections 3 and 4 by proposing a scoreboard of nine labour market indicators that, taken together, provide a broad yet relatively parsimonious overview of labour market performance. Another advantage of the scoreboard is that it can be easily updated so as to monitor future progress in improving labour market outcomes. A short concluding section considers next steps.

1. Current labour market conditions and the short-term outlook

Global growth is set to improve modestly thanks to an upturn in investment, trade and manufacturing output. After having averaged only about 3% per year during 2012-16, real global GDP growth is projected to pick up modestly to 3.6% in 2018, mostly due to improving growth prospects of several non-OECD G20 countries, including Brazil and Russia (OECD, 2017d). Real GDP growth in the OECD area was just 1.8% in 2016 and is projected to rise only to 2.1% in 2018 (see Table 1.A1.1 in the online annex at OECD, 2017b). While this modest recovery remains vulnerable to financial risks and policy uncertainty, the baseline OECD projection implies a continuation of the slow improving trend in labour market conditions, albeit with considerable variation across countries.

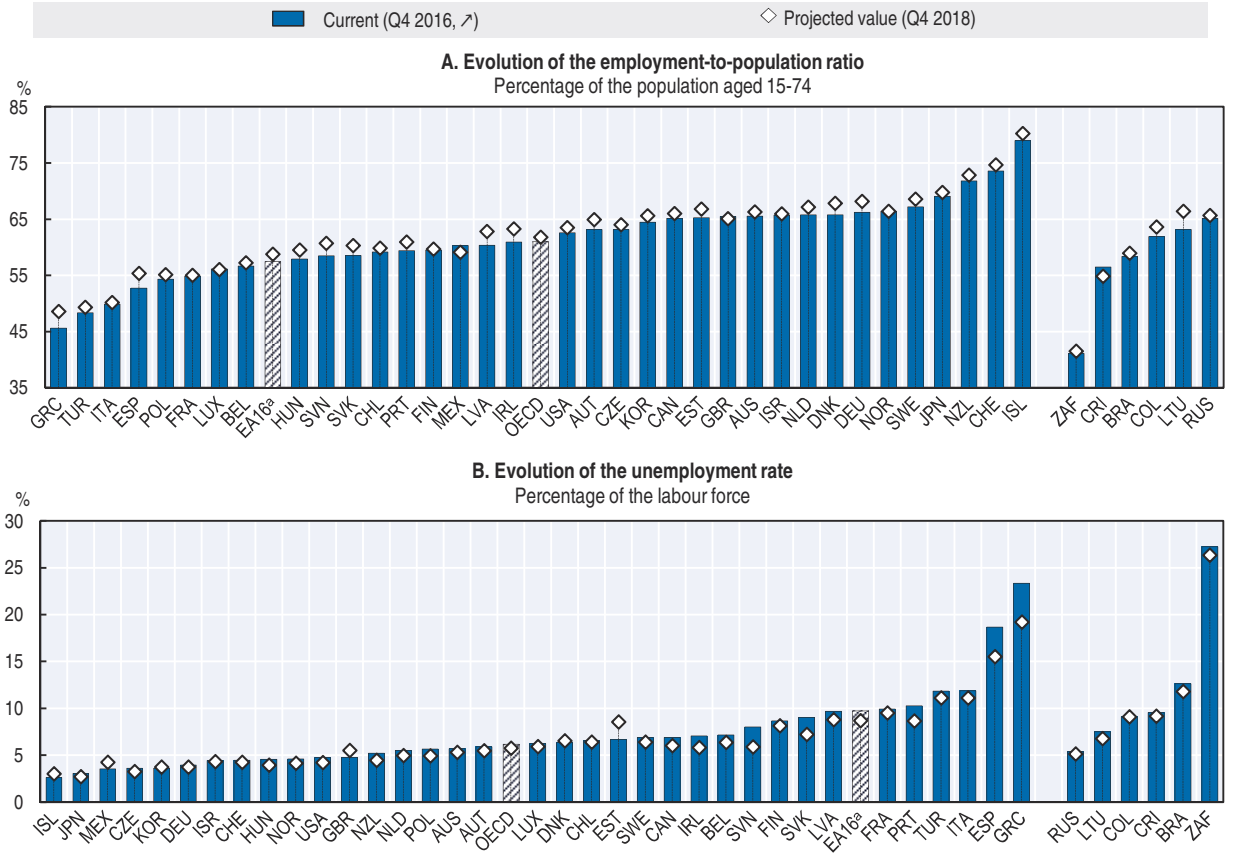
The broad-based, but slow, economic recovery was reflected in employment growth in 2016 of 1.6% for the OECD area and somewhat more rapid growth of 1.8% in the euro area (see Table 1.A1.1 in the online annex at OECD, 2017b). The employed share of the population aged 15 to 74 years rose for the third consecutive year in 2016, reaching 61% in the fourth quarter of 2016, placing it above its business-cycle peak in Q4 2007 (60.8%). It is expected to increase further over the next two years to reach 61.8% by Q4 2018 (Figure 1.1, Panel A). Employment rates range from below 55% in Greece, Italy, Spain and Turkey to more than 70% in Iceland, New Zealand and Switzerland – and these differences are not projected to diminish much in the next two years.

Another indication of improving labour market conditions is the decline in the OECD average unemployment rate to 6.2% in the fourth quarter of 2016, corresponding to 39 million unemployed persons (Figure 1.1, Panel B). Unemployment rates were below 4% in the Czech Republic, Iceland, Japan, Korea and Mexico, and below 5% in a further eight OECD countries (see Table 1.A1.2 in the online annex at OECD, 2017b). By contrast, the unemployment rate was 23.4% in Greece and 18.7% in Spain, and also exceeded 10% in Italy, Portugal and Turkey, although it has been falling in all of these countries except

Turkey. The OECD average unemployment rate is projected to decline further to 5.7% by the last quarter of 2018, which is slightly above its value in Q4 2007 (5.6%).[3] The improving unemployment situation is likely to lead to a reduction in the incidence of long-term unemployment, which still represented nearly one in three unemployed persons in the OECD area the fourth quarter of 2016.

Figure 1.1. **The slow improvement of labour market conditions is projected to continue in a large number of OECD countries**

Employment and unemployment rates, Q4 2016 and Q4 2018



Note: OECD and euro area are weighted averages.
a) Aggregate of 16 OECD countries of the euro area.
Source: OECD calculations based on *OECD Economic Outlook Database* (*https://stats.oecd.org/index.aspx?DataSetCode=EO*).

StatLink http://dx.doi.org/10.1787/888933477637

2. Towards a broad assessment of labour market performance

Despite these positive developments, not all segments of society are benefitting from the ongoing labour market recovery. A broader and deeper assessment of labour market performance is needed which goes beyond aggregate employment and unemployment. Therefore, this section presents the conceptual framework for measuring and assessing labour market performance that has been developed for the new Jobs Strategy. Section 3 then begins the analysis of performance indicators by reviewing the already widely accepted indicators that are available for job quantity and job quality. The more novel issue of measuring labour market inclusiveness is deferred to Section 4.

Labour market performance within the new OECD Jobs Strategy framework

The principal objective of the OECD Jobs Strategy is to promote policies and institutions that can foster sustained improvements in individual and societal well-being through stronger labour market performance, inclusiveness and economic growth. As such, the OECD Jobs Strategy is an integral part of the OECD Inclusive Growth initiative which focuses on "economic growth that creates opportunity for all segments of the population and distributes the dividends of increased prosperity, both in monetary and non-monetary terms, fairly across society" (OECD, 2015a, pp. 84-85). The new OECD Jobs Strategy will be a key pillar of the OECD Inclusive Growth initiative given that labour market outcomes are crucial for ensuring the strength but also the inclusivity and social sustainability of economic growth.

For the purposes of the new OECD Jobs Strategy, labour market performance is characterised along three complementary dimensions that are key for inclusive growth and well-being more generally (see Figure 1.1):

- *More and better jobs*. This captures the current labour market situation in terms of both the quantity of jobs (e.g. employment, working time) as well the quality of jobs by taking account of the three dimensions of the OECD Job Quality framework that are key for worker well-being: i) earnings quality; ii) labour market security; and iii) the quality of the work environment.
- *Inclusive labour markets*. This dimension focuses on the distribution of outcomes and opportunities across individuals and households. This includes the share of income going to labour, the distribution of individual earnings and household incomes, and differences in access to jobs and job quality outcomes between different socio-economic groups, with a focus on gender equality. It also includes dynamic aspects of inequality related to the prospects for social mobility and career advancement.
- *Adaptability and resilience*. This dimension relates to the effectiveness with which individuals and societies absorb, adapt to, and make the most out of, on the one hand, idiosyncratic, occupation/sector-specific and aggregate shocks, which arise as a result of economic crises, the continuous process of creation and destruction of jobs, firms and activities (creative destruction), and, on the other hand, long-term structural changes arising from a number of megatrends such as technological change, climate and demographic change and globalisation.

Table 1.1. **The framework for the new OECD Jobs Strategy**

Objective	Enhance inclusive growth and well-being		
Dimensions of labour market performance	More and better jobs	Inclusiveness	Resilience and adaptability
Policies	Labour market policies and institutions, and other structural and macroeconomic policies		

These three dimensions should be considered jointly when assessing labour market performance and the role of policies and institutions. The first two dimensions focus on current outcomes for individuals and their distribution. The third dimension contains a forward-looking element by focusing on the ability of workers and labour markets to withstand shocks and seize new opportunities. The experience of the recent global economic and financial crisis has highlighted the importance of fostering greater resilience to economic shocks (see Chapter 2 of this publication), while concerns about the labour market impacts of new technologies and globalisation (see Chapter 3 of this publication) underlie the importance of adaptability. More generally, adaptability and resilience are essential to ensure the sustainability of good labour performance in a constantly evolving world. They also help ensure that the labour market contributes to the achievement of sustained and inclusive growth.

The new OECD Jobs Strategy will identify the key policy packages that are required to obtain good labour market performance, defined in this manner. It will also build on and complement the other key strategies of the Organisation, including the OECD Growth Strategy, the OECD Skills Strategy, the OECD Innovation Strategy, the OECD Green Growth Strategy and the OECD Recommendations on Gender Equality, Mental Health and Ageing. However, the focus in this chapter is on the narrower question of how best to measure labour market performance as defined by this framework, albeit only as regards the first two of the three pillars of performance.[4]

3. The quantity and quality of employment

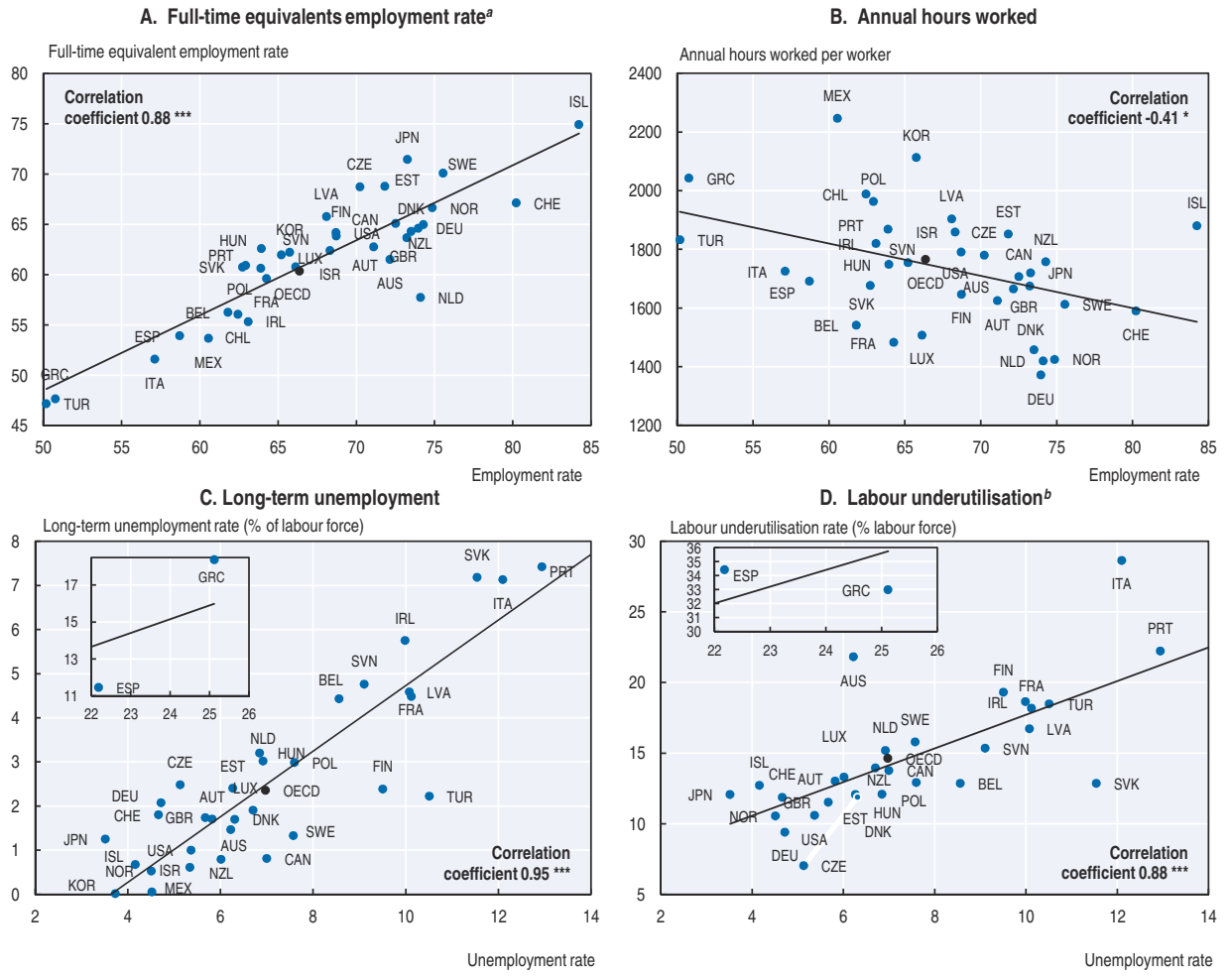
This section sets out a number of standard indicators to compare the performance of countries along the dimension of job quantity and job quality. The more novel and challenging issue of measuring labour market inclusiveness is discussed in the following section.

Jobs quantity

The most familiar goal of employment policies is to improve the quantity of jobs by promoting labour force participation and job creation. The two primary measures of employment quantity were already presented in Section 1, namely the employment and unemployment rates. The key question is whether these measures provide a sufficiently complete overview of the performance of the labour market in utilising the available potential labour supply. Figure 1.2 explores this question by juxtaposing the employment rate with two measures that take account of hours worked (Panels A and B) and the unemployment rate with two additional measures of labour market slack (Panels C and D). This simple exercise suggests the following conclusions:

- Data on hours worked provide an important supplement to the employment rate when benchmarking countries as regards their success in mobilising potential labour supply, since they take account of the intensity of employment. For example, Panel A shows that the employment rate is very similar in Japan and the Netherlands, but the full-time equivalent employment rate is considerably higher in Japan (71.5% as compared to 57.7%). Annual hours worked per worker is less strongly correlated with the employment rate than is the full-time equivalent employment rate and, thus, potentially offers more independent information (Panel B). However, a substantial part of the extra variation that this indicator adds reflects the tendency for annual working time to decrease as an economy develops and living standards improve. It follows that the relatively high hours

Figure 1.2. **Employment quantity and labour market slack, 2015**



Note: Correlation coefficient is statistically significant at 0.1% level (***), at 1% level (**) or at 5% level (*). Data for the OECD are weighted averages.

a) Employment rate in full-time equivalent units is defined as employment rate of the working-age population adjusted by a ratio of average usual weekly hours worked by all workers and average weekly hours worked by full-time workers (according to national definition of full-time employment).

b) The labour underutilisation rate is defined as the combined number of persons who are unemployed, marginally attached (i.e. persons not in the labour force who did not look for work during the past four weeks but who wish and are available to work) or underemployed (full-time workers working less than usual during the survey reference week for economic reasons and part-time workers who wanted but could not find full-time work), expressed as a percentage of the labour force.

Source: OECD calculations based on Labour Force Survey results (full-time equivalent employment rate and labour underutilisation) and the *OECD Employment Database* (*www.oecd.org/employment/emp/onlineoecdemploymentdatabase.htm*) for the remaining indicators.

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of annual employment in e.g. Mexico do not provide a useful benchmark for how well higher-income countries are utilising the available labour supply.[5] These considerations motivate the choice to add full-time equivalent employment rate as a third indicator of employment quantity.

- The unemployment rate is a good summary indicator of labour market slack. In particular, the overall unemployment rate is very strongly correlated with the incidence of long-term unemployment (a cross-country correlation coefficient of 0.95 in Panel C). While labour market programmes often need to devote particular attention to the long-term unemployed, cross-country differences in the overall unemployment rate in a

country provide a good proxy measure of differences in the risk of long-term unemployment. The same argument applies to labour utilisation (Panel D) – a broader indicator of labour market slack that supplements unemployment with several types of not too dissimilar joblessness (e.g. discouraged workers and other people of working age marginally attached to the labour force) and involuntary part-time employment – albeit not quite so strongly (correlation coefficient of 0.88). In the interest of parsimony, the unemployment rate is the only measure of labour market slack that will be retained in the labour market performance scoreboards.

Jobs quality

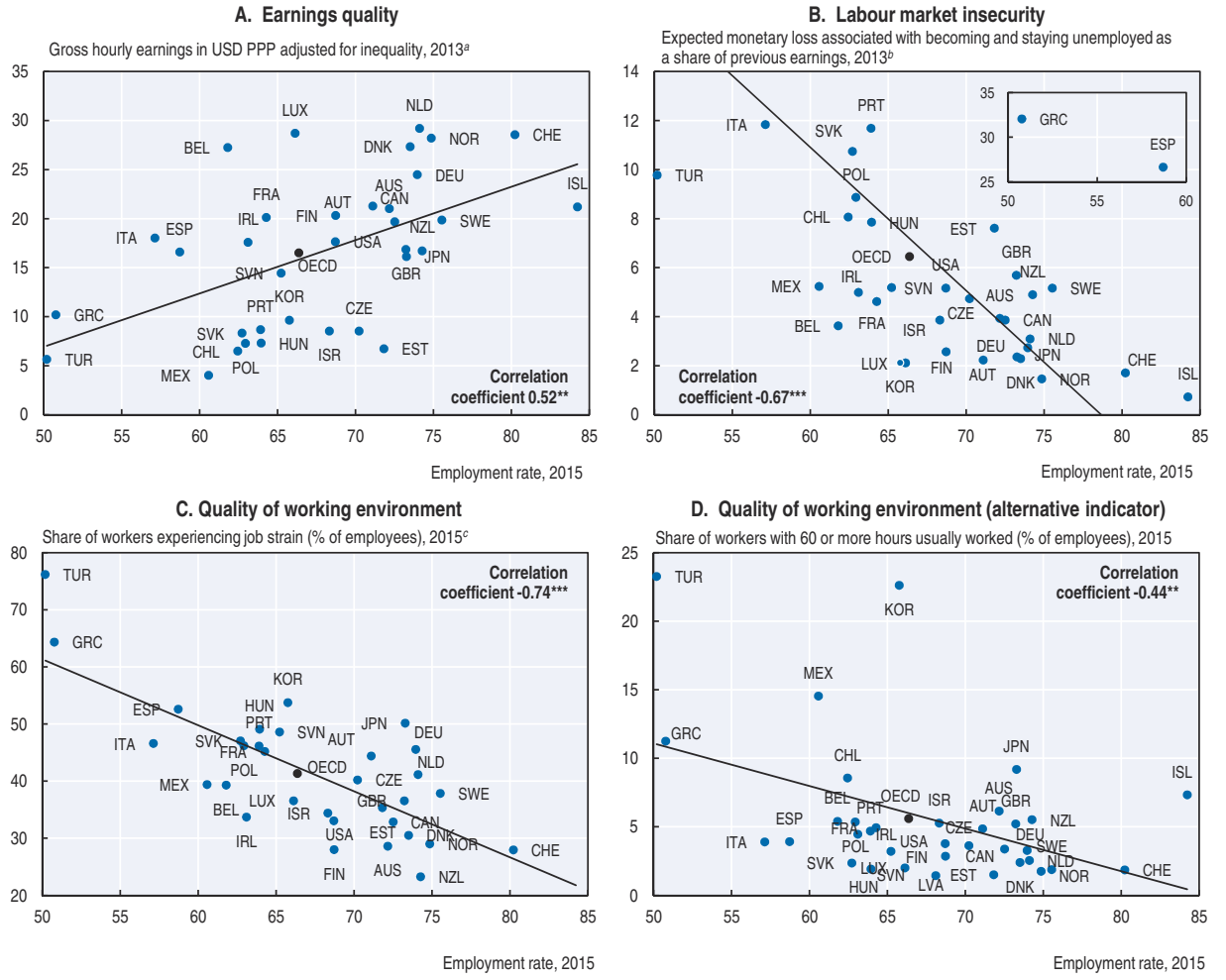
Job quality is an inherently multi-dimensional concept that refers to those job attributes that contribute to the well-being of workers. Building on the influential report by the Stiglitz-Sen-Fitoussi Commission (Stiglitz et al., 2009), which identified eight dimensions of well-being, the OECD Job Quality framework was developed (OECD, 2014). It is structured around three of those eight dimensions that are closely related to people's employment situation, namely material living standards, insecurity of an economic as well as physical nature, and personal activities including work. The development of the OECD Job Quality framework led to the construction of indicators for each of these dimensions, drawing on the existing literature in economics, sociology and occupational health, as well as pragmatic considerations of obtaining measures that could be easily obtained for most countries and were available at the individual level (Cazes et al., 2015). Since this framework has been widely endorsed (for example, by the G20 at the summit in Ankara in September 2015), it is also adopted here as a key component of the labour market performance measurement framework for the new Jobs Strategy.

The OECD Job Quality framework measures job quality along three dimensions:

- *Earnings quality*. Earnings quality refers to the extent to which the earnings received by workers in their jobs contribute to their well-being by taking account of both the average level as well as the way earnings are distributed across the workforce.
- *Labour market insecurity*. Labour market insecurity measures the risk of unemployment (the risk of becoming unemployed and the expected duration of unemployment) and the degree of public unemployment insurance (coverage of benefits and their generosity).
- *The quality of working environment*. The quality of working environment captures non-economic aspects of job quality and measures the incidence of job strain that is characterised by a combination of high job demands and few job resources to meet those demands. The incidence of very long hours of work is also used as an alternative indicator of the quality of the working environment since the data required to measure job strain are not available in most emerging economies (OECD, 2015d).

Figure 1.3 shows that the quality of jobs, as measured along all three dimensions, varies greatly across countries.[6] Figure 1.3 also juxtaposes the four job quality indicators with the employment rate of the working-age population. Overall, higher employment rates are associated with better job quality,[7] suggesting that there is no necessary trade-off between the quantity and quality of jobs.[8] Despite this positive association, there tends to be a high variability of job quality levels among countries with similar employment levels. For example, Estonia and Denmark have similar employment rates, but earnings quality is much higher in Denmark.

Figure 1.3. **Employment and the components of job quality**



Note: Correlation coefficient is statistically significant at 0.1% level (***), at 1% level (**) or at 5% level (*). Data for the OECD are unweighted averages for job quality measures and a weighted average for the employment rate.

a) Data refer to 2013 except for Estonia, Luxembourg, the Netherlands and Turkey (2010); Israel (2011); France, Italy, Poland, Spain, Sweden and Switzerland (2012) and Canada, the Czech Republic, Hungary, Korea, Mexico, Norway, the Slovak Republic, the United Kingdom and the United States (2014).

b) Data refer to 2013 except for Chile (2011).

c) Data refer to 2015 except for Australia, Canada, Israel, Japan, Korea, Mexico, New Zealand, Switzerland and the United States (2005) and Norway and Turkey (2010). No data available for Chile and Iceland.

Source: OECD calculations based on the *OECD Job Quality Database*, *www.oecd.org/statistics/job-quality.htm* and the *OECD Employment Database*, *www.oecd.org/employment/emp/onlineoecdemploymentdatabase.htm*.

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4. Labour market inclusiveness

While it is widely agreed that labour market inclusiveness represents a key component of labour market performance, there is no commonly agreed upon framework for measuring and assessing inclusiveness. Therefore, this section proposes three summary indicators of labour market inclusion that are intended to facilitate comparative assessments of performance, both internationally at a point in time and over time within the same country. As with job quality, a multi-dimensional approach is adopted that focusses on three important aspects of how successfully a national labour market fosters full and equal participation of all groups in the working-age population as well as access to good job

opportunities.[9] The three indicators are: i) the share of the working-age population with incomes below 50% of median income; ii) the gender gap in labour income; and iii) the gap in employment rates between selected disadvantaged groups and prime-age men. Each of these dimensions is discussed in turn.

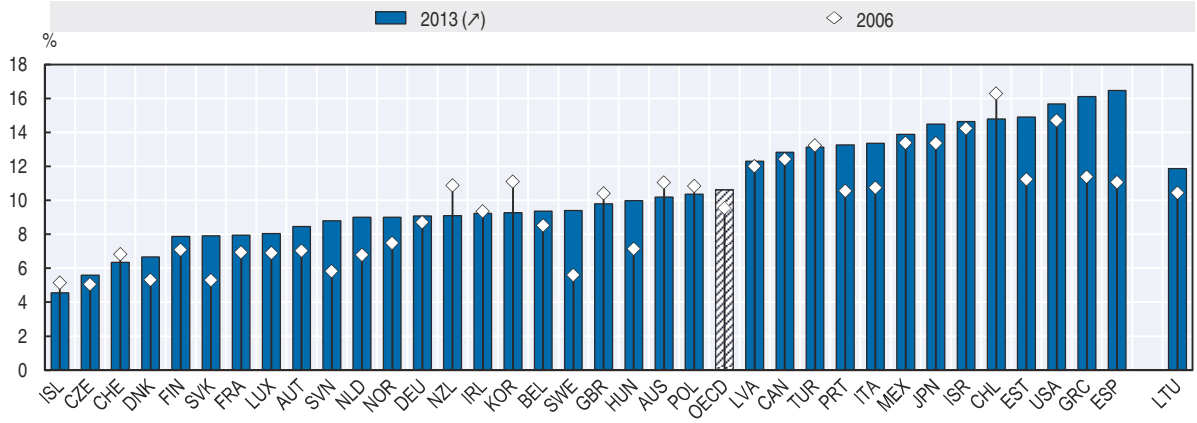
Income disparities in the working-age population remain high

An inclusive society should ensure that every person of working age has a fair chance to benefit from labour market opportunities. Since labour income – along with unemployment and related out-of-work transfers and the taxation of employment-related income – is a key determinant of household disposable income for the working-age population, particularly for those with lower incomes (see e.g. OECD, 2011), an inclusive labour market can make an important contribution to assuring that everyone receives a fair share of the fruits of economic growth. This suggests that one important characteristic of an economy with an inclusive labour market is that the income share commanded by those at the bottom of the distribution will not be too low and relatively few working-age persons will have disposable incomes that lie far below the median income. In the present framework, low income is defined as below 50% of the median. Household disposable income is preferred here to before-tax income since unemployment benefits and related out-of-work transfers, and the taxation of employment-related income are key elements of labour market policy that have a key direct impact on inclusiveness. Alternative measures of the incidence of low income based on household market income or individual labour income are presented in online Annex 3.A2 (OECD, 2017b) and shown to be strongly correlated with the measure retained here.[10]

Figure 1.4 shows that, on average in the OECD area, 10.6% of people of working age had equivalised disposable household income[11] lower than 50% of the median in 2013. This percentage – which will be called the *low income rate*[12] in the remainder of this chapter – rose between 2006, when it was 9.5%, and 2013, probably due in part to the global financial

Figure 1.4. **Dispersion of the bottom end of the disposable income distribution**

Share of low income persons of working age, 2006[a] and 2013[b]



Note: Countries are sorted in order of inclusiveness in 2013 (i.e. best performer on the left). Data for the OECD is an unweighted average.

a) Data refer to 2006 except for New Zealand (2003); Australia, Germany, Mexico, Norway and Sweden (2004); France, Hungary, Israel, Switzerland and the United States (2005).

b) Data refer to 2013 except for Japan and New Zealand (2012); Australia, Finland, Hungary, Korea, Mexico, the Netherlands and the United State (2014).

Source: OECD calculations based on the *OECD Income Distribution Database* (IDD), *http://oe.cd/idd*.

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crisis.[13] The OECD average low income rate, however, masks wide cross-country differences in any given year and, in some cases, diverging trends. Among the best performers, the low income rate is below 7% in the Nordic countries, such as Iceland and Denmark, as well as in the Czech Republic and Switzerland. At the other extreme, more than 15% of the working-age population experience relatively low incomes in Greece, Spain and the United States. The low income rate increased by more than half a standard deviation in 15 of the 35 OECD countries, while decreasing by at least half a standard deviation in only Chile, Korea and New Zealand.[14]

In sum, inclusiveness in the sense of minimising low income exposure and intensity varies considerably across OECD countries and the share of working-age persons with disposable household incomes below 50% of the median provides a good indicator of this dimension of labour market inclusiveness.

Having more and better jobs is often the best way to avoid that people are left behind…

Access to good-quality employment is a major factor limiting the low income risk faced by households with a head of working age. In all countries, the low income rate among workless households – defined as households in which no member spent time in gainful employment during the survey year – is many times higher than the rate observed among households with at least some work during the year (Figure 1.5, Panel A). For example, the OECD average low income rate for workless households was 45.2% in 2013, as compared to 7.1% for households with at least some work.[15] Moreover there is quite a strong negative cross-country correlation between employment rates and low income rates (Figure 1.5, Panel B). Taken together, these two facts clearly suggest that having a job is often the best antidote to poverty.

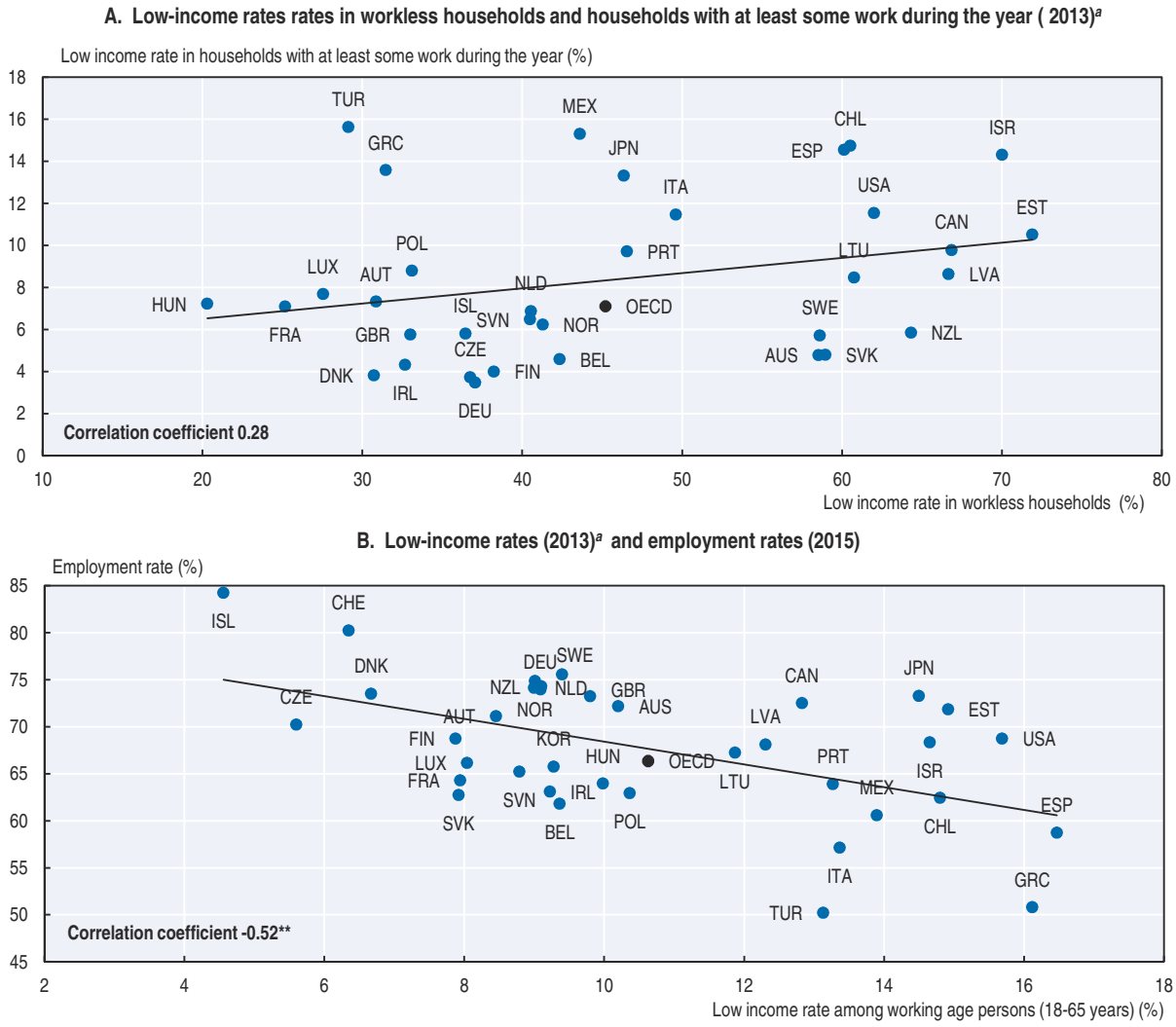
… but countries with similar employment rates may still have very different incidences of low income

However, high employment rates per se are no guarantee of greater inclusiveness, because many other factors also influence the disposable incomes of working-age households (e.g. the level of wage inequality, household structure and the tax/benefit system). Figure 1.5 illustrates the importance of these other factors. For example, the employment rates in Panel B are similar in the United States and Finland, but the low income rate is twice as large in the former country. The extent to which accessing some work reduces the risk of low household income also varies dramatically across countries in Panel A. For example, the low income risk for workless households is similar in Denmark and Turkey, but the low income rate for in-work households is far higher in Turkey. Similarly, the low income rate for in-work households is only a little higher in New Zealand than in Denmark, but is far higher for workless households. Equalising the access to employment is only one of the preconditions for lowering the risk of low incomes.

Gender disparities in labour income are decreasing but remain considerable

An inclusive labour market should also offer equal opportunities to men and women (OECD, 2013). The size of the gender gaps in employment rates, hours worked and hourly earnings are thus important indicators of the degree of labour market inclusion. The combined effect of gender disparities along all three of these dimensions is summarised by the gender gap in labour income, which is presented in Figure 1.6, Panel A. This gap is computed as the difference between men and women of their total before-tax annual

Figure 1.5. **Employment and low income rates**



Note: Correlation coefficient is statistically significant at 0.1% level (***), at 1% level (**) or at 5% level (*). Data for the OECD are unweighted averages.

a) Data refer to: 2012 for Iceland (Panel A only), Japan and New Zealand; 2014 for Australia, Finland, Hungary, Korea (Panel B only), Mexico, the Netherlands and the United States.

Source: OECD calculations based on data from the *OECD Income Distribution Database* (IDD), *http://oe.cd/idd*, and the *OECD Employment Database*, *www.oecd.org/employment/emp/onlineoecdemploymentdatabase.htm*.

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labour income – including self-employment income.[16] Labour income for both men and women is expressed in a per capita basis for persons of working age and the gender difference in these values is expressed as a percentage of the average per capita labour income of men.[17]

Gender gaps are falling in virtually all OECD countries. And this fall is significant: in 12 OECD countries, the gender gap in per capita labour income in 2014 is more than half of a standard deviation lower than it was in 2006. However, the gender gap in per capita labour income remains considerable in 2014, close to 40% on average. Nordic and Eastern European countries perform relatively well, with this gap being as low as 22% in Finland and Latvia. By contrast, gender gaps in labour income per capita are much larger in Greece and the Netherlands, as well as in German-speaking, Latin American and, especially,

Eastern Asian countries, where they can be as large as 60%. These gaps are much larger than the more familiar gender wage gap, as published in the Statistical Annex of the *OECD Employment Outlook* (available online at OECD, 2017a). This difference illustrates how gender differences in employment rates and hours of work reinforce the impact of the gender wage gap in depressing the labour income of women relative to that of men.

In order to shed some light on the relative importance of different components of the gender gap in labour income, Panels B, C and D of Figure 1.6 show gender gaps in earnings of full-time employees, employment rates, and usual weekly hours worked per worker on the main job, respectively.[18] There is considerable heterogeneity in the sources of gender disparities among the countries with relatively large overall gaps in labour income: large gaps in average hours worked play a key role in the Netherlands, Japan and German-speaking countries; whereas disparities in employment rates are the main source of gender income inequality in Greece, Turkey and Latin America; and gaps in earnings are important in Korea and Japan. In Estonia, a large earnings gap is counterbalanced by low disparities in employment and hours worked, thereby resulting in lower than average overall gender labour income inequality.

Employment of disadvantaged groups still lags behind in many countries

A number of workforce groups are often under-represented in the labour market because they face particular barriers to accessing good quality jobs and realising their work potential. These disadvantaged groups include both youth and older workers, especially those with low qualifications. They also include people with caring responsibilities, most often mothers with young children,[19] people with disabilities and immigrants, especially

Figure 1.6. **Gender disparities in labour market income**

For selected OECD countries, 2005 and 2014

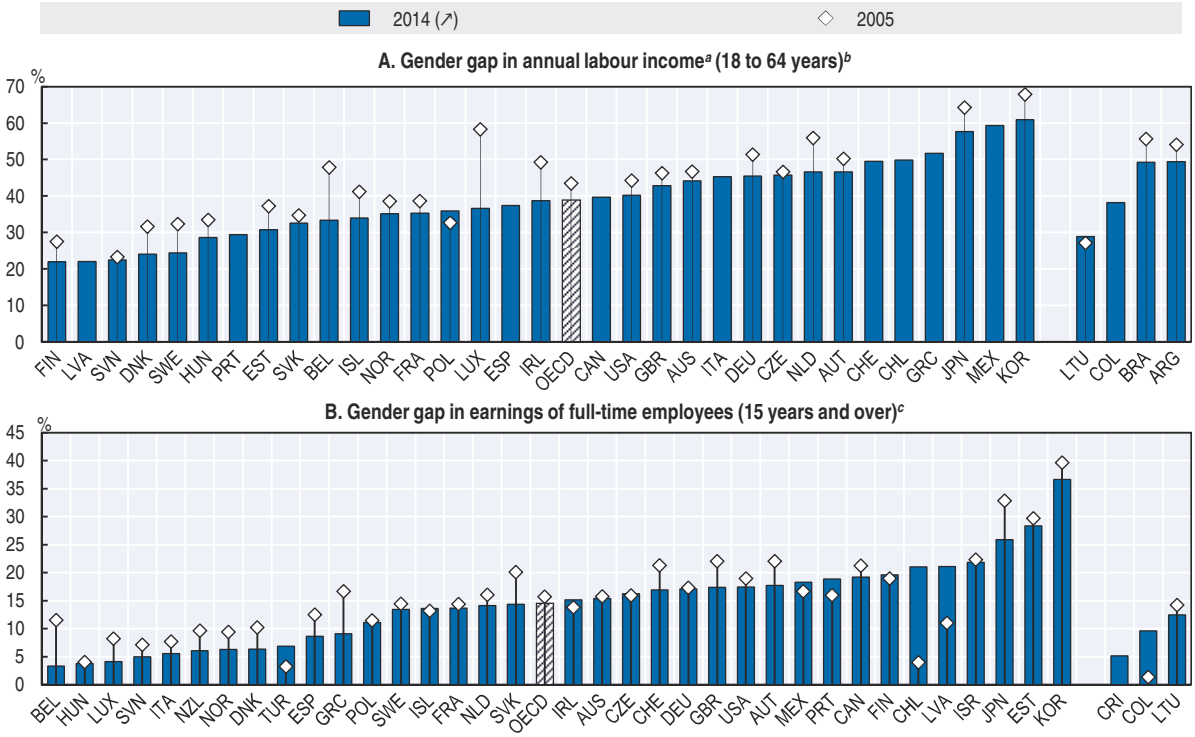

Figure 1.6. **Gender disparities in labour market income** *(cont.)*

For selected OECD countries, 2005 and 2014

Note: Countries are sorted in ascending order representing increasingly poor performance. They are selected on the basis of data availability. Gaps computed as the difference of the relevant indicator for men and women expressed as a percentage of that of men.

a) Data for Japan exclude agriculture and forestry, fisheries, the public sector and firms with less than ten employees as well as self-employment and people aged less than 20 years. Data for Chile, Argentina and Brazil refer to monthly earnings and exclude self-employment.

b) Data for Japan refer to 2006 and 2015. Data for the OECD is an unweighted average.

c) Data refer to 2005 except for Chile, Estonia, Latvia, Lithuania, Luxembourg, the Netherlands, Poland, Slovenia, Switzerland and Turkey (2006), Colombia (2007) and Denmark (2008); and to 2013 except for Israel (2011), France and Spain (2012), Sweden (2013) and Chile (2015). Data for the OECD is an unweighted average.

d) Data refer to 2005 except for Colombia (2007). Data for the OECD is a weighted average.

e) Data for the OECD is a weighted average.

Source: **Gender labour income gap:** OECD calculations based on the European Union Statistics on Income and Living Conditions (EU-SILC) for European countries except Germany, *Encuesta Permanente de Hogares* (EPH) for Argentina, Household, Income and Labour Dynamics in Australia (HILDA) for Australia, *Pesquisa Nacional por Amostra de Domicilio* (PNAD) for Brazil, Labour Force Survey for Canada and the United States (CPS – Annual Social Economic Supplement), *Encuesta de Caracterizacion Socioeconomica Nacional* (CASEN) for Chile, *Encuesta Nacional de Calidad de Vida* (ECV) for Colombia, German Socio-Economic Panel (GSOEP) for Germany, Basic Survey on Wage Structure combined with Labour Force Survey results for Japan, Korean Labor and Income Panel Study (KLIPS) for Korea, and *Encuesta Nacional de Ingresos y Gastos de los Hogares* (ENIGH) for Mexico. For the remaining indicators, *OECD Employment Database* (*www.oecd.org/employment/database*) and *OECD Earnings Distribution Database* (*www.oecd.org/employment/emp/employmentdatabase-earningsandwages.htm*).

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those coming from outside the OECD area.[20] These groups typically fare much less well in the labour market than prime-age men, although this observation by no means implies that the barriers faced by these groups are homogeneous.[21]

All five of the disadvantaged groups considered in Figure 1.7 (Panels A-E) fare worse in terms of employment rates than prime-age men (aged 25-54 years) in virtually all OECD member, OECD accession and G20 countries. Indeed, the only exception is youth in three countries.[22] Employment rates are particularly low in the case of people with disabilities whose employment gap is 44% on average and can be as high as 70% (in Hungary). Interestingly, pairwise cross-country correlations of these employment gaps are always positive and they are significant in most cases.[23] This suggests that countries that do well in

integrating one disadvantaged group into employment typically do well in the integration of all other groups as well. Similarly, the employment gaps of all of the groups are significantly smaller in countries where the aggregate employment rate is higher,[24] suggesting that these groups are the first to suffer from badly performing labour markets.

For most groups for which historical data are available, employment gaps with prime-aged men have narrowed since 2006. This is particularly evident for older workers, whose employment gap has shrunk by about 1 percentage point per year on average in the OECD

Figure 1.7. **Employment gaps with respect to prime-age men for selected disadvantaged groups**

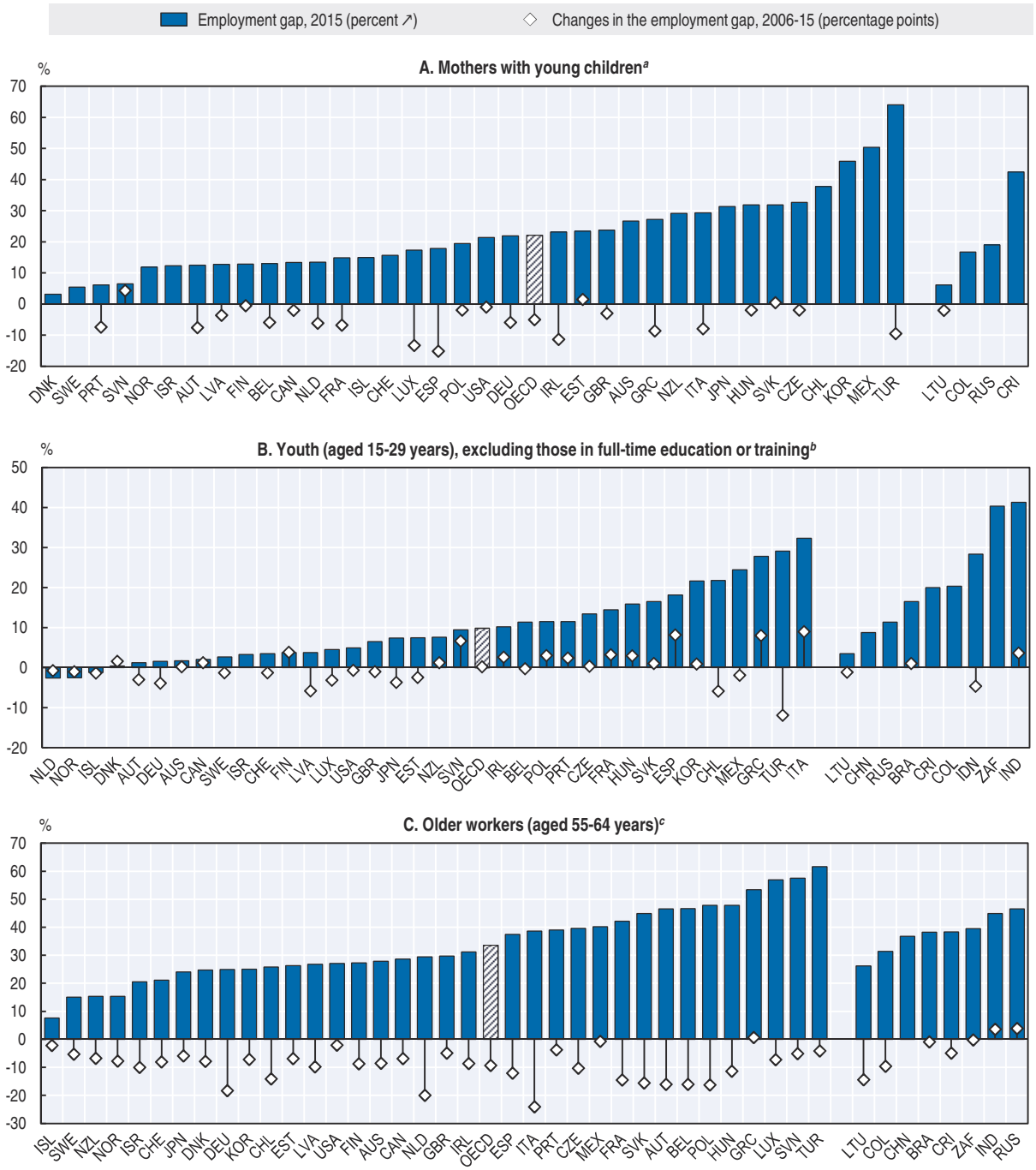
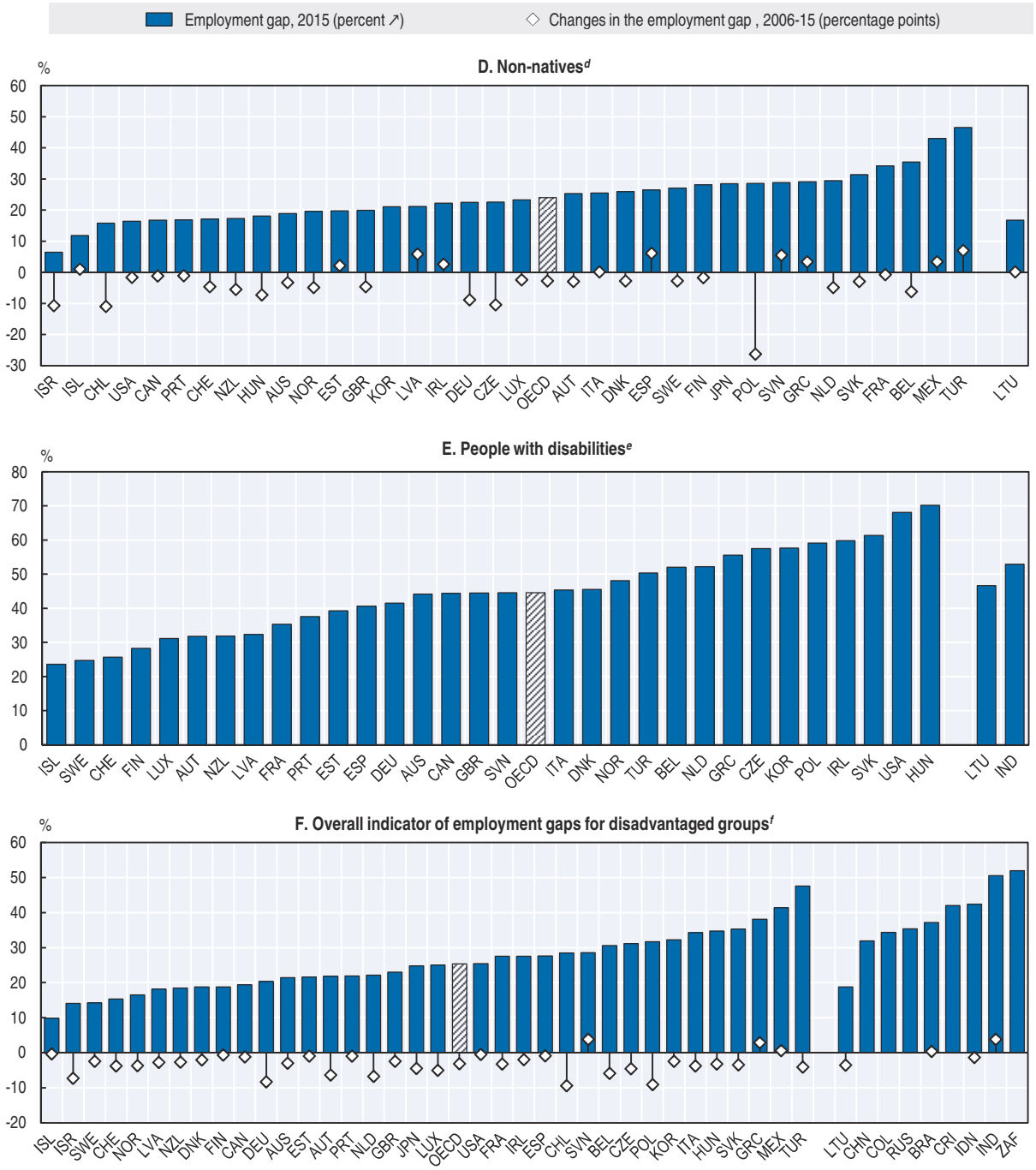


Figure 1.7. **Employment gaps with respect to prime-age men for selected disadvantaged groups** *(cont.)*



Note: Countries are sorted in ascending order of the employment gap (i.e. from best to worst performing). For each group, the employment gap is the difference between the employment rate of prime-age men (aged 25-54 years) and that of the group, expressed as a percentage of the employment rate of prime-age men.

a) Mothers with young children refer to working-age mothers with at least one child aged 0 to 14 years. The age of the youngest child is 0 to15 years in Canada, 0 to 18 years in Sweden and 0 to 17 years in the United States. In Canada, partnership status is based on civil status. For Costa Rica and Mexico, data cover mothers who are reported as the head of the household or the spouse/partner of the head of the household, only. In Japan, the employment status of mothers refers to households with a mother of all ages and at least one child aged 0 to 14 years. In Korea, data refer to mothers aged 25 to 54 years and in Sweden to mothers aged 15 to 74 years. Data refer to 2014 instead of 2015 except for Denmark, Finland and Korea (2012) and Chile, Germany and Turkey (2013). The starting year refers to 2006 except for the United States (2007).

Figure 1.7. **Employment gaps with respect to prime-age men for selected disadvantaged groups** *(cont.)*

b) In the case of youth, those that are in full-time education are excluded from the denominator of the employment rate. Data refer to 2015 except for China (2010), India (2011-12), Chile, Indonesia and Korea (2013) and Brazil and Israel (2014). The starting year refers to 2007 instead of 2006 except for Canada (2006) and Korea (2008).
c) Data refer to 2015 except for China (2010), India (2011-12), Indonesia (2013) and Brazil (2014). The starting year refers to 2006 except for Colombia (2005), India (2005-06) and China (2010).
d) Data refer to all foreign-born people with no regards to nationality and to 2015 except for Japan and Korea (2012-13) and Chile and the United States (2013). The starting year refers to 2006 except for Israel, Latvia and Lithuania (2006-07) and Canada and Turkey (2008).
e) Data refer to 2011 except for Canada and India (2012), New Zealand (2013), Australia and the United States (2015) and Norway (2016).
f) The overall indicator is a weighted average of the employment gaps for each group, adjusted for missing values.
Source: OECD calculations based on data from the OECD *Employment Database* (*www.oecd.org/employment/emp/onlineoecdemploymentdatabase.htm*), the *OECD International Migration Database* (*www.oecd.org/els/mig/oecdmigrationdatabases.htm*) and the *OECD Family Database*, (*www.oecd.org/els/family/database.htm*). Data for people with disabilities are OECD calculations.

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area. Remarkable improvements in this respect are observed in Germany, Italy and the Netherlands. By contrast, the situation of youth is a worrisome exception. Indeed, youth were badly hit by the global recession and, in 2015, this group's employment performance, adjusted for enrolment in full-time education, was still slightly worse than in 2007 in the OECD as a whole. The youth employment gap increased the most in Southern European countries, while Turkey exhibits the largest improvements, though from a very poor starting point. The evolution of the employment gap for mothers with children has been very disparate in Southern European countries, with Spain showing a reduction of more than 1.5 percentage points per year while Slovenia is the only country in which the employment gap for mothers with young children increased significantly. The evolution of the employment gap of immigrants varies substantially across countries, because the composition and size of the population of non-natives differs so much from one country to another (see e.g. OECD, 2015c). Considering only countries in which non-natives are more than 5% of the working-age population, it is noteworthy to observe that in Germany and Israel the employment gap of migrants fell by about 1 percentage point per year between 2006 and 2015, on average.[25] By contrast, the employment gap of non-natives deteriorated by more than half of a percentage point per year during this period in Turkey[26] and Spain.

The high pairwise correlations across the employment gaps for these five disadvantaged groups suggest that it is possible to construct a meaningful overall indicator of employment gaps for disadvantaged groups. Panel F presents such an indicator which is calculated as a weighted average of the employment gaps for each group, adjusting for missing values.[27] This indicator shows that the average employment gap for groups at greater risk of labour market disadvantage was 25.4% in 2015, down by 3.2 percentage points since 2006.[28] The overall indicator for disadvantaged groups ranges from an average of 10% in Iceland and around 15% in Israel, Sweden and Switzerland, at the low end, up to nearly 50% in Turkey, India and South Africa, at the high end.

5. A scoreboard of labour market performance in terms of job quantity, job quality and inclusiveness

Sections 3 and 4 presented various indicators of labour market performance that can be used to assess progress relative to the first two pillars of the new OECD Jobs Strategy framework, namely, more and better jobs, and labour market inclusiveness. Table 1.2 provides a summary overview of key indicators of job quantity, job quality and labour market inclusiveness that is intended to provide a parsimonious scoreboard of labour market performance. Table 1.2 includes:

- Three indicators of employment quantity: the employment (headcount and full-time equivalent) and unemployment rates for the working-age population;
- Three indicators of job quality: earnings quality, labour market security and the quality of working environment (including an alternative indicator of the quality of working environment, the incidence of very long working hours, that allows coverage to be extended to more emerging economies);[29]
- Three indicators of labour market inclusiveness: the low income rate of the working-age population, the gender labour income gap and the employment gap for disadvantaged groups.

By providing a relatively concise yet broad summary of labour market performance, the scoreboard is intended to help ground the new OECD Jobs Strategy in a detailed understanding of how well different national labour markets are currently performing. Such a scoreboard can help to set policy priorities, by highlighting areas where performance is particularly weak. Another benefit of such a scoreboard is that it provides a clearer sense of how achieving a strong performance in one area, such as achieving a low unemployment rate, is related to other areas of performance. This can help to clarify whether certain policy packages can provide strong labour market performance along all dimensions or if certain trade-offs need to be confronted. Ideally, the scoreboard would also incorporate indicators of labour market resilience and adaptability, the policy goals highlighted by the third pillar of the OECD Jobs Strategy framework presented in Section 2. However, it was decided not to attempt such an extension until more research has been conducted on these complex topics. Chapters 2, 3 and 4 of this publication represent precisely such research.[30] Another limitation of the scoreboard is that it cannot capture very recent changes in performance in several areas (notably inclusiveness), as data for many variables become available with some delay. Last but not least, indicators of inclusiveness included in the scoreboard are static, while an inclusive labour market is also characterised by important dynamic aspects (e.g. high exit rate from low income status), which cannot be considered due to lack of comparable data for a sufficiently large number of countries (see e.g. OECD, 2015d for a life-cycle analysis of earnings inequality and its determinants).

The choice of the three inclusiveness indicators that are included in Table 1.2 relies upon the discussion in Section 4. As is also the case for the three dimensions of job quality, the three inclusiveness measures are broadly complementary, while capturing distinct – albeit somewhat overlapping – dimensions of exclusion in the labour market (income inequality and poverty, gender disparities and poor labour market integration of disadvantaged groups). The robustness checks reported in Section 4 and online Annexes 1.A2 and 1.A3 (see OECD, 2017b) suggest that they provide a reliable indication of these three dimensions of inclusiveness, while making use of data sources that allow broad country coverage.[31]

In order to facilitate a qualitative benchmarking of labour market performance along the nine different dimensions reported in Table 1.2, shading is used to indicate whether the data value in a particular cell falls in the top third of that variable's distributions across OECD countries (dark blue), the middle third (medium blue) or the bottom third (light blue). OECD countries are also ordered, top to bottom, by the employment rate (as shown in column 1). A prevalence of dark blue cells is immediately evident in the upper part of the table, indicating that a substantial group of countries tend to be relatively strong performers across many of the nine dimensions. In particular, Nordic countries, such as Norway,

Table 1.2. **Labour market performance scoreboard: Key indicators of job quantity, job quality and inclusiveness**

2015 or latest available year and changes since 2006

	Quantity			Quality				Inclusiveness		
	Employment	Employment in full-time equivalent units	Unemployment	Earnings quality	Labour market insecurity	Quality of working environment[a]		Low income rate	Gender labour income gap	Employment gap for disadvantaged groups
						Job strain	Very long-hours of work			
	Share of working-age population (15-64 years) in employment (%) (2015)	Share of working-age population (15-64 years) in employment (%) (2015)	Share of persons in the labour force (15-64 years) in unemployment (%) (2015)	Gross hourly earnings in USD adjusted for inequality (2013)	Expected monetary loss associated with becoming and staying unemployed as a share of previous earnings (2013)	Share of workers experiencing job strain (2015)	% of workers usually working 60 or more hours per week in their main job (2015)	Share of working-age persons (18-65 years) living with less than 50% of median equivalised household disposable income (2013)	Difference between average annual earnings of men and women divided by average earnings of men (%) (2014)	Average employment gap as a percentage of the benchmark group (prime-age male workers) (2015)
OECD countries										
Iceland	84.2 ⇔	74.9 ⇔	4.2 ⇔	21.2 ⇔	0.7 ⇔	.. ..	7.3 ⇔	4.6 ⇔	34.0 ↘	9.8 ⇔
Switzerland	80.2 ⇔	67.1 ⇔	4.7 ⇔	28.5 ↗	1.7 ⇔	28.0 ..	1.9 ⇔	6.3 ⇔	49.5 ..	15.3 ↘
Sweden	75.5 ⇔	70.1 ⇔	7.6 ⇔	19.8 ⇔	5.2 ↗	37.9 ↗	1.9 ⇔	9.4 ↗	24.4 ↘	14.2 ⇔
Norway	74.9 ⇔	66.6 ⇔	4.5 ⇔	28.2 ↗	1.5 ⇔	29.0 ⇔	1.8 ⇔	9.0 ↗	35.1 ⇔	16.5 ⇔
New Zealand	74.3 ⇔	65.0 ⇔	6.0 ↗	16.7 ⇔	4.9 ↗	23.3 ..	5.5 ⇔	9.1 ↘	.. ..	18.5 ⇔
Netherlands	74.1 ⇔	57.7 ⇔	6.9 ↗	29.2 ↗	3.1 ↗	41.2 ↗	2.6 ⇔	9.0 ↗	46.6 ↘	22.1 ↘
Germany	74.0 ↗	64.6 ↗	4.7 ↘	24.5 ⇔	2.7 ⇔	45.5 ↘	3.3 ⇔	9.1 ⇔	45.4 ↘	20.3 ↘
Denmark	73.5 ↘	64.3 ↘	6.3 ↗	27.3 ⇔	2.3 ⇔	30.5 ⇔	2.4 ⇔	6.7 ↗	24.1 ↘	18.8 ⇔
Japan	73.3 ⇔	71.5 ↗	3.5 ⇔	16.1 ⇔	2.4 ⇔	50.1 ..	9.2 ↘	14.5 ↗	57.7 ↘	24.8 ↘
United Kingdom	73.2 ⇔	63.7 ⇔	5.7 ⇔	16.8 ⇔	5.7 ⇔	36.6 ⇔	5.2 ⇔	9.8 ⇔	42.8 ⇔	23.0 ⇔
Canada	72.5 ⇔	65.1 ⇔	7.0 ⇔	19.7 ⇔	3.9 ⇔	32.9 ..	3.4 ⇔	12.8 ⇔	39.7 ..	19.4 ⇔
Australia	72.2 ⇔	61.5 ⇔	6.2 ⇔	21.0 ⇔	3.9 ⇔	28.6 ..	6.1 ⇔	10.2 ⇔	44.2 ⇔	21.4 ⇔
Estonia	71.8 ↗	68.8 ⇔	6.3 ⇔	6.7 ⇔	7.6 ↗	35.3 ⇔	1.5 ⇔	14.9 ↗	30.7 ↘	21.6 ⇔
Austria	71.1 ⇔	62.7 ⇔	5.8 ⇔	21.3 ⇔	2.2 ⇔	44.4 ⇔	4.9 ↘	8.5 ↗	46.6 ⇔	21.9 ↘
Czech Republic	70.2 ↗	68.7 ↗	5.1 ⇔	8.5 ⇔	4.7 ↗	40.2 ↘	3.6 ↘	5.6 ⇔	45.7 ⇔	31.1 ↘
Finland	68.7 ⇔	63.8 ⇔	9.5 ⇔	20.3 ⇔	2.6 ⇔	28.0 ⇔	2.8 ⇔	7.9 ⇔	21.9 ↘	18.8 ⇔
United States	68.7 ⇔	64.2 ⇔	5.4 ⇔	17.6 ⇔	5.2 ⇔	33.1 ..	3.8 ⇔	15.7 ⇔	40.2 ⇔	25.4 ⇔
Israel	68.3 ↗	62.4 ↗	5.3 ↘	8.5 ⇔	3.9 ↘	34.4 ..	5.3 ↘	14.7 ⇔	.. ..	14.1 ↘
Latvia	68.1 ⇔	65.8 ⇔	10.1 ↗	.. ..	.. ..	.. ..	1.4 ↘	12.3 ⇔	22.0 ..	18.1 ⇔
Luxembourg	66.1 ⇔	60.8 ⇔	6.7 ⇔	28.7 ⇔	2.1 ⇔	36.6 ⇔	2.0 ⇔	8.0 ↗	36.6 ↘	25.0 ↘
Korea	65.7 ⇔	62.2 ⇔	3.7 ⇔	9.6 ⇔	2.1 ⇔	53.7 ..	22.6 ↘	9.3 ↘	61.0 ↘	32.3 ⇔
Slovenia	65.2 ⇔	61.9 ⇔	9.1 ↗	14.4 ..	5.2 ↗	48.6 ⇔	3.2 ⇔	8.8 ↗	22.4 ⇔	28.6 ↗
France	64.3 ⇔	59.6 ⇔	10.1 ⇔	20.1 ⇔	4.6 ⇔	45.2 ⇔	4.9 ⇔	7.9 ⇔	35.3 ⇔	27.5 ⇔
Hungary	63.9 ↗	62.6 ↗	6.8 ⇔	7.3 ⇔	7.8 ↗	49.1 ⇔	1.9 ⇔	10.0 ↗	28.6 ⇔	34.8 ⇔
Portugal	63.9 ↘	60.6 ↘	12.9 ↗	8.6 ⇔	11.7 ↗	46.2 ↘	4.7 ⇔	13.3 ↗	29.4 ..	22.0 ⇔
Ireland	63.1 ↘	55.3 ↘	10.0 ↗	17.6 ⇔	5.0 ↗	33.7 ↗	4.5 ⇔	9.2 ⇔	38.7 ↘	27.6 ⇔
Poland	62.9 ↗	60.9 ↗	7.6 ↘	7.2 ⇔	8.9 ↗	46.2 ↘	5.4 ↘	10.4 ⇔	35.9 ⇔	31.7 ↘
Slovak Republic	62.7 ⇔	60.7 ⇔	11.5 ⇔	8.3 ⇔	10.7 ↗	47.1 ⇔	2.3 ⇔	7.9 ↗	32.6 ⇔	35.3 ⇔

Table 1.2. **Labour market performance scoreboard: Key indicators of job quantity, job quality and inclusiveness** *(cont.)*

2015 or latest available year and changes since 2006

	Quantity			Quality				Inclusiveness		
	Employment	Employment in full-time equivalent units	Unemployment	Earnings quality	Labour market insecurity	Quality of working environment[a]: Job strain	Quality of working environment[a]: Very long-hours of work	Low income rate	Gender labour income gap	Employment gap for disadvantaged groups
	Share of working-age population (15-64 years) in employment (%) (2015)	Share of working-age population (15-64 years) in employment (%) (2015)	Share of persons in the labour force (15-64 years) in unemployment (%) (2015)	Gross hourly earnings in USD adjusted for inequality (2013)	Expected monetary loss associated with becoming and staying unemployed as a share of previous earnings (2013)	Share of workers experiencing job strain (2015)	% of workers usually working 60 or more hours per week in their main job (2015)	Share of working-age persons (18-65 years) living with less than 50% of median equivalised household disposable income (2013)	Difference between average annual earnings of men and women divided by average earnings of men (%) (2014)	Average employment gap as a percentage of the benchmark group (prime-age male workers) (2015)
Chile	62.4 ↗	56.1 ..	6.5 ⇔	6.5 ⇔	8.1 ⇔	.. ..	8.6 ⇔	14.8 ↘	49.9 ..	28.5 ↘
Belgium	61.8 ⇔	56.2 ⇔	8.6 ⇔	27.2 ⇔	3.6 ⇔	39.3 ⇔	5.4 ⇔	9.4 ⇔	33.3 ↘	30.6 ↘
Mexico	60.6 ⇔	53.7 ⇔	4.5 ⇔	4.0 ⇔	5.2 ⇔	39.4 ..	14.5 ⇔	13.9 ⇔	59.4 ..	41.4 ⇔
Spain	58.7 ↘	53.9 ↘	22.2 ↗	16.6 ↗	26.6 ↗	52.6 ⇔	3.9 ⇔	16.5 ↗	37.4 ..	27.6 ⇔
Italy	57.1 ⇔	51.6 ⇔	12.1 ↗	18.0 ⇔	11.8 ↗	46.6 ↘	3.9 ⇔	13.4 ↗	45.3 ..	34.2 ↘
Greece	50.8 ↘	47.7 ↘	25.1 ↗	10.2 ⇔	32.0 ↗	64.4 ⇔	11.2 ⇔	16.1 ↗	51.7 ..	38.1 ⇔
Turkey	50.2 ↗	47.2 ↗	10.5 ⇔	5.6 ⇔	9.8 ⇔	76.2 ⇔	23.3 ↘	13.1 ⇔	.. ..	47.6 ↘
OECD[b]	**66.4** ⇔	**60.4** ⇔	**7.0** ⇔	**16.5** ⇔	**6.5** ↗	**41.4** ..	**5.6** ⇔	**10.6** ⇔	**39.0** ⇔	**25.4** ⇔
Non-OECD countries										
Colombia	67.6 ↗	60.4 ↗	9.2 ↘	2.0 ..	11.0 ..	.. ..	18.9 ..	.. ..	38.2 ..	34.3 ..
Costa Rica	60.7 ⇔	53.3 ..	9.8 ↗	3.0 ..	7.2 ..	.. ..	16.6 ..	.. ..	.. ..	42.1 ..
Lithuania	67.2 ↗	64.7 ⇔	9.3 ↗	.. ..	.. ..	.. ..	0.4 ⇔	11.9 ↗	28.9 ⇔	18.8 ⇔
Argentina	61.7 ⇔	.. ..	.. ..	3.7 ..	7.5 ..	.. ..	8.1 ..	.. ..	49.4 ⇔	.. ..
Brazil	67.5 ⇔	60.8 ⇔	7.1 ⇔	2.3 ⇔	6.6 ..	.. ..	5.2 ↘	.. ..	49.2 ↘	37.2 ⇔
China	75.1 ↘	.. ..	2.9 ⇔	2.8 ..	5.8 ..	.. ..	5.8 ..	.. ..	.. ..	32.0 ..
India	53.3 ↘	.. ..	3.7 ⇔	1.1 ⇔	3.6 ..	.. ..	13.6 ..	.. ..	.. ..	50.5 ↗
Indonesia	64.6 ↗	.. ..	6.4 ↘	1.2 ..	8.2 ..	.. ..	14.3 ..	.. ..	.. ..	42.4 ⇔
Russia	69.3 ⇔	.. ..	5.6 ⇔	4.1 ⇔	5.1 ..	.. ..	3.9 ..	.. ..	.. ..	35.4 ..
Saudi Arabia	52.5 ↗	.. ..	5.7 ⇔	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
South Africa	43.7 ⇔	41.4 ⇔	25.3 ↗	1.9 ⇔	22.6 ..	.. ..	11.7 ..	.. ..	.. ..	51.9 ..
		Above average performers (Top-third)	About average performers (Mid-third)	Below average performers (Bottom-third)		Performance improved ↗ ↘	Performance stable ⇔	Performance worsened ↗ ↘		

Note: The arrows to the right of each data cell indicate changes during 2006-15. Upward pointing, horizontal and downward pointing arrows represent, respectively, increasing, approximately stable and decreasing indicator values. The colour of the sloped arrows indicates whether the change for that indicator represented an improvement in performance (black) or worsening performance (blue). Depending on the indicator, an increase in its value may represent either improved performance (e.g. an increased employment rate) or worsened performance (e.g. an increased unemployment rate). A change in a performance indicator is considered to be significant when the absolute value of its annual average multiplied by ten is at least as large as one-half of the standard deviation of that indicator across OECD countries in 2015.

Table 1.2. **Labour market performance scoreboard: Key indicators of job quantity, job quality and inclusiveness** *(cont.)*

2015 or latest available year and changes since 2006

Job quantity: Data refer to 2015 except for Argentina and Brazil (2014), China (2010), India (2011-12) and Indonesia (2013).
Employment rate in full-time equivalent units is defined as employment rate of the working-age population adjusted by a ratio of average usual weekly hours worked by all workers and average weekly hours worked by full-time workers (according to national definition of full-time employment)
Job quality: Data on earnings quality refer to 2013 except for Estonia, Luxembourg, the Netherlands and Turkey (2010); Israel (2011); France, Italy, Poland, Spain, Sweden and Switzerland (2012); and Canada, the Czech Republic, Hungary, Korea, Mexico, Norway, the Slovak Republic, the United Kingdom and the United States (2014). Data on labour market security refer to 2013 except for Chile (2011). Data for job strain refer to 2015 except for Australia, Canada, Israel, Japan, Korea, Mexico, New Zealand, Switzerland and the United States (2005) and Norway and Turkey (2010).
Inclusiveness: Data on low income rate refer to 2013 except for Iceland, Japan and New Zealand (2012); and Australia, Finland, Hungary, Korea, Mexico, the Netherlands and the United States (2014). Data on labour income gap per capita refer to 2014 except for Korea (2012) and Canada and Japan (2015). For the employment gap for disadvantaged groups, see footnotes to Figure 1.7.
a) The share of workers experiencing job strain is the conceptually superior indicator of the quality of the working environment, but the scoreboard also includes the incidence of very long working hours as an alternative indicator because this allows the country coverage to be extended to more emerging economies.
b) OECD unweighted average except for employment and unemployment rates.
Source: Job quantity and very long hours of work: *OECD Employment Database* (*www.oecd.org/employment/emp/onlineoecdemploymentdatabase.htm*); Job quality: *OECD Job Quality Database* (*www.oecd.org/statistics/job-quality.htm*). Low income rate: Estimates and calculations based on the *OECD Income Distribution Database* (IDD), *http://oe.cd/idd*. Gender labour income gap per capita: OECD calculations based on the European Union Statistics on Income and Living Conditions (EU-SILC) for European countries, *Encuesta Permanente de Hogares* (EPH) for Argentina, Household, Income and Labour Dynamics in Australia (HILDA) for Australia, *Pesquisa Nacional por Amostra de Domicilio* (PNAD) for Brazil, Labour Force Survey for Canada, India (National Sample Survey), Indonesia (SAKERNAS), Turkey and the United States (CPS – Annual Social Economic Supplement), *Encuesta de Caracterizacion Socioeconomica Nacional* (CASEN) for Chile, *Encuesta Nacional de Calidad de Vida* (ECV) for Colombia, German Socio-Economic Panel (GSOEP) for Germany, Basic Survey on Wage Structure combined with Labour Force Survey results for Japan, Korean Labor and Income Panel Study (KLIPS) for Korea, *Encuesta Nacional de Ingresos y Gastos de los Hogares* (ENIGH) for Mexico and General Household Survey (GHS) for South Africa. Employment gap for disadvantaged groups: *OECD Employment Database* (*www.oecd.org/employment/emp/onlineoecdemploymentdatabase.htm*) and *OECD International Migration Database* (*www.oecd.org/els/mig/oecdmigrationdatabases.htm*).

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Iceland, Denmark, but also, to a lesser extent, Sweden and Finland, are among the best performing countries across almost all the columns of the scoreboard. Switzerland and, to a somewhat lesser extent Germany and the Netherlands also score well in a number of areas, while at the other end of the performance spectrum a number of Mediterranean (Greece, Italy, Spain and Turkey) and Latin American countries (Chile and Mexico) as well as a few other emerging economies score relatively low on the majority of indicators. This visual impression is confirmed by pairwise correlations which are almost always statistically significant and confirm that countries that do well (poorly) in one dimension tend to do well (poorly) in many others.[32]

Despite the general tendency for countries to perform at a similar level across the different performance dimensions, there are a number of notable exceptions. One striking example is that countries' performance in reducing the gender labour income gap is largely independent of their performance along the other eight performance dimensions. Indeed, the gender gap is significantly correlated only with the incidence of very long hours and the employment gap for disadvantaged groups. There are also quite a few countries that are in the top third in at least a few dimensions but are also in the bottom third in at least another couple of dimensions (e.g. Belgium and many countries in Asia and Central Europe). These patterns suggest that policies and institutions can be designed in such a way to simultaneously promote job quality, job quantity and inclusiveness, but getting all of them right can be challenging.

Table 1.2 also provides information on changes in labour market performance between 2006 and 2015.[33] Recent trends vary considerably across the indicators. There was overall stability in terms of the quantity of employment, with about as many countries seeing significant improvements and significant reductions in performance. Job quality presents a mixed picture in that more countries progressed than regressed in terms of earnings quality and the quality of the working environment, but the opposite was true for labour market insecurity. The three inclusiveness indicators also provide a mixed picture: while low income rates increased in many countries and decreased in only few, the other two indicators show many more countries making progress than regressing. Many countries also experienced both rising performance along some dimensions and declining performances along others. Despite the overall tendency for a country's performance to be similar across the different indicators, as noted above, there is a lot of scope for medium-term changes in these indicators to diverge.

There is also considerable cross-country heterogeneity in the evolution of labour market performance during the past decade. European countries that were badly hit by the financial crisis and had to undergo important fiscal restraint (Greece, Ireland, Italy, Portugal and Spain) experienced worsening performance for many indicators, emphasising how the effects of the crisis are still being felt in these countries, not only in terms of job quantity and quality (see Chapter 2) but also in terms of inclusiveness. Several of the top performing countries (Denmark, the Netherlands and Sweden) also experienced worsening performance in a number of indicators. In some cases, this may reflect unsustainably buoyant labour market conditions in 2006 having overstated long-run performance (e.g. the Danish unemployment rate in 2006), but these countries may also have encountered new difficulties, such as large influxes of refugees (e.g. Sweden) or declining cost competitiveness. By contrast, Germany, Israel and Poland stand out for having achieved significant improvements along at least five of the nine performance dimensions, while being approximately stable on the other dimensions. The Czech Republic, Turkey and many Latin American countries also showed considerable, if somewhat less widespread, improvement. Finally, those Anglo-Saxon

countries that belong by and large to the middle third according to most indicators (Australia, Canada, the United Kingdom and the United States) are characterised by a striking stability of their performance over time.

Conclusions

This chapter contributes to the new OECD Jobs Strategy by proposing a set of indicators intended to provide a broad but relatively concise overview of labour market performance in terms of the quantity and quality of jobs and labour market inclusiveness. Much of the attention focusses on the development of inclusiveness indicators, since the measurement of inclusiveness has received considerably less attention from researchers than has the measurement of the quantity and quality of employment. The three inclusiveness indicators proposed here, as grouped in a summary scoreboard with three indicators each of employment quantity and job quality, provide a useful empirical baseline for assessing employment policy priorities and monitoring future progress. With a view to those applications, the indicators were chosen with an eye to selecting those that have broad country coverage and are easily updated.

One important extension of the analysis presented in this chapter would be to develop additional indicators of labour market resilience and adaptability. Chapters 2, 3 and 4 of this edition of the *Employment Outlook* shed new light on resilience and adaptability which will help to prepare the ground for developing summary indicators. Whether or not it will prove possible to incorporate reliable indicators of resilience and adaptability into the scoreboard, it will be essential that the OECD's revised guidelines for employment policy be forward looking and identify policies that can help to sustain strong labour market performance in the face of negative shocks and the need to adapt to megatrends such as digitalisation, globalisation and population ageing.

Notes

1. The OECD Jobs Strategy has been a key reference for guiding national labour market policies in OECD countries since it was first adopted in 1994. It is currently being reassessed an updated and the new Jobs Strategy is expected to be presented to member country governments for their adoption in June 2018.
2. Different aspects of labour market inclusiveness – for example, in-work poverty and the gender pay gap – have been the object of much study, but there appears to have been little research aimed at measuring overall labour market inclusiveness.
3. Rising participation rates in the majority of OECD countries explains why the unemployment rate remains slightly above its pre-crisis level even though the employment rate now exceeds its pre-crisis level.
4. The OECD is currently exploring the feasibility of developing robust indicators of labour market resilience and adaptability.
5. The full-time equivalent employment rate implicitly norms for the level of economic development because national definitions of full-time employment are used in the calculation. That is, it assumes that shifting social norms about socially desirable working hours are incorporated into the national definition of full-time employment.
6. When interpreting Figure 1.3, it is important to note that higher values of the indicators for labour market insecurity and the quality of working environment correspond to worse performance. That is, Panel B reports an indicator of insecurity and Panels C and D indicators of poor working conditions.
7. The Pearson linear correlation coefficients reported in Figure 1.3 are all statistically significant at 1% level. This is also the case for Spearman rank correlations that are similarly strong: 0.57 for

earnings quality, -0.70 for labour market insecurity and -0.62 for job strain, but substantially weaker for long working hours at -0.37.

8. However, there is some evidence of a trade-off between job quantity and quality across emerging economies. Indeed, the main issue for emerging economies is not the lack of jobs, as such, since open unemployment tends to be low. Rather, it is the lack of quality jobs that raises the greatest concerns. This partly reflects the inadequacy of social security, which pushes workers into subsistence-level occupations.

9. In contrast with the job quality indicators, the three inclusiveness indicators are partially overlapping.

10. In particular, for the countries for which data are available, the correlation coefficient of the low income rates computed on household disposable income and those computed on individual gross labour income (see online Annex Figure 1.A2.4) is 0.56.

11. The equivalised disposable income of a household is its total after-tax-and-transfer income divided by the square root of the headcount of its members.

12. This definition corresponds to what is often called the *relative poverty rate*, in which people are classified as poor when their equivalised disposable household income is less than a given percentage of the median prevailing in each country. The term "low income" is preferred to "poverty", since the latter often refers to material deprivation, which is not necessarily implied by being below the low income threshold considered here – which is higher in richer countries.

13. The increase in the low income rate between 2006 and 2013 was particularly sharp in countries hard hit by the crisis, such as Greece and Spain.

14. Alternative indicators of overall and bottom-end dispersion of the income distribution for the working-age population are shown in online Annex Figure 1.A2.1 (disposable income), Annex Figure 1.A2.2 (market income), Annex Figure 1.A2.3 (gross full-time earnings), Annex Figure 1.A2.4 (gross labour income, including self-employed income). The additional indicators provide a similar picture insofar as they are all significantly correlated with the low income rate, with one exception: the correlation of the ratio of the first decile to the median of gross earnings of full-time employees with the low income rate is not significant at standard levels. Note, however, that standard measures of earnings disparities based on gross earnings of full-time employees are good proxies of wage dispersion but are the least suited to provide useful measures of inclusiveness since they limit comparisons to full-time employees and do not account for income differences coming from days and hours worked.

15. The data in Panel A underestimate the impact of steady employment in lowering the risk of low employment, since the definition of households with employment includes some households that had only a little employment during the year.

16. It could be argued that gaps in post-tax labour income would provide a better measure of gender disparities. Unfortunately, this measure is available only for few countries on a comparable basis. It should also be noted that large labour income gaps need not constitute evidence of gender discrimination (See OECD, 2008, for a detailed analysis of gender discrimination).

17. Data for Japan are calculated by combining employment rates obtained from the Labour Force Survey with average earnings differentials obtained from the Basic Survey on Wage Structure (BSWS), and using a standard aggregation formula, that is: $GLIG = EG + (1 - EG) * IG$, where *GLIG*, *EG* and *IG* stands for the overall gender gap in labour income, the gender gap in employment rate and the gender gap in labour income among the employed, respectively. The Japanese income data exclude agriculture and forestry, fisheries, the public sector and firms with fewer than ten employees, as well as self-employment. However similar calculations using data from the Keio Households Panel Survey (KHPS), which include all individuals and types of labour income, yield similar estimates. Nevertheless, calculations obtained from the LFS and BSWS are preferred in Figure 1.6, since the KHPS sample is very small.

18. Gaps in full-time earnings in Panel B are measured using hourly, weekly, monthly or annual earnings, depending on data availability. To the extent that the variability of contractual hours among full-time is limited, the gaps presented in Panel B can be assumed to proxy gaps in hourly earnings. Tests made on a limited group of countries for which both hourly and monthly earnings are available validate this assumption.

19. As shown in OECD (2017c), gaps in labour income per capita are particularly large when comparing fathers and mothers with young children. In this case, in virtually all countries, the gender gap is greater than what shown in Figure 1.6.

20. This list of groups at risk of disadvantage is not exhaustive because it reflects limits to data availability. For instance, certain ethnic minorities are important disadvantaged groups in a number of countries. However, comparable data on employment performance of ethnic minorities are not available in many countries, as collection of this type of data is illegal.

21. The barriers faced by these groups may include lack of adequate education, skills and/or work experience, health problems, care responsibilities, lack of transportation, lack of suitable information on job vacancies and how to qualify for them as well as lack of access to new job search tools and technology, discrimination, or other social problems, and insufficient financial incentives due to a high tax burden on in-work income or the loss of benefits upon gaining in-work income and other sources of out-of-work income, including income of other household members. As shown by Fernandez et al. (2016), the prevalence and intensity of these barriers can be very heterogeneous both across and within each of the groups considered here.

22. In order to get a more meaningful comparison, youth who are in full-time education have been excluded from the reference population in the case of youth. If the employment rate of youth were used instead, the gap would have been positive in all countries.

23. Insignificant correlations occur only between the employment gaps for non-natives and people with disabilities. However, the insignificance of the latter is driven by the particular characteristics of the non-native population in certain countries (e.g. Chile and the United States), which drives up their employment rate. The correlation between the employment gaps of older workers and mothers with children is significant only at the 10% level. All other pairwise correlations are significant at the 5% or 1% levels.

24. The pairwise correlation of the aggregate employment rate and each of these employment gaps is always negative and significant at the 1% level. One may worry that these high pairwise correlations – as well as those between different disadvantaged groups – are driven by the fact that gaps are expressed in percentage of the employment rate of prime-age men. In principle, this introduces a common term at the denominator which is also a key determinant of the aggregate employment rate. However, the correlation coefficients are equally large and significant when the gaps are expressed as simple differences between employment rates. This suggests that these high pairwise correlations are not a spurious statistical artefact.

25. The composition of the non-native population in Israel is, however, much different from that of many other countries. Large reductions in the employment gap for migrants are also observed in Chile, the Czech Republic and Poland, where immigrants represent a very small share of the population.

26. The deterioration in the employment status of non-natives in Turkey likely reflects the large inflow of refugees from Syria.

27. The calculation of the overall indicator for employment gaps is discussed in detail in the online Annex 1.A3. The employment gap of each group is weighted by the cross-country average size of the population of each group divided by the cross-country range of variation of each group's employment gap. This is equivalent to standardising each gap by subtracting the cross-country mean and dividing by the cross-country range and then imputing any missing standardised gap by setting it equal to the average of the other standardised gaps for the same country. It should be noted, however, that there is some double counting, to the extent that certain individuals belong to more than one of the groups considered here. This indicator appears very robust to the choice of weights and the exclusion of one group altogether, even when the comparison is limited to the countries with no missing values – which justifies the adopted treatment of missing values.

28. Changes in the indicator are computed on the basis of a sub-indicator considering, for each country, only groups whose gaps are not missing in both 2006 and 2015, or nearby dates. The levels of these gaps are presented in the online Annex Table 1.A3.1.

29. When available, the share of workers experiencing job strain is the preferable measure of the quality of the working environment.

30. Chapter 2 presents an in-depth analysis of labour market resilience since the global financial crisis, while Chapter 3 analyses the adaptive challenge that new technologies, such as digitalisation, and globalisation pose for labour markets. Chapter 4 provides a fuller description of collective bargaining and other forms of worker voice than has previously been available. The organisation and operation of these forms of representation appear to play a major role in determining labour market resilience and adaptability, a topic that the OECD will address using its new database on collective bargaining that underlies Chapter 4.

31. Two observations are in order. First, while the low income rate is used as the first inclusiveness indicator in the scoreboard, the discussion in Section 4 shows that results would be robust to replacing this indicator with another inequality indicator that places particular weight on persons at the bottom of the income distribution. Second, the employment gaps indicator for disadvantaged groups (i.e. the third inclusiveness indicator in the scoreboard) provides only a partial measure of the lack of integration of disadvantaged groups into the labour market. It might be argued that a better indicator could be obtained by taking a weighted average of overall indicators for low income and employment gaps, weighting by the inverse of each variable's cross-country range of variation. This more comprehensive approach has not been adopted in Table 1.2 because low income gaps are not available for many countries (in particular in time series). Using the more comprehensive indicator would thus significantly limit country coverage. It is reassuring that the more comprehensive indicator is highly correlated with the indicator for employment gaps (online Annex Figure 1.A3.1), in particular in terms of country ranking (the Spearman rank correlation coefficient is 0.90, while the linear correlation coefficient is 0.80; both are significant at the 1% level). The indicator for employment gaps was thus chosen for the scoreboard, because the gain in country coverage appeared to more than compensate for the loss of information from not considering gaps in low income rates.

32. This remains true even if the comparison is restricted to OECD countries.

33. The colours of the arrows to the right of each data cell indicate changes during 2006-15, where black denotes a significant improvement in performance, horizontal arrow indicates approximate stability and blue indicates a significant deterioration. A change in a performance indicator is considered to be significant when the absolute value of its annual average multiplied by ten is at least as large as one-half of the standard deviation of that indicator across OECD countries.

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Chapter 2

Labour market resilience: The role of structural and macroeconomic policies

The chapter provides an overview of labour market resilience in the wake of the Great Recession of 2008-09 and the role played by macroeconomic and structural policies. The OECD unemployment rate has returned to close to its pre-crisis level, but the unemployment cost of the Great Recession has nonetheless been very large and long-lasting in many countries. Moreover, as the recovery in output has been weak relative to the recovery in employment, labour productivity and wage growth remain low. Labour market resilience depends crucially on macroeconomic and labour market policy settings. Macroeconomic policies are highly effective in limiting employment declines during economic downturns and preventing that cyclical increases in unemployment become structural. Spending on active labour market policies needs to respond strongly to cyclical increases in unemployment to promote a quick return to work in the recovery and preserve the mutual-obligations ethos of activation regimes. Overly strict employment protection for regular workers reduces resilience by promoting the use of temporary contracts and slowing job creation in the recovery. Co-ordinated collective bargaining systems can promote resilience by facilitating wage and working-time adjustments.

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.

Key findings

The Great Recession of 2008-09 and the slow pace of the subsequent recovery have highlighted that large economic downturns can have long-lasting economic and social effects. This chapter provides an overview of labour market resilience in the wake of the Great Recession of 2008-09 and the role played by macroeconomic and labour market policies. Resilience is defined in terms of the social and economic costs of economic downturns, i.e. the capacity of an economy to limit persistent deviations in output and labour market outcomes from pre-crisis trends in the aftermath of adverse aggregate shocks. This definition encompasses the avoidance of excessive fluctuations in output and labour market outcomes as well as the swiftness of the rebound. The key findings are as follows:

- In the OECD as a whole, labour markets have recovered more strongly than output from the Great Recession of 2008-09. As of the first quarter of 2017, the average unemployment rate in the OECD was 6.2% (0.5 percentage point above its rate at the start of the crisis), whereas GDP per capita remained well below its pre-crisis trend (by about 6%).
  - Although structural unemployment increased and labour force participation declined in a number of OECD countries, in the OECD as a whole structural labour market outcomes have not visibly deteriorated since the start of the crisis despite a significant slowdown in potential output growth. This implies that the slowdown in potential output growth is largely unrelated to labour market developments.
  - The flipside of higher resilience in terms of unemployment than in output at the aggregate OECD level was a slowdown in the growth rate of labour productivity and wages relative to their pre-crisis trends. Since this largely reflects the slowdown in potential output growth weak wage growth may persist for some time.
- There are large differences in labour market resilience across countries. Countries where the unemployment cost of the crisis was very high include Greece and Spain, whereas countries where the unemployment cost was modest include Germany, Japan and Korea.
  - Differences in labour market resilience across countries to a large extent reflect differences in output developments. These include differences in the size and nature of the economic shock but also subsequent output developments, which in part are shaped by the response of macroeconomic policies to the crisis. Overall, around half of the cross-country variation in unemployment resilience is explained by output developments.
  - Cross-country differences in the unemployment impact of the crisis relative to output reflect differences in the extent to which declines in labour productivity growth and – to a lesser extent – working time and labour market participation absorbed declines in output growth. These differences depend to a large extent on differences in labour market policies and institutions across countries.

- Labour market policies and institutions shape the impact of economic shocks on employment and unemployment by affecting the degree to which firms absorb declines in demand through lower profits ("labour hoarding"), adjustments in wages and working time and the effective supply of labour.
  - Stricter employment protection legislation makes the unemployment rate more sensitive to a given shock by promoting the use of temporary contracts which are more cyclical and reducing the number of people hired on regular contracts in the subsequent recovery.
  - A better co-ordination of collective bargaining arrangements across sectors or firms can help to reduce the impact of an adverse shock on unemployment in the short term by facilitating adjustments in wages and working time, so that layoffs can be avoided. The importance of collective bargaining per se, as measured by the share of workers covered in the total economy, is not associated with resilience.
- Fiscal support during economic downturns – both through automatic fiscal stabilisers (i.e. increases in government spending and declines in tax revenues that occur directly as a result of a downturn in economic activity) and additional discretionary measures – promotes labour market resilience by stabilising aggregate demand. It also reduces the risk of hysteresis, i.e. the risk that cyclical changes in unemployment or productivity as a result of the crisis persist even after aggregate demand has recovered.
  - Fiscal support is more effective during economic downturns than during recoveries, implying that its timing over the business cycle matters. Fiscal support through automatic fiscal stabilisers responds instantaneously to business cycle conditions, but additional discretionary measures need to be implemented in a timely manner to be effective.
  - On average across countries, an increase in public spending of 1% of GDP during an extreme economic downturn increases output by up to 2% and reduces the unemployment rate by up to 1 percentage point after two years. Fiscal support is likely to be less effective in countries with high degrees of trade openness, high levels of public debt, flexible exchange rates and unconstrained monetary policy.
  - Public investment and spending on active labour market programmes (e.g. job-search assistance, hiring subsidies and training) are particularly effective in reducing unemployment during economic downturns, provided that they can be scaled up in a timely manner.
  - Fiscal support during downturns diminishes the risk of labour market hysteresis by reducing the long-term unemployment rate, with spending on active labour market programmes being particularly effective.

Overall, the analysis shows that fiscal policy can be a highly effective tool for mitigating the unemployment costs of adverse economic shocks. During the Great Recession of 2008-09, fiscal policy contributed to labour market resilience in most countries, with discretionary fiscal measures typically complementing or not fully offsetting automatic fiscal stabilisers. However, the use of fiscal policy as a stabilisation tool is only possible if sufficient fiscal space is available during recessions, which explains why the role of automatic stabilisers was severely constrained in a number of countries that were hit particularly hard by the crisis (e.g. Greece and Hungary). This highlights the importance of keeping public debt at prudent levels during expansions and building sufficient flexibility into institutional fiscal rules. Despite the importance of fiscal policy for labour market resilience, differences

among countries' fiscal policies can only explain a small part of cross-country differences in labour market resilience, which are largely explained by differences in the size and nature of the economic shock in each country and the design of each country's structural policies and institutions.

Introduction

The Great Recession of 2008-09 and the slow pace of the subsequent recovery have highlighted how large economic downturns can have long-lasting economic and social costs. Some public policies that reduce the ex-ante risk of downturns also reduce growth and employment in the long term (Caldera-Sánchez et al., 2016). However, this is not the case with public policies that enhance labour market resilience, i.e. an economy's capacity to limit fluctuations in employment and to quickly rebound in the wake of economic shocks. These policies are key not only to limiting the short-term social cost of economic downturns but also to supporting labour market and economic performance in the medium to long term, by mitigating the knock-on effects of their cyclical impact on higher structural unemployment, lower labour force participation and lower wage growth ("hysteresis").

This chapter provides an overview of labour market resilience in OECD countries in the wake of the Great Recession of 2008-09 and empirically assesses the role played by macroeconomic and labour market policies. Drawing on the experience from economic cycles since the mid-1980s, the chapter analyses how structural policies and institutions shape the labour market response to aggregate shocks and the extent to which macroeconomic policies can stabilise aggregate demand during economic downturns. It further analyses how labour market and fiscal policies affect the extent to which an economic downturn continues to have an impact on labour market performance through hysteresis effects that persist even once cyclical effects have faded. This chapter provides an update of work presented in the *OECD Employment Outlook 2012* (OECD, 2012) by using data up to 2016, while also extending it by taking account of the role of macroeconomic policies and paying more attention to possible hysteresis-type effects.

The remainder of the chapter is organised as follows. Section 1 describes the conceptual framework and assesses labour market resilience in the wake of the Great Recession. Section 2 analyses how various labour market policies shape the effect of a given aggregate shock on labour market outcomes and assesses the effects of fiscal policy on labour market performance during economic downturns. Section 3 uses the resulting estimates to quantify the role of labour market and fiscal policies for labour market resilience during and in the wake of the Great Recession. The final section contains some concluding remarks.

1. Resilience in the wake of the Great Recession

Resilience in this chapter is defined in terms of the social and economic costs of economic downturns, i.e. the capacity of an economy to limit persistent deviations in output and labour market outcomes from pre-crisis trends in the aftermath of adverse aggregate shocks (i.e. recessions). This definition encompasses the avoidance of excessive fluctuations in output and labour market outcomes as well as the swiftness of the rebound. In the descriptive analysis of resilience in this section, labour market outcomes are not expressed directly in relation to the size of the initial shock, but output and labour market resilience are analysed jointly to allow gauging the labour market response to output developments. In the econometric analysis in the subsequent sections, the size of the initial shock is explicitly taken into account.

In operational terms, *output* resilience refers to the cumulative deviation of output from a counterfactual trend following an adverse aggregate shock, while *labour market* resilience refers to the cumulative deviation of unemployment from its pre-crisis structural rate. The structural rate of unemployment is approximated by the non-accelerating inflation rate of unemployment (NAIRU). The counterfactual output trend in this chapter is based on Ollivaud and Turner (2015), who calculate it using the growth rate of trend labour productivity (the ratio of potential output to potential employment) over the period 2000-07 and counterfactual potential employment growth over 2008-15. Counterfactual potential employment growth is obtained by using pre-crisis trends in potential employment rates (the ratio of potential employment to the working-age population) by age cohort but allowing for observed demographic developments over 2008-15. The advantage of focusing on pre-crisis trend labour productivity growth rather than pre-crisis observed labour productivity growth is that it is less sensitive to unsustainable booms in the run-up to the Great Recession. Accounting for actual demographic developments over 2008-15 for the calculation of counterfactual potential employment growth reduces the risk that declines in potential output that would have occurred in the absence of the crisis, are erroneously attributed to the crisis.

Resilience can be decomposed into cyclical and structural components, with the latter obtained as cumulative deviations of potential output from the counterfactual output trend and the NAIRU from the pre-crisis rate. A small cyclical component implies limited deviations of output and unemployment from potential output and the NAIRU in terms of amplitude and duration. A small structural component implies limited *hysteresis* as potential output and the NAIRU remain close to their counterfactual. The decomposition thus allows assessing the extent to which output losses and unemployment increases in the wake of the crisis reflected transitory or persistent developments and the extent to which developments in potential output were reflected in structural unemployment.

Given that estimates of potential output and the NAIRU are surrounded by considerable uncertainty, the decomposition is used exclusively for descriptive purposes in the present section. By contrast, the econometric analysis in Section 2 does not rely on potential output and the NAIRU to distinguish between cyclical and structural effects.

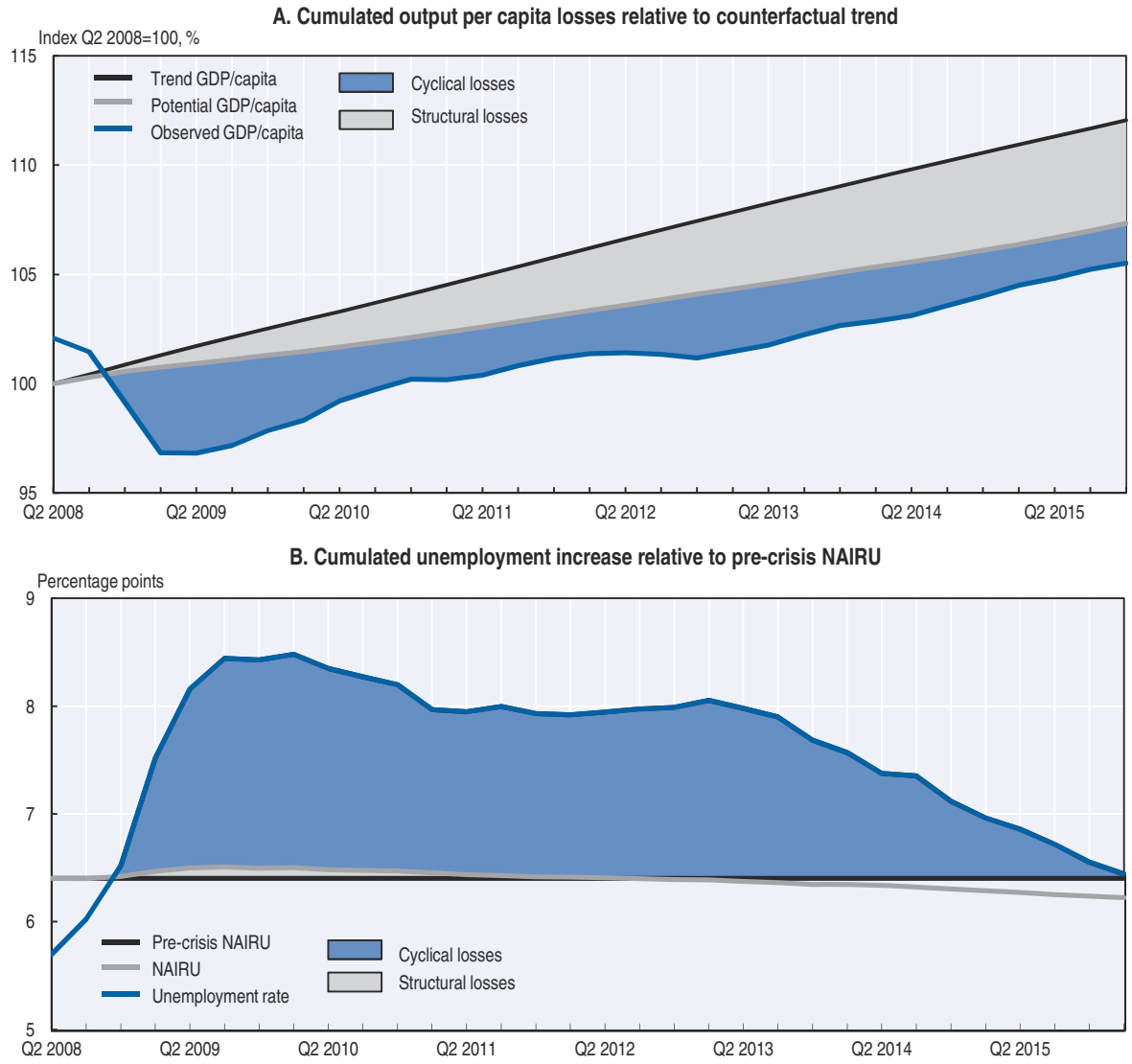
The OECD unemployment rate has returned to close to the pre-crisis level even though GDP remains well below the pre-crisis trend

OECD output has deviated significantly from the pre-crisis trend in the wake of the Great Recession (Figure 2.1, Panel A).[1] By the second quarter of 2016, output per capita was about 6% below the pre-crisis trend, but the cumulative loss in output per capita since the Great Recession amounted to almost six months of income (6% of output per capita over eight years). This predominantly reflects the structural component of output resilience as measured by the deviation of potential output from the pre-crisis trend rather than its cyclical component as measured by the cumulative output gap. According to current estimates, the main impact of the crisis was therefore to change the growth rate of potential output, which implies that the effects of the crisis on output are likely to continue to be felt for a long time.

The impact of the Great Recession on unemployment has also been substantial, but in contrast to output, the unemployment rate for the OECD as a whole has returned to close to the pre-crisis level, with no significant increase in structural unemployment (Figure 2.1, Panel B). The cost of the crisis as measured by the cumulative increase in unemployment amounted to around 8 percentage points (average deviation of around 1 percentage point

Figure 2.1. **Output and unemployment developments in the OECD since the onset of the Great Recession**

2008-15



Note: The intercept of the counterfactual trend in Panel A is normalised to 100 and corresponds to the level of potential output per capita in Q2 2008. Its slope is the counterfactual potential output per capita growth rate in Ollivaud and Turner (2015). The pre-crisis NAIRU in Panel B is the NAIRU in Q2 2008. The area between the black and blue lines gives an indication of the total cost of the crisis in terms of the cumulative impacts on output and unemployment. The blue area gives an indication of the structural component, whereas the grey area gives an indication of its cyclical component.

Source: OECD calculations based on the *OECD Economic Outlook No. 100*, *https://stats.oecd.org/index.aspx?DataSetCode=EO*.

StatLink http://dx.doi.org/10.1787/888933477708

from the pre-crisis NAIRU over eight years), but structural losses have been limited. This partly reflects good structural outcomes in a number of large countries that receive a large weight in the OECD average, including Germany, Japan, the United Kingdom and the United States. In many other OECD countries, the annualised deviation of structural unemployment from the pre-crisis rate was positive over the period 2008-15 (see below). There has further been no indication that the Great Recession has led to a persistent decline in effective labour supply. The aggregate OECD labour force participation rate has remained close to its pre-crisis value of 65%.

The absence of an increase in the rate of structural unemployment or a decline in the rate of labour force participation in the OECD area indicates that the slowdown in potential output growth is largely unrelated to labour market developments. This is consistent with evidence suggesting that the slowdown in potential output growth reflects declines in capital deepening and a slowdown in multi-factor productivity growth (Ollivaud et al., 2016). While the decline in capital deepening largely reflects increased financial frictions and persistent shortfalls in aggregate demand related to the economic downturn, the slowdown in multi-factor productivity growth began before the Great Recession and is therefore at best only partly related to the economic downturn (Andrews et al., 2016).

Unemployment developments differed significantly across countries

There are large differences in the overall degree of output resilience across OECD countries (Figure 2.2).[2] In countries with annualised output per capita losses of 12% or more, including Estonia, Greece and Latvia, cumulative losses over the period 2008-15 amount to at least a year of lost income (Panel A). Several other countries either were little affected by the Great Recession (e.g. Israel) or have partly made up for output losses relative to trend in the wake of the Great Recession through above-trend growth in later years (e.g. Germany).

Differences in output resilience translate to an important extent into differences in labour market resilience (Panel B). Countries with large deviations of output per capita from pre-crisis trends such as Greece and Ireland, which were hit by major banking and sovereign debt crises, typically experienced large deviations of unemployment from the pre-crisis rate. The opposite is true for countries with small deviations of output per capita from the pre-crisis trend, such as Germany and Japan that experienced transitory declines in external demand. Overall, around half of the variance in unemployment resilience is explained by output developments.

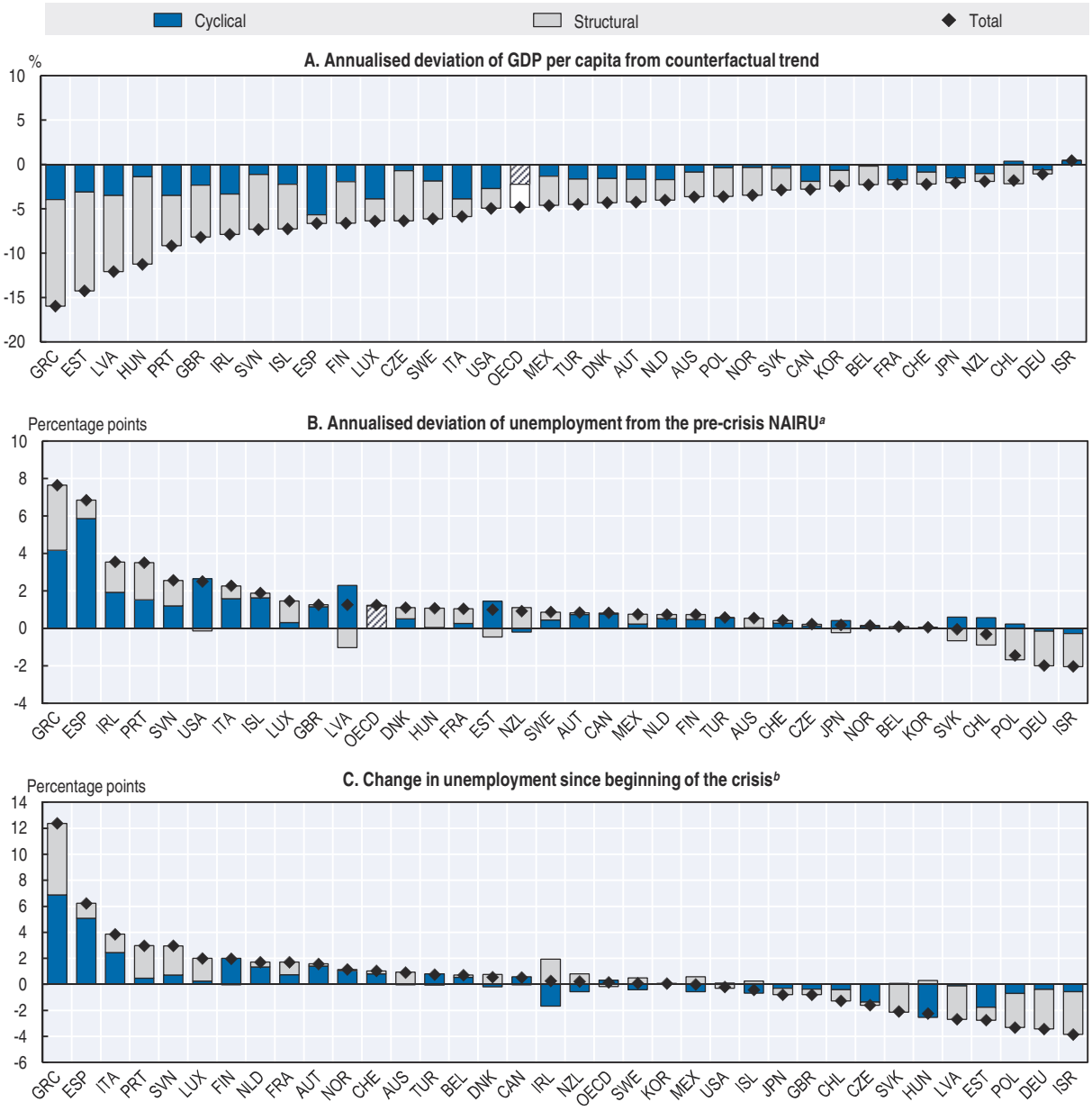
There are also large cross-country differences in the relative importance of the structural component of labour market resilience, but increases in the NAIRU were limited compared to the large deviations of potential output from pre-crisis trends. In the majority of countries, the annualised deviation of unemployment from the pre-crisis NAIRU was positive over the period 2008-15, and in 2015 the deviation remained positive in more than half of these countries (Panel C). The average annual deviation from the pre-crisis NAIRU amounted to over 5 percentage points in Greece and Spain, where structural unemployment increased, but was negative in Germany where structural unemployment continuously declined during most of the period. However, compared to the large number of countries that experienced average deviations of potential output per capita from pre-crisis trends of more than 5 percentage points, only few countries experienced average deviations of the NAIRU from the pre-crisis rate of more than 1 percentage point.

Cross-country differences in the extent to which aggregate demand declines translated into unemployment increases mainly reflected differences in labour hoarding

A high degree of resilience in terms of unemployment compared to output reflects adjustments in labour productivity, working time and labour force participation. Figure 2.3 decomposes the annualised deviation of output from the counterfactual trend into the annualised deviations of unemployment and working time from their pre-crisis rates and the annualised deviations of hourly labour productivity and labour force participation from

Figure 2.2. **A number of OECD countries experienced persistent deviations of unemployment from the pre-crisis NAIRU**

2008-15



a) The total height of the bars in Panel B denotes the deviation of the unemployment rate from the pre-crisis NAIRU, with the part in grey denoting the deviation of the NAIRU from the pre-crisis NAIRU.

b) The total height of the bars in Panel C denotes the change in the unemployment rate over 2008-15 with respect to the pre-crisis NAIRU.

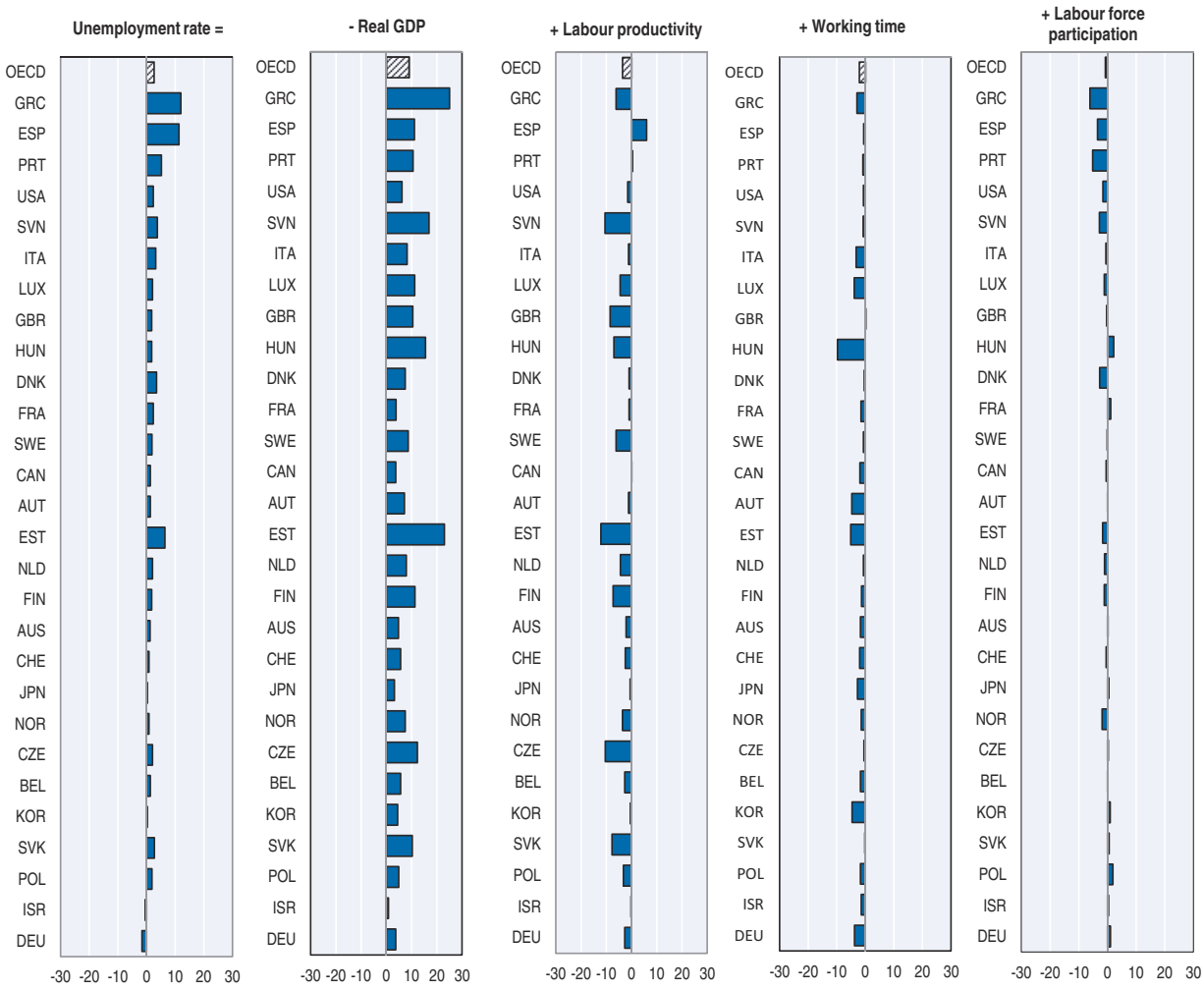
Source: OECD calculations based on the *OECD Economic Outlook No. 100*, *https://stats.oecd.org/index.aspx?DataSetCode=EO*.

StatLink http://dx.doi.org/10.1787/888933477712

their counterfactual trends. This decomposition can be used to explain – in an accounting sense – how developments in output were reflected in adjustments along different margins. For example, it reveals that for the OECD as a whole almost 30% of the decline in output was accounted for by an increase in the unemployment rate. It can also be used to show how adjustments in labour productivity, working time and labour force participation

Figure 2.3. **Declines in productivity, working time and participation dampened the impact on unemployment**

Decomposition of the annualised deviation of unemployment from the pre-crisis rate, 2008-15



Note: The decomposition is based on the approximation $u - u^* \approx [-(y - y^*)] + [(y - y^*) - (n + h - (n^* + h^*))] + [h - h^*] + [lf - n^*]$, where the right hand-side variables are expressed in logarithms and denote GDP (y), the number of employees (n), hours worked per employee (h) and the labour force (lf). $u - u^*$ is the percentage point deviation of unemployment from the pre-crisis rate; the first right hand-side term in square brackets is the percentage deviation of GDP from the counterfactual trend in Ollivaud and Turner (2015); the second term is the percentage deviation of labour productivity from the pre-crisis trend; the third term is the percentage deviation of hours per worker from the pre-crisis level; and the fourth term is the percentage change in labour force participation in deviation from the counterfactual employment trend. In contrast to Figure 2.2, the reported deviations of unemployment and real GDP from the pre-crisis counterfactual rates and trends are computed relative to actual unemployment and output in Q2 2008 rather than the corresponding unemployment and output gaps. Given that unemployment and output gaps were typically positive in Q2 2008, the deviations in Figure 2.3 are typically larger than those in Figure 2.2.

Source: OECD calculations based on the *OECD Economic Outlook No. 100*, *https://stats.oecd.org/index.aspx?DataSetCode=EO*.

StatLink http://dx.doi.org/10.1787/888933477728

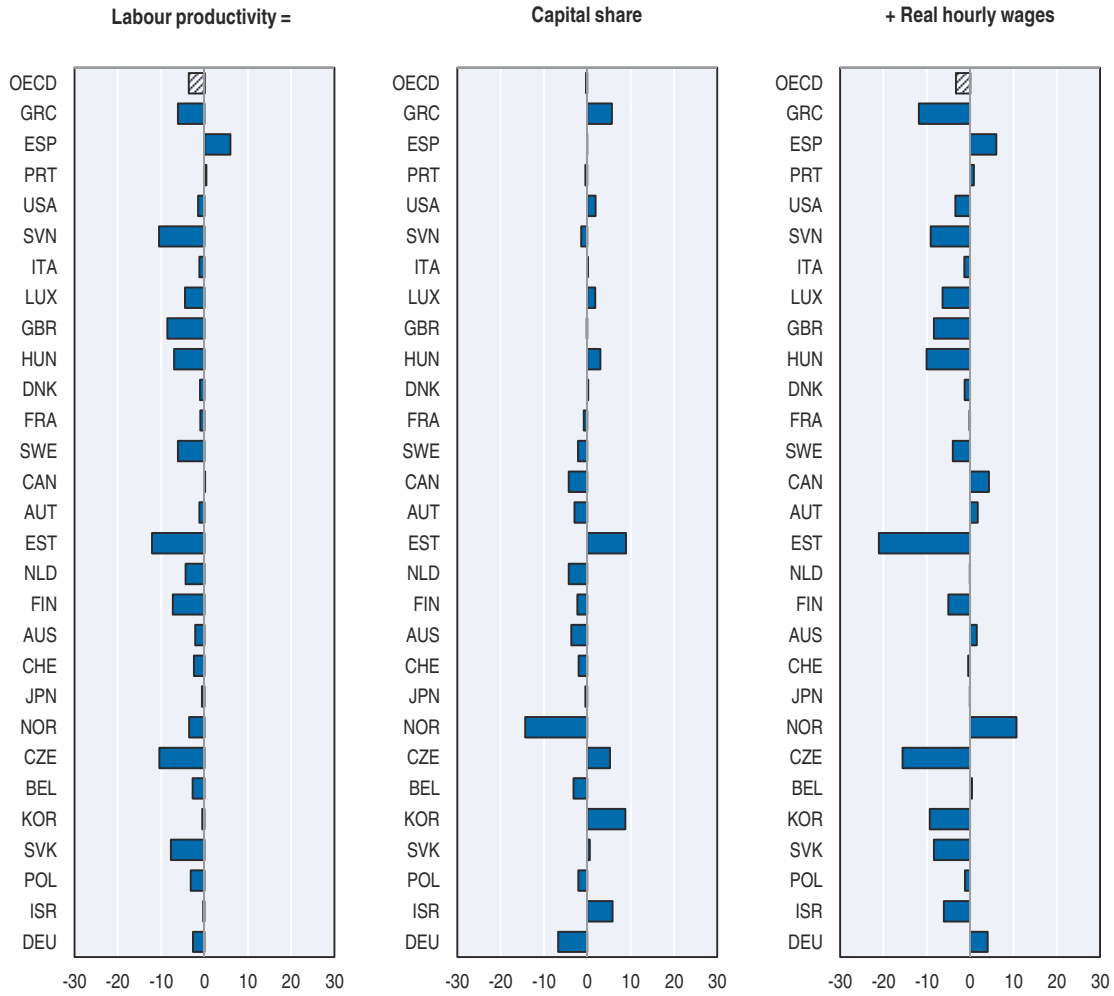
can account for cross-country differences in the annualised unemployment response to the annualised decline in output. For the OECD as a whole, labour hoarding – which was reflected in lower hourly labour productivity growth – was the main adjustment margin that dampened the impact of the decline in GDP growth on unemployment, accounting for over 40% of the adjustment to the decline in output. Average adjustments in working time and labour force participation were typically more muted, accounting for about 25% and 10% of the decline in output on average across the OECD.

Adjustments in labour productivity were reflected in lower wages

The slowdown in labour productivity growth was reflected in a slowdown in real wage growth rather than a slowdown in profit growth (Figure 2.4). At constant real wage trends, a slowdown in labour productivity growth would be reflected in a lower capital share in value added. While a number of countries experienced declines in the capital share, typically the brunt of the downward adjustment in labour productivity was borne by workers in terms of lower real wages.[3] In other words, the flip side of the high resilience in terms of unemployment was lower job quality.

Figure 2.4. **Lower labour productivity growth translated into lower real wage growth**

Decomposition of the annualised deviation of labour productivity from the pre-crisis trend, 2008-15



Note: The decomposition is based on the logarithmic identity: $(y - y^*) - (n + h - (n^* + h^*)) = [(y - y^*) - (n + h - (n^* + h^*)) - (w - w^*)] + (w - w^*)$, y is GDP, n is the number of employees, h is hours worked per employee and w is the real wage. The left hand side is the deviation of labour productivity from the pre-crisis trend, the first term in square brackets is the change in the capital share and $(w - w^*)$ is the deviation of real wage growth from the pre-crisis trend.

Source: OECD calculations based on the *OECD Economic Outlook No. 100*, *https://stats.oecd.org/index.aspx?DataSetCode=EO*.

StatLink http://dx.doi.org/10.1787/888933477732

To summarise, in the wake of the Great Recession, there were large cross-country differences in labour market resilience when measured in terms of unemployment. This was also the case for long-term and youth unemployment (Box 2.1). To a significant extent,

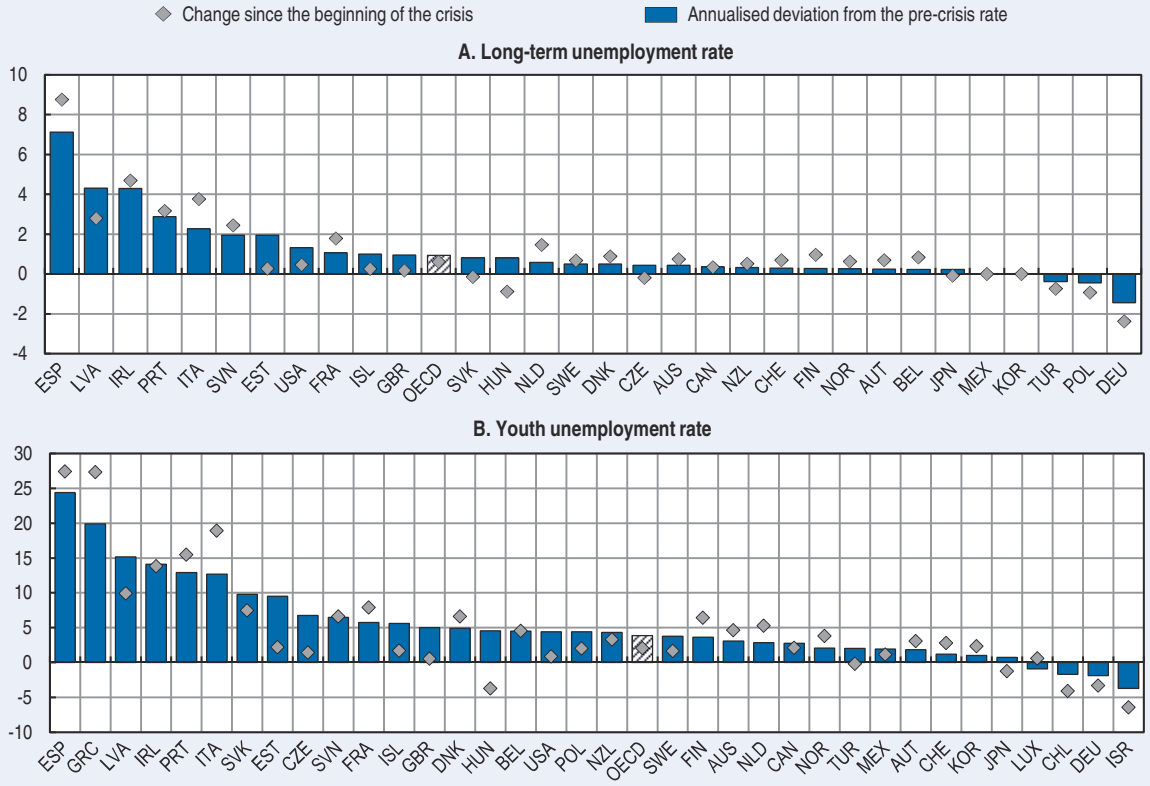
Box 2.1. **The impact of the crisis on long-term and youth unemployment**

The Great Recession also had important implications for the structure of unemployment and its composition across vulnerable groups, particularly youth (see Figure 2.5).

- The cost of the crisis in terms of long-term unemployment was substantial, with the long-term unemployment rate remaining well above of its pre-crisis rate in most OECD countries (Figure 2.5, Panel A). The difficulty of finding work for these people is to some extent captured by the NAIRU. However, there is also a risk that some of these people become discouraged, stop searching for a job and leave the labour market altogether, with potentially important consequences for long-term labour supply and potential output.
- Youth have been particularly hard hit by the Great Recession (Figure 2.5, Panel B). The annualised unemployment impact for youth is about three times as large as for the working-age population as a whole. Previous studies have shown that unemployment spells early in the working life can have important scarring effects, resulting in more frequent unemployment spells and weak labour market attachment, with long-lasting consequences for life-time earnings (OECD, 2015).

Figure 2.5. **Persistent increases in long-term and youth unemployment**

2008-15



Note: The long-term unemployment rate is defined as number of unemployed people for one year or more as a share of the labour force. The youth unemployment rate is defined as the share of labour force participants aged 15-24 in unemployment.

Source: *OECD Labour Force Statistics, www.oecd.org/employment/onlineoecdemploymentdatabase.htm.*

StatLink http://dx.doi.org/10.1787/888933477741

these cross-country differences reflected differences in output developments, which were related to the nature and the size of the initial aggregate shock and the effects of macroeconomic policies. For instance, unemployment typically increased more in

countries with major housing, banking or sovereign debt crises. However, unemployment developments also reflected different margins of labour market adjustment, which in turn partly depended on labour market policies and institutions.

2. The policy determinants of labour market resilience

The role of labour market policies and institutions for labour market resilience

Structural policies and institutions can affect labour market resilience through a number of different channels. First, structural policy settings affect the relative importance of different margins of labour input adjustment. In particular, they determine the degree of labour hoarding and whether adjustment takes place along the intensive margin, in terms of working time and hourly wages, or along the extensive margin, in terms of the number of jobs. Second, structural policy settings can also affect the extent to which any cyclical rises in unemployment translate into higher structural levels of unemployment. For instance, unemployed people may gradually become less employable as their skills deteriorate the longer they stay unemployed. The jobs created in the recovery may also differ from those that were destroyed in the downturn in terms of their location or skill requirements. While such job churn may raise growth in the longer term, for instance by generating better matches between job requirements and individuals' skills or moving labour to higher-productivity firms, it may also persistently raise unemployment if residential mobility is low or skills are not easily adaptable.

Labour market policies and institutions shape the sensitivity of unemployment, earnings per worker and employment to aggregate shocks. The empirical model therefore relates the response of labour market outcomes to changes in GDP to different policy settings across countries (see Box 2.2 for details). It simultaneously considers the following labour market policies and institutions: the stringency of employment protection provisions for regular workers, the average replacement rate of unemployment benefits, the coverage rate of collective bargaining agreements and a measure of the degree of centralisation and co-ordination in wage bargaining ("corporatism"). The results are visualised by focusing on the impulse response function during the first four years following a 1% decline in GDP under different institutional settings. More specifically, it shows impulse response functions for a one standard deviation increase in the policy or institution of interest relative to the impulse response function that is obtained when all policies and institutions are kept at their OECD average. Results are not shown for policies or institutions that have no significant effect on any of the indicators of resilience considered.

Box 2.2. **Labour market policies and institutions: The empirical model**

To analyse the short- to medium-term effects of labour market policies and institutions for labour market resilience, impulse response functions are estimated using the local projection method as proposed by Jordà (2005). This method allows for the robust estimation of impulse response functions by estimating their coefficients directly for each time horizon as opposed to deriving them indirectly from the estimates of a specific dynamic model, such as a vector auto-regression (VAR), which are typically more sensitive to misspecification.

The role of labour market policies and institutions for labour market resilience is examined by relating the response of labour market outcomes to output shocks to different policy settings across countries. Since most labour market policies cannot be deployed quickly

Box 2.2. **Labour market policies and institutions: The empirical model** *(cont.)*

to offset the negative effect of an aggregate shock on the labour market, the labour market policy that is in place at the time of the initial shock determines the labour market response. This means that the labour market response does not take account of reforms that took place in the wake of the crisis, including temporary measures taken in response to the crisis. More specifically, the following empirical model is used:

$$L_{ct+s} - L_{ct-1} = \gamma^s Y_{ct} + \sum_{j=1}^{J} {}^{s}_{j}(Y_{ct} \bullet Str^{j}_{ct-1}) + \sum_{i=1}^{2} \delta^s_i X_{ct-i} + {}^{s}_{c} + {}^{s}_{t} + \varepsilon_{ct+s} \;\; \forall s = 0,1,\ldots,S,$$

where L is the labour market outcome variable of interest; Y is the change in GDP; Str is the labour market policy setting in the year preceding the initial shock; X denotes a vector of controls including labour market policy settings to control for the independent effects of policies, GDP growth to control for the state of the business cycle and lags of the dependent variable to reduce serial correlation; and ${}^{s}_{c}$ and ${}^{s}_{t}$ are country- and year-fixed effects. ${}^{s}_{j}$ denotes the difference in the labour market response s periods after the initial shock under different labour market policy settings at the time of the initial shock.

The empirical analysis considers the following labour market policies and institutions: the stringency of employment protection provisions related to the dismissal of regular workers; the generosity of unemployment benefits using the average replacement rate which takes account of the level of benefits and their maximum duration; the coverage rate of collective bargaining agreements; and a measure of the degree of centralisation or co-ordination of the collective wage bargaining process.[1] The analysis is based on an unbalanced panel of semi-annual data for the period 1986-2015 for 22 OECD countries.

The analysis updates and extends previous results reported in OECD (2012). One important difference is that the earlier analysis conditioned on contemporaneous developments in output whereas the analysis here only conditions on the size of the initial output shock. The present analysis therefore accounts for both the cyclical response of unemployment to the initial shock and its structural response as a result of hysteresis-type effects. Another difference is that the earlier analysis was limited to the period before the Great Recession while the analysis here includes the crisis and its aftermath.

1. This is measured using an indicator which takes values 1 for decentralised and uncoordinated processes, and 2 and 3 for intermediate and high degrees of centralisation/co-ordination, respectively (Bassanini and Duval, 2006; OECD, 2004 and 2006). See Chapter 4 of this publication for an alternative way of classifying collective bargaining systems.

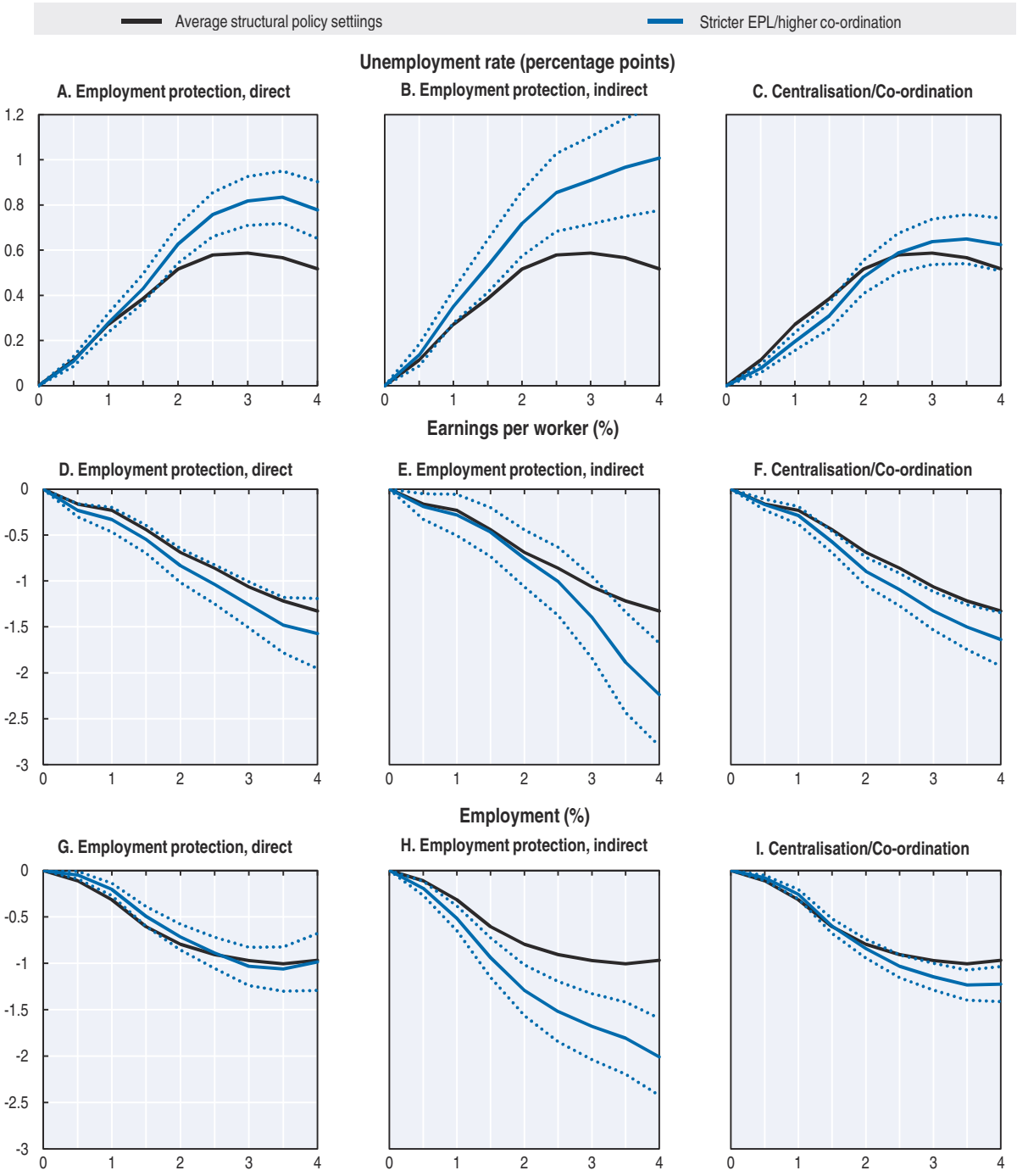
Labour market policies shape the response of unemployment to aggregate shocks

Drawing on the experience from economic cycles since the mid-1980s, the empirical analysis finds that, of the various labour market policy settings that might plausibly affect labour market resilience, only employment protection of regular workers and the centralisation/co-ordination of collective wage bargaining are significantly related with labour market resilience (Figure 2.6). The average replacement rate of unemployment benefits and collective bargaining coverage do not significantly dampen or amplify aggregate shocks in the near and medium term.[4]

- *Strict employment protection of regular workers tends to make labour markets less resilient.* The analysis distinguishes between the effect of employment protection for regular workers on labour market resilience through its impact on hiring and firing of regular workers (the direct effect) and through its impact on the use of temporary workers (the

Figure 2.6. **The role of labour market policies and institutions for labour market resilience**

Impact of a 1-percentage point decline in GDP under alternative labour market policy settings over the following four years



Note: The solid black line denotes the impact of a 1-percentage point decline in GDP on the unemployment rate under average structural policy settings. The solid blue line indicates the point estimate of a 1-percentage point decline in GDP on the unemployment rate when the structural policy setting of interest is increased by one standard deviation, while the dotted blue lines denote the corresponding 90% confidence interval around the blue line relative to the black line.

Source: OECD calculations based on the *OECD Economic Outlook No. 100*, *https://stats.oecd.org/index.aspx?DataSetCode=EO*.

StatLink http://dx.doi.org/10.1787/888933477756

indirect effect).[5] The direct effect of employment protection tends to dampen the negative effect on employment in the early phase of economic downturns when many jobs are at risk of being destroyed (Panel G). During the subsequent recovery the direct effect lowers the decline in unemployment by weakening incentives for hiring workers on permanent contracts (Panel A). Provisions that protect workers on regular contracts against the risk of job loss also affect labour market resilience indirectly by providing incentives for employers to rely more heavily on workers on temporary contracts. The combination of strict employment protection provisions for regular workers with lenient rules on the use of temporary workers tends to give rise to labour market segmentation. A high incidence of temporary work amplifies the unemployment response to aggregate demand shocks (Panels B and H). Results for employment are consistent with those for unemployment, while the wage response to aggregate shocks does not appear to be significantly associated with employment protection for regular workers (Panel E).[6, 7]

- *Centralised or co-ordinated wage bargaining systems may facilitate labour market adjustment in the short term, although their quantitative impact is rather small.*[8] In countries with highly centralised or co-ordinated wage bargaining systems, the initial adjustment on the employment margin is mitigated relative to countries with intermediate levels of centralisation and co-ordination and countries with decentralised or uncoordinated wage bargaining systems (Panels C and I) by promoting more adjustment on the earnings margin (Panel F).[9] Typically, this takes the form of reductions in working time with corresponding reductions in earnings and labour costs rather than reductions in hourly wages, which are likely to be more demoralising since they represent a devaluation of work. Having centralised or co-ordinated wage bargaining systems can help to make such adjustments more acceptable to workers by ensuring that they are broad-based and hence are more equally shared.[10] In some countries, working-time reductions are uncompensated so that they result in proportional reductions in earning (e.g. Sweden), while in others they may be partially compensated through the use of short-time work schemes (e.g. Germany, Japan). These schemes are typically more important in countries with relatively strict employment protection provisions and often require the involvement of the social partners (Hijzen and Venn, 2011; Hijzen and Martin, 2013).

At the macro level, more co-ordinated or more centralised collective bargaining systems limit the short-term unemployment impact of economic downturns, while the importance of collective bargaining per se, as measured by the share of workers covered, is not associated with resilience. Box 2.3 summarises the results from a micro-level analysis exploring the effects of both the nature and coverage of bargaining arrangements on the adjustment behaviour of firms in response to the Great Recession. These suggest that high coverage by national/sectoral (centralised) or multi-level bargaining arrangements (firm and higher level) promote adjustment in terms of earnings (wages and working time) rather than employment in response to adverse economic shocks. These results are broadly consistent with the macro-level results as they both point to the potential beneficial effects of centralised or co-ordinated collective bargaining systems for labour market resilience. However, further work is needed to better understand how collective bargaining systems can contribute to make labour markets more resilient in the short term but also how they affect labour market performance in the longer term.[11]

Box 2.3. **Collective bargaining arrangements and firm-level adjustments during the Great Recession**

This box analyses how collective bargaining arrangements affected the adjustment behaviour of firms during the Great Recession. To this end, information on the nature and reach of collective bargaining by industry is combined with firm-level data from the ORBIS database. The ORBIS database contains information from firms' balance sheets and income statements, including employment and the wage bill. The information on collective bargaining arrangements within countries is obtained from the European Union Structure of Earnings Survey (SES). The information on collective bargaining allows measuring collective bargaining coverage for four different bargaining regimes: i) collective bargaining takes place exclusively at the national or sector level ("centralised bargaining"); ii) collective firm-level bargaining and higher level bargaining coexist ("multi-level bargaining"); iii) collective bargaining takes place exclusively at the firm level ("firm-level bargaining"); and individual-level bargaining ("no collective bargaining"). The information on collective bargaining refers to the situation at the onset of the crisis and is held constant over time to avoid that the endogenous response of collective bargaining to the crisis biases the results. The analysis covers 15 European countries for the period 2000-12.

The role of collective bargaining arrangements and the adjustment behaviour of firms to the Great Recession is analysed in a differences-in-differences setup. This involves relating differences in the average growth rate of employment and firm-level wages in the pre-crisis (2000-08) and post-crisis (2009-12) period to the nature and coverage rate of collective bargaining. More specifically, the following model is estimated:

$$\Delta lnY_{ijct} = \sum_{l}\left({}^{l}CB_{cj}^{l} \bullet d_{t}^{post} \right) + \gamma \Delta lnY_{ijct-1} + \eta_{cj} + \eta_{jt} + \eta_{ct} + \varepsilon_{ijct}$$

where Y_{ijct} denotes employment or average wages in firm i, sector *j*, country *c* and year *t*; d_t^{post} is a post-crisis dummy that takes value 1 from 2009 onward and 0 otherwise; CB_{cj}^{l} is collective bargaining coverage by type *l*; η_{cj}, η_{jt} and η_{ct} are country-sector, sector-year and country-year fixed effects to control for time-invariant country-sector characteristics, including the average effect of collective bargaining on firm performance, industry-specific trends and macroeconomic developments.[1] A key difference with the macro-level analysis presented in the main text is that the current specification focuses directly on the role of collective bargaining coverage for each collective bargaining regime rather than on the role of different regimes for a given level of collective bargaining coverage.

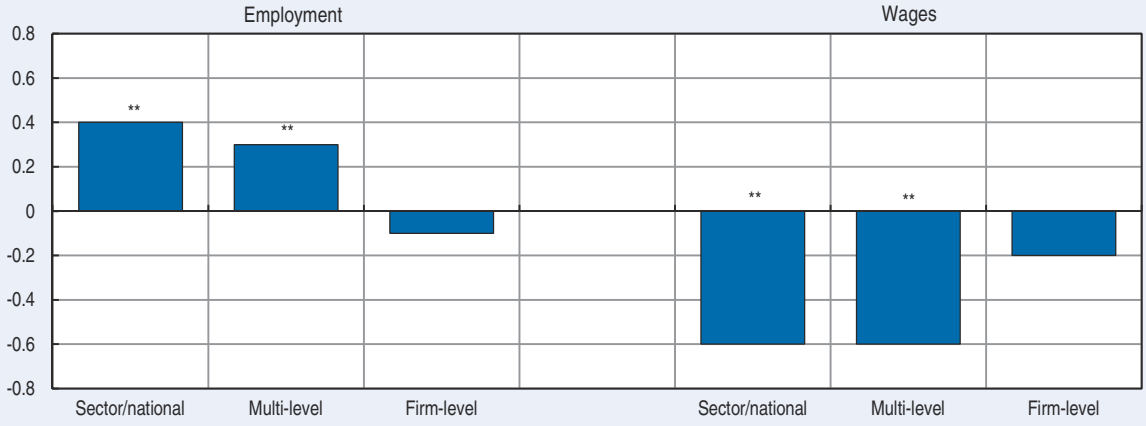
The results suggest that firms covered by centralised and multi-level collective bargaining agreements experienced higher firm-level employment growth in the wake of the Great Recession relative to firms where bargaining takes place at the firm level or where no collective bargaining takes place (results are expressed in terms of differences relative to the "no collective bargaining" benchmark, Figure 2.7). At the same time, wages in firms covered by centralised and multi-level agreements declined more than in their uncovered counterparts. A 10-percentage point increase in the coverage rate of centralised or multi-level bargaining is associated with a 0.3-0.4 percentage points increase in the growth rate of employment and a 0.6-percentage point reduction in the growth rate of firm-level wages during the first four years of the Great Recession. Firm-level bargaining is not associated with any differences in the adjustment behaviour of firms to aggregate shocks relative to firms that are not covered by any collective agreement.

One possible explanation for these results is that in the context of a deep economic downturn it is easier to make temporary wage or working-time concessions when these are broad-based and widely shared. On the one hand, more centralised collective bargaining systems can help to reduce transaction costs involved in the negotiation of temporary wage and working-time reductions and, in the case of public schemes for short-time work, may facilitate their implementation, while on the other hand they may help making wage and working-time concessions more acceptable to workers by ensuring that they are widely shared and avoid free-rider problems.

Box 2.3. **Collective bargaining arrangements and firm-level adjustments during the Great Recession** *(cont.)*

Figure 2.7. **The role of collective bargaining arrangements for firm-level adjustments to the Great Recession**

Percentage point difference between post- and pre-crisis growth due to a 10-percentage point increase in collective bargaining coverage relative to no collective bargaining



Note: ***, **, * statistically significant at 1%, 5% and 10% levels respectively, based on standard errors that are clustered by country and industry.

Source: OECD calculations based on ORBIS (2000-12) and the Structure of Earnings Survey (2006).

StatLink http://dx.doi.org/10.1787/888933477760

1. The analysis includes the following countries: Belgium, the Czech Republic, Germany, Estonia, Finland, France, Hungary, Italy, Latvia, Norway, Poland, Portugal, the Slovak Republic, Spain and the United Kingdom.

The role of fiscal policy for labour market resilience

Fiscal policy affects labour market resilience directly by impacting aggregate demand, both through the automatic fiscal stabilisers and through discretionary measures. Automatic fiscal stabilisers reflect adjustments in fiscal revenue and expenditure that are directly related to the business cycle, such as declines in income tax revenues and increases in unemployment benefit expenditure during recessions. Consequently, the effect of automatic fiscal multipliers on aggregate demand and labour market outcomes cannot be estimated econometrically. In order to estimate the effect of fiscal policy on labour market outcomes, the econometric analysis focuses on discretionary fiscal policy changes that are unrelated to the business cycle. In Section 3, the resulting employment multiplier is then applied to actual changes in fiscal balances to approximate the effects of overall fiscal policy, including that of automatic stabilisers, on unemployment.

Discretionary fiscal policy changes that are unrelated to the business cycle are measured using forecast errors obtained by comparing the actual change in discretionary public spending with the corresponding forecast for the change in public spending that was made six months earlier (Box 2.4). Forecasts for public spending are taken from historical vintages of the *OECD Economic Outlook*. The assumption for identifying the causal effect of fiscal policy is thus that the implementation lag of public spending is at least six months. Fiscal shocks are calculated separately for public consumption and investment and are scaled by lagged GDP to allow for the direct interpretation of output and labour market

Box 2.4. **Fiscal policy: The empirical model**

Identifying the causal effect of fiscal policy on output and unemployment requires isolating changes in fiscal policy that are exogenous to the business cycle. Existing studies have used either a narrative approach (Romer and Romer, 2010; Ramey, 2011) or an approach based on fiscal forecast errors (Blanchard and Perotti, 2002; Auerbach and Gorodnichenko, 2012). The narrative approach uses detailed background information on the motivation behind legislated policy changes, while the approach based on forecast errors interprets fiscal policy changes that are unanticipated by professional forecasters as exogenous. The interpretation of fiscal policy surprises as exogenous hinges on the assumption that fiscal policy cannot adjust to the business cycle instantaneously because of implementation lags (e.g. a specific measure has to be identified, budgetary approval needs to be obtained and arrangements have to be made for its effective implementation). This assumption requires focusing on government consumption, public investment and active labour market spending, since government transfers and taxes adjust automatically to the business cycle.

The econometric analysis in this chapter adopts the approach based on fiscal forecast errors. The fiscal shock is constructed as the error in forecast public spending changes scaled by lagged GDP. For government consumption and public investment, the forecast error can be constructed from historical vintages of the *OECD Economic Outlook* database as follows:

$$Fis_t = (\Delta G_t - E_{t-1}[\Delta G_t]) / GDP_{t-1},$$

where G_t denotes the final national account figures for real fiscal expenditure (government consumption or public investment); $E_{t-1}[\Delta G_t]$ denotes the forecasted change in real fiscal expenditure for period *t* from the *OECD Economic Outlook* vintage in period *t-1*; and GDP_{t-1} denotes the final national account figure for GDP in period *t-1*. Scaling the forecast error in public spending by GDP allows interpreting the estimated coefficients on the fiscal shock directly as fiscal multipliers (Hall, 2009).

Forecasts for active labour market spending are not available in the *OECD Economic Outlook Database*. However, it is possible to isolate the discretionary part of active labour market spending by generating a series of out-of-sample forecasts for this spending category for period *t* using regression models that use all information in period *t-1*, including the forecasts of GDP and unemployment from the *OECD Economic Outlook* vintage for period *t*. This is in the spirit of previous work by Darby and Melitz (2008) and Furceri and Zdzienicka (2012).

The response of output and the labour market to exogenous fiscal policy shocks during the business cycle is modelled using the local projection method as follows (see Box 2.2 for details):

$$R_{ct+s} - R_{ct-1} = {}^{s}_{L}g(z_{ct})Fis_{ct} + {}^{s}_{H}\left[1 - g(z_{ct})\right]Fis_{ct} + \sum_{i=1}^{2}\delta_i^s X_{ct-i} + {}^{s}_{c} + {}^{s}_{t} + \varepsilon_{ct+s} \;\forall s = 0,1,\ldots,S$$

where *R* denotes real GDP or labour market outcomes; *Fis* is a measure of the fiscal shock; $g(z)$ is a smooth transition function between states of the business cycle which takes the form $g(z_{ct}) = \dfrac{\exp(-\gamma z_{ct})}{(1+\exp(\gamma z_{ct}))}$, with $\gamma = 1.5$; z_{ct} is the forecast of GDP growth from the *OECD Economic Outlook* vintage released in *t-1*; *X* denotes a vector of controls which include lags of the dependent variable, actual GDP growth and actual public spending; and ${}^{s}_{L}$ and ${}^{s}_{H}$ denote the response of the labour market to the discretionary fiscal shock evaluated at the most extreme busts and booms in the sample. As in the case of structural policies and institutions, the analysis is based on an unbalanced panel of semi-annual data for the period 1986-2015 for 22 OECD countries.

effects as fiscal multipliers. The effects of spending on active labour market programmes (ALMPs) are also analysed. While there are no official OECD forecasts for these, forecast errors are constructed *ex post* by comparing actual active spending developments with forecasts for active spending based on the available information in the previous period.

As in the case of structural policies and institutions, the impact of fiscal shocks for labour market resilience is analysed by means of impulse response functions which document the evolution of GDP or unemployment in response to an impulse in public spending during the subsequent four years. Results are reported for the average impact over the business cycle as well as separately for the impact during economic downturns and expansions.

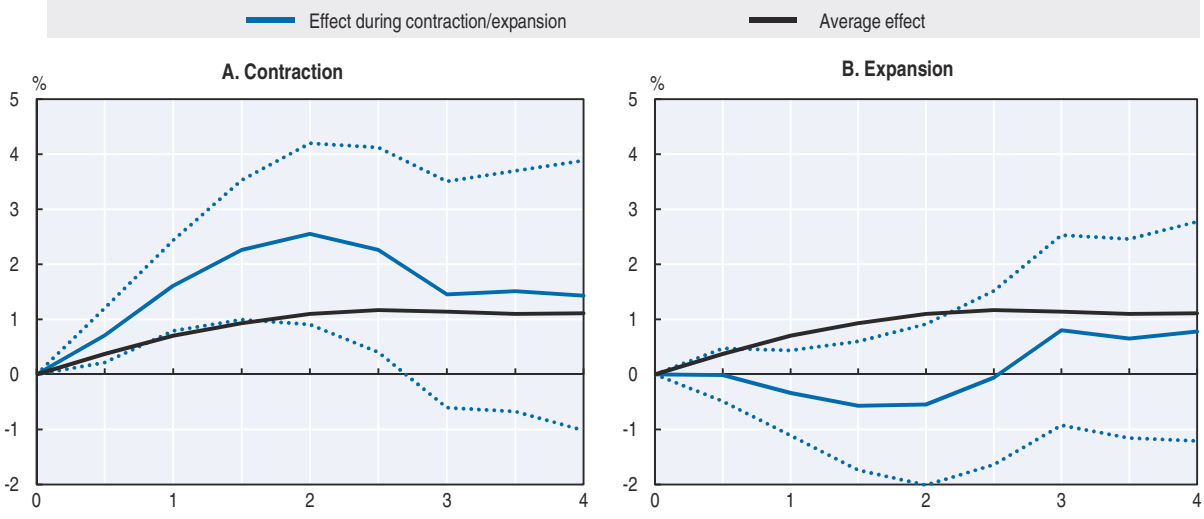
Fiscal stimulus promotes labour market resilience during economic downturns by stabilising aggregate demand

On average over the business cycle, an increase in discretionary fiscal spending of 1% of GDP increases GDP by about 1% after two years (Figure 2.8).[12] This corresponds to a fiscal multiplier of about 1, which is within the range of typical estimates reported in the literature by Gechert (2015) and Ramey (2016). The estimated short-term impact of fiscal spending on GDP is strong during severe economic downturns (Panel A) but absent during large economic expansions (Panel B), which is consistent with previous evidence (Auerbach and Gorodnichenko, 2012, 2013). While the fiscal multiplier during a severe economic downturn – around 2½ after two years – is in the upper range of previous estimates, a severe economic downturn in the context of the current methodology corresponds to the largest economic downturn across countries over the sample period. During more moderate economic downturns, the fiscal multiplier is closer to the reported average over the business cycle.

The differential impact of fiscal spending shocks over the business cycle reflects the possibility that public spending crowds out private spending to a lesser extent during

Figure 2.8. **Government spending stabilises aggregate demand during economic downturns**

Impact of a fiscal spending shock of 1% of GDP on GDP over the following four years



Note: The solid blue line indicates the point estimate during economic contractions/expansions, while the dotted lines indicate the corresponding 90% confidence interval. The black line indicates the point estimate on average over the business cycle. Overall public spending is defined for the present purposes by the sum of consumption and investment spending.

Source: OECD calculations based on the *OECD Economic Outlook No. 100*, *https://stats.oecd.org/index.aspx?DataSetCode=EO*.

StatLink http://dx.doi.org/10.1787/888933477776

economic downturns than during economic expansions or may even crowd in private spending by raising expectations of future growth. Moreover, monetary policy may not act to offset the fiscal stimulus if the policy interest rate is at the zero lower bound or expected inflation is below the target so that an increase in inflation expectations in response to the fiscal stimulus directly translates into lower real interest rates. All else being equal, the effectiveness of fiscal policy during economic downturns in the short term and its ineffectiveness during expansions suggest a strong case for counter-cyclical discretionary fiscal policy, provided that it can respond quickly enough to have its desired impact on economic activity.

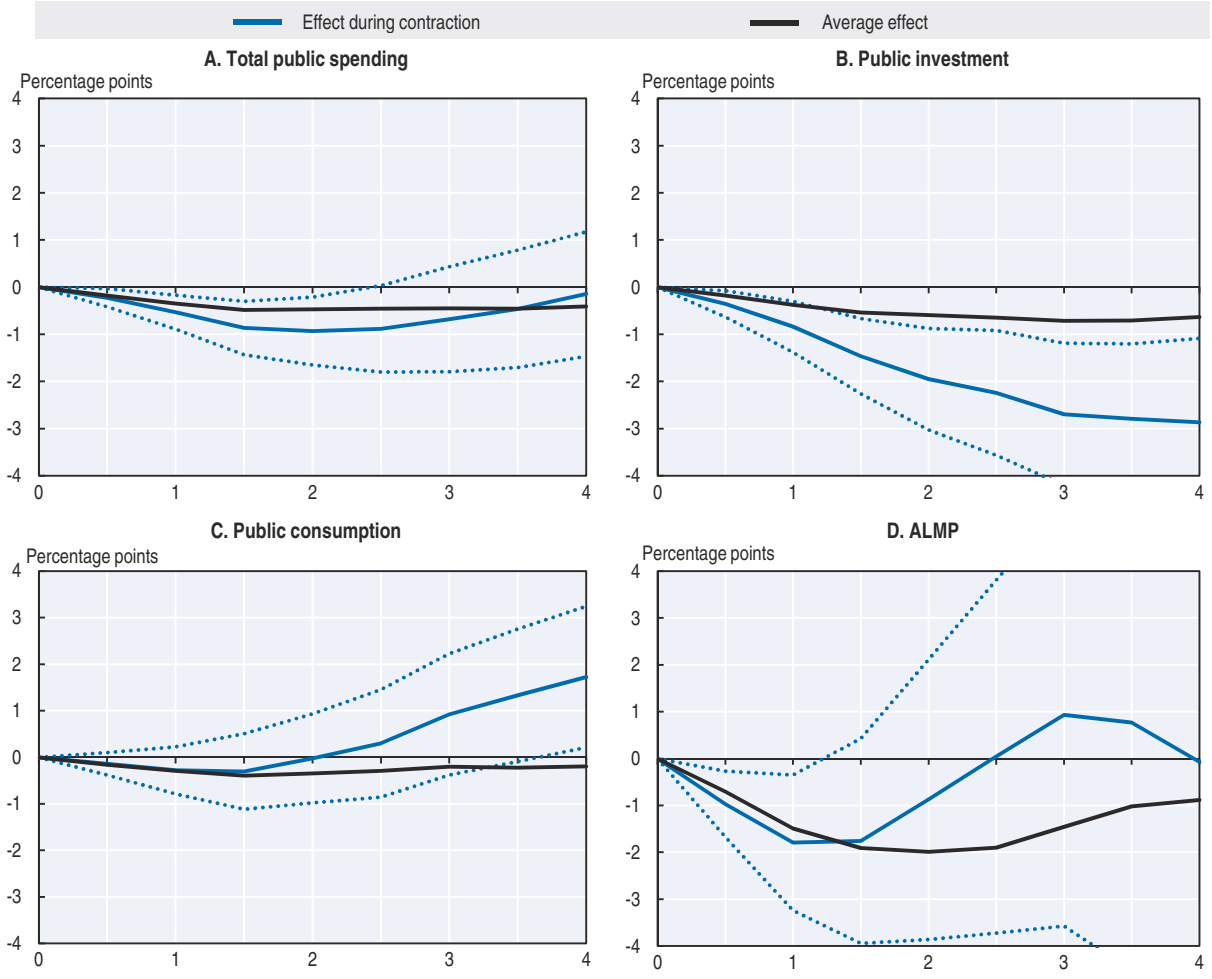
By stabilising aggregate demand, discretionary fiscal spending limits the increase in unemployment in the wake of negative aggregate shocks (Figure 2.9). With regards to the impact of fiscal policy on unemployment the following key findings emerge:

- *On average over the business cycle, a discretionary public spending shock of 1% of GDP reduces the unemployment rate by about half a percentage point* (Panel A). Given a fiscal multiplier of about one, the implicit responsiveness of the unemployment rate to an increase in aggregate demand is about one half. This is consistent with Okun's "law", i.e. the notion that there is a stable empirical relationship between output and unemployment by which a 1% decline in output is associated with a half a percentage point increase in the unemployment rate (Okun, 1962).[13]
- *The timing of public spending shocks matters for its effectiveness in promoting labour market resilience.* An increase in overall fiscal spending reduces the unemployment rate during economic downturns but not during economic expansions (Panel A). The maximum impact during a severe economic downturn is reached after two years at which point a 1% increase in public spending is associated with an almost 1-percentage point reduction in the unemployment rate.
- *The composition of public spending matters* (Panels B and C). The impact of public investment on unemployment tends to be both larger and more persistent than that of public consumption. Moreover, the impact of public investment on unemployment is also more sensitive to the business cycle, with its effect being much larger during severe downturns than in normal times. In principle, this could reflect the crowding in of private investment as firms raise investment in response to higher aggregate demand. However, there is considerable uncertainty about the exact size of the unemployment-reducing effects of public investment as can be seen from the wide confidence bands associated with the estimates.[14]
- *Public spending on active labour market programmes (ALMP) significantly reduces unemployment in the short term* (Panel D). After one year, an increase in active labour market spending of 1% of GDP would reduce the unemployment rate by almost 2 percentage points compared with less than half a percentage point for public spending overall.[15] Given the average share of active labour market spending in GDP in the OECD of around 0.5%, an increase of 1% of GDP is extremely large and may neither be desirable nor feasible (see discussion in Box 2.5). However, the result implies that even modest increases in active labour market spending can make a significant contribution to reducing unemployment in the short term. It also implies that an increase in active labour market spending could partially pay for itself by reducing the overall cost of unemployment benefits.[16]
- *The impact of active labour market spending may increase with the generosity of unemployment benefits* (not shown). This may be because unemployment benefits provide a connection

point between unemployed workers and case workers in the public employment services (Fernandez et al., 2016). Alternatively, this could reflect the role of well-designed activation policies in counteracting the impact of high and long-lasting unemployment benefits on incentives for work (Bassanini and Duval, 2009; OECD, 2006).[17]

Figure 2.9. **Government spending reduces unemployment during economic downturns**

Impact of a fiscal spending shock of 1% of GDP on the unemployment rate over the following four years



Note: The solid blue line indicates the point estimate during economic contractions, while the dotted lines indicate the corresponding 90% confidence interval. The black line indicates the point estimate on average over the business cycle.

Source: OECD calculations based on the *OECD Economic Outlook No. 100*, *https://stats.oecd.org/index.aspx?DataSetCode=EO* and *OECD Labour Market Programmes Database, https://stats.oecd.org/Index.aspx?DataSetCode=LMPEXP*.

StatLink http://dx.doi.org/10.1787/888933477786

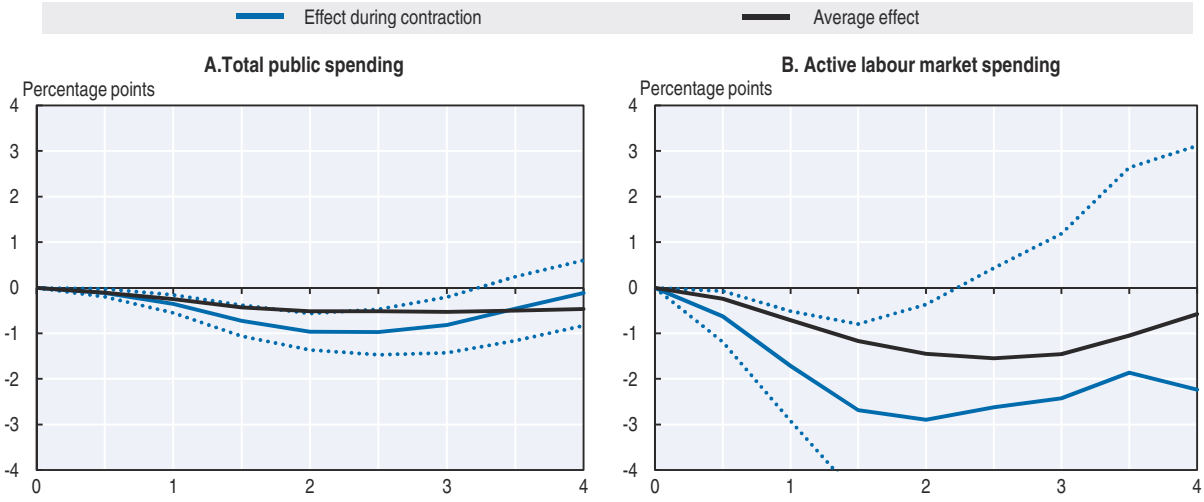
Fiscal expansion during downturns reduces the risk of labour market hysteresis

By limiting the rise in unemployment during economic downturns, fiscal stimulus not only reduces the social cost of the crisis, but also the risk that the cyclical increase in unemployment becomes structural or translates into a semi-permanent reduction in labour supply. The long-term unemployment rate, i.e. the number of persons who are unemployed for one year or more as a share of the labour force, could signal changes in both the importance of structural barriers to employment and the risk that workers become discouraged searching for a job and drop out of the labour force. Figure 2.10 shows

that total fiscal spending also reduces the long-term unemployment rate. The estimated impact of spending on active labour market programmes (ALMPs) is even larger and more persistent than for unemployment overall. This may reflect the possibility that active labour market programmes disproportionately benefit the long-term unemployed or unemployed persons at risk of long-term unemployment (Andrews and Saia, 2017).[18]

Figure 2.10. **Government spending reduces long-term unemployment during economic downturns**

Impact of a fiscal spending shock of 1% of GDP on the long-term unemployment rate over the following four years



Note: The solid blue line indicates the point estimate during economic contractions, while the dotted lines indicate the corresponding 90% confidence interval. The black line indicates the point estimate on average over the business cycle. The long-term unemployment rate refers to the share of persons who are unemployed for one year or more in the labour force.

Source: OECD calculations based on the *OECD Economic Outlook No. 100*, *https://stats.oecd.org/index.aspx?DataSetCode=EO*, *OECD Labour Market Programmes Database*, *https://stats.oecd.org/Index.aspx?DataSetCode=LMPEXP* and *OECD Labour Force Statistics Database*, *www.oecd.org/employment/onlineoecdemploymentdatabase.htm*.

StatLink http://dx.doi.org/10.1787/888933477796

The effectiveness of fiscal policy is likely to depend on country-specific factors

While the above analysis provides an indication of the average effectiveness of fiscal policies across countries, there is likely to be substantial cross-country heterogeneity due to the following factors:

- *The degree of trade openness*. Fiscal multipliers are typically found to be smaller in highly open economies since demand stimulus is more likely to leak abroad through higher imports than in more closed economies (Auerbach and Gorodnichenko, 2013; Barrell et al., 2012).
- *The level of public debt*. Fiscal policy is typically found to be less effective in countries with high public debt as households and businesses anticipate future fiscal tightening by raising saving rates (Favero et al., 2011; Ilzetzki et al., 2013).
- *The exchange rate regime*. Countries with fixed exchange rates tend to have larger fiscal multipliers as changes in aggregate demand relative to trading partners cannot be offset by changes in nominal exchange rates (Ilzetzki et al., 2013).
- *The monetary policy response*. Fiscal multipliers are larger when monetary policy does not respond to the demand stimulus by raising interest rates, which is typically the case at the zero interest lower bound (Alesina et al., 2016; Woodford, 2011).

- *Labour market policies and institutions*. Fiscal policy may be more effective in supporting employment in countries in which labour market policies and institutions generate wage rigidities since the demand stimulus may be passed on to wages to a lesser extent than in countries with more flexible wages (De Ridder and Pfajfar, 2016).

3. The effects of labour market and fiscal policies for labour market resilience following the Great Recession

This section builds on estimates in the previous section to simulate the overall effect of structural and fiscal policies on labour market resilience in the aftermath of the Great Recession. In the labour market policy simulations, observed developments in GDP are applied to the coefficients estimated in the previous section under different assumptions on labour market policy settings at the onset of the Great Recession (actual or OECD average). In the fiscal policy simulations, observed developments in GDP are applied to the estimated fiscal multiplier of public expenditure under different assumptions on the evolution of the fiscal balance since the start of the Great Recession (constant versus actual). The fiscal policy simulations account for the fact that the fiscal multiplier is larger during economic downturns than economic expansions. Since the fiscal multiplier has been estimated using exogenous forecast errors, it is not affected by the endogeneity of the fiscal balance to the business cycle. However, since changes in the fiscal balance reflect both automatic fiscal stabilisers and discretionary measures, the overall effect of fiscal policy on unemployment will tend to be larger in countries with large economic downturns.

The simulations implicitly assume that the effects of labour market and fiscal policies are identical in all countries. This means that the analysis abstracts from country characteristics that may influence the *country-specific* impact of labour market and fiscal policies on resilience. Since the scenarios considered in the labour market and fiscal policy simulations are not comparable, they cannot be used to assess their relative importance for labour market resilience.

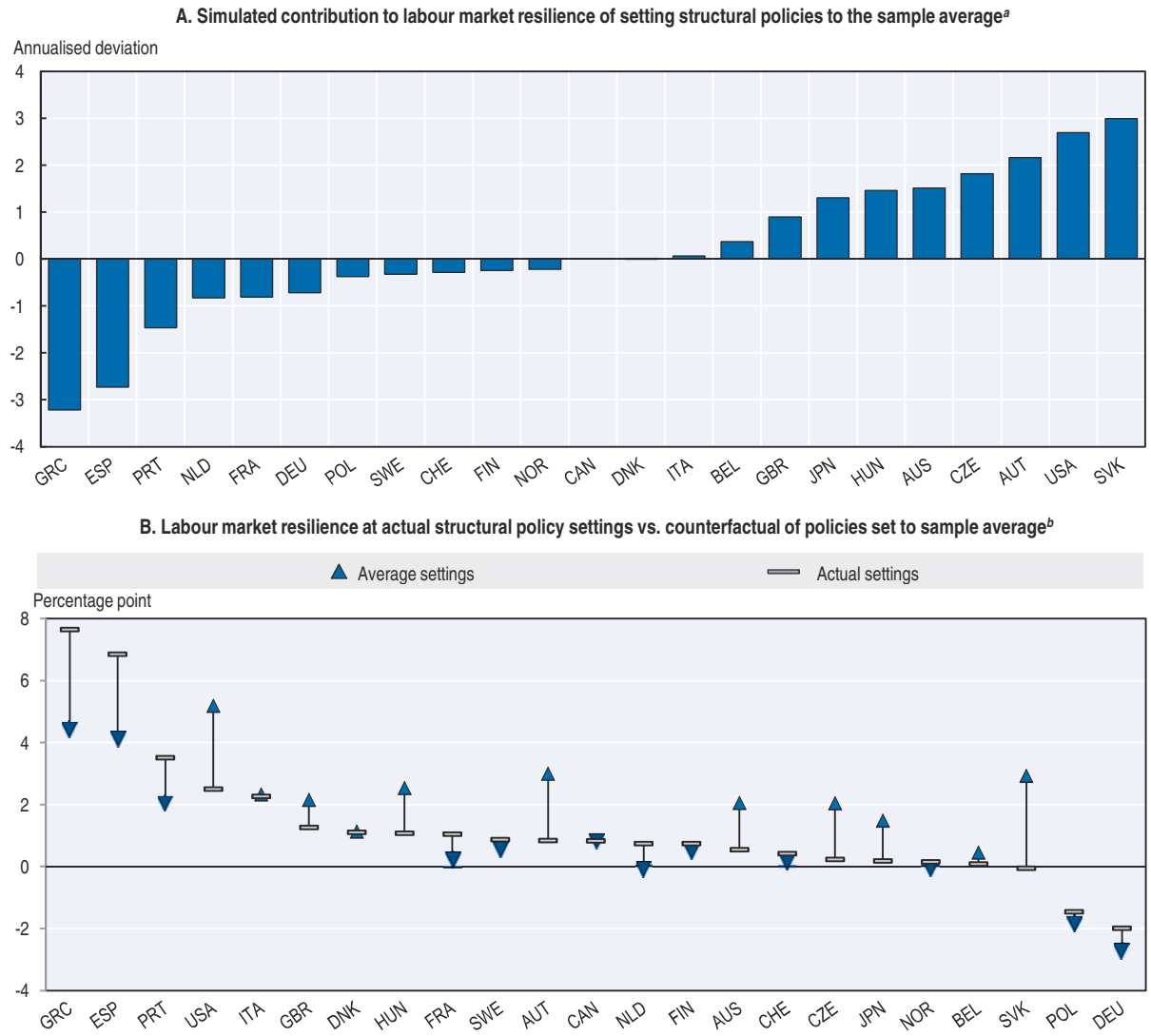
Strict employment protection provisions for regular workers tended to reduce labour market resilience

Figure 2.11 provides an indication of the role of labour market policies and institutions for labour market resilience by documenting the change in the annualised deviation of unemployment from the pre-crisis rate during the period 2008-15 that would have occurred if labour market policy settings in each country had been equal to their average level in the OECD instead of the actual values.[19] The simulations account only for labour market policies and institutions that were found to play a statistically significant role for labour market resilience in Section 2. These are the stringency of employment protection provisions for regular workers and the nature of collective bargaining systems.

The simulation results suggest that adopting the average structural policy settings in the OECD before the crisis would have significantly reduced the unemployment impact of the Great Recession in Greece, Spain and Portugal, but would have significantly increased the unemployment cost of the crisis in Austria, Australia, the Czech Republic, the Slovak Republic and the United States (Panel A). The bulk of these changes reflect changes in the employment protection provisions of regular workers, both through their direct effect on hiring and firing and their indirect effect on the incidence of temporary work. The degree of co-ordination and centralisation of collective bargaining systems typically played a minor role.

Figure 2.11. **Strict employment protection provisions for regular workers tended to reduce resilience**

Annualised deviation of unemployment from the pre-crisis NAIRU, 2008-15



a) Bars denote the change to the annualised deviation of unemployment that arises when replacing actual structural policy settings in 2007 by the sample average. The simulations take account of the direct effect of employment protection for regular workers on the hiring and firing of employees and its indirect effect on the incidence of temporary work as well as the role of more co-ordinated and more centralised collective bargaining systems based on estimates reported in Figure 2.6.

b) "Actual settings" refers to the annualised deviation of unemployment from the pre-crisis NAIRU as reported in Figure 2.2; "Average settings" refers to the counterfactual outcome that would be obtained in the event that structural settings had been equal to the sample average instead. In practical terms, this involves adding the simulated contribution of this policy change as documented in Panel A of this figure to the annualised deviation of unemployment obtained with actual settings.

Source: OECD calculations based on the *OECD Economic Outlook No. 100*, *https://stats.oecd.org/index.aspx?DataSetCode=EO*.

StatLink http://dx.doi.org/10.1787/888933477807

The role of employment protection helps to explain some of the variation in labour market resilience across countries. Actual settings tended to reduce labour market resilience in countries where the unemployment impact of the crisis was very large (e.g. Greece, Spain), while they increased it in countries where the unemployment impact was small (e.g. Australia, the Czech Republic and the Slovak Republic) (Panel B).

In most countries, fiscal policy contributed to labour market resilience

The fiscal policy simulations take account of both discretionary fiscal policy measures and automatic stabilisers. This is done by using the estimated fiscal multipliers for discretionary spending shocks in combination with actual developments in the headline fiscal balance and the cyclically-adjusted fiscal balance over the period 2008-15. This implicitly assumes that the estimated fiscal multiplier for discretionary spending is similar for other revenue and spending components, including discretionary changes in the tax system and automatic stabilisers. Existing studies typically show that the impact of these other components on aggregate demand tends to be somewhat weaker than that of discretionary fiscal spending (Alesina et al., 2016; Ramey, 2016). Consequently, the simulations in this section may somewhat overstate the impact on unemployment of changes in the headline and cyclically-adjusted fiscal balance. Moreover, the cross-country variation in the role of fiscal policy should only be considered as indicative since the simulations do not account for cross-country differences in the effectiveness of fiscal policy.

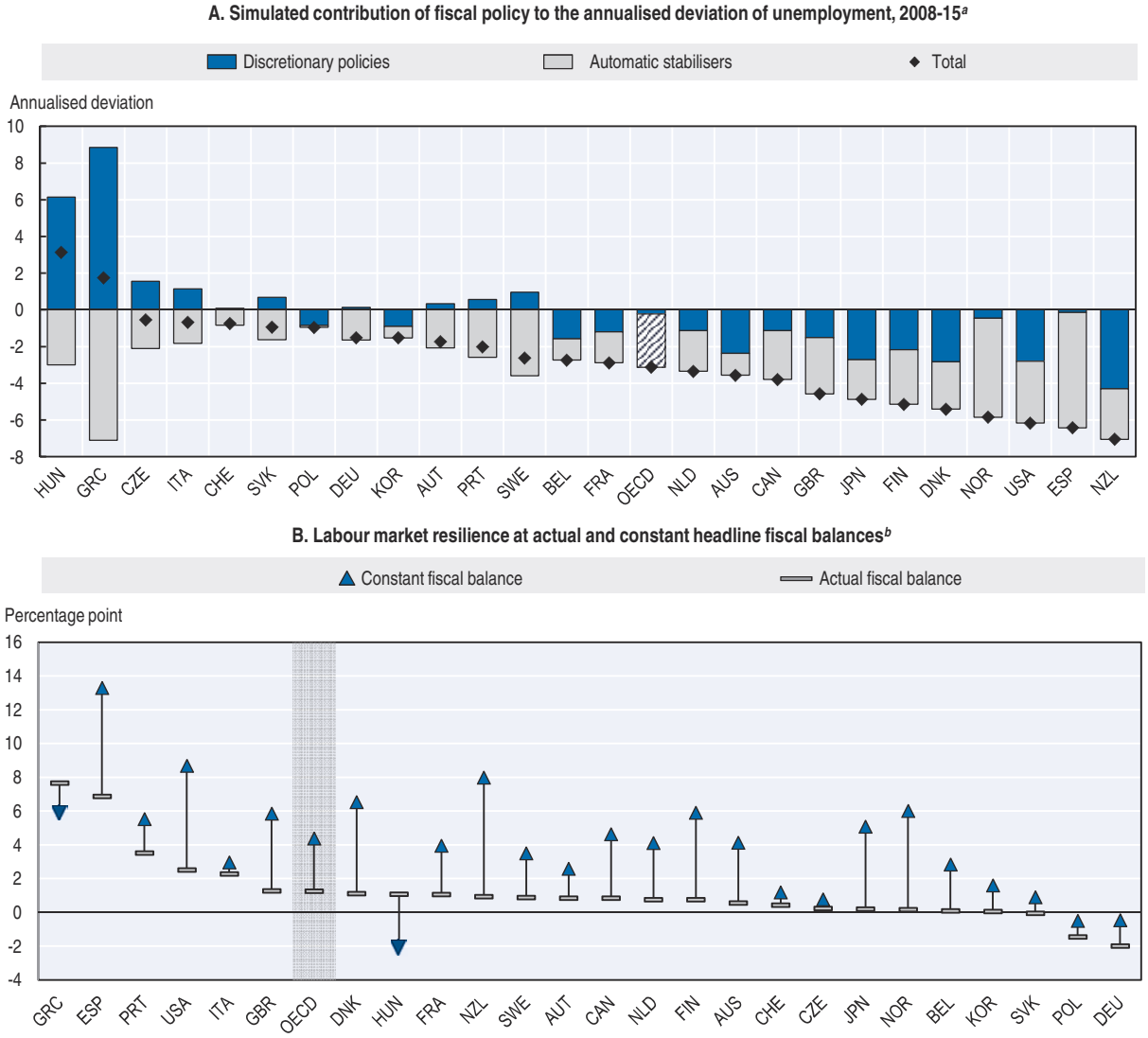
In most countries, the headline fiscal balance was allowed to deteriorate during the Great Recession, thereby supporting aggregate demand and contributing to labour market resilience (Figure 2.12, Panel A). This was largely driven by the automatic stabilisers while discretionary fiscal policy – measured in terms of the cyclically adjusted fiscal balance – either complemented or partially offset them. A number of countries, such as New Zealand and the United States, took discretionary measures to stimulate aggregate demand either by raising public spending or reducing government revenue during the downturn. In these countries, the headline fiscal balance deteriorated by more than implied by the free operation of the automatic stabilisers, which contributed to labour market resilience. In countries with modestly contractionary discretionary fiscal policy during the crisis, such as the Slovak Republic or Portugal, automatic stabilisers more than offset the upward effect of discretionary measures on the unemployment rate. While many euro area countries tightened discretionary fiscal policy over 2011-12, in most of these countries the tightening only partly offset the downward effect on the unemployment rate of fiscal expansions during the downturn. In part, this reflects the fact that the estimated fiscal multiplier during downturns is larger than during recoveries. Only Greece, Hungary and Italy did not allow the automatic stabilisers to operate at all by fully offsetting automatic declines in the headline fiscal balance via discretionary fiscal tightening.

Fiscal policy significantly contributed to labour market resilience on average but was not systematically related to its cross-country pattern (Figure 2.12, Panel B). The simulation results suggest that fiscal policy reduced the annualised deviation of unemployment from the pre-crisis NAIRU during the period 2008-15 from over 4 to about 1 percentage point for the OECD as a whole. In a number of countries that were particularly hard hit by the crisis, including Greece, Italy and Portugal, automatic stabilisers were not allowed to operate fully. However, in a number of other countries that were hard hit by the crisis automatic stabilisers were allowed to operate, which contributed to labour market resilience. Overall, similar levels of labour market resilience despite large differences in fiscal policy suggest that other factors played a larger role than fiscal policy in explaining cross-country patterns in labour market resilience.

While structural and fiscal policies explain some of the cross-country variation in labour market resilience, a considerable part remains unexplained. The most important reason for this is probably that no account is taken of the nature of the shock, i.e. whether

Figure 2.12. **Automatic fiscal stabilisers contributed to labour market resilience**

Annualised deviation of unemployment from the pre-crisis NAIRU, 2008-15



a) The diamond denotes the estimated effect of changes in the headline fiscal balance on the annualised deviation of unemployment from the pre-crisis NAIRU. The blue bar denotes the estimated effect of discretionary fiscal policy changes measured in terms of the cyclically adjusted fiscal balance on the annualised deviation of unemployment from the pre-crisis NAIRU. The grey bar denotes the estimated effect of automatic stabilisers on the annualised deviation of unemployment from the pre-crisis NAIRU in the absence of discretionary fiscal policy changes. This is obtained by subtracting the discretionary fiscal policy effect from the total fiscal policy effect. The simulations are based on the estimates reported in Panel A of Figure 2.9.

b) "Actual fiscal balance" refers to the annualised deviation of unemployment from the pre-crisis NAIRU as reported in Figure 2.2; "Constant fiscal balance" refers to the counterfactual outcome that would be obtained in the absence of any changes in the headline fiscal balance since the start of the Great Recession. In practical terms, this involves subtracting the simulated contribution of fiscal policy as documented in Panel A of this figure to the annualised deviation of unemployment obtained with actual fiscal balances.

Source: OECD calculations based on the *OECD Economic Outlook No. 100*, *https://stats.oecd.org/index.aspx?DataSetCode=EO*.

StatLink http://dx.doi.org/10.1787/888933477814

it reflected largely domestic problems related to finance, housing and construction (e.g. Spain and the United States), was compounded with a sovereign debt crisis (e.g. Greece, Portugal and Italy) or originated largely from abroad, with a sharp but short-lived impact on export demand (e.g. Germany and Japan). A second issue is that the simulations do not take account of the composition of public revenue and expenditure, even though this was

shown to be important in Section 3. Box 2.5 provides a detailed discussion of the optimal modulation of public spending on active and passive labour market programmes, unemployment benefits and short-time work schemes over the business cycle. Short-time work schemes have been shown to be particularly important in countries that have weathered the Great Recession rather well such as Germany and Japan (Hijzen and Martin, 2013).[20] Third, the analysis does not take account of all structural policy developments such as the progressive implementation of activation strategies in many OECD countries. Not only is this likely to have contributed to achieving record-low unemployment rates at the onset of the crisis, it also likely to have helped job losers get back into work more quickly during the crisis than otherwise would have been the case (e.g. Germany, Sweden and the United Kingdom).

Box 2.5. **The modulation of labour market policies over the business cycle**

This box documents the extent to which spending on labour market and social policies responds to economic downturns and provides a number of considerations in relation to their optimal modulation over the cycle.

Spending on unemployment benefits (UBs) per unemployed person has remained largely stable during the Great Recession, with an elasticity of benefit spending to unemployment close to one. This highlights the importance of UBs as an automatic stabiliser. For the OECD as a whole, the real value of income support per unemployed person even increased slightly in the period following the Great Recession. The more than proportional increase in UB spending is likely to reflect the impact of the crisis on the composition of the unemployed and the importance of specific measures taken by governments in response to the crisis (e.g. measures to promote the use of short-time work schemes or establish new ones, extensions to the maximum duration of benefit payments; the extension of UBs to workers with non-standard contracts). The case for temporarily extending benefit generosity during recessions is strongest in countries where benefit generosity is low. However, it is important that the negative effects of increased benefit generosity on work incentives are contained. This can be done by scaling up active labour market programmes; making use of declining benefit schedules and winding back temporary measures to increase the generosity or coverage of UBs once the labour market recovers (OECD, 2013, 2015).

By contrast, spending on active labour market programmes (ALMPs) has responded only weakly to the rise in unemployment following the Great Recession (Figure 2.13). A 1% increase in the number of unemployed was associated with a 0.4% increase in active labour market spending. While this was almost twice as high as during previous crisis episodes, the less than proportional increase in spending still resulted in a sharp decline in resources per jobseeker. According to OECD (2012), the value of resources per unemployed person declined by 20% between 2007 and 2010 on average across the OECD. A more significant increase is likely to be necessary to preserve the mutual-obligations ethos of activation regimes. This is particularly important in countries with relatively generous unemployment benefits and a strong emphasis on activation policies to maintain work incentives as well as in countries where the generosity of unemployment benefits is low, but has been temporarily extended in response to the increase in needs following the crisis. Linking budgets for spending on labour market programmes to labour market conditions raises a number of practical policy questions about implementation, including whether changes should be adopted on an ad hoc or automatic basis. Automatic rules may provide an effective instrument to make ALMP spending more responsive to the business cycle by allowing for a timelier, more predictable, and more transparent response. However, automatic rules also have their drawbacks. They involve an element of rigidity in the way policy responds to changing circumstances since they are inherently informed by past events and could thus prove to be sub-optimal in new circumstances. An alternative could be semi-automatic mechanisms that trigger a policy adjustment under pre-specified conditions, but that allow for policy discretion in the design of the adjustment. A number of OECD countries already have automatic or quasi-automatic rules to make spending

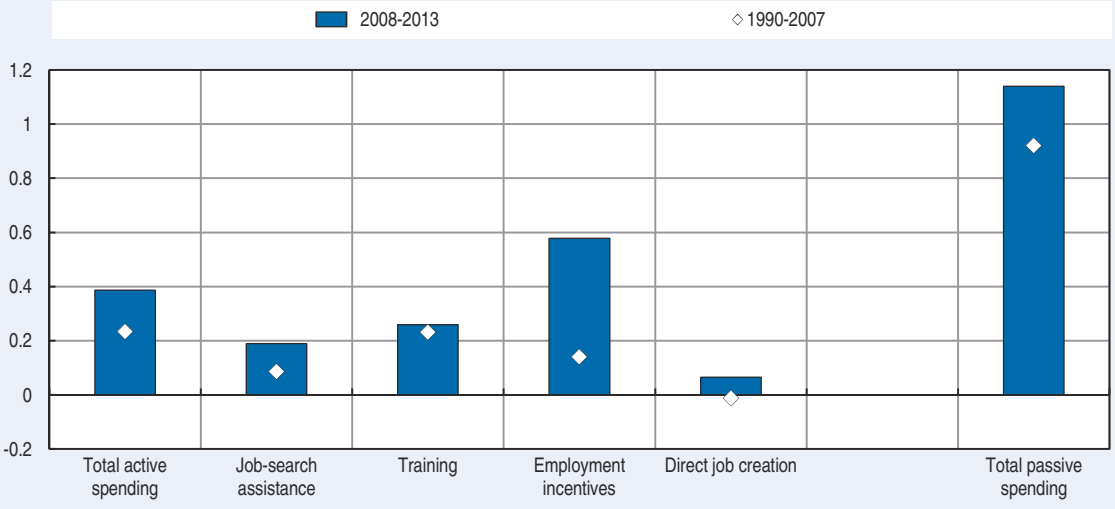
Box 2.5. **The modulation of labour market policies over the business cycle** *(cont.)*

on labour market spending more responsive to labour market conditions. State-contingent systems for active labour market spending exist in Australia, Denmark and Switzerland, whereas state-contingent UB systems exist in Canada, Chile, Israel and the United States.

A particular difficulty in the context of ALMPs is that it may be not be straightforward to translate funding increases into higher capacity in the short run.[1] Countries with more generous benefits, and that rely more heavily on the mutual-obligations approach, probably have the strongest incentives in maintaining resources per unemployed approximately constant during periods of high cyclical unemployment. Moreover, these are more likely to be countries that have the necessary infrastructure in place to translate funding increases into increased capacity quickly, while maintaining service quality. The difficulty of scaling up the capacity for labour market programmes may explain why spending on hiring subsidies ("employment incentives"), which are easy to expand, increased more strongly than spending on other categories of active labour market spending.

Figure 2.13. **The responsiveness of spending on labour market programmes to changes in unemployment**

Elasticity of spending with respect to the number of unemployed, OECD average



Source: OECD calculations based on the *OECD Labour Market Programmes Database, https://stats.oecd.org/Index.aspx?DataSetCode=LMPEXP.*

StatLink http://dx.doi.org/10.1787/888933477821

1. This may explain why the presence of automatic rules for active labour market spending did little to stem the decline in resources available per unemployed jobseeker during the crisis.

Source: This box has been prepared with inputs from Rodrigo Fernandez.

Conclusions

The analysis presented in this chapter suggests that fiscal policy played an important role in stabilising the labour market and preventing hysteresis following the Great Recession of 2008-09. Fiscal policy appears to be particularly effective during recessions, which implies that allowing automatic fiscal stabilisers to operate and complementing them with additional discretionary measures during deep economic downturns can go some way toward promoting labour market resilience. However, the use of fiscal policy as a stabilisation tool requires that sufficient fiscal space be available during recessions. Lack of fiscal space explains why a number of countries hit particularly hard by the crisis could

not allow automatic stabilisers to operate fully. This highlights the importance of keeping public debt at prudent levels during expansions and building sufficient flexibility into institutional fiscal rules.

Structural policies and institutions also have a role to play in promoting labour market resilience, both by directly sustaining employment during downturns and by supporting aggregate demand. A well-designed social protection system for workers (i.e. one which combines effective protection with effective activation policies) and activation policies that respond strongly to cyclical increases in unemployment can be particularly effective. Not only do they directly reduce the social cost of economic downturns by providing income support to people who have lost their job and facilitating their return to work, but they also strengthen automatic fiscal stabilisers by sustaining the consumption levels of unemployed people. Well-designed short-term work schemes and collective bargaining systems can promote labour market resilience by facilitating adjustments in wages and working time. In particular, better co-ordination of collective bargaining outcomes across sectors and firms can help making collective bargaining systems more responsive to economic conditions. Avoiding large gaps in the degree of employment protection between those on permanent and temporary contracts reduces dualism in the labour market by limiting the overuse of temporary contracts which in turns contributes to labour market resilience.

While structural and fiscal policies play an important role for labour market resilience, they cannot fully offset the effects of large aggregate shocks on employment. For instance, the countries with the largest losses in terms of unemployment in the wake of the Great Recession of 2008-09 were typically hit by severe housing, banking and sovereign debt crises that resulted in large and persistent declines in aggregate demand and employment, whereas the countries with the smallest losses typically experienced transitory shocks in external demand. This demonstrates that structural policies that are not directly related to the labour market, especially regulations that reduce the risk of financial crises, can have large effects on labour market resilience.

Structural and fiscal policies that promote labour market resilience also have beneficial effects for long-run growth, employment performance as well as inclusiveness. Stabilising labour market outcomes during large economic downturns not only reduces the social cost of such downturns, but also reduces the risk that transitory increases in unemployment translate into semi-permanent increases in unemployment and decreases in labour force participation. Moreover, the benefits of higher labour market resilience are likely to accrue disproportionately to the most vulnerable workers, including young people, the long-term unemployed and workers on temporary contracts.

Notes

1. The timing and duration of the Great Recession differed across OECD countries and a number of countries did not experience a technical recession defined as at least two consecutive quarters of output contraction (e.g. Korea, Poland and Australia).
2. The figure is based on annualised rather than cumulative deviations to facilitate their interpretation. Since the reference period is 2008-15 for all countries, this does not affect the relative cost of the crisis across countries.
3. Note that since hours and wages in the above decomposition cover dependent employees only, the capital share is implicitly defined as 1 – the share of wages of dependent employees in GDP so that it includes mixed income. An increase in the capital share may therefore partly reflect an increase in the number of self-employed rather than an increase in profits.

4. These findings are broadly consistent with those reported in OECD (2012).

5. To this end, it exploits the well-known stylised fact in the literature that the average incidence of temporary work is closely related to the stringency of employment protection for regular workers across countries, but that they are not systematically related over time (Boeri and Van Ours, 2013). Consequently, a country's average strictness of employment protection (the "between component") is used as an instrument for the average incidence of temporary work to give an indication of the indirect impact of employment protection on labour market resilience through its impact on labour market segmentation. The time-varying component of employment protection (the "within component") is used to capture the direct effect of employment protection on labour market resilience through its impact on hiring and firing.

6. The results are robust to the exclusion of countries with dual labour markets that were hit particularly hard by the crisis (e.g. Spain).

7. The fact that in countries with strict employment protection of regular workers the employment and unemployment responses do not converge to those in countries with average strictness over a horizon of four years suggests that employment protection may give rise to labour market hysteresis in the wake of aggregate shocks.

8. Centralised or co-ordinated wage bargaining systems may be considered functional equivalents since co-ordination across bargaining units is likely to yield broad-based bargaining outcomes that allow taking account of the macroeconomic situation. The combination of centralisation bargaining and co-ordination is sometimes referred to as the degree of corporatism. See Chapter 4 of this publication for a mode in-depth discussion of centralisation and co-ordination and Blanchard and Wolfers (2000), OECD (2006) and Traxler and Brandl (2012) for analyses of their role for macroeconomic flexibility.

9. Decentralised and uncoordinated wage bargaining systems do not appear more or less resilient in terms of unemployment than countries with intermediate levels of centralisation or co-ordination.

10. See Smith (2015) for a discussion of the welfare effects of individual versus broad-based reductions in earnings.

11. Including by analysing how the degree of centralisation affects the efficiency of labour reallocation in the medium term.

12. For the present purposes, an overall public spending shock is defined as the sum of the shocks in public consumption and investment and hence excludes social transfers. Shocks in activation spending are not included in the overall measure of fiscal spending since these are obtained from a separate dataset and the construction of the forecast errors is different. However, this should not make much of a difference in practice since the economic importance of active spending compared with public consumption and investment is very small.

13. There is an ongoing debate whether Okun's law has remained stable during the global financial crisis. Despite claims that the relationship between unemployment and output had changed in the United States, recent estimates suggest that GDP and unemployment followed a fairly typical pattern (Daly et al., 2014).

14. These findings are qualitatively consistent with results in Abiad et al. (2016).

15. While the short-term impact of ALMP spending on the unemployment rate is statistically different from zero it is not statistically different from that of overall spending as there is considerable uncertainty about the exact size of the estimated effect of ALMP spending.

16. Total spending on unemployment benefits as a share of GDP amounted to 0.9% for the OECD as a whole in 2009. Taking account of the actual OECD unemployment rate at the time (8%), it can be shown that a 1% increase in active labour market spending of GDP leads to a 0.2% reduction in the share of unemployment benefit spending in GDP. This implies a marginal cost of active labour market spending of 0.8. The marginal cost of active labour market spending is considerably smaller in countries with more comprehensive and generous unemployment benefits system such as Austria and the Netherlands where it is about 0.5.

17. This typically takes the form of a "mutual-obligations approach" where jobseekers receive unemployment benefits in exchange of active job search and participation in active labour market programmes (e.g. counselling, training, work-experience programmes). This approach can be enforced through the threat of benefit sanctions, whose effect on incentives is stronger the more generous is the benefit system.

18. Similar results were found for the rate of labour force participation. This suggests that the positive impact of active labour market spending does not reflect the role of stricter activation systems for pushing unemployed workers out of the labour force and into inactivity.

19. This choice of counterfactual necessarily implies that structural policies and institutions increased labour market resilience in about half of the countries and reduced it in the other half.

20. Moreover, as in the case of fiscal policy more generally, the role of short-time work schemes is considerably more positive when their use is limited to economic downturns. In order to limit the use of short-time work policies to economic downturns, its use has to be very responsive to changes in economic conditions. Factors that may help to ensure that take-up does not persist for too long in a recovery are to require firms to participate in the cost of short-time work, to limit the maximum duration of short-time work schemes and to require workers to search for a job whilst on short-time work (Hijzen and Venn, 2011).

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Chapter 3

How technology and globalisation are transforming the labour market

This chapter documents the impact of two megatrends, technological progress and globalisation, on OECD labour markets over the past two decades, with a focus on the process of job polarisation and de-industrialisation. As both of these phenomena are associated with severe disruption in workers' lives and rising inequality, they have given rise to growing concerns and uncovering their root causes is of fundamental importance for policy. The chapter begins by presenting key indicators of technology diffusion, participation in global value chains and international trade, and up-to-date evidence on job polarisation. It then analyses the relationship between polarisation and de-industrialisation, and employs econometric techniques to assess the impact of technology and globalisation on these phenomena. Technology displays the strongest association with both polarisation and de-industrialisation. The role of globalisation is less clear-cut, but there is some indication that international trade has contributed to de-industrialisation. Based on this evidence, the chapter outlines the key policy tools to help workers to successfully navigate the ongoing transformation of the labour market and reap the benefits of technological progress.

Key findings

This chapter analyses the impact of technological progress and globalisation on the structure of the labour markets in OECD countries, over the past two decades. In particular, it identifies the effects of these two megatrends on labour market polarisation and de-industrialisation. Labour market polarisation involves a decline in the share of middle-skill, middle-pay jobs relative to jobs with higher or lower skill levels and pay. De-industrialisation is a shift in employment from manufacturing to services. These phenomena have been a major source of anxiety for workers in OECD countries, since they have been associated with job losses, rising inequalities, and the squeezing of the middle class. Understanding their causes has important implications for policy. In particular, the chapter focuses on three key driving factors that have been at the centre of the policy debate in recent years: the diffusion of information and communication technology (ICT); the growing importance of global value chains (GVCs); and the dramatic increase in imports from China following the country's accession to the World Trade Organization (WTO) in 2001.

The key results are:

- Over the past two decades, all regions considered have experienced a process of polarisation away from middle-skill jobs to low- and high-skill employment.
- De-industrialisation (the reallocation of employment from manufacturing to services) accounts for about a third of this polarisation. Changes in the occupational structure within sectors explain the remaining two-thirds.
- Growing ICT use is associated with an increase in high-skill relative to middle-skill occupations within manufacturing.
- The more ICT is used, the slower is overall employment growth in the manufacturing sector. Greater use of ICT does not affect employment in the service sector, and overall has little impact on employment growth in the economy as a whole.
- There is no clear evidence that more globalisation (for example, countries' involvement in global value chains or the penetration of imports from China) causes changes in the occupational mix within industries across the OECD.
- There is no evidence that integration in GVCs reduces the relative growth of different industries, but tentative evidence suggests that increasing import penetration from China has contributed to reducing employment in manufacturing, but not in services.
- Finally, the chapter finds some evidence that labour market institutions – such as trade unions, minimum wages and the stringency of employment protection legislation (EPL) – may affect the way technology and globalisation impact the structure of the labour market. In particular, the results suggest that stricter EPL increases the effect of both ICT and GVC's on polarisation, while stronger unions reduce the effect of ICT on bottom polarisation.

Building on these results, the chapter highlights a broad set of policy actions to help workers navigate the ongoing transformations of the labour market. They can be summarised as follows:

Building skills for the future

- Policy makers should ensure that initial education, including early education, equips students with solid literacy, numeracy, problem-solving abilities but also basic ICT skills and soft skills, paying particular attention to the most disadvantaged groups who tend to lag behind in skill acquisition, use and adaptation during the working life.
- Education and training systems need to better assess and anticipate changing skill needs in order to adapt curricula and guide students towards choices that lead to good labour market outcomes.
- It is equally important to recognise that many skills are acquired outside education and training institutions. This emphasises the need for work-based learning opportunities, which has the advantage of linking training provision to a direct expression of employer requirements and workers' interests, and to provide soft skills that are not easily taught in a classroom environment.
- Even when workers have sufficient skills, inefficient use of such competences and skills mismatches may result in lower productivity and competitiveness. Promoting the use of high performance work practices (HPWP) and improved credentialing of skills learned on the job can play a crucial role in this regard.
- The large share of workers with few, if any, digital skills, especially among older cohorts, illustrates the more general need to scale up and improve the effectiveness of lifelong learning and training for adults, so that workers are better able to keep up with continuously changing skills needs. This entails offering better incentives for workers and firms to re-skill and up-skill. Training opportunities should be widely available and not necessarily linked to one's work status or workplace. Particular attention should be dedicated to low-skill workers, who currently tend to be neglected by on-the-job training programmes.
- The provision of lifelong learning and adult training can be enhanced by the new opportunities digitalisation opens for innovation in learning infrastructure. MOOCs (massive open online courses) and OERs (open educational resources) are an important new resource, but they remain underutilised and their effectiveness rests on closing gaps in basic digital skills and on adequate investment in digital infrastructure.

Activation and social protection measures to help people face disruptive changes

- The provision of welfare benefits should be designed in conjunction with activation measures to maximise the chance of re-employment and minimise disincentives to work, including in the difficult case of mid-career workers who are displaced by structural economic change and need to switch industry or occupation.
- An effective activation framework should: i) motivate jobseekers to actively pursue employment; ii) improve their employability; and iii) expand the set of opportunities for them to be placed and retained in appropriate jobs.
- As much as possible, activation measures should also be preventive, taking into account ongoing megatrends and the likely risk of job loss in different sectors, and providing workers with adequate information and re-employment support ahead of potential job losses (e.g. during the notice period prior to a mass redundancy).

- Adapting social protection systems to the new world of work will require some crucial reforms. In particular, entitlements should be linked to individuals rather than jobs so that they are portable from one job to the next.
- An alternative policy option being discussed in some countries is the introduction of a basic income guarantee, i.e. an unconditional income transfer that would replace other forms of public transfers without any means-testing or work requirement. The costs of such a solution, however, could be very large and its effects on work incentives need to be carefully assessed. In some countries, experiments with different forms of basic income guarantees are currently underway or planned that will offer some evidence to help judge the usefulness and feasibility of this kind of scheme.

Introduction

Technological change and globalisation are key forces shaping today's world. Globalisation consists of a deeper integration of factors of production across countries. New technologies and increased digitalisation profoundly affect many aspects of life and have deeply transformed production processes by complementing workers and allowing the automation of certain tasks. They have also vastly reduced the transaction costs of communicating and co-ordinating globally, enabling a vertical fragmentation of industrial production that takes full advantage of the expertise and comparative advantages of different countries at each stage of production. Overall, by spurring innovation, increasing productivity and decreasing production costs, these two forces have contributed to economic growth and increased overall wellbeing. However, they have also entailed rapid transformations in the labour market, which pose severe challenges for workers, firms and governments.

In recent decades, labour markets across the OECD have experienced profound transformations in their occupational and industrial structures. A process of de-industrialisation – which has seen significant shifts of employment from manufacturing to services – has taken place alongside one of labour market polarisation, whereby the number of middle-pay, middle-skill jobs has declined relative to the number of low-pay and high-pay jobs. These are fundamental changes, which cause significant disruption in workers' lives and raise three significant policy challenges. The first is that employment is being reshuffled across occupations and industries, confronting workers with the risk of job loss followed by the need to make a difficult transition to a job in a different occupation or industry. Even workers who are able to stay in the same job are often faced with changing skill demands that require retraining. A second policy challenge arises from the link between the growth of the service sector and the slowdown in productivity growth which can hinder improvements in living standards (OECD, 2015a; Goos et al., 2016). Finally, differential changes in skill demands, driven by changing industrial structures, can affect trends in inequality over time (Acemoglu and Autor, 2011). To formulate adequate policy responses it is necessary to understand what drives changes in the structure of the labour market.

The increasing ability of technology to perform easy-to-codify routine tasks has been singled out in many studies as a key driver of job polarisation (Goos et al., 2014). Similarly, several studies have suggested that an accelerated diffusion of AI-enabled robots could soon lead to many more jobs being destroyed than created and hence to technological unemployment (Brynjolfsson and McAfee, 2011; Mokyr et al., 2015), although Arntz et al. (2016) reached less alarmist conclusions. At the same time, the offshoring of production to countries with lower labour costs has contributed to growing concerns about the negative impacts of globalisation in developed countries. The emergence of new players, increasingly

integrated in global value chains (GVC), has heightened these concerns. In particular, China's transition to a market economy and its entry into the World Trade Organization has benefitted consumers globally through lower prices, but has also been empirically linked to the decline in manufacturing employment in advanced economies (Autor et al., 2016), and to job polarisation in particular (Keller and Utar, 2016). China has recently become the world's largest exporter, overtaking the United States and Germany (WTO, 2015).

Few studies have considered the relevance of technology and globalisation simultaneously for job polarisation and de-industrialisation, and those that have done so have typically focused on individual countries, neglecting the role of geographical and institutional factors**.** This chapter exploits industry-level data from 22 OECD countries over the past two decades to explore the relationship between job polarisation and de-industrialisation, and to assess the importance of technology and globalisation in driving these structural transformations.[1] The chapter draws upon a broad literature, which includes recent OECD contributions (e.g. Marcolin et al., 2016; OECD, 2016g). The core of the analysis, however, consists of novel empirical findings that build on the work by Breemersch et al. (2017). Several sources of data are pooled to measure the diffusion of technology and two recent developments in international trading patterns, namely integration in global value chains (GVCs) and the penetration of Chinese imports. Recognising that the effects of technology and trade are not inevitable but can be influenced by policy, the chapter also investigates the potential mediating role of labour market institutions using information on the role of collective bargaining – proxied by union density – as well as the minimum wage and employment protection legislation (EPL).

The remainder of the chapter is structured as follows. Section 1 presents recent evidence on job polarisation, as well as on key indicators of technological change, participation in GVCs and Chinese import penetration across countries. Section 2 then employs econometric techniques to assess the impact of technology and globalisation on job polarisation and de-industrialisation. The final section identifies the key policy tools to help workers to successfully navigate the ongoing transformation of the labour market and reap the benefits of technological progress and deepening international economic integration.

1. The changing structure of the labour market

Over the past decades, the labour markets of OECD countries have experienced a significant change in the occupational structure. One of the most evident transformations is the increased polarisation of employment into high-skill/high-paying jobs on the one hand, and low-skill/low-paying jobs on the other. This has occurred in conjunction with rapid digitalisation and automation, and increased global integration of production processes. This section paints a bird's eye view of how the occupational structure has evolved in conjunction with technology and globalisation in recent decades, offering a discussion of the complex link between these developments and wage inequality. The following section will further explore the relationship between job polarisation and de-industrialisation.

The labour market continues to polarise

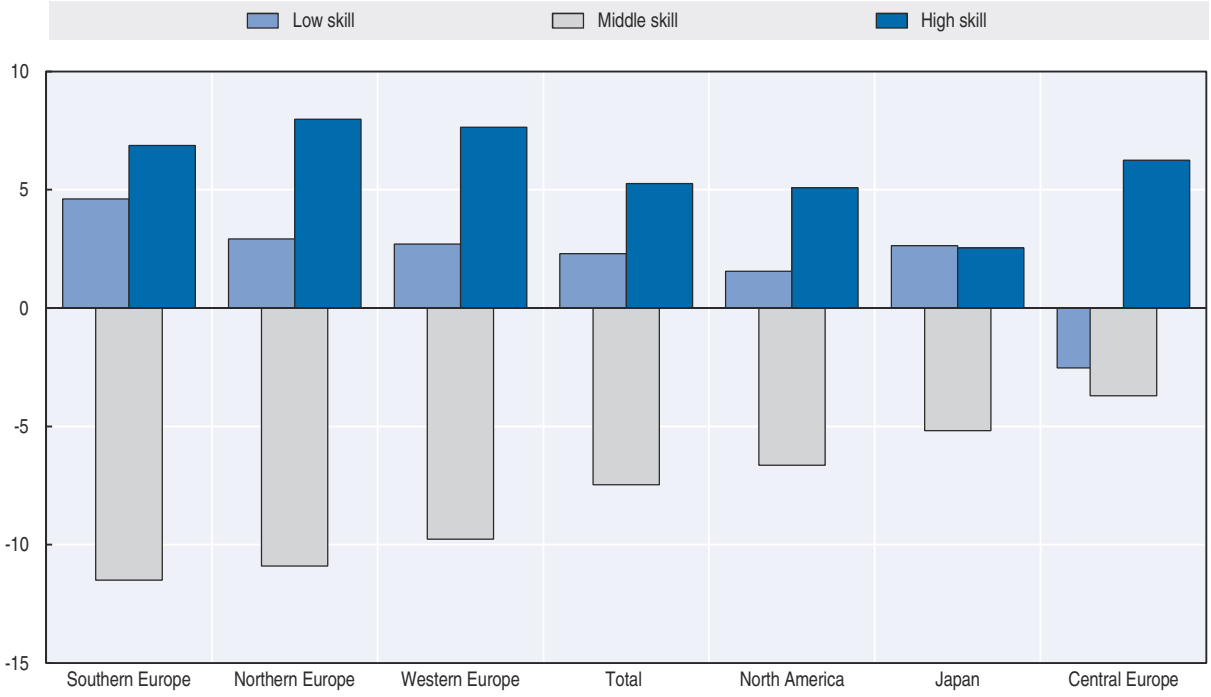
The polarisation of the labour market into high-skill high-pay jobs and low-skill low-pay jobs has been widely documented in a range of advanced economies. Pioneering research by Autor, Katz and Kearney (2006), Goos and Manning (2007), and Goos, Manning and Salomons

(2009) found that the share of employment in occupations in the middle of the skill distribution has declined rapidly in the United States and Europe over the past 30 years. At the same time, the share of employment at the upper and lower ends of the occupational skill distribution has increased. The result has been a hollowing out of the labour market.

Figure 3.1 shows the most recent available evidence on job polarisation across the OECD, between 1995 and 2015. Occupations are ranked by wage level following Autor and Dorn (2013) and Goos et al. (2014) and the results are presented by broad geographical area.[2] The

Figure 3.1. **The labour market continues to polarise**

Heterogeneity in polarisation, selected OECD countries by region, 1995 to 2015[a, b, c, d]
Percentage point change in share of total employment



Note: High-skill occupations include jobs classified under the ISCO-88 major groups 1, 2, and 3. That is, legislators, senior officials, and managers (group 1), professionals (group 2), and technicians and associate professionals (group 3). Middle-skill occupations include jobs classified under the ISCO-88 major groups 4, 7, and 8. That is, clerks (group 4), craft and related trades workers (group 7), and plant and machine operators and assemblers (group 8). Low-skill occupations include jobs classified under the ISCO-88 major groups 5 and 9. That is, service workers and shop and market sales workers (group 5), and elementary occupations (group 9). Southern Europe contains Spain, Greece, Italy and Portugal. Western Europe contains Austria, Belgium, Germany, France, Ireland, the Netherlands, Switzerland and the United Kingdom. Central Europe contains the Czech Republic, Hungary, the Slovak Republic, and Slovenia. Northern Europe contains Denmark, Finland, Norway, and Sweden. North America consists of Canada and the United States.

a) European employment data beyond 2010 was mapped from ISCO-08 to ISCO-88 using a many-to-many mapping technique. This mapping technique is described in Annex 3.A4 (online at OECD, 2017b). Data for Japan is for the period 1995 to 2010 due to a structural break in the data.

b) Employment data by occupation and industry for the United States prior to 2000 were interpolated using the occupation-industry mix for the years between 2000 and 2002, and matched with control totals by occupation and by industry for the years 1995 to 1999. Employment data for Canada and the United States were transposed from the respective occupational classifications (SOC 2000) into corresponding ISCO-88 classifications.

c) EU-LFS data contains a number of country specific structural breaks which were corrected by applying the post-break average annual growth rates to the pre-break data by skill level (high, middle, low). Adjustments were performed for all relevant documented breaks in the ISCO occupational coding between 1995 and 2009. That is Portugal (1998), the United Kingdom (2001), France (2003) and Italy (2004). Undocumented breaks in the data for Finland (2002) and Austria (2004) were not adjusted.

d) Underlying industrial data for Switzerland are classified according to the General Classification of Economic Activities (NOGA 2008). Swiss data for 1995 are derived from representative second quarter data, while data for 2015 is an annual average.

Source: European Labour Force Survey; labour force surveys for Canada (LFS), Japan (LFS), Switzerland (LFS) and the United States (CPS MORG).

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figure shows that all areas considered have experienced a decline in the share of middle-skill jobs relative to both high-skill and low-skill jobs. The country-specific results reported in Figure 3.A1.1 in Annex 3.A1 confirm that the decline in the share of middle-skill jobs is a pervasive phenomenon affecting all countries with only two exceptions in Central Europe (Hungary and the Czech Republic).[3] Among the macro regions in Figure 3.1, only in Japan have low-skill occupations outgrown high-skill jobs, albeit only slightly, while in Northern Europe, Southern Europe, Western Europe and North America the employment shares lost in the middle have mostly been acquired by top occupations.

While a global analysis is beyond the scope of this chapter, it is worth noting that job polarisation tends to be lower or absent in emerging economies. For example, in China, there has been strong growth in both middle- and high-skill employment between 2000 and 2010, but an even larger increase in low-skill employment has resulted in the overall share of both medium and high-skill occupations falling (see Figure 3.A1.2 in Annex 3.A1). In India, the shares of low and medium skill occupations have decreased relative to high-skill occupations over the same period. The share of occupations that could experience automation in coming decades will be larger in emerging economies.[4] Even in these countries, therefore, the risk of polarisation is significant and will depend to a large extent on the speed at which new technologies will be adopted (World Bank, 2016; Maloney and Molina, 2016). While lower wage costs have played a key role in attracting offshored jobs and containing the spread of automation, sustained real wage growth in emerging economies might contribute to some re-shoring of jobs in the coming decades, as well as providing incentives for the adoption of labour-replacing technology.

Technology and globalisation are advancing fast

One of the most commonly-identified drivers of labour market polarisation is the fact that the effect of technology varies across the skill distribution depending on the main tasks characterising different jobs. In particular, ICT is seen as complementing high-skill workers who perform the types of complex cognitive tasks typically found in managerial and professional occupations. On the other hand, middle-skill clerical and production jobs are typically characterised by "routine" tasks, i.e. the ones that can be executed following a precise set of instructions and are therefore easier to automate given current technological capabilities. Finally, low-skill jobs (such as those in catering and cleaning occupations, and other personal services) tend to involve non-routine manual tasks that, for example, require more manual dexterity and hand-eye co-ordination (which have so far proven more difficult to automate on a large scale). This so-called *routine-biased technological change* (RBTC), therefore, results in lower demand for middle-skill jobs relative to both high-skill and low-skill ones, giving rise to the polarisation of occupational structures documented in advanced countries.

The decline in the share of middle-skill jobs has also been linked to increasing globalisation in at least two ways. First, the reductions in transaction and monitoring costs brought about by new technologies have contributed to the spread of global value chains which often entail the offshoring of the production of intermediate inputs and back office services that are typically provided by middle-skill workers (e.g. Oldenski, 2014). Second, the growth of international trade in final products has been concentrated in manufacturing sectors that traditionally account for a significant share of middle-skill/middle-pay jobs in advanced countries. For instance, the growth in Chinese import competition has been shown to have reduced manufacturing employment in the United States and Denmark (Autor et al., 2013; Keller and Utar, 2016).

A related literature has highlighted that international trade can alter the composition of labour demand by generating incentives for firms to innovate and adopt new technologies. Bloom, Draca and Van Reenen (2016) have shown evidence that the increase in trade with China has induced European firms to innovate significantly while also driving low-tech firms out of the market.[5] This has increased the demand for high-skill workers in European firms and might therefore have contributed to the significant reallocation of employment from middle to top occupations that characterises the polarisation process in most countries.[6]

These points illustrate that trade and technology are mutually reinforcing and interact in complex ways in shaping the structure of labour markets. ICT tends to reduce transaction and monitoring costs that hamper international trade and GVCs, while in turn the competitive pressure arising from the increasing globalisation can induce firms to innovate and adopt technology which itself changes the demand for different skills.[7]

Empirical studies that have compared the explanatory power of alternative theories of polarisation in individual countries have generally concluded that technology and globalisation are the two main forces at play (Acemoglu and Autor, 2011; Goos et al., 2014). The jury is still out, however, on their relative importance. Before addressing this question, it is useful to set the scene by providing some descriptive evidence of how technology and globalisation have advanced in OECD countries.

Technology increasingly permeates the world of work

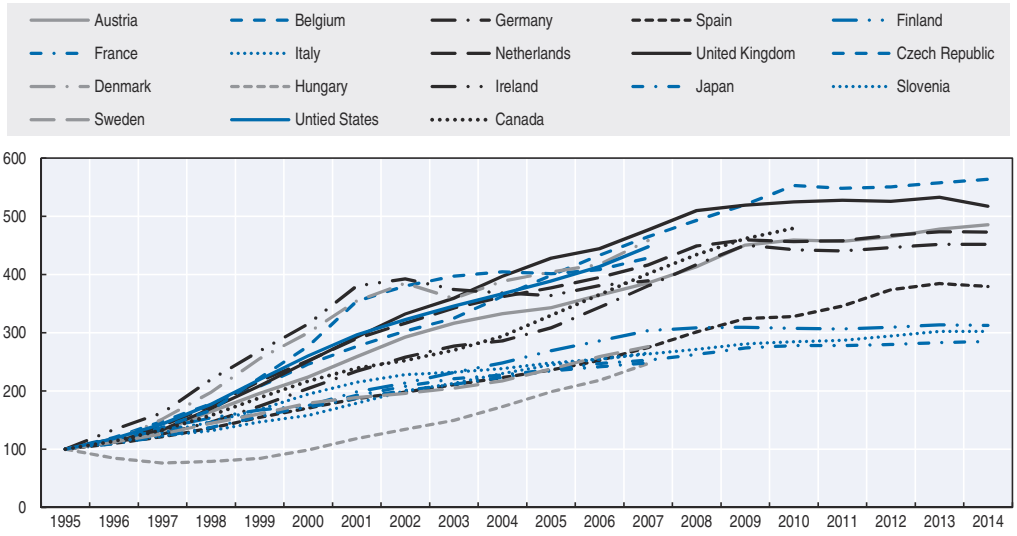
The growth in ICT use in the workplace provides a clear indication of how fast technology has permeated the world of work over the past three decades. From 1995 to 2007, the level of ICT capital services per hour worked at least doubled in every country analysed (Figure 3.2). There is, however, substantial cross-country heterogeneity, indicating that different countries experience very different paces of technology adoption. While in Hungary, Japan, and Slovenia, ICT levels increased by just over 150% over the period, the increase was as much as 300% in the Netherlands, the Czech Republic, Ireland, and Germany and above 350% in the United States, Belgium and the United Kingdom. For the period after 2007, the data are only available for selected countries and show that the growth rate of ICT slowed down in most countries (with the exception of Spain) following the recession.

Cross-country differences in the speed of technology diffusion have important implications for any predictions about the rate at which automation will contribute to job destruction going forward. Recent estimates of the share of jobs at risk of automation, discussed in detail in Box 3.3, are based on an assessment by experts of the likelihood that engineering obstacles to the automation of different tasks will be overcome in the near future (Frey and Osborne, 2013; Arntz et al., 2016). However, if there is substantial variation across (and within) countries, industries and occupations in the speed at which existing technologies are adopted, some countries may feel the effects of automation much later than others.

Large differences in the speed of technology adoption also exist between different sectors. While all industries have been impacted by fast penetration of new technologies, some economic activities have been affected more heavily than others (Figure 3.3). Across the countries analysed, for instance, "Total manufacturing" has seen the largest increase in ICT intensity, experiencing a growth of around 230% between 1995 and 2007. "Agriculture, hunting, forestry and fishing", "Hotels and restaurants", and "Wholesale and retail trade"

Figure 3.2. **ICT has spread fast throughout the world**

ICT capital services per hour worked, index (1995 = 100), 1995 to 2014



Note: ICT capital intensity per hours worked refer to the CAPIT_QPH variable in the EU KLEMS database. Data for Canada are taken from the World KLEMS database. Data series were extended using growth of the numerator and denominator of the ICT intensity ratio using the various releases of the EU KLEMS database (2009, 2013, and 2016). The 2009 EU KLEMS release covers the largest number of countries, covering the period from 1995 to 2007. Additional data was taken from later releases of EU KLEMS for the following countries: Austria, Belgium, Finland, France, Germany, Italy, the Netherlands, Spain and the United Kingdom. Values for Denmark have been adjusted to account for abnormally large increases in ICT intensity within the mining industry.
Source: EU KLEMS growth and productivity accounts, World KLEMS.

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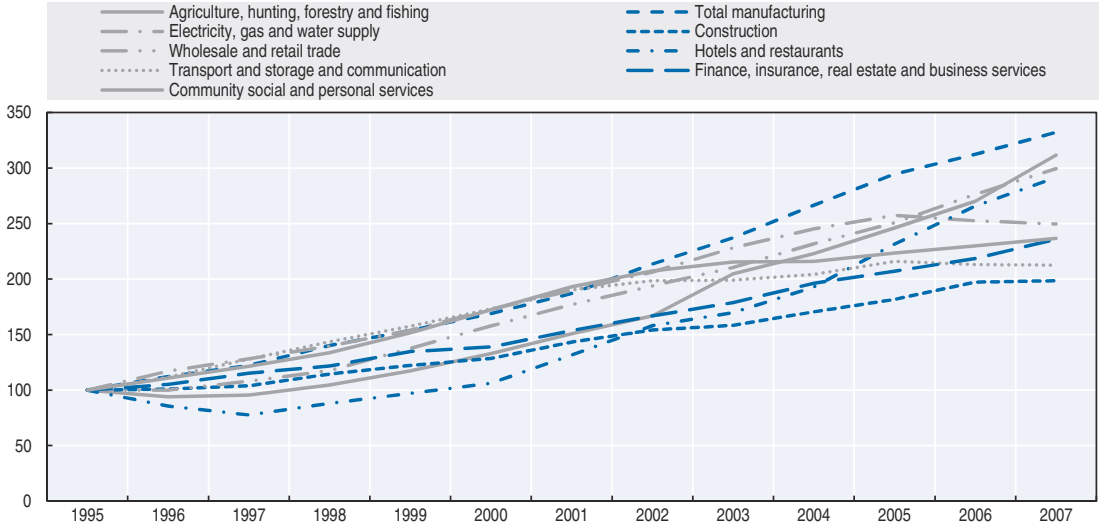
Figure 3.3. **Some sectors have increased their use of ICT particularly rapidly**

ICT capital services per hour worked, index (1995 = 100)



Note: The chart includes data from the following countries: Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, Norway, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, the United Kingdom and the United States. ICT capital intensity per hours worked refers to the CAPIT_QPH variable in the EU KLEMS database. Data for Canada are excluded. No data is available for Belgium, Japan, and Slovenia for the year 2007. The 2007 data points for these countries were inferred according to their cumulative annual growth rate for the period from 2005 to 2006. The mining industry is excluded from the chart due to abnormally large increases in ICT intensity in that industry, largely driven by data from Denmark.
Source: EU KLEMS growth and productivity accounts.

StatLink http://dx.doi.org/10.1787/888933477853

have also recorded increases of around 200%. Even the sectors with the lowest growth rates – "Transport and storage and communication" and "Construction" – have nevertheless doubled their ICT intensity between 1995 and 2007.

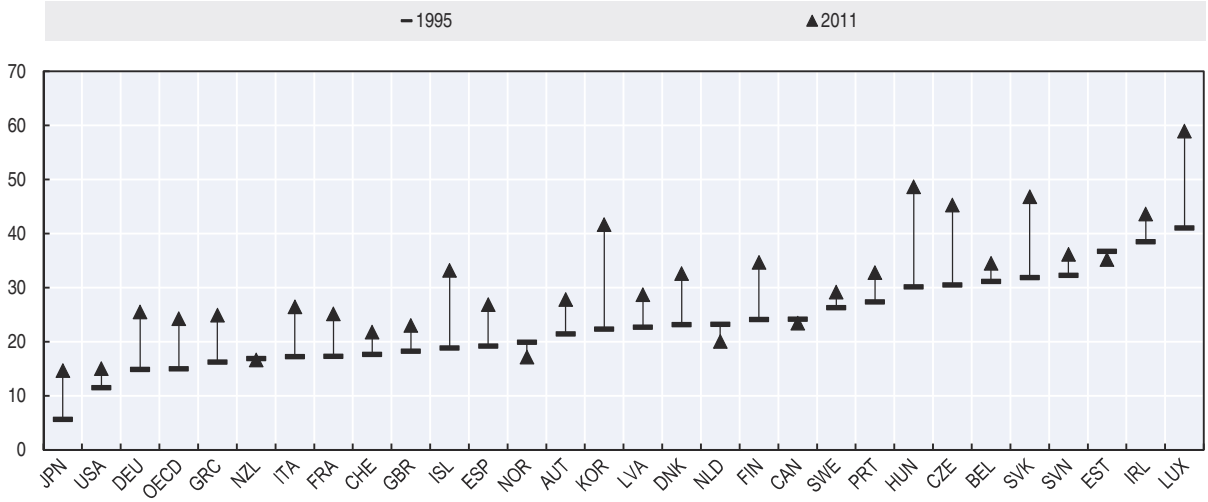
Production processes are increasingly global

In parallel to the diffusion of ICT (and partly thanks to it), industrial production has become increasingly fragmented and internationalised. In particular, the world economy is increasingly organised in global value chains (GVCs) whereby the different stages of the production process are spread across countries and regions.

Figure 3.4 demonstrates the growing importance of GVCs by presenting the share of a country's exports that is accounted for by foreign value added, as captured in the trade in value added (TiVA) dataset. It indicates the extent to which countries rely on intermediate products from abroad in their production processes (for a description of the dataset, see Box 3.1).[8] Almost all countries have experienced increasing integration between 1995 and 2011, some of them at a very fast pace (e.g. the Slovak Republic, the Czech Republic, Hungary, Korea and Luxembourg). The global financial crisis caused a major slow-down in the integration process (not shown for conciseness), but all regions of the world have since returned to an upward trend.

Figure 3.4. **The rise of global value chains**

Change in foreign value added share of gross exports, 1995 to 2011



Note: Foreign value added share of gross exports is defined as foreign value added (FVA) in gross exports divided by total gross exports. It is an "FVA intensity measure" often referred to as the "import content of exports" and considered as a reliable measure of "backward linkages" in analyses of global value chains (GVCs).
Source: Trade in Value Added (TiVA) Database.

StatLink http://dx.doi.org/10.1787/888933477863

Box 3.1. **Mapping global value chains: The TiVA dataset**

International trade increasingly involves global value chains (GVCs) whereby services, raw materials, parts and components are exchanged across countries before being incorporated in final products that are shipped to consumers all over the world. Exports from one country to another now reflect increasingly complex interactions among a variety of domestic and foreign suppliers and create income for firms and workers in widely separated locations. Trade is increasingly determined by the international strategies of firms

Box 3.1. **Mapping global value chains: The TiVA dataset** *(cont.)*

that engage in foreign outsourcing and foreign direct investment so as to carry out their production activities or source their inputs wherever the necessary skills and materials are available at competitive cost and quality. The OECD has undertaken comprehensive data work that sheds new light on the scale, nature and consequences of international production sharing (OECD, 2013b).

In order to better account for the internationalisation and fragmentation of production, new trade statistics have been developed that identify the value added by each country in GVCs (*http://oe.cd/tiva*). These value added calculations are decomposed into foreign and domestic components, allowing for an in-depth examination of trade flows. The TiVA database encompasses a wide variety of trade measures, including: trade balances, domestic and foreign demand, re-imports, re-exports, service value added, and value added by source country and industry. These statistics build upon the OECD's Inter-Country Input-Output (ICIO) tables and are expressed in millions of current USD, or as percentages. Reported variables are available by industry.

The most recent version of the TiVA database includes 61 economies covering OECD, EU28, G20, most East and South-east Asian economies and a selection of South American countries. The industry list has been expanded to cover 34 unique industrial sectors, including 16 manufacturing and 14 service sectors. The years covered are 1995, 2000, 2005 and 2008 to 2011.

Source: OECD (2015), "Trade Policy Implications of Global Value Chains", available at: *www.oecd.org/tad/trade-policy-implications-gvc.pdf*.

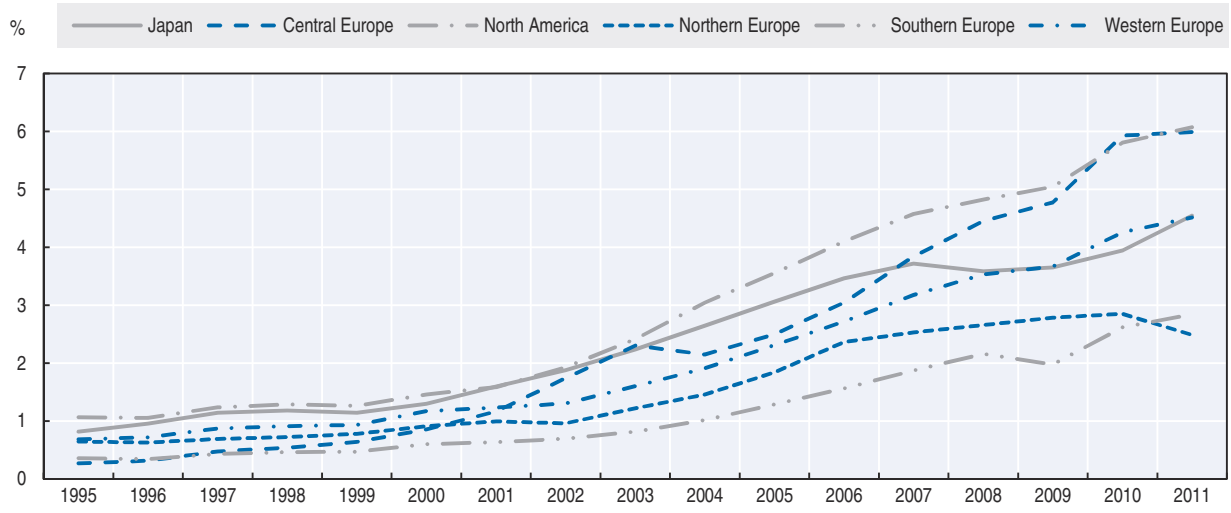
China is an increasingly important global player

One of the most striking features of the past decades of rapid globalisation has been the rapid penetration of Chinese goods in the global economy. Several other countries have experienced rapid export growth, but given the scale of the Chinese economy, they probably have not had as large an impact on the labour markets of importing countries and definitely have not attracted the same interest in the international debate. Since China's accession to the WTO in 2001, the share of Chinese imports in total domestic absorption of the average OECD country has grown from 1.4% to 4.8%, with peaks of 6.1% in North America and Central Europe (Figure 3.5). This has attracted the attention of policy makers concerned about the impact of Chinese competition on domestic labour markets, and it has motivated a growing body of academic research (e.g. Autor et al., 2013; Keller and Utar, 2016). The analysis in the next section continues in the same vein and includes Chinese import penetration among the variables whose impact on the labour market will be tested.

Overall, the effect of GVCs on the labour market is complex (Marcolin et al., 2016). On the one hand, as the importance of GVCs grows, part of domestic production is offshored and certain skills may no longer be needed, leading to potential displacement of workers and substantial labour reallocation across occupations and sectors. This may exacerbate the process of de-industrialisation and of job polarisation, since middle-skill jobs with a higher routine content have a greater potential to be offshored (Goos et al., 2014).[9] On the other hand, as firms change their production structures to take part in GVCs, they adopt new processes that may have positive effects on productivity and competitiveness, and thus beneficial implications for wages and job quality. Moreover, international trade may have direct positive effects on overall employment. It has been estimated that between 30%

Figure 3.5. **The rise of China**

Chinese imports as a share of total domestic absorption, 1995 to 2011



Note: Domestic absorption is defined as gross domestic output, plus imports, less exports. The following industries are excluded from the data: 1) Agriculture, hunting, forestry and fishing; 2) Mining and quarrying; 3) Public administration and defence; 4) Compulsory social security; 5) Education; 6) Health and social work; 7) Other community; 8) Social and personal services; 9) Private households with employed persons in order to ensure comparability with the data used for the econometric analysis in the following sections. Southern Europe consists of Spain, Greece, Italy and Portugal. Western Europe consists of Austria, Belgium, Germany, France, Ireland, the Netherlands and the United Kingdom. Central Europe consists of the Czech Republic, Hungary, the Slovak Republic and Slovenia. Northern Europe consists of Denmark, Finland, Norway and Sweden. North America consists of Canada and the United States.
Source: World Input Output Database (WIOD).

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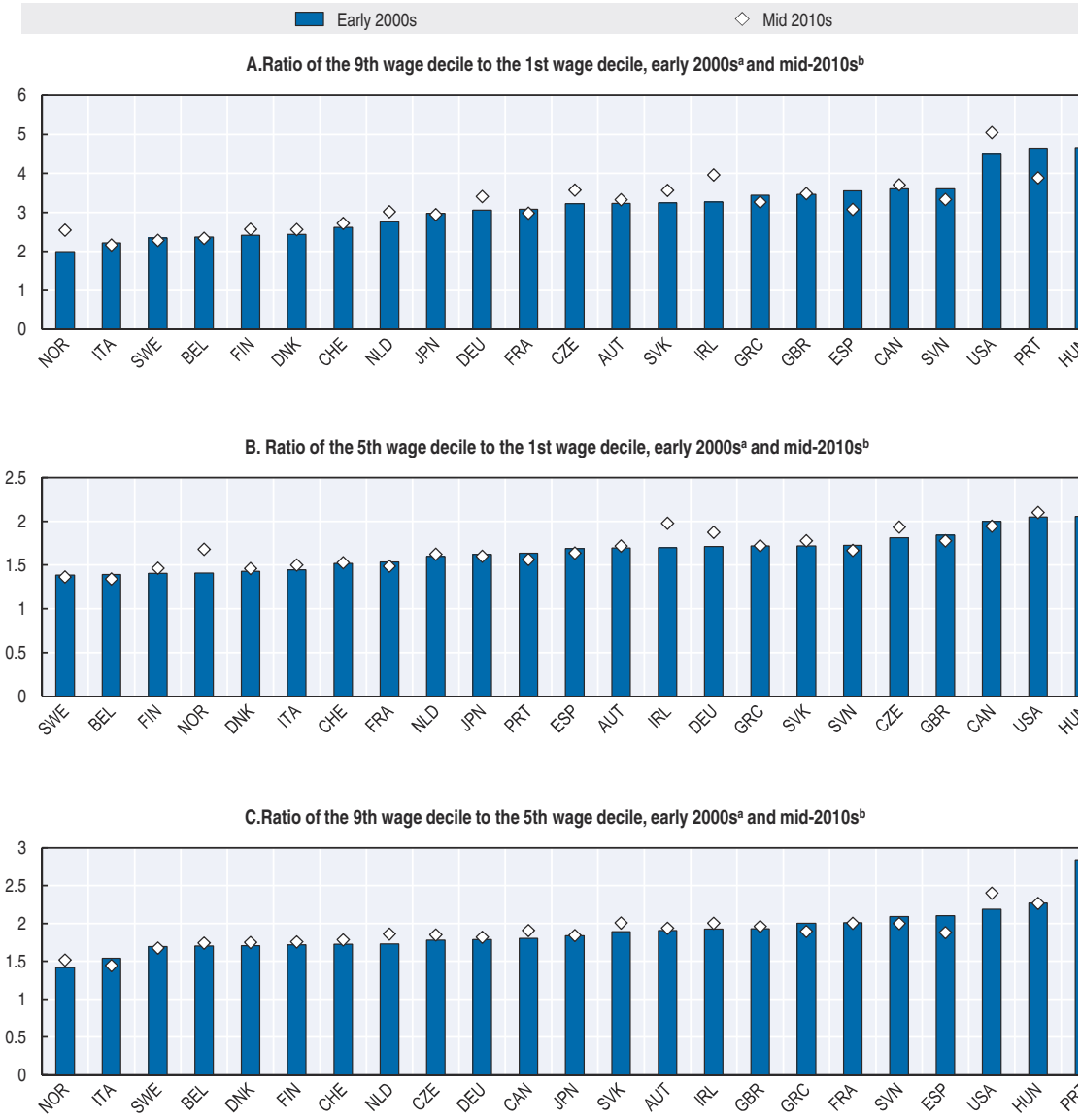
and 40% of jobs in the business sector in most European countries in 2011 were sustained by consumers in foreign markets (OECD, 2016a).

The effects of GVCs are likely to be highly heterogeneous across economies, depending on their level of development. In less developed countries, low labour costs may attract offshored jobs and discourage offshoring of domestic jobs, but also slow down the adoption of technology that permits automation, leading to a slower process of polarisation. Labour market institutions may also play an important role, by cushioning (or amplifying) some of the effects of these megatrends on the labour market.[10] These considerations pose a challenge for the empirical analysis in the next section, which will estimate *average* effects on a global scale and should be kept in mind when interpreting the results. They also motivate the analysis of heterogeneous effects across different regions and institutional settings, described below.

The complex link between inequality and the labour market

One of the main concerns with rising job polarisation is its potential implication for wage inequality. Indeed, the change in occupational structure documented above has coincided with a period of increasing wage inequality in a number of OECD countries (Figure 3.6). The link between polarisation and overall inequality, however, is complex. In the simple scenario where the polarisation of employment is entirely demand driven (for example, as a result of technology replacing middle-skill workers), one would expect to observe polarisation in wage growth as well, since the wages in low-skill and high-skill occupations would tend to grow at a faster pace than wages in middle-skill occupations. This is in fact what was observed in the United States in the 1990s, when lower tail inequality

Figure 3.6. **Inequality is rising, especially at the top**



Note: Estimates of earnings used in the calculations refer to gross earnings of full-time wage and salary workers. However, this definition may slightly vary from one country to another. Further information on the national data sources and earnings concepts used in the calculations can be found at *www.oecd.org/employment/outlook*.

a) Data for the early 2000s refer to the following country years: Belgium, Canada, Finland, France, Germany, Hungary, Ireland, Italy, Japan, Norway, Sweden, Switzerland, the United Kingdom and the United States (2000); the Czech Republic (2001); the Netherlands, the Slovak Republic and Slovenia (2002); Austria, Greece, Portugal and Spain (2004); Denmark (2008).

b) Data for the mid-2010s refer to the following country years: Canada, the Czech Republic, Hungary, Norway, the Slovak Republic, the United Kingdom and the United States (2015); Austria, Belgium, Denmark, Finland, Greece, Ireland, Italy, Japan, the Netherlands, Portugal, Slovenia and Switzerland (2014); Sweden (2013); France and Spain (2012).

Source: *OECD Earnings Distribution Database*, *www.oecd.org/employment/emp/employmentdatabase-earningsandwages.htm*.

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decreased and upper tail inequality increased (Acemoglu and Autor, 2011). However, wage polarisation has not been found in later decades in the United States (Mishel et al., 2013; Autor, 2015), nor at any point in time in any other country where job polarisation has occurred.[11] Rather, most countries have seen an increase in the gap between top and median wages, and either a stable or increasing gap between median and bottom wages (Figure 3.6).

In discussing this apparent puzzle, Autor (2015) highlights that wage growth in bottom occupations can be hindered by the fact that these occupations generally do not benefit from significant complementarities with new technologies while also facing a very elastic labour supply, given their low skill requirements. This latter supply issue can be exacerbated if the decline in middle-skill job opportunities also means that some middle-skill workers have to settle for lower-skilled jobs. At the other end of the occupational, skill distribution, occupations requiring advanced cognitive skills typically see their productivity boosted by new ICTs and are characterised by a less elastic labour supply given the time necessary to acquire the education typically required for these jobs. As for middle-skill occupations, Autor (2015) emphasises that complementarity and substitution can coexist. So, while computers might be replacing some workers in performing routine tasks, they can complement those who remain in these occupations, therefore raising their productivity and, potentially, their wage growth.[12] These mechanisms imply that job polarisation need not lead to wage polarisation and can instead contribute to growing inequality across the board (OECD, 2015a).

2. Estimating the effects of technology and globalisation on the labour market

The analysis in this section uses econometric techniques to estimate the effect of technology and globalisation on polarisation, and on another related aspect of labour market transformation: the process of de-industrialisation. It first discusses the relationship between the two phenomena, showing that polarisation is in fact partly the result of the shift of employment from manufacturing to services. The analysis covers 19 European countries, as well as the United States, Canada and Japan, between 1995 and 2007. For a subset of countries, where data are available through to 2015, more recent estimates are provided in Annex 3.A2.

Clarifying the relationship between polarisation and de-industrialisation

As a first step, it is important to clarify the relationship between job polarisation and the decline in manufacturing (de-industrialisation). To do that, it is useful to begin by distinguishing transformations that have occurred inside individual industries (i.e. *within-industry polarisation*) from changes due to the reallocation of employment from less polarised manufacturing sectors to more polarised service sectors (i.e. *between-industry polarisation*).

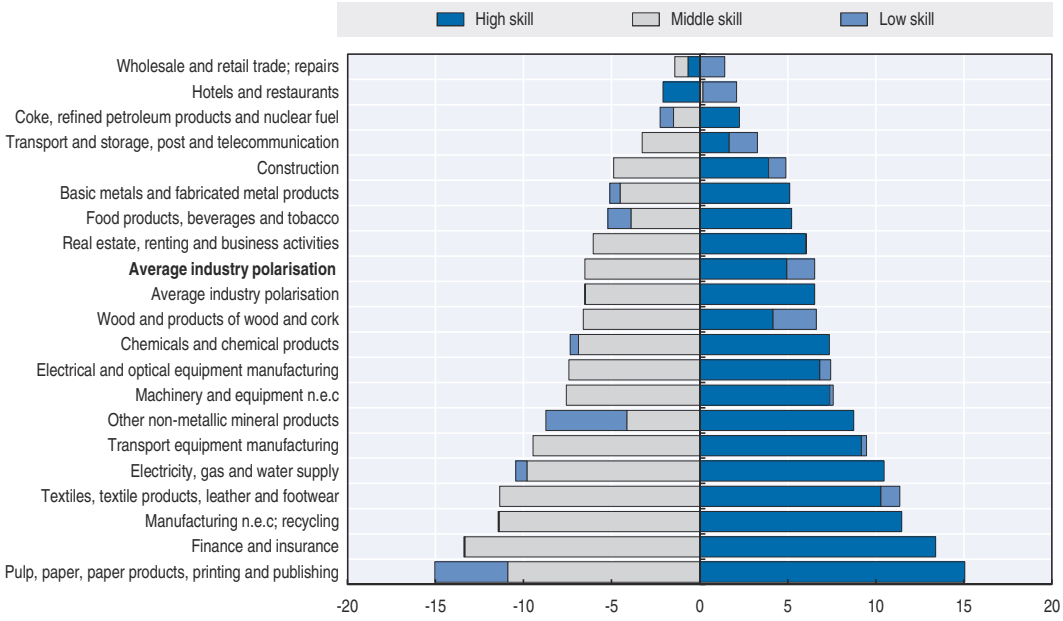
Middle-skill jobs have declined within all sectors

Figure 3.7 documents within-industry polarisation. The share of middle-skill occupations in total employment has declined in almost all sectors of the economy between 1995 and 2015. In most industries, these declines have been entirely offset by the growth in top occupations. This is particularly the case for those sectors where the decline in middle-skill occupations has been the largest across the OECD. This includes manufacturing industries (such as "Pulp, paper, paper products, printing and publishing", "Chemicals and chemical products", and "Transport equipment manufacturing"), as well as services (such as "Finance and insurance", and "Real estate and business services"). Two service industries have seen a clear shift of employment towards the bottom of the skill distribution ("Hotels and restaurants" and "Wholesale and retail trade; repairs"). Figure 3.A3.1 in Annex 3.A3 (available online at OECD, 2017b) documents variations in the pattern of within industry polarisation across different regions. Northern Europe, Southern Europe, Western Europe and North America all exhibit a clear pattern of polarisation in all industries with a shift of employment from middle-skill jobs predominantly directed towards top occupations. Japan, which is excluded from Figure 3.7 due

to a structural break in the data, also shows a similar pattern up to 2010. Central Europe stands out for the pronounced shift of employment away from low-skill occupations within most sectors, in line with the aggregate pattern in Figure 3.1.

Figure 3.7. **Polarisation has occurred in almost all industries**

Percentage point change in share of total employment within industry for select OECD countries,[a] 1995 to 2015[b, c, d]



Note: The figure depicts changes in the share of low, middle- and high-skill jobs (by two-digit ISIC Rev.3 classification) within each industry across selected OECD countries. The results are obtained by pooling together employment in each industry across all the countries analysed. The average industry polarisation is a simple unweighted average of changes in the shares of low-, middle-, and high-skill jobs across industries.

a) The countries included in this chart are: Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Norway, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, the United Kingdom and the United States.

b) European employment data beyond 2010 was mapped from ISCO-08 to ISCO-88 using a many-to-many mapping technique. This mapping technique is described in the Annex 3.A4 (available online at OECD, 2017b). Data for Japan is excluded due to a structural break in the data after 2010.

c) Employment data by occupation and industry for the United States prior to 2000 were interpolated using the occupation-industry mix for the years between 2000 and 2002, and matched with control totals by occupation and by industry for the years 1995 to 1999. Employment data for Canada and the United States were transposed from the respective occupational classifications (SOC 2000) into corresponding ISCO-88 classifications.

d) Employment data was adjusted to correct for structural breaks in the following countries: Portugal (1998), the United Kingdom (2001), France (2003) and Italy (2004).

Source: European Labour Force Survey; labour force surveys for Canada (LFS) and the United States (CPS MORG).

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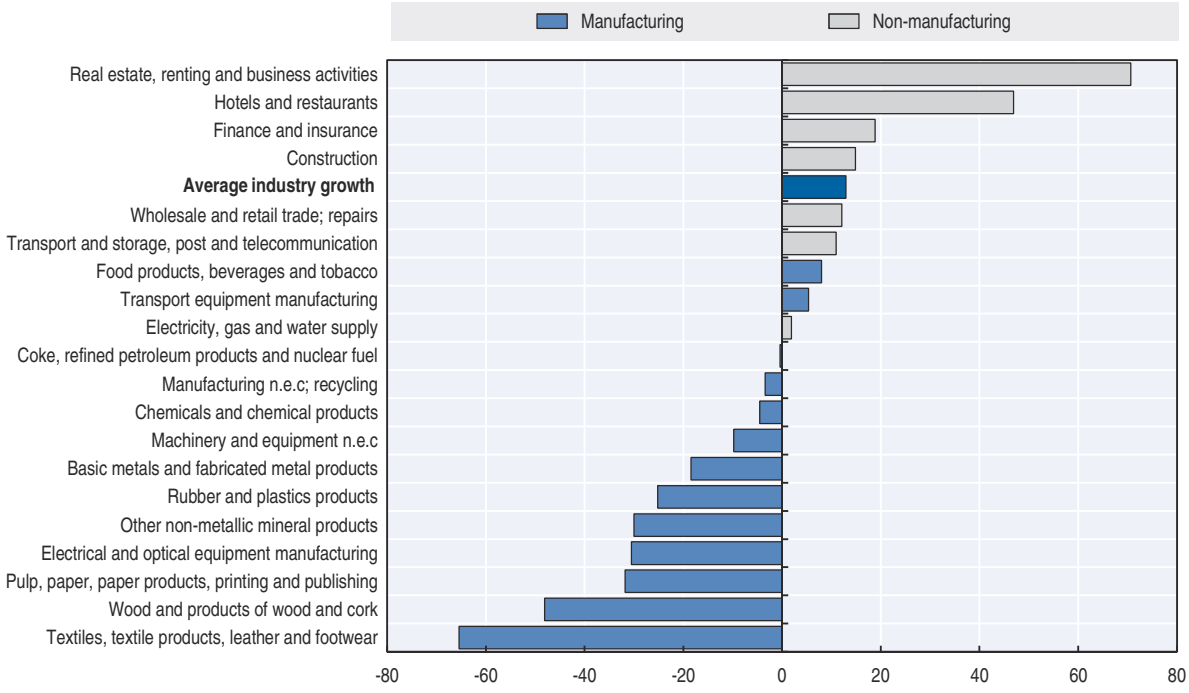
The manufacturing sector has shrunk significantly…

The overall shrinking of the manufacturing sector has further contributed to the loss of middle-skill jobs. Figure 3.8 reports the percentage change in employment by industry, and the process of de-industrialisation is very clear. Only 2 of the 13 manufacturing sectors have seen their employment grow slightly, while 5 of them have experienced reductions of 30% or more. Most service sectors have increased their share of employment, with the largest growth recorded in "Real estate and business services" (+70%). The two sectors for which polarisation has meant a shift from middle- and high-skill jobs to low-skill jobs – as seen in Figure 3.7 – have increased their employment levels ("Wholesale and retail trade", "Hotels

Figure 3.8. **The decline of manufacturing**

Percentage change in total employment within industry for selected OECD countries,[a] 1995 to 2015[b, c, d]



Note: The figure depicts the percentage changes in total employment by industry (by two-digit ISIC Rev.3 classification). The results are obtained by pooling together employment in each industry across all the countries analysed. The average industry growth (dark blue bar) is a simple unweighted average of changes in total employment across industries.

a) The countries included in this chart are: Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Norway, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, the United Kingdom and the United States.

b) European employment data beyond 2010 was mapped from ISCO-08 to ISCO-88 using a many-to-many mapping technique. This mapping technique is described in Annex 3.A4 (available online at OECD, 2017b). Data for Japan were excluded due to a structural break in the data between 2010 and 2011.

c) Employment data by occupation and industry for the United States prior to 2000 were interpolated using the occupation-industry mix for the years between 2000 and 2002, following a similar approach to the US Bureau of Labour Statistics (BLS). These interpolated data were matched with control totals by occupation and by industry for the years 1995 to 1999. Employment data for Canada and the United States were transposed from the respective occupational classifications (SOC 2000) into corresponding ISCO-88 classifications.

d) Employment data was adjusted to correct for structural breaks in the following countries: Portugal (1998), the United Kingdom (2001), France (2003) and Italy (2004).

Source: European Labour Force Survey; labour force surveys for Canada (LFS) and the United States (CPS MORG).

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and restaurants"). In particular, "Hotels and restaurants" was the second fastest growing sector with an increase of total employment in excess of 45%. Annex 3.A3 (available online at OECD, 2017b) documents variations across regions in changes in industry-level employment. The decline in manufacturing is clear in all areas except for Central Europe, where industries such as "Transport equipment manufacturing" have grown substantially. The fastest growing service sector is "Real estate and business services" in all regions except Central Europe and Japan, where it is the second fastest growing sector.[13]

… but polarisation mostly occurs within sectors, and not as a consequence of shrinking manufacturing

To understand the relative importance of between- and within-industry effects, one can also apply a formal decomposition of the change in overall polarisation over the period

analysed into between- and a within-industry components (Goos et al., 2014).[14] The results are reported in Table 3.1. Across all countries considered, the share of top and bottom occupations in total employment increased on average by about 5 percentage points between 1995 and 2007, from 58% to 63%. The last row shows that 62% of this increase is explained by changes in polarisation within industries, while the remaining 38% is accounted for by changes in the relative size of different industries. The positive between-industry component is the result of the fact that overall employment has shifted towards industries with higher polarisation. On top of that, within most sectors, polarisation has increased. As a result of these two forces, the business services sector emerges as the industry making the largest contribution to aggregate polarisation (50% of the overall increase).

Table 3.1. **Industry[a] contributions to within- and between-industry polarisation,[b] 1997 to 2007[c]**

Average industry contributions[d] expressed in percentage points

Industry	Within	Industry	Between
Manufacturing, all	0.951	Manufacturing, all	-1.435
Agriculture	0.048	Agriculture	-0.253
Electricity, gas, water	0.089	Electricity, gas, water	-0.134
Mining	0.015	Mining	-0.043
Transport & communication	0.253	Transport & communication	-0.158
Wholesale and retail trade	0.203	Wholesale and retail trade	-0.045
Education	0.113	Education	0.071
Finance and insurance	0.341	Finance and insurance	-0.056
Public administration	0.449	Public administration	-0.067
Construction	0.113	Construction	0.269
Other services	0.121	Other services	0.279
Hotels and restaurants	-0.026	Hotels and restaurants	0.429
Health and social work	0.159	Health and social work	0.851
Business Services	0.393	Business Services	2.226
Total	**3.221**	**Total**	**1.934**

a) Industries are classified according to ISIC Rev.3 2 digit classifications. The groupings are as follows: Agriculture (1 to 5), Business services (70 to 74), Construction (45), Education (80), Electricity, gas, water (40 to 41), Finance and insurance (65 to 67), Health and social work (85), Hotels and restaurants (55), Manufacturing, all (15 to 37), Mining (10 to14), Other services (90 to 93), Public administration (75), Transport and communication (60 to 64), Wholesale and retail trade (50 to 52).

b) In this table, overall polarisation is calculated as the sum of high- and low-skill workers over total employment. Within-sector polarisation is the increase in the share of high- and low-skill jobs within an industry, while between-sector polarisation is the reallocation of employment towards more highly polarised industries. Within-industry polarisation is calculated as the change in polarisation by industry over the time period, multiplied by the average share of employment of that industry. Between-industry polarisation is calculated as the change in the employment share of an industry over the time period, multiplied by the average polarisation of that industry.

c) Some countries were missing observations in 1995 and 1996, and so 1997 was taken as the beginning of the period with the exception of the Slovak Republic, which uses data from 1998. There was a revision in the ISIC industry classification in 2008, limiting the analysis to 2007.

d) Averages are calculated at a country level.

Source: OECD calculations based on the European Labour Force Survey; labour force surveys for Canada (LFS), Japan (LFS) and the United States (CPS MORG).

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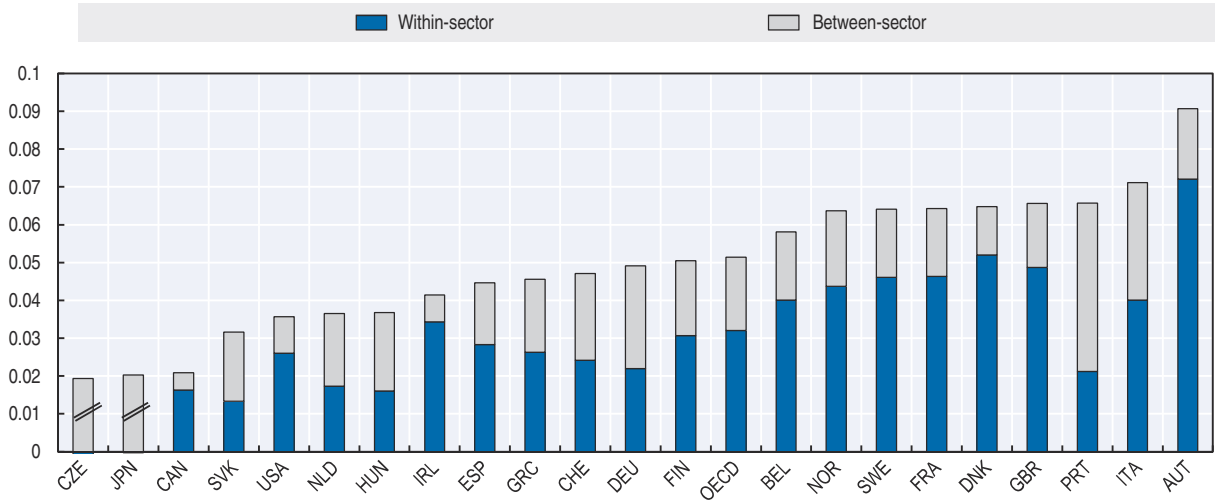
Figure 3.9 shows that the prevalence of the within-industry component is a pattern observed in most countries, with some notable exceptions including the Czech Republic, Japan, the Slovak Republic, the Netherlands, Hungary, Germany and Portugal, where the decline of specific sectors has played a major role in the loss of middle-skill jobs relative to high- and low-skill occupations.

Figure 3.9. **In most countries, polarisation has largely reflected within-sector dynamics**

Percentage-point change in polarisation between 1997 and 2007[a, b, c]



Note: Polarisation is calculated as the sum of high- and low-skill workers over total employment. Within-sector polarisation is the increase in the share of high- and low-skill jobs within an industry, while between-sector polarisation is the reallocation of employment towards more highly polarised industries. Within-industry polarisation is calculated as the change in polarisation by industry over the time period multiplied by the average share of employment of that industry. Between-industry polarisation is calculated as the change in employment share of an industry over the time period multiplied by the average polarisation of that industry.

a) Averages are calculated at the country level. Employment data by occupation and industry for the United States prior to 2000 were interpolated using the occupation-industry mix for the years between 2000 and 2002, combined with control totals by occupation and by industry.

b) Employment data for Canada, Japan, and the United States were transposed from the respective occupational classifications (SOC 2000 for the United States and Canada and JSOC Rev.3 for Japan) into corresponding ISCO-88 classifications. Within-sector polarisation for the Czech Republic and Japan are negative values. Underlying industrial data for Switzerland are classified according to the General Classification of Economic Activities (NOGA 2008). Employment data was adjusted to correct for structural breaks in the following countries: Portugal (1998), the United Kingdom (2001), France (2003) and Italy (2004).

c) Some countries were missing observations in 1995 and 1996, and so 1997 was taken as the beginning of the period with the exception of the Slovak Republic, which uses data from 1998. There was a revision in the ISIC industry classification in 2008, limiting the analysis to 2007.

Source: European Labour Force Survey; labour force surveys for Canada (LFS), Japan (LFS), Switzerland (LFS) and the United States (CPS MORG).

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The effects of technological change and globalisation on within and between polarisation are theoretically ambiguous

Technology can affect overall polarisation both through within- and between-industry adjustments (Goos et al., 2014), but its overall effects are theoretically ambiguous and deserve empirical scrutiny. To see why, consider a sector which initially makes high use of routine jobs and is therefore relatively unpolarised. The adoption of new labour-saving technology will cause polarisation within the sector. It will also slow employment growth in this sector and thus raise aggregate polarisation by increasing the relative share of more polarised sectors. However, as technological advances trigger greater productivity and lower prices for consumers, greater demand for the sector's output may partly offset the first-order effect of automation. Similarly, offshoring of middle-skill jobs might induce both higher polarisation and slower employment growth in less polarised sectors. If it leads to higher productivity, however, some of these negative effects may be partly offset. Import penetration is akin to offshoring as it contributes to the displacement of middle-skill workers and to the overall decline of manufacturing sectors that make intensive use of such workers (Keller and Utar, 2016). However, trade models that incorporate firm heterogeneity also

predict that trade can induce adjustments within industries as production switches towards more productive firms (Melitz, 2003). To the extent to which such firms also have a more polarised occupational structure (perhaps as a result of technology adoption), this means that trade could affect aggregate polarisation through within-industry adjustments as well. And, again, these efficiency gains within industries might lead to stronger employment growth for the more polarised sectors, therefore further contributing to the overall polarisation of the labour market.

There are of course, a number of other factors that can contribute to polarisation within and across industries – either independently or by interacting with the megatrends that are the focus of this chapter. For example, the fortunes of different industries can be driven by changes in consumer preferences, and firms can adjust their production technology and occupational composition to changes in the composition of the workforce in terms of skills, gender and immigration status.[15] While existing studies have suggested that these factors might have played a role in explaining some aspects of the polarisation process in at least some countries, they are beyond the scope of this chapter.

What drives polarisation within industries?

Given the relative importance of within-industry polarisation, the first goal of the econometric analysis is to investigate how changes in technology and integration in GVCs affect job polarisation within individual sectors. For this purpose, within-industry polarisation can be split into two complementary indicators: i) the share of high-skill relative to medium-skill occupations, by industry and country, can be used to capture polarisation at the top; while ii) the share of low-skill relative to medium-skill occupations can be used to capture polarisation at the bottom. These two indicators are used as the dependent variables in the empirical model below (full details are provided in Box 3.2 and in Breemersch et al., 2017).[16] In addition, the model relies on a set of proxies for technology and globalisation.

To capture technological change, the model relies on two different variables. First, expenditure on ICT capital services per hour worked is used as an indicator of ICT penetration in the labour market. Goos et al. (2016) report a positive correlation between the intensity of ICT capital use and job polarisation. Second, R&D intensity is used as a proxy for technological change, as commonly done in the literature studying the effects of process and product innovation at firm level on employment changes (e.g. Klette and Forre, 1998). Bogliacino et al. (2012) find that R&D is a good proxy for innovation not only in manufacturing industries but also in service industries, corroborating the strategy adopted here.[17]

To measure integration in GVCs, the analysis uses data from the trade in value added (TiVA) dataset published by the OECD and the WTO (2015). The data is derived from the 2015 version of OECD Inter-Country Input-Output (ICIO) Database (a description of the dataset is provided in Box 3.1). The main indicator used in the estimation is the share of the foreign component of value added in gross exports by industry and country. A higher share implies that an industry relies more on international specialisation and the international fragmentation of the production process.[18] This is a measure of backward participation in GVCs, since the domestic industry is assumed to be in the middle of the global value chain.[19]

In order to further investigate the effects of international trade on the labour market, a measure of Chinese import penetration in the domestic economy is added to the analysis.[20] This is captured by the share of Chinese imports in total industry domestic absorption, calculated on the basis of the WIOD database (Timmer et al., 2015).[21] A higher value of this

variable indicates greater importance of Chinese goods in overall domestic consumption in a given industry. If Chinese imports compete with domestic output, they may directly lead to job losses in industries that are most exposed causing changes in the relative size of different industries (Keller and Utar, 2016). In addition, the competitive pressures arising from increasing international competition can lead to a shift of production towards more productive firms (Melitz, 2003). If these firms use production processes that make greater use of high-skill workers, this could lead to higher polarisation within industries.

Finally, the analysis includes several country-level indicators to capture the effect of a range of labour market institutions that may mitigate (or amplify) the impact of technology and integration in GVCs on the labour market.[22] In particular, the emphasis is placed on employment protection legislation (EPL), union density and the level of the minimum wage.[23]

Box 3.2. **Estimating the effects of technology and globalisation on the labour market**

To estimate the effects of technology and globalisation on *within-sector* polarisation, the empirical strategy rests on two reduced form equations modelling, respectively, the shares of workers in high- and low-paid occupations relative to middle-paid occupations:

$$ln\frac{N_h}{N_{m\,ict}} = {}_1 + {}_2 lnICT_{ict} + {}_3 lnR\,\&\,Dintensity_{ict} + {}_4 lnTiVA_{ict} + {}_5 lnImp.pen_{ict}^{CHN} + \theta_{ic} + \varphi_{ct} + \varepsilon_{ict}$$

$$ln\frac{N_l}{N_{m\,ict}} = {}_1 + {}_2 lnICT_{ict} + {}_3 lnR\,\&\,Dintensity_{ict} + {}_4 lnTiVA_{ict} + {}_5 lnImp.pen_{ict}^{CHN} + \theta_{ic} + {}_{ct} + \eta_{ict}$$

where the subscripts i, c and t refer to industry, country and year, respectively. θ_{ic} captures fixed effects that are specific to each industry in a given country, while φ_{ct} captures effects that are specific to a certain country in a given time period. ε_{ict} and η_{ict} are idiosyncratic error terms. These specifications permit analysing how the employment structure within industries has on average been affected by the megatrends of interest. All the variables are measured in logarithms to facilitate the interpretation of the results.

The analysis of *between-industry* polarisation is carried out by estimating the following specification in differences:

$$\Delta lnE_{ict} = \gamma_1 + \gamma_2 \Delta lnICT_{ict} + \gamma_3 \Delta lnR\,\&\,Dintensity_{ict} + \gamma_4 \Delta lnTiVA_{ict} + \gamma_5 \Delta lnImp.pen_{ict}^{CHN} + \delta_{ct} + \omega_{ict}$$

where ΔlnE_{ict} is the percentage change in the employment of industry i between two periods, while $\Delta lnICT_{ict}$, $\Delta lnR\&D\ intensity_{ict}$, $\Delta lnTiVA_{ict}$, and $\Delta lnImp.pen_{ict}^{CHN}$ capture changes in the independent variables. δ_{ct} is a country x period fixed effect. ω_{ict} is an idiosyncratic error term.

Technological change has a stronger effect than globalisation on the labour market

The first set of results, reported in Table 3.2, concentrates on manufacturing industries, the sector that has been most heavily affected by labour-saving technologies. In light of previous studies pointing to technology as the main driver of the polarisation process, the first specification in the table includes only the ICT variable while the successive columns progressively add the other variables of interest. The coefficient on the ICT variable is rather stable across specifications, displaying a stronger correlation than globalisation with the extent to which labour markets polarise. The coefficients imply that a 10% change

Table 3.2. **Unpacking polarisation in manufacturing**

Explaining polarisation using manufacturing sector data (ISIC two-digit) in the period 1995 to 2007

	(1) top	(2) bottom	(3) top	(4) bottom	(5) top	(6) bottom
ICT	0.16**	-0.03	0.15**	-0.03	0.15**	-0.03
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
R&D intensity			0.04	-0.03	0.04	-0.03
			(0.02)	(0.03)	(0.03)	(0.03)
TiVA					-0.10	-0.02
					(0.12)	(0.26)
$Imp.pen^{CHN}$					0.01	0.06
					(0.02)	(0.04)
N	2 496	2 488	2 496	2 488	2 496	2 488

Standard errors in parentheses. ***, **, * statistically significant at 1%, 5% and 10% levels respectively.

Note: "ICT" is the ratio of ICT capital services per hour worked. "R&D intensity" is the ratio of research and development expenditure over value added. "TiVA" is the ratio of foreign value added of exports over total exports. "$Imp.pen^{CHN}$" is the ratio of Chinese imports over total domestic absorption. Standard errors are clustered at the country level. All sets of analysis include dummies for country by year fixed effects, and also country by industry fixed effects. All the variables are converted to a logarithmic scale. Observations are weighted by the industry share of total employment within each country. Data after 2007 is not included in the analysis due to a lack of ICT intensity observations for a majority of countries.

Source: OECD calculations based on the European Labour Force Survey; labour force surveys for Canada (LFS), Japan (LFS) and the United States (CPS MORG); the World Input-Output Database (WIOD); the Trade in Value Added (TiVA) database; the EU KLEMS growth and productivity accounts; and the OECD Research and Development Statistics database.

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in ICT intensity is correlated with an increase in high-skill employment polarisation of 1.5%. There is no clear evidence, on the other hand, of a correlation between integration in GVCs and polarisation.

When the analysis is extended through to 2015 for a subset of countries, these conclusions are largely confirmed, despite the decrease in statistical precision that derives from considerably lower sample sizes (Table 3.A2.1).

And the effects are predominantly on polarisation at the top

Further, while the results show that technology increases top polarisation, they show no significant correlation between technological change and polarisation at the bottom. Industries with higher penetration of ICT tend to have more high-skill workers, but not more low-skill ones, relative to middle-skill workers. This indicates that the effect of technology on polarisation within industries is not only through substitution of middle-skill workers – which would lead to both top and bottom polarisation. Instead, the result suggests that part of the effect of technology might be through complementarities with high-skill jobs, or through substitution of lower-skill workers as well.[24] Globalisation also shows little sign of correlating with bottom polarisation. The penetration of Chinese imports is positively correlated with the increase of low-skill jobs relative to middle-skill jobs, but the estimate is statistically insignificant.

The low statistical precision of the trade estimates is not due to the inclusion of the country-specific time trends which are quite demanding of data in this setting. In fact, further analysis (not reported here) fails to pick up significant effects for import penetration even when the country-specific trends are excluded or the effect of import penetration is allowed to change before and after China's accession to the WTO in 2001. Previous studies have generally emphasised that trade is more likely to affect aggregate polarisation through

its impact on the relative size of industries that differ in the intensity of use of middle-skill workers, rather than through *within-industry* effects (Keller and Utar, 2016). The analysis returns to this point below.

Within non-manufacturing sectors the effects are more difficult to estimate

Turning to the non-manufacturing sector, the analysis reveals that the effects of interest are harder to estimate with statistical precision. The lower number of non-manufacturing industries available in the data results in a sharp drop in sample size, which reduces the statistical precision of the results.[25] The analysis uncovers a positive correlation between ICT intensity and polarisation which is larger at the top than at the bottom (similar to the results for manufacturing), but which is not statistically significant in either case (Table 3.3). However, when the analysis is extended to 2015 for a subset of countries where data are available, the effect of technology on top polarisation becomes significant and its magnitude is consistent with the effect uncovered in manufacturing (Table 3.A2.2).

Table 3.3. **Unpacking polarisation in non-manufacturing**

Explaining polarisation using non-manufacturing sector data (ISIC one-digit) in the period 1995 to 2007

	(1) top	(2) bottom	(3) top	(4) bottom	(5) top	(6) bottom
ICT	0.11	0.04	0.13	0.12	0.08	0.04
	(0.12)	(0.13)	(0.12)	(0.12)	(0.06)	(0.08)
R&D intensity			-0.07	-0.17*	0.02	-0.05
			(0.06)	(0.10)	(0.03)	(0.04)
TiVA					0.13	0.27*
					(0.14)	(0.14)
$Imp.pen^{CHN}$					0.01	-0.04**
					(0.01)	(0.02)
N	1 399	1 399	1 104	1 104	950	950

Standard errors in parentheses. ***, **, * statistically significant at 1%, 5% and 10% levels respectively.

Note: "ICT" is the ratio of ICT capital services per hour worked. "R&D intensity" is the ratio of research and development expenditure over value added. "TiVA" is the ratio of foreign value added of exports over total exports. "$Imp.pen^{CHN}$" is the ratio of Chinese imports over total domestic absorption. Standard errors are clustered at the country level. All sets of analysis include dummies for country by year fixed effects, and also country by industry fixed effects. All the variables are converted to a logarithmic scale. Observations are weighted by the industry share of total employment within each country. Data after 2007 is not included in the analysis due to a lack of ICT intensity observations for a majority of countries.

Source: OECD calculations based on the European Labour Force Survey; labour force surveys for Canada (LFS), Japan (LFS) and the United States (CPS MORG); the World Input-Output Database (WIOD); the Trade in Value Added (TiVA) database; the EU KLEMS growth and productivity accounts; and the OECD Research and Development Statistics database.

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Both TiVA and import penetration are positively correlated with top polarisation, but neither estimates are statistically significant. On the other hand, the two coefficients differ in sign when looking at bottom polarisation, with TiVA showing a positive effect and import penetration a negative one. Introducing TiVA and Chinese import penetration in the model reduces the size of the coefficients on the proxies for technology, which suggests that some of the effects of trade may occur by inducing technological change.

The effects of technology have been particularly strong in some regions

Focusing on the manufacturing sector, which has displayed the clearest impacts of technology, Table 3.4 investigates whether the correlation of the megatrends with top and bottom polarisation varies across different regions. The first column reports the correlation

Table 3.4. **The impacts of technology and globalisation on polarisation in different regions**

Manufacturing sector polarisation in the period 1995 to 2007

	top					bottom				
	WE	NA-WE	NE-WE	SE-WE	CE-WE	WE	NA-WE	NE-WE	SE-WE	CE-WE
ICT	0.11**	-0.04	0.20***	0.40***	-0.08	-0.00	-0.11	-0.08	0.32*	-0.08
	(0.05)	(0.05)	(0.05)	(0.13)	(0.09)	(0.08)	(0.08)	(0.23)	(0.16)	(0.12)
R&D	-0.03	0.07*	0.12**	0.17***	0.06	-0.03	0.04	-0.04	-0.01	0.00
	(0.04)	(0.04)	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)	(0.12)	(0.06)	(0.05)
TiVA	-0.27	0.15	0.19	-0.60*	0.64	0.22	-0.15	-0.84	-0.58	-0.24
	(0.18)	(0.20)	(0.40)	(0.33)	(0.37)	(0.39)	(0.39)	(1.13)	(1.30)	(0.62)
$Imp.pen^{CHN}$	0.05***	-0.06***	-0.07	-0.07**	-0.06**	0.19**	-0.19**	-0.20**	-0.18	-0.21**
	(0.02)	(0.02)	(0.05)	(0.03)	(0.03)	(0.08)	(0.08)	(0.09)	(0.12)	(0.09)
N	2 353					2 349				

Standard errors in parentheses. ***, **, * statistically significant at 1%, 5% and 10% levels respectively.

Note: "ICT" is the ratio of ICT capital services per hour worked. "R&D" is the ratio of research and development expenditure over value added. "TiVA" is the ratio of foreign value added of exports over total exports. "$Imp.pen^{CHN}$" is the ratio of Chinese imports over total domestic absorption. Standard errors are clustered at the country level. Observations are weighted by the industry share of total employment within each country. Both sets of analysis include dummies for country by year fixed effects, and also country by industry fixed effects. "SE" represents Southern Europe and contains Spain, Greece, Italy and Portugal. "WE" represents Western Europe and contains Austria, Belgium, Germany, France, Ireland, the Netherlands and the United Kingdom. "CE" represents Central Europe and contains the Czech Republic, Hungary, the Slovak Republic and Slovenia. "NE" represents Northern Europe and contains Denmark, Finland, Norway and Sweden. "NA" represents North America and consists of Canada and the United States. Results for Japan not reported, as limited data availability reduces the reliability of the estimates. All the variables are converted to a logarithmic scale. Data after 2007 is not included in the analysis due to a lack of ICT intensity observations for a majority of countries.

Source: OECD calculations based on the European Labour Force Survey; labour force surveys for Canada (LFS), Japan (LFS) and the United States (CPS MORG); the World Input-Output Database (WIOD); the Trade in Value Added (TiVA) database; the EU KLEMS growth and productivity accounts; and the OECD Research and Development Statistics database.

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of each megatrend with polarisation in Western Europe, which is chosen as the reference. The successive columns show the difference in the estimates between each of the other regions and Western Europe, as indicated by the column headings. Hence, the total effect for each of the regions is given by the sum of i) the coefficient in the first column and ii) the coefficient in the region-specific column.

The results show that ICT tends to increase the share of high-skill relative to middle-skill occupations in all countries, but the effect is significantly larger in Northern and Southern Europe – where a 10% increase in ICT intensity is associated with a 3% and 5% increase in top polarisation respectively.[26] Similarly, the correlation of R&D with top polarisation – which in the aggregate results of Table 3.2 appears statistically insignificant – is found positive and significant in these two regions in Table 3.4.

While for TiVA the estimates are generally statistically insignificant across regions, the bottom row reveals that the lack of an overall clear correlation between Chinese import penetration and polarisation documented above masks considerable heterogeneity across regions. In particular, import penetration is correlated with both top and bottom polarisation in Western Europe. In addition, it is worth stressing that these estimates are obtained after controlling for technology adoption and that they indicate a stronger impact on bottom polarisation than on top polarisation (a 10% increase in import penetration is associated with a 2% and 0.5% increase in bottom and top polarisation respectively). Hence, they suggest that import penetration in Western Europe has affected middle-skill occupations directly, rather than by providing incentives for firms to adopt new technologies that may have led to an

upskilling of the workforce (Bloom et al., 2016). However, the remaining columns show that similar effects are not detected in any of the other macro regions considered here, as indicated by the sum of the coefficient reported in the first column and those in the remaining columns.

Labour market institutions may influence the effect of technology

Next, the chapter turns to analysing the role of institutions in affecting the impact of the megatrends of interest on the labour market. Breemersch et al. (2017) show that controlling for labour market institutions, such as the strength of trade unions, the strictness of employment protection legislation (EPL) and the minimum wage (measured by the Kaitz index), in a very similar model to the one estimated above does not uncover strong relationships between those variables and polarisation across industries. However, even if these institutions do not have a direct effect on polarisation, they might alter the effect of technology and globalisation on the labour market, although the direction of the effect is theoretically ambiguous.

On the one hand, stricter employment protection and stronger unions might be expected to slow employment adjustments caused by the megatrends considered in this chapter (e.g. Causa et al., 2016 suggest that stronger EPL is effective in protecting low- and middle-skill workers). Under this hypothesis, countries with high EPL and union density can be expected to have lower polarisation, at least temporarily. Similarly, a higher minimum wage can slow the reallocation of employment towards the lower end of the earnings distribution, attenuating the effect of the megatrends on bottom polarisation. This, however, might be achieved at the cost of higher unemployment.

On the other hand, firms might be more likely to use technology to replace workers when facing the rigidities imposed by stricter regulations or stronger unions. Previous literature has shown that the higher costs generated by overly strict labour market regulations can induce firms to increase their capital intensity (e.g. Alesina and Zeira, 2006; Cingano et al., 2015). In addition, it is plausible that even for a given level of capital intensity, firms facing rigidities generated by regulation or unions might be more likely to use technology to replace rather than complement workers. Under this hypothesis, therefore, stricter EPL and stronger unions might be associated with a stronger effect of technology on polarisation.

Table 3.5 reports the estimates of an augmented model of polarisation that includes interactions between the variables of interest and indicators capturing strong institutions (i.e. above median levels of union density, the Kaitz index and the EPL stringency index). Perhaps unsurprisingly, given the limited variability available for estimation once country-specific time trends are included, most coefficients are estimated with little statistical precision.[27] However, the interaction of ICT with high EPL attracts positive and statistically significant coefficients in the regressions for both top and bottom polarisation, providing support for the hypothesis that stricter regulations induce firms to use technology to replace workers. Stricter EPL is also associated with a stronger impact of integration in GVCs on top polarisation, but the estimate is statistically insignificant for bottom polarisation. On the contrary, high union density appears to dampen the effect of ICT on bottom polarisation but not on top polarisation.

Overall, therefore, a mixed picture emerges from Table 3.5. While most interactions of interest are estimated with low statistical precision, there is an indication that stricter EPL amplifies the effect of both ICT and GVCs on polarisation, while stronger unions reduce the effect of ICT on bottom polarisation.

Table 3.5. **The role of labour market institutions**

Manufacturing sector polarisation in the period 1995 to 2007

	(1) Top	(2) Top	(3) Top	(4) Bottom	(5) Bottom	(6) Bottom
Institutions →	Union Den.	Min. Wage	EPL	Union Den.	Min. Wage	EPL
ICT	0.15**	0.16**	0.11*	0.06	-0.03	-0.11
	(0.07)	(0.06)	(0.06)	(0.08)	(0.07)	(0.07)
ICT x Strong institution	0.01	-0.01	0.09*	-0.16***	0.01	0.17***
	(0.04)	(0.03)	(0.05)	(0.05)	(0.05)	(0.05)
R&D	0.04*	0.04	0.04**	-0.02	-0.03	-0.08*
	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)	(0.04)
R&D x Strong institution	0.00	-0.01	-0.01	-0.01	-0.01	0.09*
	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.05)
TiVA	-0.07	-0.10	-0.27**	-0.01	-0.04	-0.59
	(0.12)	(0.13)	(0.11)	(0.21)	(0.26)	(0.50)
TiVA x Strong institution	-0.04	0.04	0.28**	-0.02	0.12	0.94
	(0.08)	(0.09)	(0.11)	(0.16)	(0.14)	(0.63)
N	2 496	2 496	2 496	2 488	2 488	2 488

Standard errors in parentheses. ***, **, * statistically significant at 1%, 5% and 10% levels respectively.

Note: "ICT" is the ratio of ICT capital services per hour worked. "R&D" is the ratio of research and development expenditure over value added. "TiVA" is the ratio of foreign value added of exports over total exports. Each column reports the results of a different estimation, where the variables of interest are interacted with a dummy equal to 1 if a particular institution is stronger than the median. Estimating the same model with all the institution dummies and interaction terms in a single regression does not change the conclusions. All sets of analysis include dummies for country by year fixed effects, and also country by industry fixed effects. Standard errors are clustered at the country level. Observations are weighted by the industry share of total employment within each country. Variables with the suffix "x Strong institution" represent data for which the Institution of interest is above the median value. The variable EPL is an index indicator of the employment protection legislation for permanent workers. All the variables are converted to a logarithmic scale. Data after 2007 is not included in the analysis due to a lack of ICT intensity observations for a majority of countries.

Source: OECD calculations based on the European Labour Force Survey; labour force surveys for Canada (LFS), Japan (LFS) and the United States (CPS MORG); the World Input-Output Database (WIOD); the Trade in Value Added (TiVA) database; the EU KLEMS growth and productivity accounts; the OECD Labour Force Statistics Database; and the OECD Research and Development Statistics database.

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What drives de-industrialisation?

This section investigates the role that technology and globalisation play in fostering the growth and decline of different sectors, as documented in Figure 3.9. In particular, it is crucial to understand to what extent these megatrends have contributed to the process of de-industrialisation that has affected advanced economies, with employment shrinking in the manufacturing sector while growing in industries such as business services, health and social services. As discussed at the beginning of Section 2, these changes have contributed to about a third of the increase in overall polarisation across the countries considered here.

To achieve this objective, the analysis turns to the statistical link between changes in employment by industry and changes in the same variables used to capture technology and globalisation in the previous section. The full empirical specification is detailed in Box 3.2.

Greater technology use is associated with lower employment in manufacturing

Table 3.6 suggests a small negative effect of increased technology use on employment in manufacturing. The coefficients imply that an increase in ICT use of 10% is associated with a fall in employment in manufacturing of 0.5% which is consistent with the hypothesis that new technologies in this sector are to some extent labour replacing.

Table 3.6. **What has been driving the fall in manufacturing, and the rise of service sector employment?**

Explaining employment growth using manufacturing and non-manufacturing sector data in the period 1995 to 207

	(1)	(2)	(3)	(4)
	Manufacturing		Non-manufacturing	
	Δ ln emp	Δ ln emp	Δ ln emp	Δ ln emp
ICT	-0.06*	-0.05*	-0.01	0.01
	(0.03)	(0.03)	(0.02)	(0.03)
		(0.07)		(0.11)
$Imp.pen^{CHN}$		-0.02**		0.01
		(0.01)		(0.00)
N	2 619	2 477	1 399	908

Standard errors in parentheses. ***, **, * statistically significant at 1%, 5% and 10% levels respectively.

Note: "ICT" is the ratio of ICT capital services per hour worked. "$Imp.pen^{CHN}$" is the ratio of Chinese imports over total domestic absorption. Not shown are results including controls for the share of foreign value added in total exports and research and development intensity. Standard errors are clustered at the industry level and observations are weighted by the employment share of each industry at the first year of the analysis. The analysis includes dummies for country by year fixed effects. The estimation is based on a regression of annual differences between 1995 and 2007. Δ ln emp captures the change in the log of employment. All the other variables are also converted to a logarithmic scale. Data after 2007 is not included in the analysis due to a lack of ICT intensity observations for a majority of countries.

Source: OECD calculations based on the European Labour Force Survey; labour force surveys for Canada (LFS), Japan (LFS) and the United States (CPS MORG); the World Input-Output Database (WIOD); the Trade in Value Added (TiVA) database; the EU KLEMS growth and productivity accounts; and the OECD Research and Development Statistics database.

StatLink http://dx.doi.org/10.1787/888933478220

Conversely, no negative effect of technology on employment in service sectors is detected (and the overall impact of ICT penetration on the economy as a whole, estimated when pooling both manufacturing and non-manufacturing sectors together, is negligible). This is in line with existing studies which have generally found no clear negative association between technology adoption and aggregate employment using firm, occupation, industry and individual level data (Bessen, 2015; Graetz and Michaels, 2015; Gaggl and Wright, 2015; Cortes and Salvatori, 2016; Gregory et al., 2016), with the recent exception of Acemoglu and Restrepo (2017) who find large and robust negative effects of robots on employment across commuting zones in the United States. Box 3.3 considers the available evidence about whether automation will become a major driver of job losses in the coming decades.

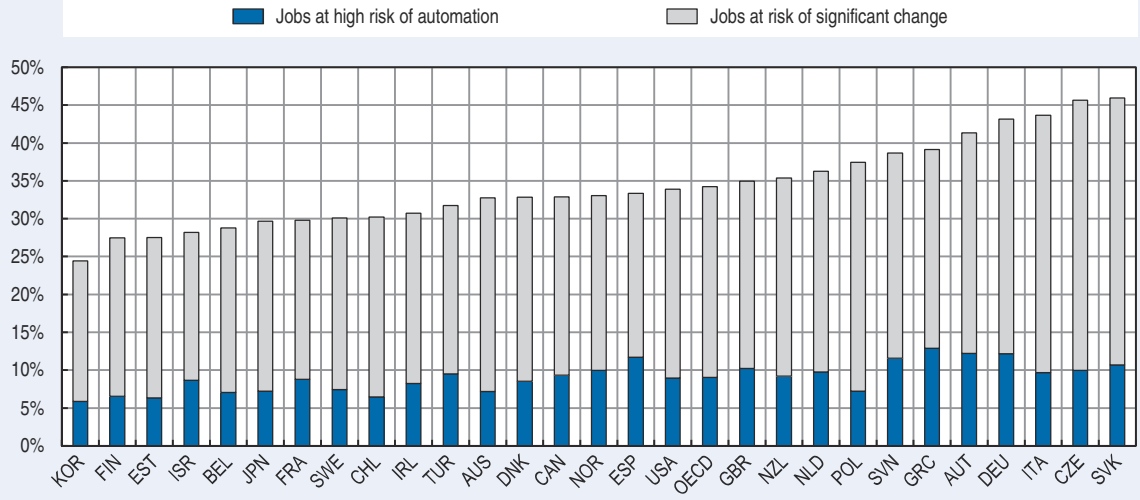
Box 3.3. **The risk of automation in the next 10-20 years**

The analysis presented in this chapter relies on historical data and, as such, it is only directly informative about past trends. A complementary body of research focuses on the effects of technological change going forward, building on evidence gathered through foresight exercises. Recent OECD work in this area has concentrated on estimating the share of jobs at medium and high risk of automation. The analysis, detailed in Arntz et al. (2016), builds on previous work by Frey and Osborne (2013), who estimate that almost half of all jobs in the United States are at risk of being substituted by computers or algorithms within the next 10 to 20 years. These estimates are constructed using experts' assessment of the probability that the main task in a given occupation will be automated. Critics of these alarming estimates argue that occupations as a whole are unlikely to be automated, as each occupation consists of a set of tasks that often differ significantly in their degree of automatibility (Autor and Handel, 2013). Similarly, two workers in the same occupation may not perform the same tasks. For example, if their work is organised differently, one of them may require more face-to-face interaction or autonomy than the other.

Box 3.3. **The risk of automation in the next 10-20 years** *(cont.)*

An alternative approach to estimate the number of jobs at risk of automation is to directly analyse the task content of individual jobs instead of the average task content within each occupation. This can be done using the OECD Adult Skills Survey (Programme for the International Assessment of Adult Competencies, PIAAC), which has produced a dataset that allows for a detailed breakdown of workers' tasks. This results in lower figures for the share of jobs at high risk of automation (i.e. those with a probability of being automated of at least 70%) which Arntz et al. (2016) estimate to be 9% across the OECD. The figures for individual countries range from 12% in Austria, Germany and Spain to around 6% in Finland and Estonia (the results are presented in Figure 3.10, which also includes new data from countries in the second PIAAC round).[1] A far larger share of jobs (25%), however, is estimated to have a lower risk of automation (50-70%) but a significant risk of seeing the majority of the tasks they entail changed by technology.

Figure 3.10. **The risk of automation in OECD countries**



Note: Jobs are at high risk of automation if the likelihood of their job being automated is at least 70%. Jobs at risk of significant change are those with the likelihood of their job being automated estimated at between 50 and 70%.Data for Belgium refer to Flanders and data for the United Kingdom refer to England and Northern Ireland. Data refer to 2012 for countries participating in the first round of the Survey of Adult Skills: Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Ireland, Italy, Japan, Korea, the Netherlands, Norway, Poland, the Slovak Republic, Spain, Sweden, the United States and the United Kingdom. Data refer to 2015 for countries participating in the second round of the Survey of Adult Skills: Chile, Greece, Israel, New Zealand, Slovenia and Turkey.

Source: OECD calculations based on the Survey of Adult Skills (PIAAC) 2012, 2015; and Arntz, M., T. Gregory and U. Zierahn (2016), "The Risk of Automation for Jobs in OECD Countries: A Comparative Analysis", *OECD Social, Employment and Migration Working Papers*, No. 189, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5jlz9h56dvq7-en*.

StatLink *http://dx.doi.org/10.1787/888933477923*

The analysis also shows that the tasks most at risk of being substituted by technology are those involving basic exchange of information, buying and selling and simple manual dexterity. On the other hand, occupations that entail creative tasks, those that involve inter-personal relationships and greater socio-emotional skills are at lower risk.

Finally, the risk of automation is particularly severe for workers from the most disadvantaged socio-demographic groups, who are most likely to be in low-skill occupations. The analysis shows that while 40% of workers with a lower secondary degree are in jobs with a high risk of automation, less than 5% of workers with a tertiary degree are. Policy makers should pay particular attention to these differences, as automation could reinforce existing disadvantages faced by some workers.

1. Cross-country differences reflect, to some extent, the degree to which technology has already permeated the labour market (Figure 3.2 showed significant heterogeneity in this respect).

The impact of globalisation is less clear cut. On the one hand, the variable measuring GVC integration is never statistically significant (and not reported in the table). Import penetration from China, on the other hand, shows a small negative correlation with employment growth in manufacturing. The coefficient in Table 3.6 implies that a 10% increase in import penetration leads to a slow-down in employment growth of about 0.2%. Further checks not reported here indicate that the statistical significance of this estimate is quite sensitive to modelling choices and in particular to the length of the differences used to compute changes in employment. However, the indication of a negative effect of import penetration from China on employment in manufacturing is consistent with the findings of a number of studies which have applied alternative empirical strategies to data from individual countries, including the United States (see Autor et al., 2016 for a review), Norway (Balsvic, 2015), Spain (Donoso et al. 2014), Germany (Dauth et al., 2014), France (Malgouyres, 2016), and Australia (Tuhin, 2015).

Overall, these results suggest that both technology and trade might have contributed to the between-industry component of job polarisation by slowing down employment growth in manufacturing but not in services. The result on the potential role of trade integration is consistent with that of Keller and Utar (2016) who look explicitly at the effect of import penetration from China on polarisation and conclude that the trade-induced shift of employment from manufacturing to services has contributed significantly to the polarisation of the labour market in Denmark. Similarly, Autor and Dorn (2015) find that rising Chinese import penetration has contributed to the polarisation of the US labour market by reducing employment in manufacturing for non-college workers.

3. Policy options to help workers withstand labour market transformations

The empirical findings in this chapter have important implications for policy. The fact that ICT is found to be an important force behind labour market transformations suggests that renewed efforts are needed to help workers to withstand the disruption caused by the digital revolution, while allowing them to reap the benefits of technological change. Furthermore, the evidence that, at least in some regions, the growth of trade has contributed to the shift of employment from middle- to low-skill jobs demonstrates the need for a policy framework to ensure that the workers affected have access to adequate learning and training opportunities, and receive adequate support to improve their chances of career progression. Effective activation measures, designed in conjunction with social protection, are especially important to ensure that displaced workers can make successful transitions between occupations and sectors. A comprehensive policy strategy to achieve the full potential gains from new technologies and globalisation while assuring that no one is left behind will need to embrace a wide range of economic policy areas, such as innovation, trade and tax policy. It would also need to be tailored to the specific needs of each country. However, the scope of this section is limited to outlining the general policy principles to be considered in the domains of skills, activation and social protection.

Building skills for the future

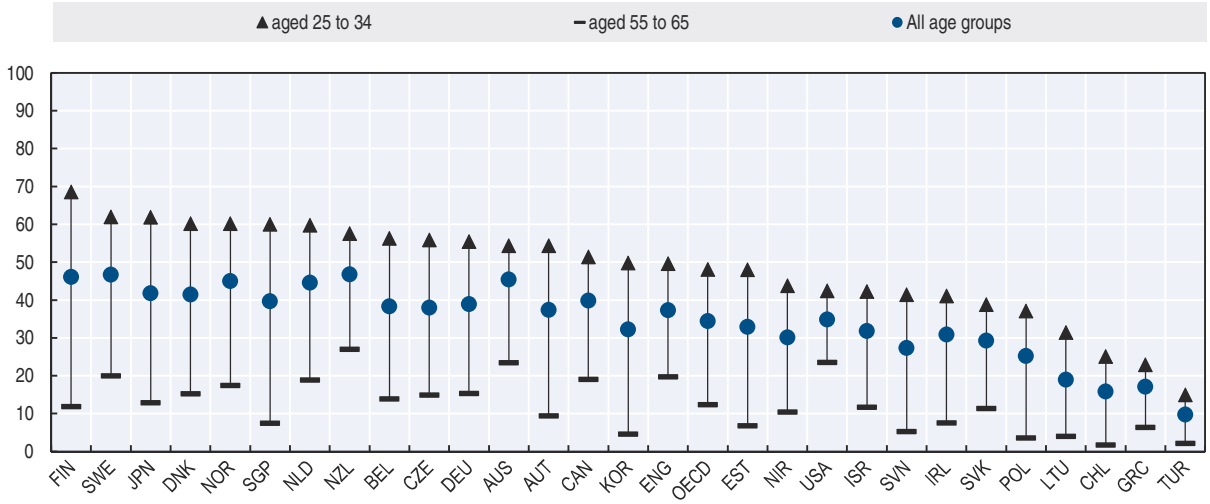
The existing evidence suggests that some countries may be ill-prepared to embrace the rapid technological transformation brought about by digitalisation. According to the OECD Survey of Adult skills (PIAAC), more than 50% of the adult population on average in 28 OECD countries, can only carry out the simplest set of computer tasks, such as writing an email and browsing the web, or have no ICT skills at all (OECD, 2016b). Only around 30%

of workers have the more advanced cognitive skills that enable them to evaluate problems and find solutions using digital technologies (Figure 3.11 and OECD, 2013a). As a result, many workers use ICTs regularly without adequate ICT skills: on average, over 40% of those using software at work every day do not have the skills required to use digital technologies effectively (OECD, 2016c).

Furthermore, Figure 3.11 shows that ICT skill levels differ significantly across countries and age groups. Most importantly, it highlights that while ICT skills among older workers are relatively low in all countries, the competencies of younger workers vary significantly across the OECD. The top four countries (Finland, Sweden, Japan and Denmark) have more than twice as many young people with higher ICT competencies than the bottom four countries (Lithuania, Chile, Greece and Turkey). This raises the prospect of further divergence in these countries' ability to reap the benefits of technological progress in the future. A comprehensive policy strategy to bridge these gaps should build on four pillars (OECD, 2016b).

Figure 3.11. **Younger people are better prepared for the digital working environment than older people**

Share of 25-34 and 55-64 year-olds performing at Level 2 or 3 in problem solving in technology-rich environments



Note: Individuals in Level 2 or Level 3 have more advanced ICT and cognitive skills to evaluate problems and solutions than those in Level 1 or below. The OECD average is the simple unweighted average across countries. France, Italy, Jakarta (Indonesia) and Spain did not participate in the problem solving in technology-rich environments assessment. Results for Jakarta (Indonesia) are not depicted as the assessment was administered exclusively in paper and pencil format. A certain proportion of individuals had some experience with computers but opted not to take the computer-based assessment. These individuals were excluded from the calculations. All other individuals that did not receive a score for problem solving in technology rich environments were classified as having a score of Level 1 or below. These individuals fall into three groups: 1) those that indicated in completing the background questionnaire that they had never used a computer, 2) those that had some experience with computers but who "failed" the ICT core assessment, and 3) those that did not attempt the ICT core for literacy-related reasons.
Source: Survey of Adult Skills (PIAAC) 2015.

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First, policy makers should ensure that initial education, including early education, equips all students with basic ICT skills, as well as solid literacy, numeracy, problem-solving abilities, and soft skills (e.g. the ability to communicate, work in teams, lead, self-organise, etc.).[28] School curricula should be adapted accordingly, but it is equally important to recognise that many of these skills are acquired outside education and training institutions. This emphasises the need for work-based learning opportunities, which has the advantage of linking training provision to a direct expression of both employers' requirements and

workers' interests, and to provide soft skills that are not easily taught in a classroom environment. Building a solid system of workplace training poses a number of challenges. First, it rests on reliable mechanisms of quality assurance and on adequate incentives for employers' engagement. The provision of financial incentives, including direct subsidies, tax breaks and special arrangements to share the burden of training among enterprises, are some of the measures countries adopt to overcome this hurdle. Second, work-based learning options should be attractive enough to potential apprentices, who should be able to afford their direct costs (e.g. tuition fees) and indirect costs (e.g. foregone earnings). Government grants or subsidies can be helpful in this respect, as well as special provisions to give workers the possibility to take leave for training and educational purposes. Finally, effective recognition systems for competencies gained at work and, more generally, outside formal channels are crucial.

Second, education and training systems need to better assess and anticipate changing skill needs in order to adapt curricula and guide students towards choices that lead to good labour market outcomes. Big data can be harnessed to complement existing labour market information systems and monitor changing skill needs (OECD, 2016c). All the relevant stakeholders should be included in skill assessment exercises, to ensure that the information collected is useful and that policies respond to actual needs (OECD, 2016d). The information obtained should be made available to students, workers and employers, to help them make informed decisions about their education, investment and career choices.

Third, even when workers have sufficient skills, inefficient use of such competences, and skills mismatches may result in lower productivity and competitiveness. The use of skills, such as reading and writing, numeracy, problem solving and ICT, varies substantially across countries (OECD, 2016d). A key factor driving this variation is the use of high performance work practices (HPWP) relating both to the way work is organised and to the management practices adopted by firms. More specifically, HPWP involve an emphasis on team work, autonomy, task discretion, mentoring, job rotation and applying new learning. These practices can increase firms' internal flexibility to adapt job tasks to the skills of new hires, while also promoting a better allocation of the workforce to required tasks. They can also provide incentives for workers to deploy their skills at work more fully through, for instance, bonus pay, training provision and flexibility in working hours. Many countries have taken policy initiatives to promote better skills utilisation through workplace innovation and to foster the skills needed to support these practices. The background to most interventions is the recognition that many firms, if offered expert advice and encouragement to adopt more effective managerial practices, can better utilise existing skills and reap the ensuing productivity gains. Good labour market institutions, such as effective systems of collective bargaining, can also improve skills use at work (OECD, 2016f).

Fourth, the large share of workers with little if no digital skills and, more generally, the increasing need of workers to be able to re-train in the face of structural transformations, stresses the need to scale up and improve the effectiveness of lifelong learning and training for adults, so that workers are better able to keep up with continuously changing skills needs. This entails offering better incentives for workers and firms to re-skill and up-skill. Training opportunities should be widely available and not necessarily linked to one's work status or workplace. France recently introduced the *Compte personnel d'activité* which allows workers to preserve accumulated training rights throughout their careers, even when they switch employer. Indeed, the rise of non-standard work and the diffusion of "on-demand" jobs on digital platforms places increased responsibility on individuals for

managing their own skills development (OECD, 2016a). Yet, in the absence of adequate and widely accessible training opportunities, workers may be unable to invest sufficiently in their human capital accumulation, and the problem may be particularly acute among the most disadvantaged groups. Currently, throughout the OECD, low- and medium-skill workers are the least likely to receive training, even though they may be facing the greatest risk of job loss (OECD, 2013a). This is partly the reflection of limited opportunities offered to these groups, and partly the result of lower returns to training which weaken the incentives for workers' participation. An index of readiness to learn calculated by the OECD in *Education at a Glance* (OECD, 2016h) shows how the low-skilled are the least well prepared for further participation in learning.[29] Low-skill workers also face specific barriers to participation, including financial constraints. Improving basic skills and removing such barriers is important to avoid exacerbating existing inequalities.

In the process of overhauling lifelong learning, countries should take advantage of the new opportunities digitalisation opens for innovation in learning infrastructure and approaches. MOOCs (massive open online courses) and OERs (open educational resources) are an important new resource, but they remain underutilised. Take-up is low due to the low perceived quality of these forms of learning, lack of incentives and limited recognition of the competencies acquired through these and other non-formal means. To this end, alternative certification methods (e.g. OpenBadge) have begun to appear (ITU, 2014). In addition, a number of technology companies such as Microsoft, CISCO, HP, Samsung, Apple, and Google, offer certificates that MOOC participants can earn directly online (OECD, 2016b). Since learning through MOOCs necessitates basic digital skills, the diffusion and effectiveness of such tools rests crucially on closing existing skill gaps, especially among the most disadvantaged social groups. It also necessitates adequate investment in digital infrastructure to ensure that all workers, including those from poorer backgrounds or living in remote areas, have adequate access to online resources.

Activation and social protection to withstand disruptive change

As the megatrends analysed in this chapter will inevitably generate further disruption in the labour market, it is essential to provide workers who are displaced with a safety net to ensure that they and their families do not fall into poverty, and to provide them with the means necessary to find a new job. The provision of welfare benefits should be designed in conjunction with activation measures to maximise the chance of re-employment and minimise disincentives to work, including in the difficult case of mid-career workers who are displaced by structural economic change and need to switch industry or occupation. As highlighted in recent OECD work, an effective activation framework should: i) motivate jobseekers to actively pursue employment; ii) improve their employability; and iii) expand the set of opportunities for them to be placed and retained in appropriate jobs (OECD, 2015c). As much as possible, activation measures should also be preventive, taking into account ongoing megatrends and the likely risk of job loss in different sectors, and providing workers with adequate information, counselling and re-employment support ahead of their potential displacement (e.g. during the notice period prior to a mass redundancy). Using statistical profiling techniques to provide tailored support on the basis of workers' characteristics and interests can increase the effectiveness of these measures. Social partners can play an important role in providing adjustment assistance to workers who will be displaced, tailoring the support offered to the specific needs of the affected workers and already beginning to deliver that assistance during the notification period

prior to the workers becoming unemployed. That is the case, for instance, in the Job Security Councils in Sweden, which represent one of the most successful examples of re-employment assistance for displaced workers (OECD, 2015d).

The changes in the occupational structure discussed in this chapter and the process of de-industrialisation have also been accompanied, in a number of countries, by a growing incidence of non-standard forms of work (fixed-term employment, self-employment, part-time). These new ways of working are setting significant challenges for existing social security systems, which are still largely predicated on the assumption of a full-time, regular, open-ended contract with a single employer. As a result of these challenges, large numbers of workers risk falling through the cracks. In most OECD countries, for instance, self-employed workers are not eligible for unemployment benefits (OECD, 2015a). In the European Union, a recent study estimated that 54.5% of the self-employed were at risk of not being entitled to unemployment benefits in 2014, and 37.5% of the self-employed were at risk of not being entitled to sickness benefits (Matsaganis et al., 2016).

Adapting social protection systems to the new world of work will require some crucial reforms. In particular, entitlements should be linked to individuals rather than jobs, and they should be portable from one job to the next. Such an approach should allow workers to transition more smoothly across jobs and sector. In doing so, it should encourage labour mobility, as current arrangements may effectively lock individuals in their existing job out of fear that moving would result in a loss of their entitlements. It could also make independent work more attractive.

A crucial challenge countries will face in trying to set up a sustainable system of social protection is that new forms of work and the rise of self-employment hinder the ability of employment offices to enforce the principle of mutual obligations on unemployment benefit recipients, as it becomes more difficult to monitor work activity. At the same time, the rise of work through digital platforms provides a unique opportunity, albeit still in its infancy, to obtain information on workers' activity that was not previously available, and overcome the monitoring challenge. Activation might also become more difficult if more frequent interruptions in workers' careers result in a larger share of the unemployed not being eligible for unemployment benefits and, hence, not being in contact with public employment services. Revising the rules of benefit eligibility to ensure adequate coverage for workers with fragmented work histories and broadening the scope of activation measures beyond the standard link with unemployment benefits will be a step in the right direction.

Another policy option being discussed in some countries is the introduction of a basic income guarantee – i.e. an unconditional income transfer that would replace other forms of public transfers without any means-testing or work requirement. This approach would provide all workers with the basic means to withstand the potential disruptions – e.g. job displacement, unemployment – caused by automation and digitalisation. It would also offer a simpler alternative to the complex mixture of in- and out-of-work benefits, which suffer from the monitoring problems outlined above. However, the costs of such a solution could be very large and its effects on work incentives need to be carefully assessed. On the one hand, if countries aimed to introduce a basic income without reducing existing transfers that are based on specific needs (e.g. disability, child benefits, etc.), its implementation would typically require a large increase in social spending. On the other hand, a basic income that is budget neutral (and thus replaces many of the cash transfers that are currently in place) would typically correspond to an income level below the poverty line, while exposing some

of the most vulnerable groups to a higher risk of poverty (OECD, 2017a). In some countries, experiments with different forms of basic income guarantees are currently underway or planned (e.g. Finland; the Canadian Province of Ontario; Oakland [United States]; and several municipalities in the Netherlands). While those schemes differ significantly in their structure, their evaluation might offer some evidence to help judging the usefulness and feasibility of this kind of scheme.

Conclusions

This chapter analyses the impact of technological progress and globalisation on the structure of employment in OECD countries over the past two decades. In particular, it attempts to identify the effects of these two megatrends on job polarisation and the process of de-industrialisation that has characterised most advanced economies. As both of these phenomena may lead to job displacement and rising inequality, a better understanding of their causes has important implications for designing adequate labour market and social policies.

All of the regions considered have experienced a decline in the share of middle-skill, middle-pay jobs relative to that of high-skill and low-skill jobs. The analysis shows that this process of occupational polarisation is linked to but also broader than de-industrialisation *per se*. In particular, the reallocation of employment from manufacturing to services accounts for about a third of aggregate polarisation, while changes in the occupational structure within sectors explain the remaining two-thirds.

Of the different megatrends analysed in this chapter, fast technological change displays the strongest association with both polarisation within industries and the shift of employment from manufacturing to services. In particular, growing ICT use is associated with an increase in high-skill relative to middle-skill occupations within manufacturing and with weaker employment growth in the manufacturing sector but not in services.

By contrast, the evidence of an effect of globalisation on polarisation is weaker. Neither the involvement in global value chains nor the penetration of Chinese imports (except for Western Europe) are clearly correlated with increasing polarisation within industries – which accounts for most of the overall polarisation in the economy. On the other hand, tentative evidence supports the hypothesis that increasing import penetration from China has contributed to overall polarisation through a small negative effect on employment growth in manufacturing. This is consistent with the empirical evidence from recent studies that also finds a negative effect of imports from China on employment in manufacturing in a number of advanced countries. Recent work by the OECD offers a more comprehensive analysis of the effects of globalisation, showing that increasing international trade has boosted firms' productivity and consumers' welfare, while also imposing a cost on some workers in particular geographical areas and contributing to higher earnings inequalities (OECD, 2017c).

Finally, the chapter finds some tentative evidence that labour market institutions – such as trade unions, minimum wages and the stringency of employment protection legislation – may affect the way trade and globalisation impact the structure of the labour market. In particular, the results suggest that stricter EPL amplifies the effect of both ICT and GVCs on polarisation, while stronger unions reduce the effect of ICT on bottom polarisation.

These results have important implications for public policy. Most importantly, they imply that policy efforts should be concentrated on helping workers to reap the benefits of technological progress and withstand the disruptive changes that globalisation and

digitalisation are causing in the labour market. A comprehensive policy strategy should aim to strengthen initial education by fine-tuning education and training curricula in light of changing labour market needs. It should provide incentives for adult learning and remove the obstacles that prevent participation in education and training of the most disadvantaged workers. Recognition of non-formal qualifications obtained outside the education system will also need to play an increasingly important role. Finally, skills policies should be coupled with strengthened activation measures and modern social protection systems that account for the increased fragmentation of working life, so as to foster flexibility and facilitate transitions between jobs.

Further analysis can deepen our understanding of how the labour market is being reshaped and thus help to refine these policy recommendations. First, it will be important to shed light on the impact of other major megatrends on the labour market. For instance, population ageing is associated with changes in both the skills endowment of the workforce and the consumption patterns driving the growth of different sectors, and may therefore play an important role in driving some of the patterns analysed here. Second, while this chapter has focused on the quantity of jobs and their distribution across sectors, the megatrends of interest may also affect job quality and the types of jobs available, especially since these forces contribute to reshaping the content of occupations and the nature of employment relationships. Understanding what drives the emergence of new forms of work will be crucial to designing effective policies to capitalise on the opportunities generated by the new world of work, while ensuring that no worker is left behind.

Notes

1. The analysis covers Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, the Netherlands, Norway, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, the United Kingdom and the United States. Country coverage was limited by data availability. Limitations in the EU KLEMS growth and productivity accounts (used to form a measure of ICT intensity) represented the main constraint. ICT intensity data was unavailable for Chile, Iceland, Israel, Mexico, New Zealand, Norway, Switzerland, and Turkey. The analysis of Australia and Korea was limited by the availability of employment level data presented across both occupations and industries.
2. Pay has generally been found to be a good proxy for skill levels, at least as captured by education in 3-digits occupations (Acemoglu and Autor, 2011; Green and Sand, 2015). Since the analysis in this chapter uses broad occupational categories (at the 1-digit level), the results are particularly unlikely to be affected by the specific metric used to rank them. In line with previous literature, self-employment is excluded from this analysis and from the data used in the remainder of the chapter.
3. The overall pattern of polarisation shown in Figure 3.1 for Central Europe as a whole is the result of a process of occupational upgrading in Hungary and the Czech Republic (where bottom occupations have declined more than all other groups), and of a clearer process of job polarisation in Slovenia and the Slovak Republic.
4. China and India together account for the largest technically automatable employment potential in the G20, with more than 700 million full-time equivalents between them (McKinsey Global Institute, 2017).
5. It is plausible that similar effects might have occurred even in industries that have experienced a relatively modest increase in import penetration, if innovation is pursued by firms to improve efficiency in order to prevent significant breakthroughs by foreign competitors.
6. Another way in which trade and technology interacts is that trade facilitate the transfer of technology across different countries (Acharya and Keller, 2009).
7. More generally, the type of developments, rate adoption, and modality of use of technology are note entirely exogenous, as they will be driven by choices firms and workers make taking into account a number of factors – including policies. An analysis of these mechanisms is beyond the

scope of this chapter, but a better understand of the extent to which policies can influence how technology is used in the labour market is an important topic for future research.

8. The choice to focus on exports, as opposed to total production, is driven by data availability in the TiVA dataset.

9. It may also result in a disproportionate growth in high-skill occupations (i.e. top polarisation) in advanced economies, which may tend to specialise in in high-skill production and offshore low-skill tasks to less developed countries with lower labour costs (a pattern that would be consistent with the prima-facie evidence shown in Figure 3.1).

10. Those effects are also likely to differ substantially between countries in different segments of the GVC, and most crucially, between those that are already well integrated in GVCs and those on the verge of entering GVCs.

11. For Canada, see Green and Sand (2015); for Germany, Antonczyk et al. (2010) and Dustmann et al. (2009); and for the United Kingdom, Salvatori (2015).

12. Consistently with this conjecture, there is evidence that clerical workers – the stereotypical victim of computer automation – have seen declining employment shares but strong wage performance in the United States, Canada and the United Kingdom (Autor and Dorn, 2013; Green and Sand, 2015; Salvatori, 2015).

13. "Real estate and business services" is also the second fastest growing sector in Japan, which is excluded from Figure 3.8 due to a structural break in the data. The importance of the business services sector highlighted in this analysis is interesting in light of the findings in Cortes and Salvatori (2016). Using British data, they show that changes in occupational specialisation at the firm level are closely linked to aggregate polarisation. They also document that such firm-level changes are entirely driven by firms providing goods and services to other firms, which are disproportionally concentrated in the business services sector.

14. The decomposition can be expressed as follows: $\Delta Polar_c = \underbrace{\sum_i \Delta S_{i,c} \overline{Polar_{i,c}}}_{Between} + \underbrace{\sum_i \Delta Polar_{i,c} \overline{S_{i,c}}}_{Within}$, where $Polar_{i,c}$ captures within-industry polarisation of industry i in country c, and $S_{i,c}$ is the employment share of the industry i relative to total employment in all considered industries in country c.

15. For a broader discussion of the potential role of changes that occur on the supply side of the labour market, see Oesch (2013) and Salvatori (2015). Mazzolari and Ragusa (2013) emphasise the role of growing demand for personal services by high-paid high-skill workers in explaining the increasing share of low-skill jobs.

16. This approach is preferable to using an overall measure of polarisation (i.e. the ratio of top plus bottom occupations relative to the middle), as the effects of the megatrends of interest may be very different at the top and bottom of the occupational distribution.

17. The R&D measure, however, differs from the ICT penetration proxy in some important ways. In particular, R&D expenditures are more likely to capture investment in cutting edge innovation rather than the pace of adoption of an already-available technology. Moreover, R&D investments are risky and might not actually lead to significant innovation. Furthermore, when innovations are achieved, their adoption on a scale sufficient to affect the labour market might require a significant amount of time.

18. Data on the foreign component of value added in exports, however, is only available in 1995, 2000, 2005 and 2008-11 in the TiVA dataset. In order to increase sample size, the analysis uses linear interpolation to fill the gaps.

19. An alternative would be to use a measure of forward participation, captured by the share of an industry's exports that is part of foreign exports. In this case, the domestic industry is assumed to be at the beginning of the value chain. In their robustness checks, Breemersch et al. (2017) produce a set of estimates based on this alternative proxy. They find no significant relationship between GVC forward participation and polarisation.

20. This follows the approach in Breemersch et al. (2017) and is in line with recent work on the same topic (see for example Autor et al., 2016).

21. Domestic absorption is equal to the domestic consumption of an industry's goods. It is therefore equal to the country's home production of a given industry's goods plus imports of those same goods minus exports.

22. This is achieved by including interaction terms between the variables of interest and the strength of institutions.

23. The measure of EPL used in the analysis is the stringency of regulation for permanent contracts. The bite of the minimum wage is captured by the Kaitz index, the ratio of the nominal legal minimum wage to the average wage of the working population. As these variables do not vary across sectors, the identification of their effect comes from variation in the data over and above the country-specific time trends, which are included in all regressions.

24. It is also worth noting that an analysis using industry-level data such as this one is not well-suited to account for some of the factors that previous studies have singled out as likely drivers of the strong performance of low-skill service occupations in recent decades. These include the increase in the demand for such services by high-skill workers (Mazzolari and Ragusa, 2013) and complementarities in consumption between goods (whose prices are driven down by new technology) and services (Autor and Dorn, 2013).

25. For this reason, the specification used in this case controls for country, year and industry specific fixed effects separately, rather than by interacting them. This is less demanding of the data. The results do not change significantly.

26. For example, the effect for Northern Europe is given by the sum of the 0.11 coefficient in the first column (WE) and the 0.20 coefficient in the third column (NE-WE). For a 10% increase in ICT, this implies an increase in top polarisation by 3%.

27. The coefficient on Chinese import penetration, which never attracts significant coefficients is not shown for conciseness.

28. Beyond general skills, the design of education and training programmes should pay close attention to the needs of the labour market. For ICT specialist skills, for instance, basic programming is no longer enough. Advanced engineering and experience with machine learning are increasingly important. In addition, ICT specialists also need domain-specific knowledge, given the potential applications of ICT in business, health, education and industry (OECD, 2016b).

29. The index is compiled from the Survey of Adult Skills and accounts for the way respondents: relate new ideas to real life; like learning new things; relate to existing knowledge when coming across something new; get to the bottom of difficult things; figure out how different ideas fit together; and look for additional information.

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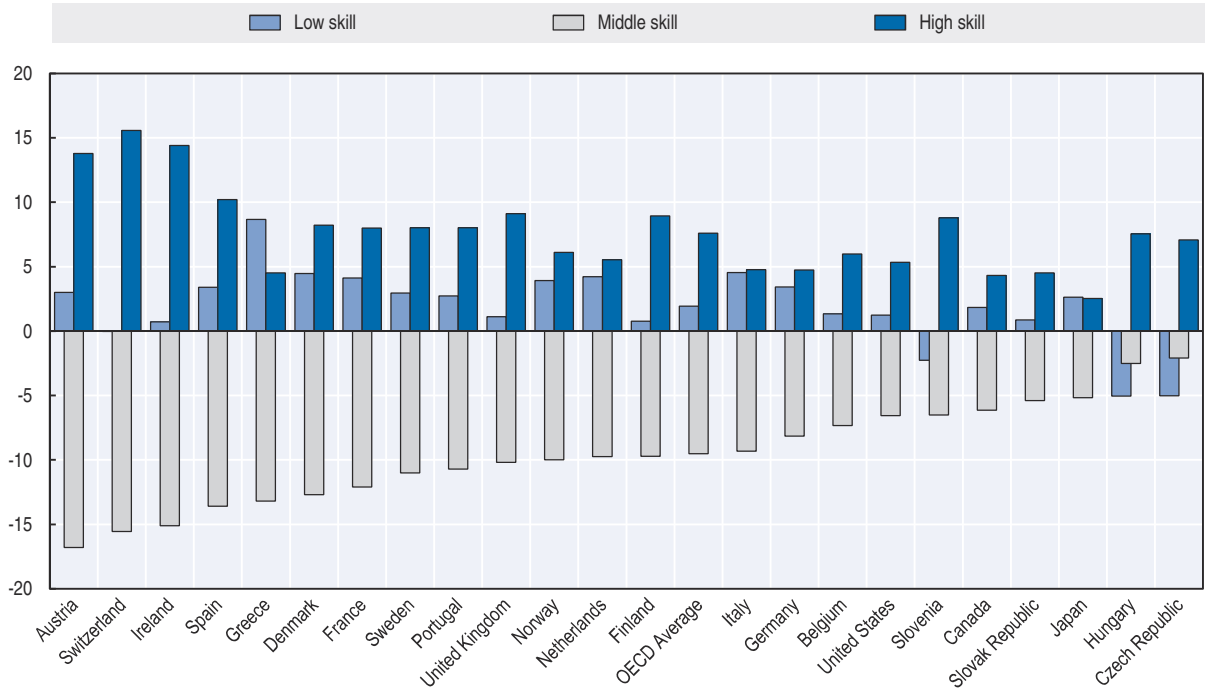
ANNEX 3.A1

Additional evidence on polarisation

Figure 3.A1.1. **Job polarisation by country**

Percentage point change in share of total employment, 1995 to 2015[a, b, c, d]



Note: High-skill occupations include jobs classified under the ISCO-88 major groups 1, 2, and 3. That is, legislators, senior officials, and managers (group 1), professionals (group 2), and technicians and associate professionals (group 3). Middle-skill occupations include jobs classified under the ISCO-88 major groups 4, 7, and 8. That is, clerks (group 4), craft and related trades workers (group 7), and plant and machine operators and assemblers (group 8). Low-skill occupations include jobs classified under the ISCO-88 major groups 5 and 9. That is, service workers and shop and market sales workers (group 5), and elementary occupations (group 9). As agricultural, fishery and mining industries were not included in the analysis, those occupations within ISCO-88 group 6 (skill agricultural and fisheries workers) were likewise excluded. The above chart includes 15 of the 18 listed industries. The excluded industries are the following: Agriculture, hunting, forestry and fishing (1), Mining and quarrying (2), and Community, social and personal services (18). As a result of unavailable data for 1995, a different starting year was used for some countries. Norway, Slovenia, and Hungary used 1996; Finland, Sweden and the Czech Republic used 1997, while the Slovak Republic used 1998. The OECD average is a simple unweighted average of the selected OECD countries. Data for Japan over the period examined is reported under four different industry classifications and highly aggregate occupation groups.

a) European employment data beyond 2010 was mapped from ISCO-08 to ISCO-88 using a many-to-many mapping technique. This mapping technique is described in Annex 3.A4 (available online at OECD, 2017b). Data for Japan is for the period 1995 to 2010 due to structural break in the data.

b) Employment data by occupation and industry for the United States prior to 2000 were interpolated using the occupation-industry mix for the years between 2000 and 2002, and matched with control totals by occupation and by industry for the years 1995 to 1999. Employment data for Canada, and the United States were transposed from the respective occupational classifications (SOC 2000) into corresponding ISCO-88 classifications.

c) EU-LFS data contains a number of country specific structural breaks which were corrected by applying the post-break average annual growth rates to the pre-break data by skill level (high, middle, low). Adjustments were performed for all relevant documented breaks in the ISCO occupational coding between 1995 and 2009. That is Portugal (1998), the United Kingdom (2001), France (2003), and Italy (2004). Undocumented breaks in the data for Finland (2002) and Austria (2004) were not adjusted.

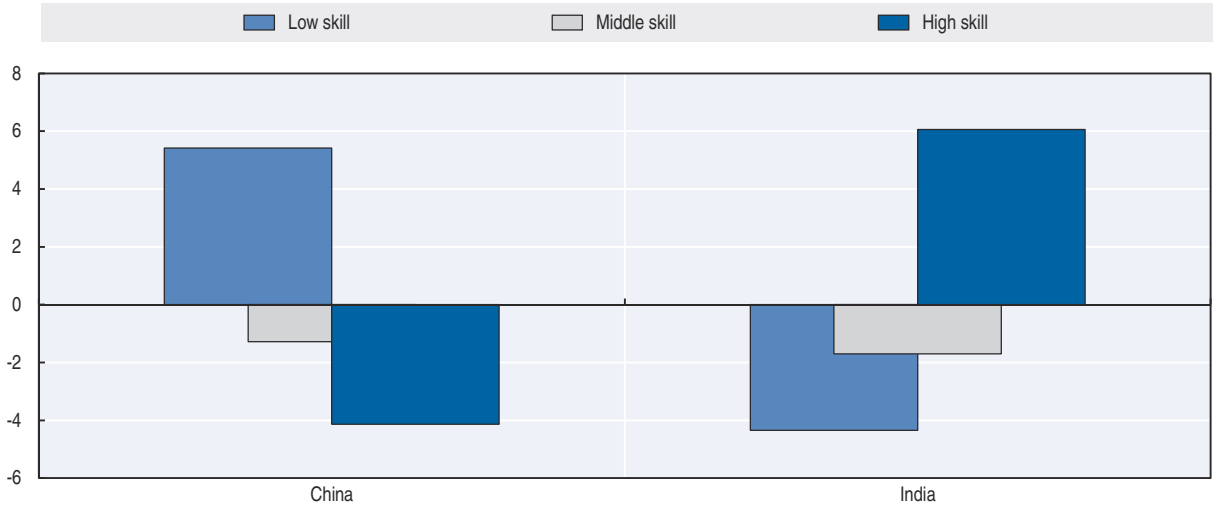
d) Underlying industrial data for Switzerland are classified according to the General Classification of Economic Activities (NOGA 2008). Swiss data for 1995 are derived from representative second quarter data, while data for 2015 is an annual average.

Source: European Labour Force Survey; labour force surveys for Canada (LFS), Japan (LFS), Switzerland (LFS) and the United States (CPS MORG).

StatLink http://dx.doi.org/10.1787/888933477940

Figure 3.A1.2. **Polarisation in China[a] and India[b]**

Percentage point change in share of total employment, 2000 to 2010



a) Chinese occupations were classified according to high level categories. The five broad categories (and the associated skill mapping) is as follows: heads of government agencies, party agencies, enterprises, institutional organisations (high), professional personnel (high), clerks and related personnel (high), employees in commerce and service sectors (low), people operating the manufacturing and transportation equipment and related personnel (middle). For comparability, employees in farming, forestry, animal husbandry and fishery sectors were excluded from the analysis.

b) Indian occupations were classified according to the ISOC-88 classification. High-skill occupations include jobs classified under the ISCO-88 major groups 1, 2, and 3. That is, legislators, senior officials, and managers (group 1), professionals (group 2), and technicians and associate professionals (group 3). Middle-skill occupations include jobs classified under the ISCO-88 major groups 4, 7, and 8. That is, clerks (group 4), craft and related trades workers (group 7), and plant and machine operators and assemblers (group 8). Low-skill occupations include jobs classified under the ISCO-88 major groups 5 and 9. That is, service workers and shop and market sales workers (group 5), and elementary occupations (group 9). As agricultural, fishery and mining industries were not included in rest the analysis, those occupations within ISCO-88 group 6 (skill agricultural and fisheries workers) were likewise excluded. As these occupations play a relatively important role in the Indian economy, this is likely to affect the observed patterns.

Source: Chinese Census for 2000 and 2010, ILO KILM.

StatLink http://dx.doi.org/10.1787/888933477957

ANNEX 3.A2

Estimates on selected countries, 2000-15

Table 3.A2.1. **Unpacking polarisation, 2000-15, selected countries, manufacturing sector**

Explaining polarisation using manufacturing sector data (ISIC two-digit) in the period 2000 to 2015 (selected OECD countries)

	(1) top	(2) bottom	(3) top	(4) bottom	(5) top	(6) bottom
ICT	0.16*	0.18	0.15	0.22	0.16*	0.22
	(0.09)	(0.12)	(0.09)	(0.13)	(0.09)	(0.13)
R&D intensity			0.06	-0.04	0.06	-0.04
			(0.04)	(0.03)	(0.04)	(0.03)
$Imp.pen^{CHN}$					0.05	-0.01
					(0.03)	(0.04)
N	1 159	1 157	1 149	1 147	1 149	1 147

Standard errors in parentheses. ***, **, * statistically significant at 1%, 5% and 10% levels respectively.

Note: "ICT" is the ratio of ICT capital services per hour worked. "R&D intensity" is the ratio of research and development expenditure over value added. "$Imp.pen^{CHN}$" is the ratio of Chinese imports over total domestic absorption. Trade in value added (TiVA) data is only available up to 2011, so it is not included in the above analysis. Countries included in the above analysis are: Austria, Belgium, Finland, France, Germany, Italy, the Netherlands, Spain and the United Kingdom. Standard errors are clustered at the industry level. All sets of analysis include dummies for country by year fixed effects, and also country by industry fixed effects. All the variables are converted to a logarithmic scale. Observations are weighted by industry share of total employment.

Source: OECD calculations based on the European Labour Force Survey; labour force surveys for Canada (LFS), Japan (LFS) and the United States (CPS MORG); the World Input-Output Database (WIOD); the EU KLEMS growth and productivity accounts; and the *OECD Research and Development Statistics Database*.

StatLink http://dx.doi.org/10.1787/888933478230

Table 3.A2.2. **Unpacking polarisation, 2000-15, selected countries, services sector**

Explaining polarisation using non-manufacturing sector data (ISIC one-digit) in the period 2000 to 2015 (selected OECD countries)

	(1) top	(2) bottom	(3) top	(4) bottom	(5) top	(6) bottom
ICT	0.11**	-0.08	0.10	-0.11	0.10*	-0.12
	(0.05)	(0.14)	(0.06)	(0.15)	(0.05)	(0.12)
R&D intensity			0.03	0.02	0.03	0.02
			(0.02)	(0.02)	(0.02)	(0.02)
$Imp.pen^{CHN}$					0.00	0.01
					(0.02)	(0.03)
N	630	629	560	559	550	549

Standard errors in parentheses. ***, **, * statistically significant at 1%, 5% and 10% levels respectively.

Note: "ICT" is the ratio of ICT capital services per hour worked. "R&D intensity" is the ratio of research and development expenditure over value added. "$Imp.pen^{CHN}$" is the ratio of Chinese imports over total domestic absorption. Trade in value added (TiVA) data is only available up to 2011, so it is not included in the above analysis. Countries included in the above analysis are: Austria, Belgium, Finland, France, Germany, Italy, the Netherlands, Spain and the United Kingdom. Standard errors are clustered at the industry level. All sets of analysis include dummies for country by year fixed effects, and also country by industry fixed effects. All the variables are converted to a logarithmic scale. Observations are weighted by industry share of total employment.

Source: OECD calculations based on the European Labour Force Survey; labour force surveys for Canada (LFS), Japan (LFS) and the United States (CPS MORG); the World Input-Output Database (WIOD); the EU KLEMS growth and productivity accounts; and the *OECD Research and Development Statistics Database*.

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Chapter 4

Collective bargaining in a changing world of work

This chapter presents a comprehensive and up-to-date review of collective bargaining systems across OECD and a selected group of emerging economies that are in the process of accession to the OECD. It provides comparable estimates of membership to trade unions and employer organisations as well as collective bargaining coverage by country, sector, and firms' and workers' characteristics. The rules and uses of extension devices which allow the reach of collective agreements to extend beyond signing firms and union members are described, as well as those governing the duration of collective agreements. The chapter assesses the degree of centralisation, the articulation between different bargaining levels and how derogations and opt-out clauses are used. The various modes and degrees of bargaining co-ordination are also discussed together with the level of contract enforcement and the quality of labour relations. In addition, the chapter describes the types of worker representation at firm level and compares the various bargaining systems along the key parameters identified.

This chapter could not have been prepared without the tireless co-operation of the Labour and Employment Ministry staff in OECD and accession countries as well as of the staff of many national employer associations and unions in completing the policy questionnaires on collective bargaining that underpin the analysis. The chapter has also benefitted from helpful discussions and suggestions from the participants at two OECD expert meetings on collective bargaining. The views expressed in this chapter cannot be attributed to any of the people, organisations and governments that helped the Secretariat during the research and drafting process.

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.

Key findings

In all OECD countries, workers and employers can associate to express their interests and concerns, as well as to bargain over the terms and conditions of employment. However, since the 1980s, this process of collective representation and negotiation has faced a series of major challenges resulting, in particular, from technological and organisational changes, globalisation, the decline of the manufacturing sector, new forms of work and population ageing, which have severely tested its efficacy. Policy reforms in several OECD countries have also affected the scope and functioning of collective bargaining systems.

Building on a rich set of survey and administrative data, covering the past three decades to 2015, this chapter sheds new light on collective bargaining systems currently in place in OECD and accession countries by providing an updated and comprehensive review of the main trends and features going beyond the usual indicators. In particular, the chapter shows that:

- About 80 million workers are members of trade unions in OECD countries, and about 155 million are covered by collective agreements concluded either at the national, regional, sectoral, occupational or firm level. On average, 17% of employees are members of trade unions, down from 30% in 1985, with slight increases in membership rates found only in Iceland, Belgium and Spain.
- Trade union density, the proportion of employees who are union members, varies considerably across OECD and accession countries, ranging from 4.5% in Estonia to 92% in Iceland. Union members tend to be predominantly male, middle-aged (between 25 and 54 years old), with medium or high skills and working in medium or large firms, and on a permanent contract.
- On average, 51% of workers in OECD countries for which data are available are employed in a firm that is member of an employer organisation and this share has been relatively stable over the last 15 years. In most countries, medium and large firms are better represented by employer organisations than small firms, while sectoral coverage varies significantly across countries.
- On average across OECD countries, the share of workers covered by a collective agreement has shrunk to 33% in 2015 from 45% in 1985. The decline was strongest in Central and Eastern European countries, with steep decreases also observed in Australia, New Zealand and the United Kingdom, and, more recently, in Greece. Coverage has been relatively stable in most continental European countries, except for Germany where it has decreased significantly since reunification in 1990.
- Overall, collective bargaining coverage is high and stable only in countries where multi-employer agreements (i.e. at sector or national level) are negotiated and where either the share of firms which are members of an employer association is high or where agreements are extended also to workers working in firms which are not members of a signatory employer association. In countries where collective agreements are signed

mainly at firm level, coverage tends to go hand-in-hand with trade union density. Workers in small firms are generally less likely to be covered as these firms often do not have the capacity to negotiate a firm-level agreement, or a union or another form of worker representation is absent at the workplace.

Using detailed information collected through new OECD policy questionnaires that were addressed to Labour Ministries and social partners, the chapter provides a detailed picture of collective bargaining systems by unpacking them into their different building blocks. In particular the chapter shows that:

- In two-thirds of OECD and accession countries, collective bargaining takes place predominantly at firm level. Sector-level agreements play a significant role only in continental European countries. However, this does not tell the whole story about the actual degree of centralisation or decentralisation as countries differ greatly in terms of the flexibility for firm-level agreements to modify the terms set out in higher level agreements. In some countries (particularly the Scandinavian countries), sectoral agreements define the broad framework but leave considerable scope for bargaining at the firm/establishment level. In other countries (such as Germany and Austria and more recently also Spain), sector-level agreements dominate but they leave room for firm-level agreements to apply less favourable terms for employees, either in a rather generalised way or only temporarily in case of a crisis. In a third group of countries (including Italy, Slovenia and despite the recent reform also Portugal), firm-level bargaining remains limited and in most cases strictly regulated by higher level agreements.
- Collective bargaining systems across OECD and accession countries also differ greatly in the degree of co-ordination between bargaining units – essentially the extent to which common (wage) targets are pursued and/or minor players follow what major players decide. Co-ordination is a key factor behind macro flexibility (i.e. the ability of the economy to adjust to macroeconomic shocks) and is strong, at least in certain sectors, in Austria, Denmark, Germany, the Netherlands, Norway and Sweden, but also in Japan.
- Firm-level representation of workers' interests takes several forms: local trade union representatives (which may or may not engage in firm-level collective bargaining), work councils, worker representatives or a combination of the three. At least for European countries, the proportion of workers covered by these different forms is not higher in countries where firm-level bargaining dominates; instead it tends to be relatively high in multi-level bargaining systems, with complementary effects between sector- and firm-level agreements.
- There is significant variation across countries in the overall quality of labour relations as assessed by senior executives and the trust in trade unions among the population at large. These factors are not found to be linked to any specific model of bargaining nor do they show any clear trend over the last 10-15 years. In most OECD and accession countries the number of work days lost due to strikes and lockouts has decreased markedly since the 1990s.
- There are no comparable and comprehensive indicators on the level of enforcement of collective agreements across countries. However, where estimates are available, compliance with negotiated wage floors is shown to be far from perfect.

Introduction

About 80 million workers are members of trade unions in OECD countries, and about 155 million[1] are covered by collective agreements concluded either at the national, regional, sectoral, occupational or firm level. In all OECD and accession countries, workers and employers associate to express their interests and concerns and to negotiate the terms and conditions of employment. This process of collective representation, negotiation and decision making is a key labour market institution and, together with the "right to organise", is a "fundamental principle and right at work" set by the ILO Convention No. 98 and a key pillar of social dialogue at national level.

Since the 1980s, collective bargaining systems have faced a combination of major challenges: technological and organisational changes, globalisation, the decline of the manufacturing sector, the expansion of flexible forms of work and population ageing. Additional pressures resulted from the global economic and financial crisis of 2008-09. In many OECD countries, these factors, combined with policy reforms, have led to a decentralisation of collective bargaining which, together with a long-standing decline in union membership rates and increasing individualisation of employment relationships, have severely tested the relevance and methods of functioning of collective bargaining systems. At the same time, new forms of social dialogue, collective organisation and bargaining are emerging to meet the challenges posed by new forms of work.

Even though these general patterns have been widely noted, there is a lack of detailed, comprehensive and comparable information on the evolving nature and scope of collective bargaining in OECD countries. For example, reliable and up-to-date information on the membership of unions and employer organisations and collective bargaining coverage across countries and sectors is limited. Moreover, standard cross-country analyses of collective bargaining and the summary indicators they typically rely on often do not provide as precise an indication of the actual functioning of collective bargaining as would be desirable. Most of the early empirical work on collective bargaining has been conducted at the macroeconomic level, with an almost exclusive focus on the predominant level of bargaining and the degree of co-ordination. For example, the policy assessment and recommendations of the original and reassessed OECD Jobs Strategy (1994 and 2006, respectively) largely focused on the degree of centralisation of wage bargaining and co-ordination among unions and employer association. The Jobs Strategy suggested that both centralisation and decentralisation could perform well, while a system dominated by sectoral bargaining lacking co-ordination may deliver worse results, as previously had been argued by Calmfors and Driffill (1988).

However, the evidence of recent decades demonstrates the need for a more nuanced picture of how institutional settings in collective bargaining affect labour market and economic outcomes. Indeed, it appears that different systems can achieve similar outcomes, while formally similar systems can lead to very different outcomes depending on the specific ways the system works in practice. This is the case, for instance, in Denmark, Germany, France, Portugal or Italy where wages are typically negotiated at the sectoral level, but the large differences in the rules and uses of extensions, derogations and opt-out clauses and co-ordination practices lead to significant differences in labour market outcomes, but also in the level of trust in the national collective bargaining system and its functioning.

Therefore, this chapter sheds new light on collective bargaining by providing an updated and comprehensive review of the main features of collective bargaining going

beyond the usual indicators, while also documenting recent trends. The analysis relies on the detailed information collected through the OECD policy questionnaires that were addressed to Labour Ministries, trade unions and employer organisations (see Box 4.1 for more information) and on a rich set of survey and administrative data. The more finely grained description of collective bargaining that emerges is intended to enable more satisfactory analyses of how collective bargaining affects labour market performance and, thereby, also to contribute to the development of the new OECD Jobs Strategy (see Chapter 1) and the "Global Deal", an endeavour initiated by the Swedish Government, the OECD and the ILO with the objective to harness social dialogue as a vital tool to create more and better jobs and promote inclusive growth.

The chapter is organised as follows: Section 1 introduces the main functions and building blocks of collective bargaining systems in place in OECD and accession countries. Section 2 presents a detailed and up-to-date portrait of the actors and the scope of bargaining systems. In particular, it provides comparable estimates of trade union density, employer organisation density and collective bargaining coverage by country, but also by sector, firms' and workers' characteristics. The section also documents the application of agreements beyond the signatory parties through *erga omnes* clauses and administrative extensions and those regulating the duration of collective agreements. Section 3 discusses the degree of centralisation, the mechanisms linking different bargaining levels and the use of derogations and opt-out clauses. The different modes and degree of bargaining co-ordination found in OECD and accession countries are also explored together with the actual enforcement of agreements and the quality of labour relations. The section also describes the types of worker representation that are present at firm level. Section 4 provides a summary comparison of the different national collective bargaining systems in OECD and accession countries based on the key elements analysed in Sections 1-3. The intent is to provide a detailed portrait of the system as a whole, rather than just as the sum of its components. Finally, last section concludes by discussing the main challenges ahead for collective bargaining systems and priorities for future research.

1. The functions and the features of collective bargaining

The functions of collective bargaining

Collective bargaining and, more generally workers' voice (the collective expressions of workers' interests with no proper bargaining prerogatives), aim at ensuring adequate conditions of employment (*protective function*), a fair share of the benefits of training, technology and productive growth (*inclusive function*) and social peace (*conflict management function*).[2] Collective bargaining is also a key tool of market control, i.e. reining wage competition between companies or, on the opposite, limiting the so-called "monopsony power" of firms which in some cases may profit from a lack of bargaining power of workers. While often considered mainly as a wage setting institution, collective bargaining also plays an important role for setting other conditions of employment such as job security, working-time regulation, quality of the working environment, provision and access to training, etc.

Collective bargaining entails both benefits and costs for employers, workers, and society as a whole. Collective bargaining and workers' voice can make labour markets function more efficiently by correcting market failures (asymmetry of information and bargaining power between workers and employers, possibly reflecting monopsony and other labour market frictions) and reducing transactions costs involved in individual bargaining. For instance, it can ensure that workers' requests for pay to increase with productivity are heard, prevent

excessive turnover of staff, and limit the extent of costly procedures in case of grievances and complaints. Collective bargaining can also improve the quality of the employment relationship between workers and firms, leading to more efficient allocation of resources, greater motivation and ultimately productivity. Finally, unions and employer organisations can also provide important services to their members. At the same time, however, collective bargaining and workers' voice, especially when representation is weak, can also introduce market distortions ("rent seeking behaviour"), for instance by strengthening the power of *insiders* on both workers' and employers' side and excluding (or not considering enough) the *outsiders* (e.g. less-skilled, temporary or young workers or young/small firms). Moreover, while worker voice may help reduce turnover costs, excessive power to unions may lead to the so-called *hold-up* problem especially in most innovative or skill-intensive sectors where workers could extract excessive rents from their employers by threatening to leave after an irreversible investment has been made (for instance after a substantial training). Or on the opposite, companies may have fewer incentives to invest in innovation when unions are weak as they can increase profits by simply reducing wages.

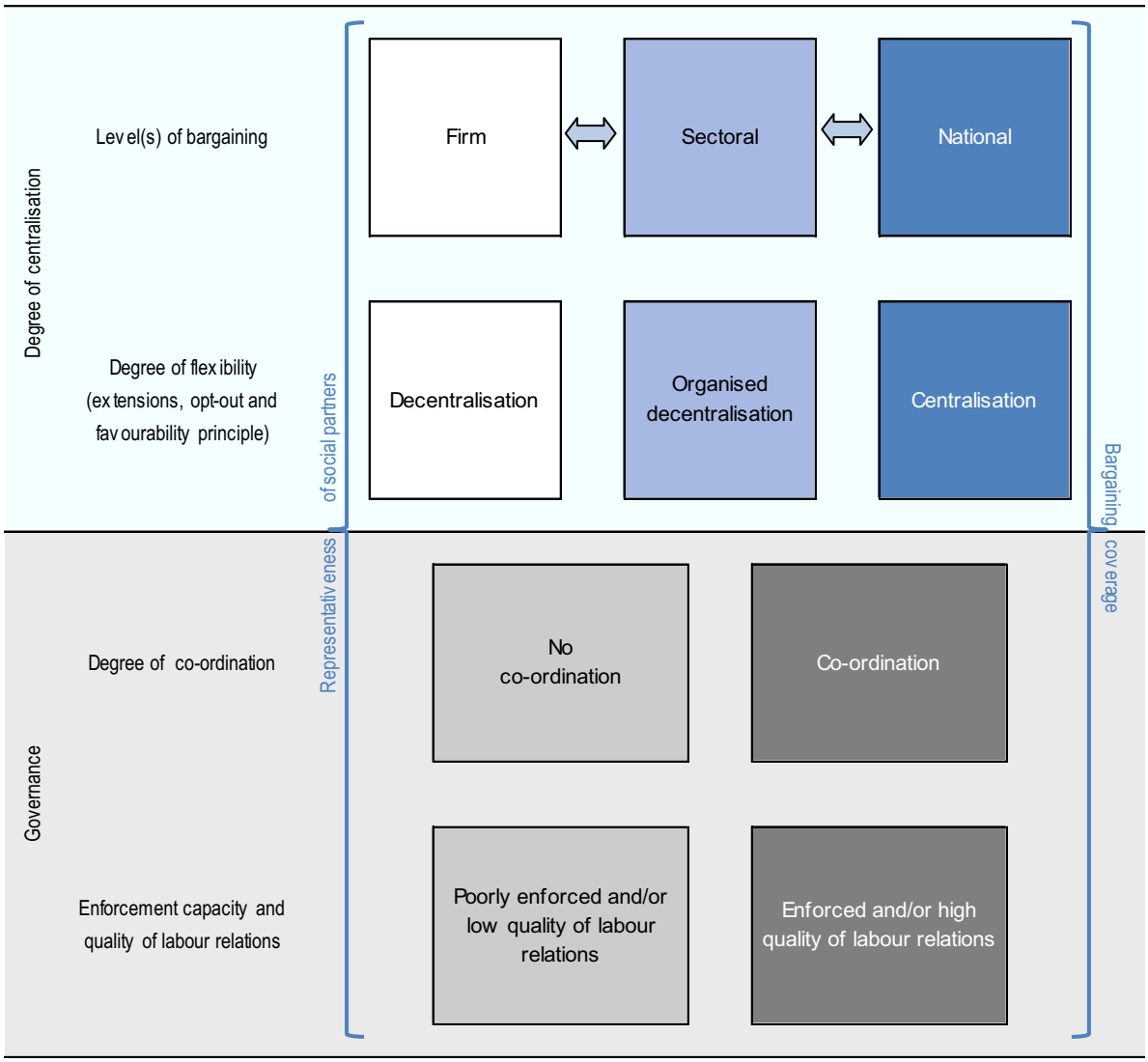
Collective bargaining can have an impact on wage dispersion and income inequalities more in general (e.g. by affecting employment but also through its influence on management pay at firm level and the tax and benefit system at country level), unemployment levels and competitiveness as well as the way labour market responds to unexpected shocks. It can thus affect labour market performance along all the dimensions of the OECD Jobs Strategy (see Chapter 1) – in terms of both quantity and quality of outcomes, but also in terms of resilience, adaptability and inclusiveness of labour markets. Moreover, it can represent a useful tool for self-regulation between workers and employers and bring more stable labour relations and industrial peace. Finally, collective bargaining, and more in general social dialogue, systems can constitute an efficient tool to promote effective consultation and implementation of structural reforms. When collective bargaining is well organised and representative, it can help manage and reduce the extent of any trade-offs between different policy objectives. The overall effect of collective bargaining on overall economic performance largely depends on the specific features of the system of each country, how they interact with other key parameters of labour market institutions, such as employment protection or minimum wage legislation, but also on prevailing macroeconomic and labour market conditions and policies.

The building blocks of collective bargaining

Characterising collective bargaining systems according to the (predominant) level at which collective agreements are negotiated (firm level, sector/branch level and the national/cross-sectoral level) and the degree of co-ordination within and between social partners as the sole variables of interest is not sufficient to reflect the granularity of the different systems, especially among those where bargaining predominantly takes place at sectoral level. Figure 4.1 sketches the main building blocks of collective bargaining to be taken into account for a comprehensive analysis and assessment of different national systems which are described and discussed in details in the rest of the chapter:

- First, the representativeness of trade unions and employer organisations, as well as the share of workers covered by collective agreements, are key (but not the only ones) indicators of the strength of social partners and the scope of the bargaining systems. The rules and the spread of administrative extensions beyond the signatory parties are also examined as being critical devices for assessing more accurately the reach of collective agreements.

Figure 4.1. **The main building blocks of collective bargaining**



- Second, while the predominant level of bargaining (e.g. mainly firm level, sector/branch level and the national/cross-sectoral level) defines where parties negotiate, it does not fully capture the actual degree of centralisation or decentralisation which hinges also on the rules governing the hierarchy between the different levels and the possibility for firms to derogate or to opt-out in case of economic difficulties from higher level agreements or from their own agreement. In particular, systems based on sector level and national/cross-sectoral level bargaining can be centralised when they leave no or little room to modify the terms of agreements to lower level agreements; or they can be decentralised but in an organised way when firm-level agreements have a significant role in determining the terms of employment but they are subject to specific conditions set either by law or social partners themselves.
- Third, the presence and degree of different forms of co-ordination within and between social partners is also very important for capturing whether more decentralised systems

produce totally independent and atomised negotiations or if they ensure some synchronisation of different bargaining units when setting their strategy and targets.

- Finally, the enforcement capacity and the quality of labour relations, in particular the level of trust between social partners, the degree of enforcement of the terms set in collective agreements and the ability of employer organisations and trade unions to control the behaviour of their constituency at lower levels can make the difference between formally similar systems.

Box 4.1. **The OECD policy questionnaires on collective bargaining**

The description of the functioning of collective bargaining systems in OECD and accession countries that is presented in this chapter mainly relies on information provided by the responses to the detailed policy questionnaires that were sent to Labour Ministries, employer organisations and trade unions in 2016. The information reported in the questionnaires (and hence in the chapter otherwise stated) represents the situation in December 2015. The focus is on collective bargaining practices in the private sector. In the case of institutional differences across sectors, the answers focus on what is applicable in the agreement that prevails for the manufacturing sector (in case of differences within the manufacturing sector, for the metal workers). Unless otherwise stated, the information in the chapter refers to the entire economy, even if the actual application and use of certain instruments may differ across sectors. The questionnaire addressed to Labour Ministries focused on: i) the architecture of collective bargaining (e.g. structure of bargaining, hierarchy between levels, wage co-ordination, use of extensions, derogations, duration of agreements, etc.); ii) labour relations at the firm level (e.g. presence and role of work councils and of other forms of employee representation bodies in the workplace, rules for unions activity at firm level); iii) the topics covered by collective bargaining (e.g. if and where wages, hiring and firing rules, occupational health and safety, working time are set by collective bargaining and if collective agreements also cover training and/or unemployment insurance); iv) collective bargaining and non-regular forms of work (if and how social partners and collective bargaining also cover flexible forms of work); and v) recent changes (if any) in collective bargaining. The questionnaires addressed to social partners were intended to complement the information provided by Labour Ministries and focused on: i) the actors of collective bargaining (e.g. functioning and membership of employer organisations and unions); ii) the topics of collective bargaining (same as for Labour Ministries); iii) the quality of labour relations; iv) collective bargaining and flexible forms of work (same as for Labour Ministries); and v) recent changes in collective bargaining. All OECD and accession countries have filled in the questionnaire. Canada has sent detailed answers for the federal level and the four biggest provinces (Alberta, British Columbia, Ontario and Québec). The information collected via the policy questionnaires has been complemented and cross-checked with existing data sources (in particular using data from ICTWSS, Eurofound, European Commission, ILO and various individual- and firm-level surveys and administrative data) and the relevant research literature.

2. The actors and the scope of collective bargaining

Trade unions density

Trade (or labour) unions are voluntary organisations of workers which are present in all OECD and accession countries. Seventeen per cent of employees are members of a union on average across OECD countries. However, trade union density varies considerably across

OECD and accession countries, going from 4.5% in Estonia, to about 65% in Sweden, Denmark and Finland and 92% in Iceland. Trade union density has been declining steadily in most OECD and accession countries over the last three decades (Figure 4.2). Only Iceland, Belgium and Spain[3] have experienced a (very) small increase in trade union density since 1985 and Italy in the recent years. Technological and organisational changes, the decline of the manufacturing and public sectors, but also the increasing spread of flexible forms of contracts and policy reforms in several countries are among the main drivers behind this marked decline of trade union density in almost all OECD and accession countries (Ebbinghaus and Visser, 1999; Visser, 2003; Blanchflower and Bryson, 2009). In Central and Eastern European countries, trends have been quite dramatic, as reflected by the collapse of the union affiliation rate after the fall of central planning (stabilised at 10% over the recent years). In all other OECD countries trade union density has been declining, though at a significantly lower rate. Currently, the union membership rate is above 50% only in the countries where unemployment benefits are administered by union-affiliated institutions (sometimes called the "Ghent system", as found in Denmark, Finland, Iceland, Sweden and partly Belgium[4]) and in Norway. However, even the Ghent system has been increasingly challenged and eroded by the development of private insurance funds offering unemployment insurance without requiring union membership (Bockerman and Uusitalo, 2006; and Høgedahl and Kongshøj, 2017) leading to a decrease in trade union density.

Trade union density varies considerably across workforce groups (Figure 4.3). On average across OECD countries, public administrations workers are those most likely to be unionised (Figure 4.3, Panel A) but only represent 13% of total union members (Figure 4.3, Panel B). Those working in the good-producing sector (mining, manufacturing, constructions and energy and electricity supply) and in social and personal services (including education and health) respectively represent 25% and 35% of total union members. There are however significant differences in terms of composition across countries: correcting for the various sectors' weight in the economy, employees in the good-producing sector still represent a much higher proportion of union members in Germany and the Netherlands than in Portugal or the United Kingdom (see Annex 4.A1).

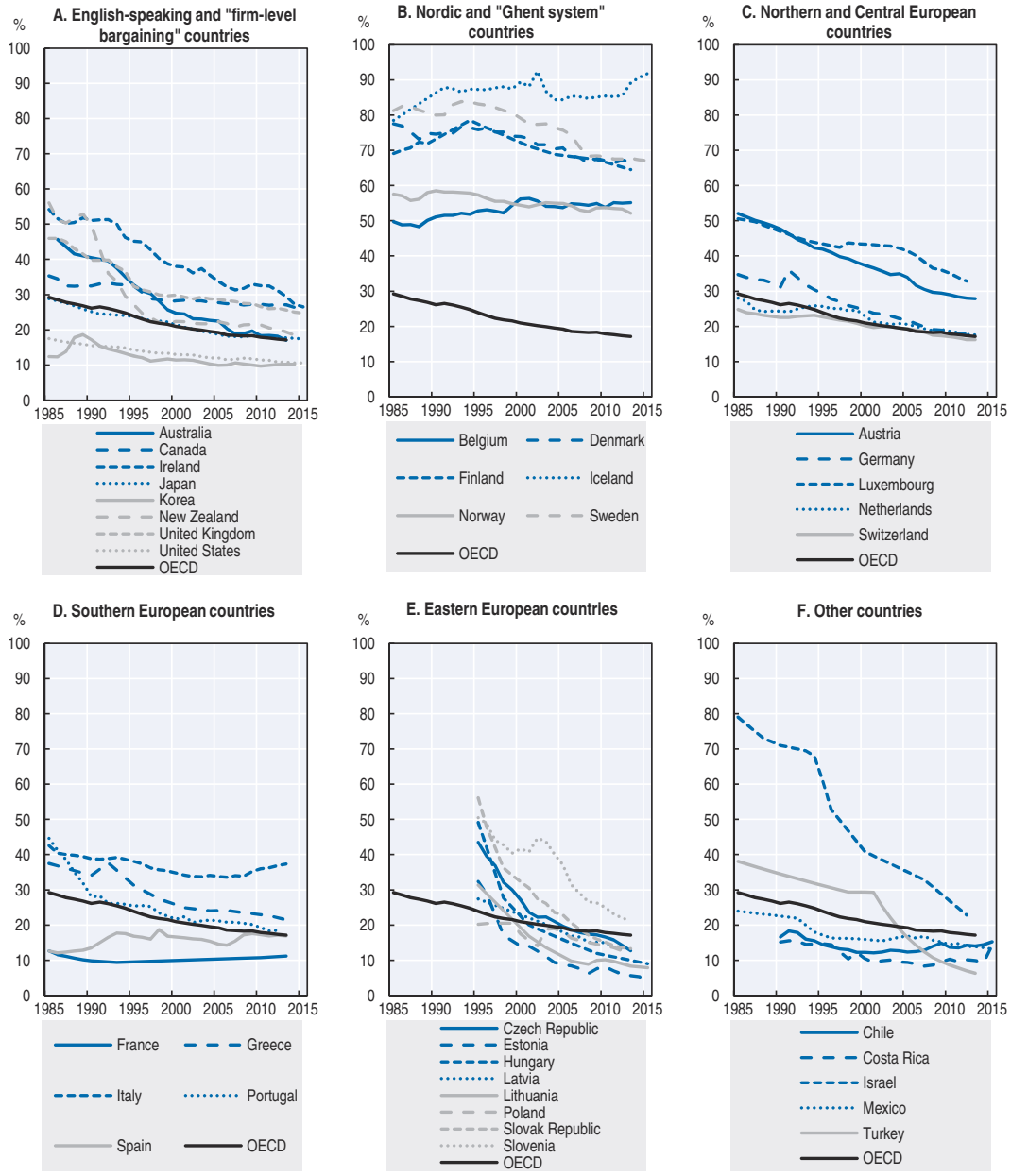
Only 7% of employees in small firms belong to a union on average across OECD countries, as union members tend to work in large and medium firms. Yet patterns differ across countries: employees in small firms represent a larger share of trade union members in Belgium and Sweden while unions in Japan have no affiliates at all in small firms. Women and men show little difference in terms of their likelihood to be union members when employed (Panel A) but since employment rates are higher for men than women, unions have on average a more masculine membership (Panel B). In 15 OECD countries women outnumber men among union members (see Annex 4.A1). Prime age workers constitute the core of trade union affiliates but as a share of the working population, older workers are those more likely to be union members. Youth only represent 7% of total union members in the OECD area, and are the age group least likely to unionise in all countries. Union members tend to be medium or high skilled (around 40% of total union members in each group). Finally, union members in all OECD have overwhelmingly a permanent contract, with only 9% of them having a temporary contract.

Employer and business organisations

Employers, business and employer organisations are the other key actors of collective bargaining, but much less is known about their membership and representativeness across

Figure 4.2. **Trends in union density**

Percentage of employees,[a] 1985-2015



Note: OECD is the weighted average of the 35 OECD member countries.

a) For Costa Rica, figures do not include solidarity associations and refer to total employment. In Costa Rica, the law permits the formation of solidarity associations (the so-called *Solidaristas*) and allows worker unions and solidarity associations to co-exist within an enterprise. While *Solidaristas* are forbidden to engage in collective bargaining, there are some indications that they have contributed to weaken the role of trade unions in representing workers (OECD, 2017a). For Turkey, official statistics on trade union density published by the Ministry of Labour and Social Security refer to the number of workers covered by the social security institution and set it at 11.21% in 2015.

Source: J. Visser, ICTWSS Database Version 5.1. Amsterdam: Amsterdam Institute for Advanced Labour Studies (AIAS), University of Amsterdam, September 2016 for Austria, Belgium, the Czech Republic, Denmark, France (completed by estimates from the DARES based on the *Enquête permanente sur les conditions de vie des ménages* [EPCV] for 2008 and 2010 and on the *Statistiques sur les ressources et les conditions de vie* [SRCV] for 2013), Germany, Greece, Israel, Italy, Latvia, Lithuania, Luxembourg, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Switzerland and Turkey; national administrative data for Chile, Costa Rica, Finland, Japan, Korea and New Zealand; and estimates based on national Labour Force Surveys for Australia, Canada, Estonia, Hungary, Iceland, Ireland, Mexico, the Netherlands, Sweden, the United Kingdom and the United States.

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Figure 4.3. **Trade union density by group, 2013**

OECD weighted averages, 2013

Note: Trade union density by group presented in this figure has been adjusted for the overall trade union density shown in Figure 4.2 by using the share of each individual group in total union membership and total number of employees. For further details on definition, country covered and data sources, see Annex Figures 4.A1.1 to 4.A1.7.

Source: Annex Figure 4.A1.1 to Figure 4.A1.7.

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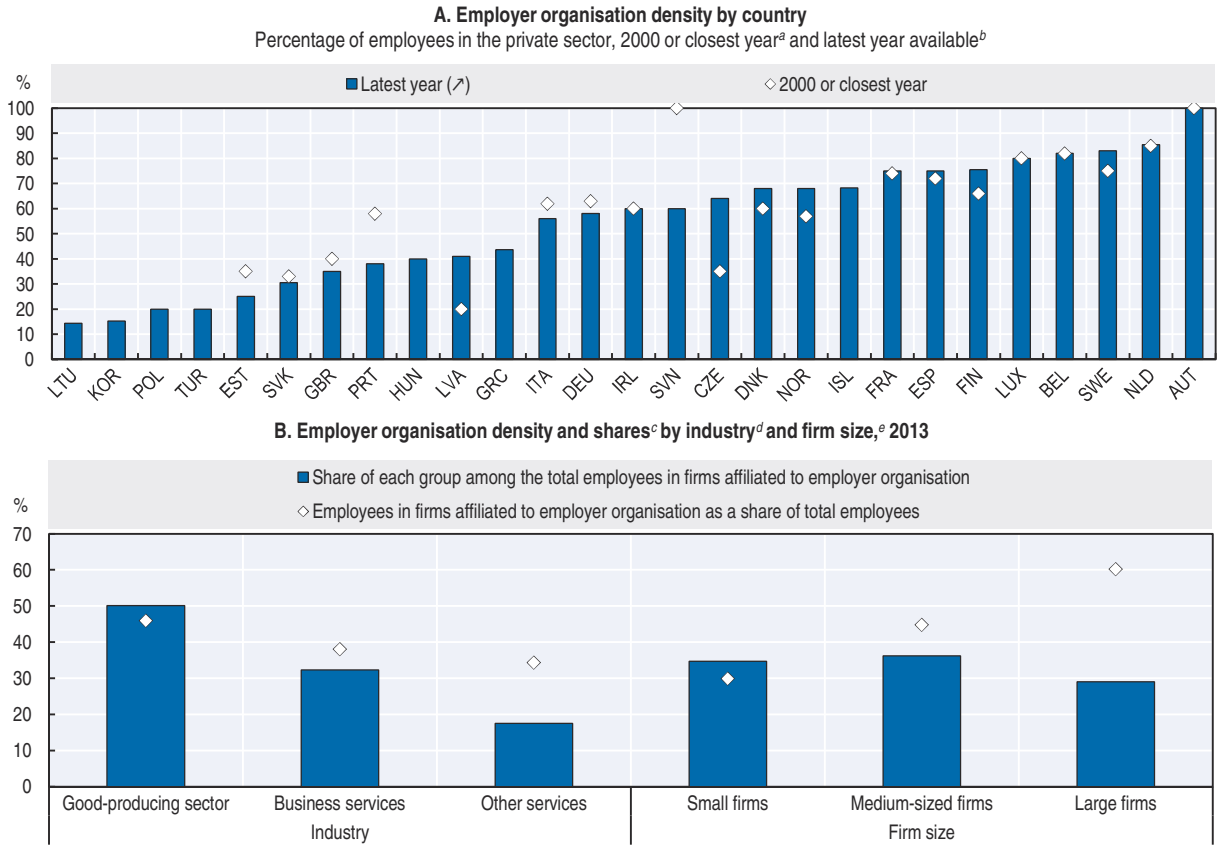
OECD and accession countries. Representativeness, in particular, is very difficult to assess: official and up-to-date statistics on the number of *workers* covered, as distinct from the number of affiliated firms, are very limited and partial and often based only on self-reported data. Further difficulty in providing a precise assessment arises also from the possibility for firms to belong to several employer associations. Using available information, Figure 4.4 shows the share of employees in the private sector working in firms affiliated to an employer organisation. On average, employer organisation density in the 26 OECD countries for which data is available is 51%. Like trade union density, employer organisation density varies considerably across OECD and accession countries: it is very low in Central and Eastern European countries, Korea and Turkey, but up to about 80% in the Netherlands, Sweden, Belgium and Luxembourg (and at 100% in Austria due to compulsory affiliation for all firms). In most OECD countries outside Europe, employer associations represent the interests of business (i.e. lobby and voice) but do not bargain collective agreements, with most, if not all bargaining taking place at the firm level.

Differences across OECD countries in employer organisation density mirror partly those in trade union density even if not perfectly (the correlation between trade union density and employer organisation density is 0.55; see Annex 4.A1): in Austria, Finland, Sweden or Belgium both trade union and employer organisations display high rates, while in Central and Eastern European countries, Korea or Turkey both memberships rates are low. However, based on the number of employees covered, Denmark combines one of the highest unions' densities among OECD countries with an average employer organisation

Figure 4.4. **Employer organisation density**



a) 2000 for Austria, Finland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Slovenia and Sweden; 2002 for Belgium, the Czech Republic, Denmark, Estonia, Latvia, Portugal, the Slovak Republic, Spain and the United Kingdom.

b) 2005 for Turkey; 2008 in Greece, Hungary, Spain and the United Kingdom; 2009 for Korea; 2010 for Denmark; 2011 for Estonia, Germany, Ireland and Portugal; 2012 for Belgium, France, Italy, Lithuania and Luxembourg; 2013 for Iceland, Latvia, the Slovak Republic and Slovenia; 2014 for the Austria, the Czech Republic, Finland, the Netherlands and Sweden; and 2015 for the Netherlands.

c) Statistics refer to establishments of the private sector with ten or more employees in all economic sectors except agriculture, activities of households as employers and activities of extraterritorial organisations. Unweighted average of 24 OECD countries (not including Australia, Canada, Chile, Israel, Japan, Korea, Mexico, New Zealand, Norway, Switzerland and the United States).

d) All sectors reported in Panel B refer to the private sector. Good-producing sector refers to manufacturing (including mining and utilities) and construction; business services refers to commerce and hospitality, transport and communication and financial services and real estate; other services refers to remaining social and personal services excepted activities of households as employers and activities of extraterritorial organisations.

e) "Small firms" refers to firms with fewer than 50 employees; "Medium-sized firms" to firms with 50 to 249 employees; and "Large firms" to firms with 250 employees or more.

Source: **Panel A:** J. Visser, ICTWSS Database version 5.1. Amsterdam: Amsterdam Institute for Advanced Labour Studies (AIAS), University of Amsterdam. September 2016, administrative data provided by national authorities for the Czech Republic, Finland, the Netherlands, Norway and Sweden and OECD estimates based on the third Eurofound European Company Survey (ECS 2013) for Iceland. **Panel B:** OECD estimates based on the third Eurofound European Company Survey (ECS 2013).

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density; and France has a high employer organisation density together with one of the lowest trade union densities among OECD countries.

In most countries, employer organisations tend to represent, in terms of employees, more firms in the good-producing sector than in the service sector. In most OECD countries, they generally are also more representative of medium and large firms.

Employer organisations density has been quite stable in the last decades. Most countries (at least for those for which time series are available) show a remarkable stability which sharply contrasts with the fall observed in trade union density. Brandl and Lehr (2016) argue

that employer associations have been able to adapt their organisational structure as well as their activities to the changing needs of business (for instance by offering negotiation training, legal representation, industrial information, health and safety advice, wage surveys and marketing). The only exceptions are found in Slovenia (since 2006 membership is voluntary) and Portugal where employer organisations declined rapidly between 2000 and 2013. On the other hand, affiliates increased in Latvia and the Czech Republic.

Membership rates and membership composition are obviously not the (only) elements to gauge the influence and legitimacy of unions and employer organisations. In fact, these rates are closely interlinked with the labour relations system itself and often reflect long historical patterns. However, they are still good proxies to measure the ability of unions and employers to represent a broad base of workers and firms or, in contrast, merely a narrow segment of them.

Collective bargaining coverage

The share of employees covered by collective agreements (the collective bargaining coverage[5]) also declined significantly over the past 25 years. This indicator is key for comparing the relative strength of collective bargaining across countries since it captures the extent to which workers' employment conditions are actually influenced by collective negotiation. On average across OECD countries, it shrunk by a fourth, from 45% in 1985 to 33% in 2013 (Figure 4.5). With the exception of some of the countries which passed major labour market reforms during the last five years, the recent economic crisis did not represent a particular turning point and coverage continued to decline.

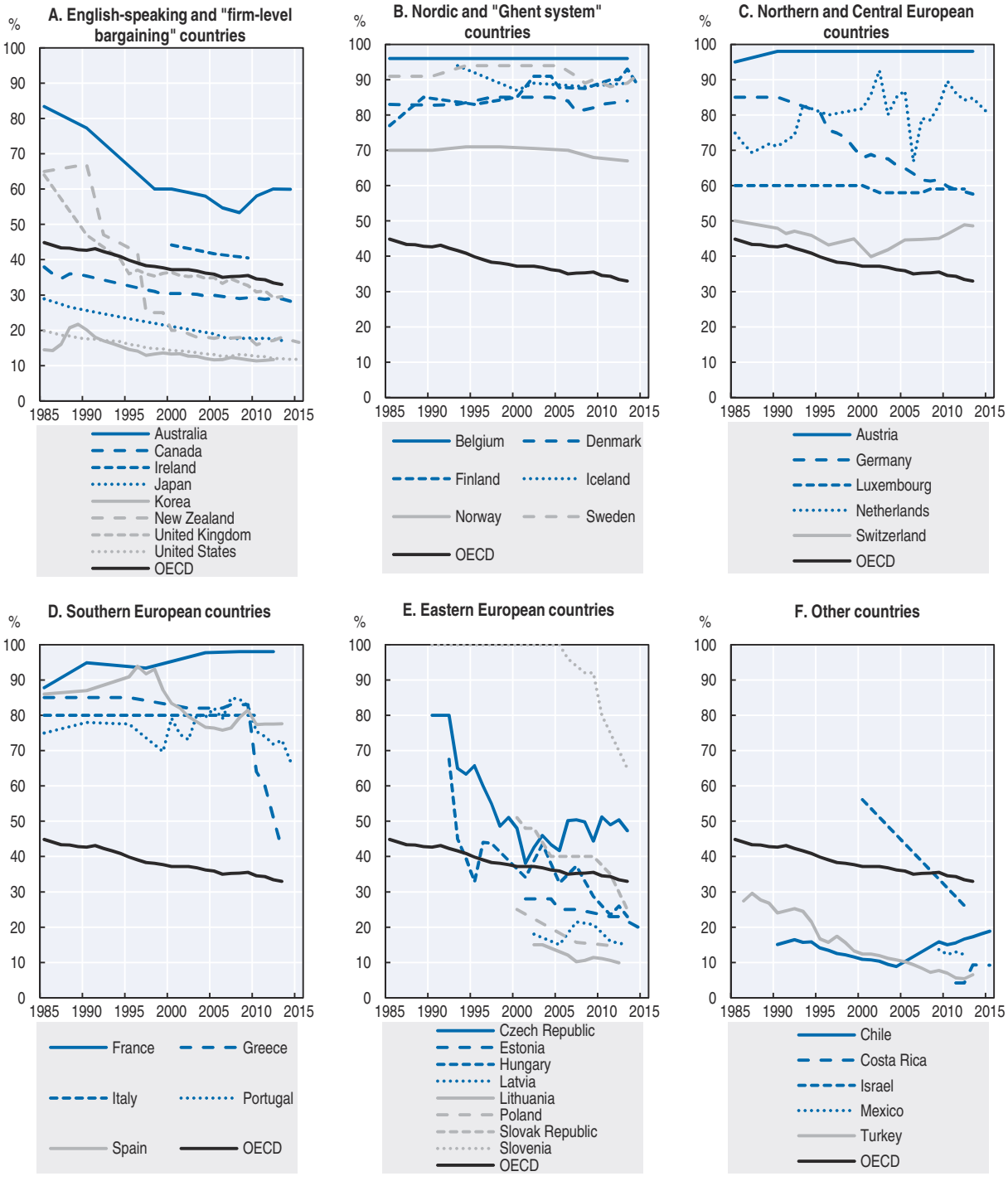
As with trade union density, the decline was the strongest in Central and Eastern European countries where the collapse of the old regimes led to abrupt changes in the role of trade unions and collective bargaining. Steep decreases were also observed in Australia, New Zealand and the United Kingdom where deep reforms took place in the 1980s. Coverage has been relatively stable in most of continental European countries except for Germany and, more recently, Greece. The drop in collective bargaining coverage in Portugal over the last few years is the subject to methodological controversies which are discussed in Box 4.2.

All in all, collective bargaining coverage is high and stable only in countries where multi-employer agreements (mainly sectoral or national) are negotiated (even in several of the Southern European countries where trade union density is quite low). A second key element which matters for bargaining coverage is the relative strength, and willingness to negotiate, of employer organisations since they negotiate and sign collective agreements which in most countries then apply to all workers of their affiliated firms.[6] Indeed in countries where employers' density is high, coverage is also relatively broad and vice versa (with a correlation of 0.90; see Annex 4.A1). The relationship with trade union density is weaker (correlation of 0.64) and collective bargaining coverage is significantly higher than trade union density as in most countries agreements also apply to non-union members (see below the detailed discussion on *erga omnes* clauses and administrative extensions).

On average across OECD and accession countries, collective bargaining coverage is slightly higher in the good-producing sectors (manufacturing, constructions and energy and electricity supply) than in business services or other sectors (Figure 4.6). However, firm size matters: 26% of workers are covered by a collective agreement in small firms while 34% are covered in large firms. In small firms, the probability of being covered by a collective agreement is much lower in the absence of a multi-employer agreement at sectoral or

Figure 4.5. **Trends in collective bargaining coverage rate**

Percentage of employees with the right to bargain, 1985-2015



Note: OECD is the weighted average of the 35 OECD member countries.

Source: J. Visser, ICTWSS Database version 5.1. Amsterdam: Amsterdam Institute for Advanced Labour Studies (AIAS), University of Amsterdam. September 2016 completed with the OECD Policy Questionnaires and national administrative data for Costa Rica.

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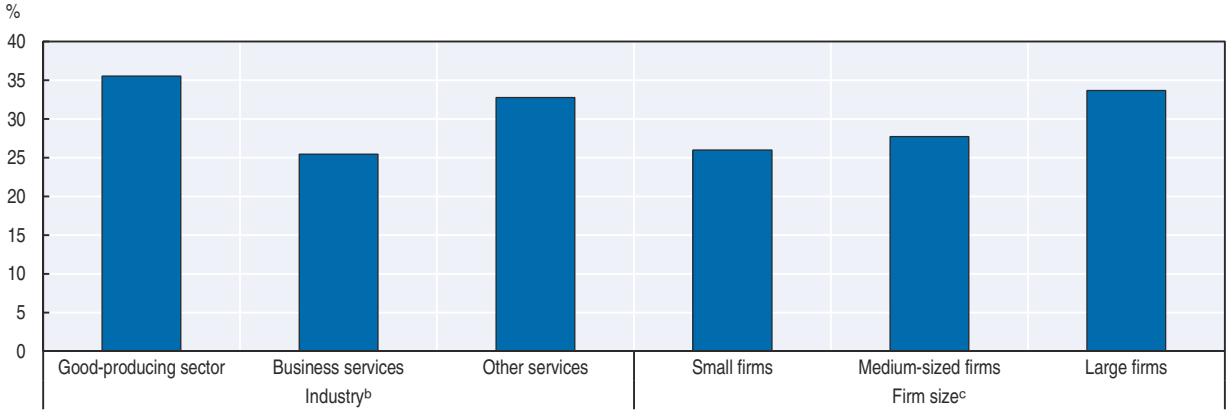
national level as small firms are much less likely to negotiate and sign a firm-level agreement. Indeed, in Chile, Estonia or Turkey collective agreements cover a negligible share of small firms, contrary to what happens in Nordic or continental European countries.

Figure 4.6. **Collective bargaining coverage rate by industry and firm size**

Percentage of employees in the private sector, latest year available[a]



Note: Statistics refer to the private sector only and to all firms for Australia and Canada excepted firms with less than five employees for Chile, firms with less than ten employees for Belgium, Greece, Italy, Slovenia and Sweden, and firms with less than 11 employees for other countries. OECD weighted average of 30 OECD countries (not including Israel, Japan, Korea, Mexico and New Zealand) for statistics by industry and 29 OECD countries (not including countries previously listed and the United States) for statistics by firm size.

a) Statistics refer to 2013 for Belgium, Greece, Iceland, Ireland, Italy, Slovenia and Sweden; 2014 for Chile and all other European countries; 2015 for Canada and the United States; and 2016 for Australia.

b) Good-producing sector refers to manufacturing (including mining and utilities) and construction; business services refers to commerce and hospitality, transport and communication and financial services and real estate; other services refers to remaining social and personal services excepted activities of households as employers and activities of extraterritorial organisations.

c) "Small firms" refers to firms with fewer than 50 employees; "Medium-sized firms" to firms with 50 to 249 employees; and "Large firms" to firms with 250 employees or more.

Source: OECD calculations based on the Survey of Employee Earnings and Hours (EEH) for Australia, Labour Force Survey for Canada, administrative data for Chile, the Current Population Survey (CPS) for the United States, the third Eurofound European Company Survey (ECS 2013) for Belgium, Greece, Iceland, Ireland, Italy, Slovenia and Sweden, and the 2014 Structure of Earnings Survey (SES 2014) for all other European countries.

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Box 4.2. **Computing collective bargaining coverage: Stock or flows?**

In the wake of the Portuguese labour market reform that introduced in 2012 significant changes to the way collective bargaining works, making notably the rules for administrative extensions more rigid, there has been much debate on the extent of bargaining coverage decrease. Indeed, computing collective bargaining coverage is not straightforward, despite good and detailed data (*Quadros de Pessoal*, Personnel Records, a compulsory survey of all firms, conducted annually in October) as it requires a series of assumptions.

A ILO report (2014a) for instance argues that the 2012 reform led to a 80% decrease in coverage based on the drop of the number of sector- and firm-level agreements between 2008 and 2012 (from 300 down to 85) bringing the number of workers covered by these agreements from 1.9 million down to 300 000.

Addison et al. (2016) counter that these figures mix stocks and flows. In particular they point out that, while the flow of new agreements considerably slowed down after the reform, the stock of workers covered by collective agreements barely changed between 2008 and 2012 (at around 90%), as many workers remained covered by the former agreements. This stability has also been confirmed using more recent data for 2014 (OECD, 2017b).

Box 4.2. **Computing collective bargaining coverage: Stock or flows?** *(cont.)*

National estimates based on *Quadros de Pessoal* published by the Portuguese Labour Ministry in its recent Green Paper on Labour Relations (Ministério do Trabalho, Solidariedade e Segurança Social, 2016) show a decrease in the stock of workers covered from 85.4% in 2010 to 80.5% in 2014 and a large decrease in terms of flows of workers covered, from 54.1% in 2010 to 10% in 2014.

Data from the Institutional Characteristics of Trade Unions, Wage setting, State Intervention and Social Pacts (ICTWSS Database) are less dramatic than those of ILO report, but they also find a significant fall of coverage rate from 84.9% in 2007 to 72.2% in 2013. These estimates are based on the same numerator (i.e. stock of workers covered by collective agreements) as Addison et al. (2016) but use a different denominator (e.g. OECD employment data to include temporary, part-time and agricultural workers, yet excluding employees in the public sector whose terms of employment are not set by collective agreements).

However, Visser (2016a) argues that even the ICTWSS estimates should be taken with great caution given that many workers are actually covered by old agreements whose wage floors may not be binding anymore as they are probably below the minimum wage level (but non-wage conditions still apply). Fougère et al. (2016) report the same for France. Visser (2016a) refers to the analysis by Naumann (2017) on the use and application of extensions in collective bargaining which finds that, in 2013, at least half of valid collective agreements in Portugal have more than eight years and around 30% of employees covered by collective agreements have not had their contracts renewed since 2009. While similar computing problems are encountered in France for instance, in the Netherlands expired agreements are removed from the register and no longer counted (with one year delay).

In conclusion, providing clear-cut estimates of effective collective bargaining coverage is far from easy, in Portugal as in most of other countries. Using only flow data (new agreements) is not correct as it would lead to ignore workers who are still covered by old agreements. At the same time, using stock data is also problematic, as in some cases agreements may not be binding anymore, or only partially, leading to an overestimation of coverage. Changes in average duration of agreements and possible retroactivity of agreements further complicate the estimation. Furthermore, the choice of the denominator is also crucial in the computation, especially in light of the widespread use of non-standard forms of employment, not systematically well covered in standard surveys.

Extensions and erga omnes provisions

In many OECD countries, the share of workers covered by collective agreements is significantly higher than the share of workers who are member of a trade union. At the same time, collective bargaining coverage patterns have been much more stable than trade union membership. This difference is sometimes somewhat improperly referred to as "excess bargaining coverage" and used as a proxy for administrative extensions of collective agreements, while it is actually the result of both *erga omnes* (literally in Latin, "towards everybody") clauses and administrative extensions.

In principle, an agreement between unions and an employer or employer organisations applies only to the signatory parties ("double affiliation principle"). *Erga omnes* clauses extend the terms set in a collective agreement to all workers, not only to the members of signatories unions. *Erga omnes* clauses are usually embedded in the law. However in most countries where agreements are legally binding only for members of the signatory trade unions (Table 4.1), employers often voluntarily provide the same or similar conditions for

all employees within the company (sometimes because employers do not know who is a union member). *Erga omnes* clauses simplify the system (since the same terms apply to all workers), increase fairness, limit rivalries and help social peace and reduce transaction costs. However, *erga omnes* clauses may also represent a disincentive for workers to become members of a union (a typical free-rider problem).

Table 4.1. **Use of *erga omnes* clauses,[a] 2015**

		Sector-level agreements		
		Not applicable	Erga omnes[a] (de jure or de facto)	Double affiliation[b]
Firm-level agreements	All workers	Australia Canada (BC, ON and QC) Costa Rica Poland United Kingdom United States	Austria Belgium Canada (AB) Czech Republic Denmark Estonia Finland France Hungary Iceland Ireland Israel Italy Latvia Lithuania Luxembourg Mexico Netherlands Norway Slovak Republic Slovenia Spain	Greece
	Only union members	Colombia New Zealand*		Germany Korea Japan Chile* Portugal* Sweden Switzerland* Turkey

* Workers can opt in at firm level. In New Zealand, employers and unions can agree that collective terms and conditions may be passed on to other employees or unions, which would include non-union members.

Note: Note: AB: Alberta; BC: British Columbia; ON: Ontario; QC: Québec.

a) *Erga omnes*: agreements cover all workers, not only members of signatory unions. This is fixed either by the law (*de jure*) or is a standard practice (*de facto*).

b) Double affiliation: agreements cover only workers who are member of a signatory union working in a firm member of a signatory employer association.

Source: OECD Policy Questionnaires.

Extensions (or administrative extensions) go one step further and cover workers in all firms within an industrial sector, including also firms that have not signed the agreement or are not affiliated to an employer organisation which signed the agreement. Extensions are usually an "*act of public policy based on an explicit legislation mandating the government, a public agency or in some cases a court to apply the collective agreement beyond its signatories*" (Visser, 2017). Extensions, or their functional equivalent,[7] are present in two-thirds of OECD and accession countries. However, their specific functioning is extremely diverse: in some countries agreements are extended by default (e.g. in Iceland, Italy and Spain where agreements cover all firms), in some quasi automatic (e.g. in France), in others very rare (e.g. Japan or Central and Eastern European countries). In some countries they are subject to some criteria. In Germany, for instance, any extension decision has to pass a binding advice of the tripartite committee in the Labour Ministry (until 2015 there was also a threshold of 50% of workers covered by signing firms) and is *de facto* subject to a veto from employers. Table 4.2 summarises the frequency of extensions and the criteria used to grant them across OECD and accession countries. The figures in parenthesis refer to the additional coverage rate (as a percentage of employees) provided by extension measures.

Table 4.2. **Scope and coverage of extensions (or functional equivalent) mechanisms in place in OECD and accession countries, 2015**

	Subject to relatively binding criteria	Subject to relatively mild criteria	Not subject to any criteria
Common	Finland (16.0% in 2014) Netherlands (9.3% in 2015) Slovenia (9.0% in 2012) Switzerland (13.7% in 2014)	Belgium (14.0% in 2013) France (22.6% in 2013) Portugal (38.3% in 2011)[a]	Iceland* (24.0% in 2013) Italy* Spain* (6.6% in 2013)
Uncommon	Austria Czech Republic (5.7% in 2013) Germany (0.4% in 2008) Hungary (2.5% in 2012) Israel Japan Latvia Norway (4.0% in 2013) Slovak Republic (0% in 2013) Turkey	Estonia (1.0% in 2012)	Lithuania Luxembourg Mexico Poland

Note: Extension mechanisms do not exist in Australia, Canada (except in Québec where they are rare), Chile, Colombia, Costa Rica, Denmark, Greece, Ireland, Korea, New Zealand, Sweden, the United Kingdom and the United States. Figures in parenthesis refer to the additional coverage rate (as a percentage of employees) due to extension measures. For Belgium, France, Iceland, Ireland, Portugal, Slovenia and Spain, the figures refer to the difference between the coverage rate and the organisation rate of employers.

* No formal administrative extensions but functional equivalent are in place. Compulsory membership to an employer association in Austria can also be considered a functional equivalent.

a) The estimated share of workers covered by extensions refers to a period before the series of reforms who tightened the criteria for extensions (see Box 4.3)

Source: OECD Policy Questionnaires and J. Visser, ICTWSS Database version 5.1. Amsterdam: Amsterdam Institute for Advanced Labour Studies (AIAS), University of Amsterdam. September 2016 for additional coverage rate.

Extensions are often issued out of fairness considerations to ensure the same treatment and standards to all workers in the same sector, in particular for workers for foreign firms or service providers, and migrant and posted workers (Hayter and Visser, 2017). By doing so, extensions can level the playing field across firms and ensure a fair competition.[8] Extensions also reduce the transactions costs linked to lengthy and detailed negotiations over the terms of employment, especially for small firms that lack the resources (or do not have workers representation) to engage in firm-level bargaining in which case workers would never be covered by an agreement (Blanchard et al., 2014). In some cases, extensions are also issued in order to guarantee the stability of the collective bargaining system and the sustainability of some forms of "public goods" such as sectoral training and mobility schemes that are funded via collective agreements (De Ridder and Euwals, 2016; and Hayter and Visser, 2017). Finally, extensions also contribute to spread best practices in terms of personnel management, training, health and safety, technology usage, insurance, retirement packages, or performance-related incentives.

On the opposite, extensions can become a tool of unfair competition, for instance when extensions are used by "insider" firms to drive competitors out of the market (Haucap et al., 2001; Magruder, 2012; Martins, 2014). More in general, extensions may also have a negative impact when the terms set in the agreement do not account for the economic situation of a majority of firms in the sector: for instance, when the employer association is representative only of large and relatively more productive firms (and hence willing to pay higher wages), it may agree on wage floors and other components that are not sustainable for smaller and less productive firms. Finally, delayed extensions that require the payment of sizeable pay arrears can also severely affect the labour market during a period of liquidity constraints for firms (see Hijzen and Martins, 2016 for the case of Portugal).

In order to partly alleviate these concerns, extensions may be issued when the "collective agreement already covers a number of the employers and workers concerned which is, in the opinion of the competent authority, sufficiently representative", as stated in the ILO Recommendation on collective agreements (No. 91). In several OECD countries administrative extensions are subject to threshold representativeness criteria (more details in the online annex at OECD, 2017c): collective agreements can only be extended if they are signed by *employer organisations* representing a minimal share of workers (most often the majority). A few countries also request that signing *unions* represent a majority of workers. However, while these criteria may be important, a more important concern is to ensure that signing employer organisations do not only represent a few selected firms. In most countries these thresholds are checked only at the moment of signing the agreement or issuing the extension. An exception is in Switzerland, where they must hold for the entire duration of the agreement; therefore if coverage drops below the 50% threshold, the extension must expire (Visser, 2017). Introducing representativeness criteria in countries where they do not exist is not straightforward. As the 2012 Portuguese reform shows, it is not easy to define criteria that are sufficiently strict to be meaningful, while easy to be fulfilled hence allowing an effective role for extensions. Hijzen et al. (2017) suggest opting for a gradual increase of the thresholds over time to ensure that non-representative extensions are eliminated and give time to employer associations to increase their membership levels, especially amongst smaller firms.

Having reliable and up-to-date statistics on trade unions' and employer organisations' membership is in all cases a necessary condition in order to have meaningful representativeness criteria. Portugal was able to swiftly introduce representativeness criteria thanks to the detailed information on firms' membership of an employer organisation contained in the *Quadros de Pessoal*. However this is rather an exception across OECD and accession countries. Membership figures of both trade unions and employers, as well as other indicators such as, for instance, the votes obtained at social elections, can be used as an indicator of the relative bargaining power of social partners and influence government actions. Bargaining parties may thus have an incentive to inflate statistics in search of influence power, in particular since official, detailed and up-to-date statistics on unions, employer organisations and collective bargaining are not widespread. Therefore, enhancing the reliability and accessibility of such data would help inform and improve the policy debate on collective bargaining.

Representativeness criteria based on threshold may prove too rigid and unhelpful when the stability of the collective bargaining system or of common funds is at stake. Partly for these reasons, the threshold in Germany of 50% was dropped in 2015. Alternatively, a possibility to derogate from the representativeness criteria could be left open in certain circumstances. In Switzerland, for instance, when unions can prove to public authorities that in a specific sector it is particularly complicated to organise workers (for instance, because of a high presence of foreigners or because of security issues that restrain the possibility to reach and organise workers on their workplace) there is a possibility to derogate from the criterion requiring that signing unions represent a majority of workers.

OECD countries could also submit the extension of collective agreements to a test of public interest, by which extensions could be denied if the social and economic circumstances do not warrant extending the terms beyond the signatory parties or, on the opposite, issued to safeguard the public interest (for instance to stabilise the collective bargaining system or avoid free-riding in common funds such as for training). As argued in

OECD (2017b), while the exact definition can vary, it is important that the criteria of public interest are announced well in advance by the government so that social partners can take them into account during the negotiation. Hijzen et al. (2017) report that in the Netherlands, political actors frequently call upon public interest concerns to limit extensions, but do not use it so much in practice, being reluctant to interfere in the bargaining process.[9] In Norway, extensions are granted if it is proven that foreign workers work or could work under employment conditions that are worse than those set by national agreements for the trade or industry in question or what is common for the place and occupation. Public interest criteria could help introducing some degree of qualitative evaluation in the decision of granting or not an extension, above and beyond strictly threshold representativeness criteria, but may be more difficult to action and be more subject to partisan considerations. So far they are not used to any major extent in any of the OECD countries.

While representativeness criteria (and, if used, public interest clauses) aim to reflect as much as possible the situation of a wide set of firms, they cannot account for their full diversity. Few countries, therefore, also allow for exemptions from extensions. In the Netherlands clearly pre-defined criteria for exemptions are even a condition for extension. Moreover, firms can request an *ad hoc* exemption from the ministry if they can justify dispensation.[10] Hijzen et al. (2017) report that, between 2007 and 2015, 191 requests of *ad hoc* exemptions were presented by Dutch firms, but only 58 were accepted. In Switzerland, although there are no formal rules for exemptions, in one case in 2012 firms with an annual turnover lower than 1.2 million Swiss francs (around EUR 1.2 million) were exempted (Visser, 2017). Another option to better reflect the heterogeneity of firms and avoid the "one-size-fit-all" limit of extensions would be to encourage a differentiation within agreements as is done in the Dutch metal industry where, in practice, two agreements are signed, and extended, one for firms with 35 and more employees and one for firms with less than 35 employees.

Finally, existing statistics on collective bargaining coverage may underestimate the real extent of coverage, with or without extensions, due to "orientation", e.g. the possibility for firms to follow the terms set by the collective agreement of their reference sector while not being formally bound to it or to formally "opt-in", to reduce transaction costs and reduce the risks of conflicts. Opt-in is even sometimes suggested as a better alternative than allowing firms to "opt-out" from collective agreements. This option would hold if the main and sole rationale for issuing extensions would be a reduction of transaction costs; however several other reasons motivate in practice the use of extensions (such as levelling the playing field) and, therefore, opting-in cannot be considered a perfect functional equivalent. Moreover, even in countries where opt-in is relatively common, such as Germany, it does not appear to be a brake to declining coverage of collective agreements.

Based on establishment data,[11] Addison et al. (2016) show that half of the German establishments which are not covered by a sectoral agreement still orient themselves to it. This partly cushions the effects of a declining coverage of sector-level agreements: between 2000 and 2013, while coverage decreased by 10.7 percentage points, from 60% to 49.3% of establishments, orientation increased by 4.1 percentage points, from 16% of establishments to 20.1%. Orientation, however, is a weak policy tool as firms can withdraw from the terms set in the agreement at any time or just pick-and-choose the elements of the agreement they like (a formal opt-in is a stronger tool as firms cannot withdraw easily, but as a consequence it is also potentially less appealing for firms). Addison et al. (2016) find that wages in establishments not covered by sector-level agreements are indeed lower than those in

covered firms. Orienting establishments pay better than non-orienting (and therefore fully uncovered) ones, but still not as much as covered establishments. Hence, orientation (or opt-in) fills some of the gaps left by a decreasing coverage but far from completely.

Duration, ultra-activity and retroactivity

The duration of collective agreements, their validity beyond termination date (the so-called "ultra-activity") or before their entry into force in case of delays (the so-called "retroactivity") also influence bargaining coverage as noted earlier. In some OECD countries, collective agreements do not expire until they get replaced by new ones. This ensures the continuity of the system and prevents voids when collective agreements expire. In countries where the law leaves large, or total, room to collective bargaining (for instance in countries with no statutory minimum wage), expiration without any replacement or ultra-activity effects would leave workers totally uncovered. Clearly, a long, and even indefinite, duration of agreements strengthens workers' bargaining power by keeping them covered, even when employers are unwilling to negotiate new terms, and is ultimately contributing to increase stability and social peace. On the other hand, indefinite, or long, duration of agreements can make it more difficult for employers to renegotiate the terms of the agreement in times of crisis or deflation with potentially a negative effect on employment. Or they may lock workers in an outdated agreement (as pointed in the discussion on the estimation of the bargaining coverage in Portugal, Box 4.2), especially in times of higher inflation. Without co-ordinated and swift actions, indefinite duration of collective agreements may thus ultimately reduce the resilience of the labour market to unexpected shocks.

Table 4.3 shows where the maximum duration is specified in the law, fixed by social partners or not specified. Collective agreements of indefinite duration are typically negotiated in France, but they are also common in Belgium (and before the economic crisis of 2008, agreements had an indefinite duration or long ultra-activity in Greece and Spain as well). Countries which set a maximum duration by law, typically limit it to 36 months. Table 4.3 also shows that most OECD countries do not specify a maximum duration for the ultra-activity of an expired agreement, but leave it for negotiation between social partners. Among OECD countries, Luxembourg, New Zealand, the Slovak Republic, Slovenia and Spain (unless agreed otherwise) limit ultra-activity to 12 months, Portugal to 18 months. Limits to the duration of agreements beyond their termination date also exist in Greece. In addition, collective agreements can be terminated unilaterally by one of the signatory parties, in some countries such as Chile, Estonia, Poland or Switzerland. In most other countries, the union or the employer can ask for the termination of an agreement within a predefined notice period and the agreement has to be renegotiated while the terms of the former agreement remain valid. Across OECD and accession countries, collective agreements are renewed on average every 12-24 months, or three years in Australia,[12] Chile, and Sweden. Canada and Portugal are outstanding exceptions with an average duration exceeding 40 months (see online annex at OECD, 2017c).[13]

Finally, Table 4.3 also shows that collective agreements can be applied retrospectively, i.e. before their signature date, in order to ensure the continuation of rights and obligations in case of late renewal. Most OECD countries leave the decision on the payment of arrears to social partners. In some cases, retroactivity applies to all firms and workers, including those covered by administrative extensions (or their functional equivalent). For instance, this happens, to different extents, in Belgium, Italy and Spain. Including in the retroactivity of the agreement also firms subject to the extensions contributes to levelling the playing

Table 4.3. **The duration, ultra-activity and retroactivity of collective agreements, 2015**

	Limits to (or no) ultra-activity and no retroactivity	Unlimited ultra-activity and no retroactivity	Limits to ultra-activity and possibility of retroactivity	Unlimited ultra-activity and possibility of retroactivity
Maximum duration fixed by the law	Luxembourg New Zealand Portugal[a]	Chile[a] Japan Latvia Netherlands	Greece Korea	Australia[a]
Maximum duration fixed by social partners	Slovak Republic	Austria Costa Rica Czech Republic Estonia Iceland[a] Israel Mexico Sweden[a] Switzerland	Spain[a] Turkey United States	Colombia Denmark[b] Germany Italy Norway
No rule	France Slovenia[b]	Belgium Finland Hungary Ireland Lithuania Poland United Kingdom		Canada[a]

a) Average duration of collective agreements exceeds two years. For Australia, a collective agreement continues to apply until it is terminated or replaced.
b) Only for the manufacturing sector in Denmark and in the metal sector in Slovenia.
Source: OECD Policy Questionnaires.

field (and this is consistent with the spirit of sector-level bargaining and the logic behind extensions as argued by Hijzen et al., 2017). Retroactivity is unlikely to have a significant economic effect in normal times as far as extensions can be anticipated. However, it may become a major burden for firms in case of liquidity constraints, by constraining them to pay sizeable arrears in a relatively short period of time. Hijzen and Martins (2016) suggest that the negative effects on employment of extensions in Portugal before the 2012 reform was probably driven by the burden posed by the payment of arrears by cash-strapped firms.

3. Unpacking the complex machinery of collective bargaining

Centralised and decentralised bargaining systems

Levels of bargaining and favourability principle

The predominant level of bargaining as a proxy of the degree of centralisation occupied most of the attention of early studies on collective bargaining and macroeconomic performance. According to the corporatist view which dominated in the 1980s, performance would increase with centralisation, as centralised regimes would be able to internalise the potentially adverse effects of wage increases on unemployment and competitiveness (Cameron, 1984). The *centralisation* argument was however challenged by the "hump-shape" or "U-shape" thesis of Calmfors and Driffill (1988), which was very influential in the 1990s and early 2000s and argued that both centralisation *and* decentralisation could actually perform well in providing either aggregate flexibility or micro flexibility, since decentralisation would allow wages to adjust to productivity across firms. In any cases, sectoral bargaining was found to deliver the worst outcomes. Empirical studies have not provided much backing for this simplistic view, and showed that even seemingly similar

bargaining structures work differently while the degree of co-ordination seems a more important variable in explaining different labour market outcomes across countries (OECD, 2004 and 2012). This suggests that a comprehensive discussion of centralised versus decentralised systems needs to go beyond the bargaining level as the sole variable of interest, and instead address the full complexity of bargaining structures.

Since the late 1980s, several reforms promoted the decentralisation of collective bargaining in many OECD countries, i.e. gave more space to negotiations at the level of the company, the establishment or the workplace. Decentralisation typically occurred in two ways: either directly through a replacement of national/sectoral agreements by enterprise agreements, or through a process of articulation/devolution within the national/sectoral agreements (Visser, 2016a and 2016b) allowing firm-level agreements to negotiate wage and working conditions within a general framework negotiated at higher level. Traxler (1995) first coined these configurations as respectively "disorganised decentralisation" and "organised decentralisation".

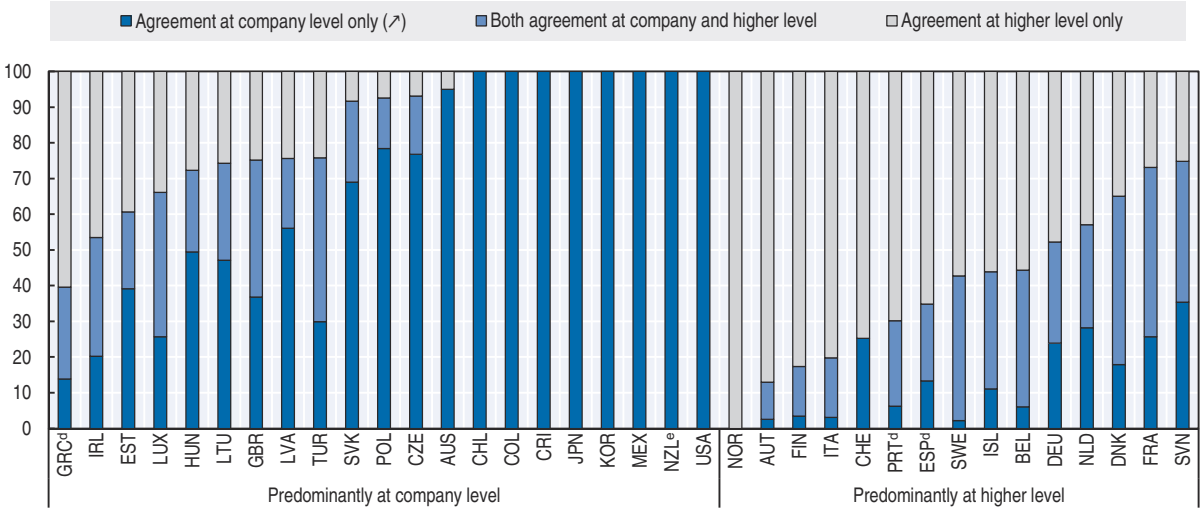
Organised decentralisation (or controlled form of decentralised collective bargaining) takes two main forms in European countries. In a first case, national or sectoral agreements define the broad framework but leave large scope for bargaining at the firm/establishment level (notably in Scandinavian countries or the Netherlands): sectors can either set *minimum* or *standard* terms of employment which employers can complement or deviate from at firm level; or allow workers and employers to choose "*à la carte*" and trade-off, if they want, wages against working conditions. A second form of organised decentralisation is the one where national or sector agreements allow and define the conditions for deviations at lower levels via the so-called opening or opt-out clauses (Germany is probably the most notable example). However in other countries, formal regulatory changes in the bargaining structure have not resulted in a real shift of power[14] to the firm level but rather in two-tier bargaining structures (Boeri, 2014): in this case higher level agreements still dominate, leaving to firm-level bargaining only the possibility to improve the standards set in national or sector level ("*in melius*") agreements, firm-level agreements being subject to the "favourability principle" which states that a lower level agreement can only take precedence over a higher level agreement if it improves the terms of employment for workers.

Figure 4.7 provides a first suggestive overview of bargaining levels across OECD and accession countries. Sector or industry level bargaining continues to dominate in most continental Western European countries, while in Canada, Chile, Ireland, Japan, Korea, Mexico, Turkey, New Zealand, the United Kingdom, the United States, most Central and Eastern European countries, as well as the three OECD accession countries, bargaining predominantly takes place at firm or enterprise level. In Belgium, Finland and Norway, national unions and employer organisations engage predominantly in cross-sector bargaining at central level but, even if not always well reflected in the data, also at sector and company level. Finally, Israel, Luxembourg and the Slovak Republic are mixed cases with an almost equal combination of sector- and firm-level negotiations.[15]

While the predominant level of bargaining allows for a rapid characterisation of collective bargaining systems across OECD countries, it also risks conveying an overly simplistic picture. Figure 4.7 clearly shows that countries with the same predominant level of bargaining differ substantially in terms of their actual structure: even in countries where sectoral bargaining is the predominant level, firm level bargaining can have a very significant role and vice versa.

Figure 4.7. **Detailed bargaining level**

Percentage of employees covered by a collective agreement[a] in the private sector[b] 2013 or latest year available[c]



Note: Countries are ordered by ascending order of the proportion of employees covered by agreement taking place at the company level and company and higher level for each predominant level of collective bargaining. Collective agreements are only at company level in Chile, Colombia, Costa Rica, Japan, Korea, Mexico and the United States.

a) Statistics based on the Structure of Earnings Survey (Norway and Switzerland) refer to the type of pay agreement covering at least 50% of the employees. This could be explained why data reported for Norway do not reflect the two-tiered bargaining system based on a hierarchical system (i.e. basic agreement covering several industries/sectors sector agreement and company level agreement). Statistics based on the third European Company Survey (all other European countries) refer to employees in firms with at least ten employees.

b) Data for Australia include employees of the public sector and relates to the federal enterprise agreement system only.

c) 2014 for Norway and Switzerland; June 2014 for Chile; 2015 for Australia; and 2015-16 for New Zealand.

d) Greece, Spain and Portugal undertook deep reforms of their collective bargaining systems around the year of observation of the data (see Box 4.3). The figures may therefore reflect a mix of the legacy of the previous system and the early effects of the new one.

e) Ten percent of private sector collective agreements in 2016 were multi-employer collective agreements. While such agreements are not sectoral or industry collectives, they do represent agreements that are with more than one company.

Source: OECD calculations based on the third Eurofound European Company Survey (ECS 2013) for all European countries except Norway and Switzerland, the Structure of Earnings Survey 2014 (SES 2014) for Norway and Switzerland, the Workplace Agreements Database for Australia, administrative data from the Labour Department of the Ministry of Labour for Chile and Bargaining Trends and Employment Law Update 2015/2016 for New Zealand and OECD questionnaires for Colombia, Costa Rica, Japan, Korea, Mexico and the United States.

StatLink http://dx.doi.org/10.1787/888933478011

A critical element which defines the hierarchy between bargaining levels and the difference among systems is the existence of the so-called "favourability principle" which states that lower-level agreements can only improve the standards set in higher level agreements.[16] In most continental European countries (e.g. Austria, Belgium, Germany, Italy, etc.), the favourability principle has traditionally applied and in practice continues to be the rule (Table 4.4 and online annex at OECD, 2017c).[17] In the Scandinavian countries, Hungary, Korea, Latvia and the Netherlands, it is left to the negotiating parties which are then free to set lower standards if necessary. The 2012 reform in Spain, and to a lesser extent with a series of reforms starting in the 1980s in France, particularly in 2004 and 2008, the favourability principle has been inverted, i.e. giving precedence to firm-level agreements (in France, this is limited to specific topics as working time). In Greece, the favourability principle was abolished in 2012 following the adjustment programme that reversed the hierarchy of agreements. In all other countries with single-level bargaining, it does not apply (e.g. Australia,[18] Canada,[19] Chile, Colombia, Costa Rica, Japan and the United States).

Table 4.4. **Use of the favourability principle, 2015**

Favourability principle always applies	Application of the favourability principle is entirely a matter for the bargainers	Favourability principle does not apply
Austria	Denmark	Greece
Belgium	Finland	Spain
Czech Republic	France*	
Estonia	Hungary	
Germany	Korea	
Ireland	Latvia	
Israel	Netherlands	
Italy	Norway	
Mexico	Portugal	
Poland	Sweden	
Slovak Republic		
Slovenia		
Switzerland		

* On wages, occupations, complementary social security and training funds the favourability principle always applies.
Note: Favourability principle is not relevant for the following countries: Australia, Canada, Chile, Colombia, Costa Rica, Iceland, Japan, Lithuania, Luxembourg, New Zealand, Turkey, the United Kingdom and the United States.
Source: OECD Policy Questionnaires.

Derogations and opt-out clauses

A second key element which can differentiate countries with the same predominant level of agreement is the use of deviations practices. Controlled forms of derogations have been one of the main factors in the shift of collective bargaining away from centralisation towards an "organised decentralisation" in some European countries over the last two decades. Temporary opening clauses have become rather popular during the crisis (Eurofound, 2015; and Visser, 2016a), following the German practice which allowed firms, together with other tools such as short-time working schemes, to better adapt to the deep crisis of 2008-09 (Dustmann et al., 2014).

As shown in Table 4.5, in most European countries agreements at firm level can deviate from the terms set in the collective agreements. In a third of OECD countries, agreements can also deviate from the standards set in law, most often to make variations to working-time arrangements (when comparing countries, however, one should consider that in some countries there is hardly any law from which to deviate, for instance where most of labour regulations are fixed by collective agreements, while in other countries the labour code is very detailed). Deviations from higher level agreements can be distinguished in general opening clauses[20] and temporary opt-out clauses (also called hardship clauses, or inability-to-pay clauses). General opening clauses allow firm-level agreements to deviate from the minima or the standards set in higher level agreements (for instance to decrease collectively-agreed wage floors, increase working time or change work organisation). Temporary opt-out clauses allow the suspension (or renegotiation) of the terms of agreements (even firm-level agreements) in cases of economic difficulties. In most countries general opening clauses and temporary opt-out clauses are subject to the rules and procedures specified in higher level agreements by social partners themselves and to an agreement at firm level. Finally, in some cases (e.g. Spain) derogations can be obtained without union involvement if no agreement is reached with worker representatives by referring the matter to an external tripartite body.

Table 4.5. **Scope and actual use of derogations and opt-out, 2015**

	Derogations from the law		Derogations/opt-out from higher level agreements
Common	-		Austria Germany* Greece* Netherlands* Spain* Switzerland*
Limited	Austria Belgium Estonia Finland* Germany Hungary Japan Netherlands Norway Slovenia Sweden		Belgium Finland France* Hungary Iceland Italy Ireland* Lithuania* Poland* Portugal* Slovenia*
No derogations	Australia Canada Chile Colombia Costa Rica Czech Republic Denmark France Greece Iceland Ireland Israel Italy Korea	Latvia Lithuania Luxembourg Mexico New Zealand Poland Portugal Slovak Republic Spain Switzerland Turkey United Kingdom United States	Canada Chile Czech Republic Denmark Estonia Israel Latvia Luxembourg Norway Slovak Republic Sweden Turkey United Kingdom

* Derogations possible in case of economic difficulties (referred in the text as opt-out). In Switzerland the information refers to the manufacturing sector.

Note: Derogations/opt-out from higher level agreements not applicable in Australia, Colombia, Costa Rica, Japan, Korea, Mexico, New Zealand and the United States.

Source: OECD Policy Questionnaires.

The use and relevance of permanent or temporary derogations from higher level agreements is closely linked to the presence of a clear and strict hierarchy between levels of negotiations (as noted in the discussion on the favourability principle) and the use of administrative extensions (see Section 1). Indeed, in countries where there is no favourability principle (or is up to negotiators) and no administrative extensions, such as in Northern European countries, there is no need of derogations since unions and firms are free to negotiate agreements that set lower standards than the sector-level agreement. In Denmark, for instance, nothing limits the possibility of temporarily lowering standards.

Opening clauses are among the main adjustment tools of collective bargaining systems where the hierarchy of agreements is subject to the favourability principle and extensions are used. Indeed, opening clauses – and particularly, temporary hardship clauses – are often referred to as "safety valve" (Visser, 2016a) to avoid the "one-size-fit-all" sector-level agreements, notably to adapt to local or specific permanent conditions, or to respond swiftly to an unexpected shock and keep high the support for wide-reaching collective bargaining systems.[21] However, if not regulated, they can result in a downward competition between firms and even undermine the regulatory capacity of collective agreements. Moreover, if derogations and opt-outs are used only, or mainly, by large firms which have the resources to

conclude firm-level agreements and/or to process the paperwork required to request the opt-out and which are often also the most productive, they risk losing their role of "safety valve". Small firms, which may be those most in need of some derogations from the terms set by collective agreements they have not negotiated, most often are not able to make use of derogations and opt-out clauses because they lack the capacity and/or worker representation. In a possibly extreme, but not totally unlikely scenario, large firms may even use opt-outs as an anti-competitive tool by negotiating first relatively generous conditions in sector-level agreements and then opt-out to improve the terms in their favour, leaving competitors bear the brunt of the generous terms they have negotiated.

Opening clauses in higher level agreements were introduced in Germany as a temporary solution,[22] limited first to working time, then from 1995 extended to wages (Brändle et al., 2011). Initially only unions could agree to revise the terms of the agreement, but quickly collective agreements also allowed "Pacts for employment and competitiveness" (PECs) with the work councils (with or without formal involvement of a union). These have become increasingly widespread and began being used independently of the specific economic situation (Seifert and Massa-Wirth, 2005). Kohaut and Schnabel (2006), based on data from the IAB Establishment Panel, also report that, in 2005, 13% of establishments and 29% of employees in Germany were covered by a collective agreement with scope for an opening clause. Around half of the involved/concerned establishments (53% in the West, 50% in the East) had made use of such a clause, mostly to modify working-time arrangements, and only one third to change basic pay or annual bonuses. Data from the WSI Works Council Survey (Bispinck and Schulten, 2010) and from the IAB Establishment Panel (Addison, 2016) do not show yet any particular trend over the last ten years, except an uptake during the crisis.

As mentioned before, the 2012 Spanish labour market reform made it easier for firms to opt-out from higher level agreements and extended the possibility for employers to unilaterally modify wages, working hours and work schedules referring the matter, if disagreement persists, to arbitration by a public tripartite body. In the years until 2015, estimates of the Spanish Labour Ministry show that less than 5% of firms, mainly large ones, have opted-out. Data collected by the Wage Dynamics Network Survey and reported by Izquierdo and Jimeno (2015) show that in 2013, 3.7% of firms opted-out from a sector-level agreement and 1.9% from their own firm-level agreement. Opt-outs were mainly used by large firms opting out from a sector-level agreement (5.9% of firms with more than 200 employees) and even more from their own firm-level agreement (16.6% of firms with more than 200 employees). As SMEs constitute the bulk of the Spanish economy, the use of opt-outs in Spain remains therefore limited. Moreover, since the Spanish reform also facilitated internal flexibility, firms have other adjustment options beyond opting-out from collective agreements. The German experience, moreover, shows that it takes time before firms learn how to make full use of these instruments.

Box 4.3. **The reforms of collective bargaining during the crisis**

Spain, Portugal, Greece and, more recently, France passed encompassing labour market reforms during or following the crisis that also changed the way collective bargaining works. All reforms were aimed at strengthening firm-level bargaining and giving more flexibility to employers in case of economic shocks.

In Greece (see ILO, 2014b for more details), the collective bargaining has undergone a complete overhaul since 2010. The favourability principle was inverted giving priority to

Box 4.3. **The reforms of collective bargaining during the crisis** *(cont.)*

firm-level agreements which can now be signed by associations of persons in place of trade unions. Extensions of collective agreements to non-signatory firms have been scrapped and limits to the duration and the ultra-activity of collective agreements were introduced. Finally, the system of recourse to arbitration was changed. Many of the measures were introduced on a temporary basis and are currently the subject of renegotiation between Greece and international institutions.

In Spain (see OECD, 2014 for more details and a preliminary review), the 2012 reform inverted the favourability principle giving priority to firm-level agreements over those at the sector or regional level. The reform also made it easier for firms to opt-out from higher level agreements or firm-level agreements either upon an agreement with worker representatives or by unilaterally referring the matter to arbitration by a public tripartite body.

In Portugal (see OECD, 2017b for more details and a preliminary review), successive reforms between 2011 and 2015 initially froze extensions of collective agreements and then granted them only if the signing employer organisations met certain criteria. The duration and ultra-activity of collective agreements was reduced. Work councils in firms with at least 150 employees (down from 500) have been allowed to negotiate firm-level agreements upon a mandate from unions and a possibility was introduced for employers to temporarily suspend a collective agreement in case of crisis.

In France (see Ministère du Travail, 2016 for more details), the 2016 reform, in the wake of a series of reforms starting in the 1980s, further strengthened the role of firm-level agreements in defining working time, leave and rest period. It also increased the threshold to define which trade unions are representative and allowed to sign firm-level agreements and introduced the possibility of approving the agreements via an internal referendum. Opt-out clauses in case of economic difficulties, with the objective of safeguarding employment have also been introduced (but not on wages).

Co-ordination, enforceability and the quality of labour relations

Co-ordination

Co-ordination is the other key pillar of collective bargaining systems. Co-ordination refers to the "degree to which minor players deliberately follow what major players decide" (Kenworthy, 2001 and Visser, 2016a). Co-ordination can happen between bargaining units at different levels (for instance when sector- or firm-level agreements follow the guidelines fixed by peak-level organisations or by a social pact) or between units at the same level (for instance when some sectors or companies follow the standards set in another sector/company).

Many studies have found in different co-ordination practices a main factor behind wage developments and macro flexibility, namely the ability of the economy to adjust to macroeconomic shocks (Soskice, 1990; Nickell, 1997; OECD 1997, 2004 and 2012; Blanchard and Wolfers, 2000; Traxler and Brandl, 2012). While conceptually different, co-ordination and centralisation can be thought of as two different ways to reach the same objective, and strong co-ordination has been found to be a functional equivalent of centralisation in some cases (Soskice, 1990; Traxler, 1995; Teulings and Hartog, 1998). However co-ordination can also ensure that either organised, but also disorganised decentralisation does not result in totally independent and atomised negotiations and allow for a certain degree of synchronisation of different bargaining units when setting their strategy and targets. Co-ordination can play a

particularly important role at the macroeconomic level as a critical tool to strengthen the resilience of labour markets by increasing the responsiveness of real wages to changes in macroeconomic conditions (OECD, 2012; IMF 2016). But co-ordination can be a key instrument in pushing up wages when needed. Co-ordination is also important to ensure that the competitiveness of the export sector in a country is not endangered by what is negotiated in the non-tradable sector which does not suffer from international competition but is often a critical input for the tradable sector.

Wage co-ordination takes different forms across OECD countries. Table 4.6 presents the degree and mode of co-ordination among OECD and accession countries. It follows Kenworthy (2001) and Visser (2016a) by distinguishing between the *mode* of co-ordination (state-imposed, pattern bargaining, etc.) and the *degree* of co-ordination (whether pervasive and binding or not). Co-ordination is strongest when it is based on strict statutory controls (this is called *state-imposed* co-ordination, and it occurs via indexation rules, binding minimum wages and/or rules for maximum uprates). Currently only Belgium falls in this category: wages are indexed to increases in living costs but capped by a "wage norm" which takes into account (weighted) wage developments in France, Germany and the Netherlands on top of a statutory minimum wage negotiated between social partners. Finland is the country closest to Belgium since central agreements (still) play an important role in guiding what lower-level agreements can negotiate (*state-induced* co-ordination). In France, the relatively high minimum wage also severely restricts the room of manoeuvre of social partners and renders many wage floors irrelevant (Fougère et al., 2016). In Nordic countries, as well as in Austria, Germany and the Netherlands co-ordination takes the form of the so-called *pattern bargaining* where a sector sets the targets first (usually the manufacturing sector exposed to international trade) and others (or at least some of them) follow. Pattern bargaining also takes place in Japan where collective agreements are negotiated only at company level (see Box 4.4 for more details). Finally, co-ordination can also take the form of inter- or intra-associational guidelines where peak level organisations either set some norms or define an intra-associational objective that should be followed when bargaining at lower levels. This takes place more or less formally in several countries but it is usually binding only in countries where peak level trade unions or employer organisations are relatively

Table 4.6. **Forms of co-ordination across OECD countries, 2015**

		Mode of co-ordination		
		Pattern bargaining	State imposed/induced	Inter/Intra-associational
Degree of co-ordination	Strong	Austria Denmark Germany Japan Netherlands Norway Sweden	Belgium Finland	Austria Finland Japan Netherlands Norway Sweden Switzerland
	Limited		France	France Iceland Italy Portugal Slovenia Spain

Note: Forms of co-ordination are not relevant for the following countries: Australia, Canada, Chile, Colombia, Costa Rica, the Czech Republic, Estonia, Greece, Hungary, Ireland, Israel, Korea, Latvia, Lithuania, Luxembourg, Mexico, New Zealand, Poland, the Slovak Republic, Turkey, the United Kingdom and the United States.
Source: OECD Policy Questionnaires.

strong and centralised (typically Nordic countries and to a significantly lower extent France and Italy). In most Central and Eastern European countries, OECD accession countries and other decentralised systems, bargaining systems are uncoordinated.

Box 4.4. **Wage co-ordination in a decentralised system: The Japanese *Shunto* or Spring Offensive**

Collective bargaining in Japan is highly decentralised: most of the bargaining takes place at the company level without national or sectoral agreements. Yet, a co-ordination mechanism for wage bargaining is launched every spring by the peak unions to supplement the limitations of bargaining power of firm-levels unions. This co-ordination system, called *Shunto* (the trade unions' nation-wide Spring Offensive), is entirely left to the social partners.

Introduced in 1955 by one of the major national trade unions in a context of weak, fragmented and highly politicised unions, over time *Shunto* became the quintessential example of integration and synchronisation in wage bargaining in combining pragmatism, flexibility and efficiency. Annual negotiations for wage increases on a national scale are given a precise framework through separate internal co-ordination by both unions and employer organisations (Togaki, 1986; Shirai, 1987). The co-ordination mechanism takes place both within and across sectors. Typically, the negotiations with large companies start in winter, when Rengo, the national Japanese trade union confederation, sets the intra-associational guidelines with wage increase target to be further specified by each sectoral level trade union federations. Taking this minimum wage increase as a benchmark, firm-level unions negotiate over wages, bonuses and working conditions. Parallel efforts to co-ordinate the bargaining policy of employers are also made by employer organisations and the major enterprises, ensuring a large convergence with unions' requests.

The importance of information sharing for a co-operative relationship between unions and employers and efficient negotiation process was pointed out by Morishima (1991) as a critical ingredient of success of the Shunto system over time. For instance, following the 1973 oil crisis, the national trade union centre changed strategy drastically after heated management-labour discussions, and decided to self-restrain wage increases to prevent causing hyperinflation. A similar pragmatism was observed in 2001, after the ICT bubble crisis in Japan, as national-level social partners jointly declared that unions would restrain their requests to allow employers to preserve jobs. More recently, unions compromised on the wage increases with employers in exchange for employment protections (2% wage increases in 2016). Some observers have argued however that this wage moderation policy may have led to a weakening of unions' bargaining power during the Lost Decades (e.g. Visser, 2013). Moreover, Kato (2016) suggests that in recent decades wages started to fall behind productivity growth and Shunto has become less relevant, losing in part its efficacy in synchronising wage negotiations.

Source: This box was prepared in collaboration with Yoshie Shigiya.

Enforcement of collective agreements and the quality of labour relations

The ability of the employer organisations and trade unions to control the behaviour of their constituency at lower levels is key for ensuring that decisions taken at higher levels are actually reflected at lower levels and effectively implemented. Co-ordination and centralisation without compliance and enforcement are simply ineffective (Nickell and Layard, 1999; Traxler, 2003). The evidence discussed in Box 4.5 shows that, for countries where estimates are available, even compliance to the lowest levels of the negotiated wage floors is far from perfect.

Box 4.5. **Compliance and enforcement of collective agreements**

Primarily a legal issue, the actual level of enforcement of the standards set by collective agreements is critical to judge the effectiveness of the bargaining systems, notably in terms of fairness for workers and level-playing field for firms. However, available empirical evidence on compliance to labour market regulations is quite scarce and almost inexistent for collective bargaining. In fact, measuring the extent of non-compliance is very difficult to do in a practical way, given data limitations and measurement error. Garnero et al. (2015) provide a first estimate of non-compliance to wage floors fixed by collective agreements in seven European countries. They find that on average in 2007-09, the share of workers paid less than the negotiated wage floors was 13% in Italy, 8% in Germany, 4% in Austria and Belgium, and around 2% in Finland and Denmark.

More recent estimates on the incidence and depth of non-compliance to minimum wages fixed by collective agreements in Italy between 2008 and 2015 using a range of survey and administrative data are provided by Garnero (2017). He finds that non-compliance is indeed non-negligible: on average, using Labour Force Survey data, around 10% of workers in the country are paid one fifth less than the reference hourly wage floor (7% using data declared by employers themselves in the Structure of Earnings Survey which however excludes micro firms and the agriculture sector; and 2.7% using social security data which however are unlikely to report non-compliance as they are based on official company records and limited to monthly wages, therefore not considering extra unpaid time, and to full-time full-month employees only). Not surprisingly, all data sources show that non-compliance is particularly high in the south of Italy and in micro and small firms and it affects especially women and temporary workers. Moreover, all data sources show that wages in the bottom of the distribution in Italy appear to be largely unaffected by wage floor increases. The exact estimates vary according to the data used but all show that non-compliance significant and pervasive.

In addition to more effective labour inspections, Garnero (2017) suggests a series of relatively cost-free tools for improving compliance to negotiated wage floors, and to the terms of collective agreements more in general. In countries where the number of collective agreements is very high, a smaller number of collective agreements and minimum wages would make the system more transparent for both employers and workers. Where it is not the case, ensuring that agreements are signed by representative unions and employer organisations is key to avoid that complacent, poorly representative social partners or "yellow" unions (unions dominated or heavily influenced by an employer) undermine existing standards.

Making the text of collective agreements and a summary of its main elements publicly and easily available is an essential precondition to ensure that workers and employers are well informed about their rights and duties. In most countries it is difficult to get access to the text of collective agreements. Finally, awareness and "name and shame" campaigns have been proven quite effective in increasing compliance with the statutory minimum wage in Costa Rica (Gindling et al., 2014) and the United Kingdom (Benassi, 2011) and could be used as a relatively cost-effective tool also in the case of collective agreements.

There are no comparable indicators on the level of enforcement across countries. However, the capacity of enforcement of each system – sometimes also referred to as "governability" (see Traxler, 2003; and OECD, 2004)[23] – is likely to be related to the functioning of collective bargaining, historical developments and overall trust among social partners. The "enforceability" of agreements can also be fostered by regulating industrial actions with

"peace clauses" ruling that unions which have signed an agreement, and their members, cannot lawfully strike on issues regulated in the agreement). In some countries peace clauses are not or rarely used (for instance, Belgium and France, Mexico, Chile) on the grounds that a peace obligation would interfere with the right to strike. In other countries (e.g. Italy and Spain), peace clauses are common but given that the strike is an individual right, workers can always strike as the agreement is binding only for the collective signatory parties. Therefore, even a small group of workers is enough to limit the enforcement of the agreement undermining the governability of the system. In other countries (typically the Nordic countries) peace clauses are used and enforced thanks to the strong role of unions and relatively high level of trust between and in social partners.

Mediation and arbitration procedures can also play a significant role in smoothing conflicts and helping finding an agreement within the framework of collective bargaining and therefore contribute to strengthen the overall governability of the system. Mediation and arbitration procedures in sector-level and firm-level agreements are present in about half of OECD and accession countries and in around two-thirds of the cases a mediation procedure is compulsory. In other countries, for instance in Norway, mediation mechanisms exist outside the agreements. The Norwegian National Mediator mediates in conflicts of interests between employer and employee organisations, i.e. when the negotiations on renewal or establishment of an agreement have broken down. The purpose of mediation is to avoid work conflict which, in fact, cannot legally be started before mediation has been tried. The Labour Court of Norway is a special court for resolving labour disputes concerning the interpretation, validity and existence of collective agreements, cases of breach of collective agreements and the peace obligation and cases of claims for damages arising from such breaches and unlawful industrial action.

Table 4.7. **The enforcement of collective agreements, 2015**

		Sector-level agreements			
		Nothing or not applicable	Peace clause	Mediation	Both
Firm-level agreements	Nothing	Canada (AB) Korea Poland Slovak Republic		Austria* Slovenia	Denmark* Latvia*
	Peace clause	Japan	Iceland Luxembourg Norway		Estonia Greece* Lithuania* Netherlands Switzerland
	Mediation	Australia Chile Colombia* United Kingdom		Czech Republic France Hungary Mexico Portugal	
	Both	Canada (BC*, ON* and QC) Costa Rica New Zealand Turkey United States*		Ireland*	Australia Belgium* Finland Germany Israel* Italy* Spain* Sweden*

* Compulsory mediation.

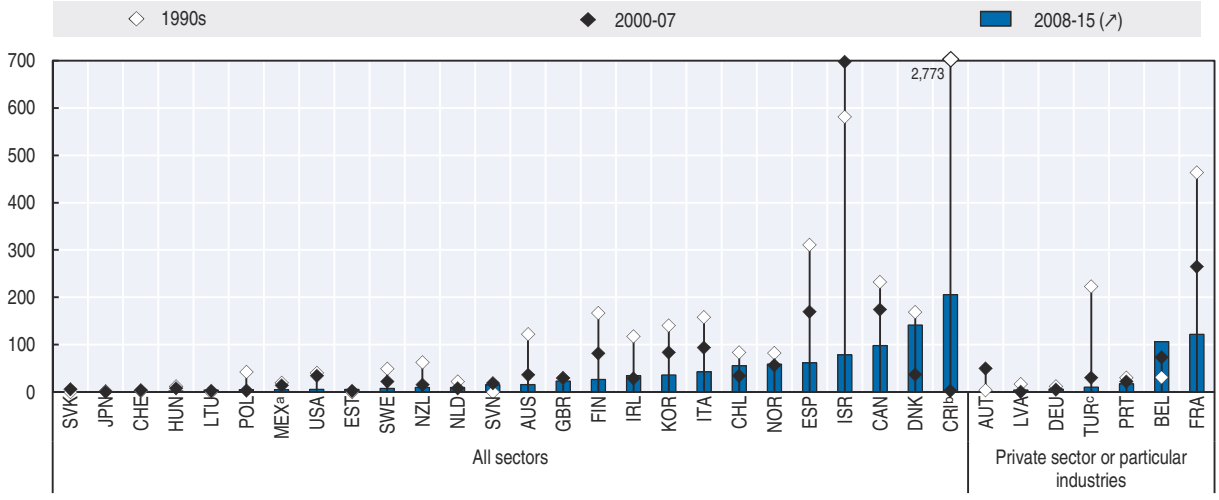
Note: AB: Alberta; BC: British Columbia; ON: Ontario; QC: Québec.

Source: OECD Policy Questionnaires.

Figure 4.8 shows the trends in industrial disputes (strikes and lock-outs) across OECD and accession countries. Data should be interpreted however with caution as the number of strikes is likely to be affected by how they are regulated at national level and may thus not reflect the actual level of strife on the workplace. Furthermore, existing statistics are plagued by considerable differences in definitions and measurement which severely limit the comparability of the data (see note under Figure 4.8 and, for further details, see online annex at OECD, 2017c). Notwithstanding these caveats, Figure 4.8 shows that industrial disputes as well as the degree of variation across countries have gone down considerably since the 1990s (a notable exception is only Belgium where days lost because of strikes have steadily increased since the 1990s).

Figure 4.8. **Trends in industrial disputes**

Annual averages of work days lost per 1 000 salaried employees



Note: International comparability of data on strikes is affected by differences in definitions and measurement. Many countries exclude from their official records small work stoppages, and use different thresholds relating to the number of workers involved and/or the number of days lost. Strikes statistics in some countries may also exclude stoppages in particular industries, such as the public sector (as in Austria, Belgium, France, Germany, Latvia, Portugal and Turkey) or of a particular type, such as political and unauthorised strikes (as in Chile, Costa Rica, Estonia, Hungary, Israel, Korea, Latvia, Lithuania, Mexico, Turkey, the United Kingdom and the United States). Conversely, some countries may include workers indirectly involved (i.e. those who are unable to work because others at their workplace are on strike) as in Costa Rica, Denmark, Estonia, Finland, France, Hungary, Ireland, Lithuania, the Netherlands, New Zealand, Poland, the Slovak Republic, Switzerland, Turkey, the United Kingdom and the United States or work stoppages caused by the shortage of materials supplied by firms involved in strike. In general, forms of industrial action that do not involve full-work stoppages, such as "go-slows", silent and other protests on the workplace are not included. For further details, see online annex at OECD (2017c).

a) The statistics concern strikes at establishments and enterprises covered by federal jurisdiction. As a result, strikes at enterprises under local jurisdiction are not included.

b) Average in 2008-14 is mainly driven by a strike in 2014 taking place in the Ministry of Education and involving 75 000 workers during 29 days. The annual average set at 33 days lost per 1 000 employees otherwise.

c) The following branches of economic activity or sectors are excluded: life or property saving, funeral and mortuary, production, refining and distribution of city water, electricity, natural gas and petroleum as well as petrochemical works, production of which starts from naphtha or natural gas; banking services; in workplaces operated directly by the Ministry of National Defence, General Command of Gendarmerie and Coast Guard Command, firefighting and urban public transportation services carried out by public institutions and in hospitals.

Source: ILOSTAT and national statistical offices for working days not worked and *OECD Annual Labour Force Statistics Database* and national statistical offices for total number of employees.

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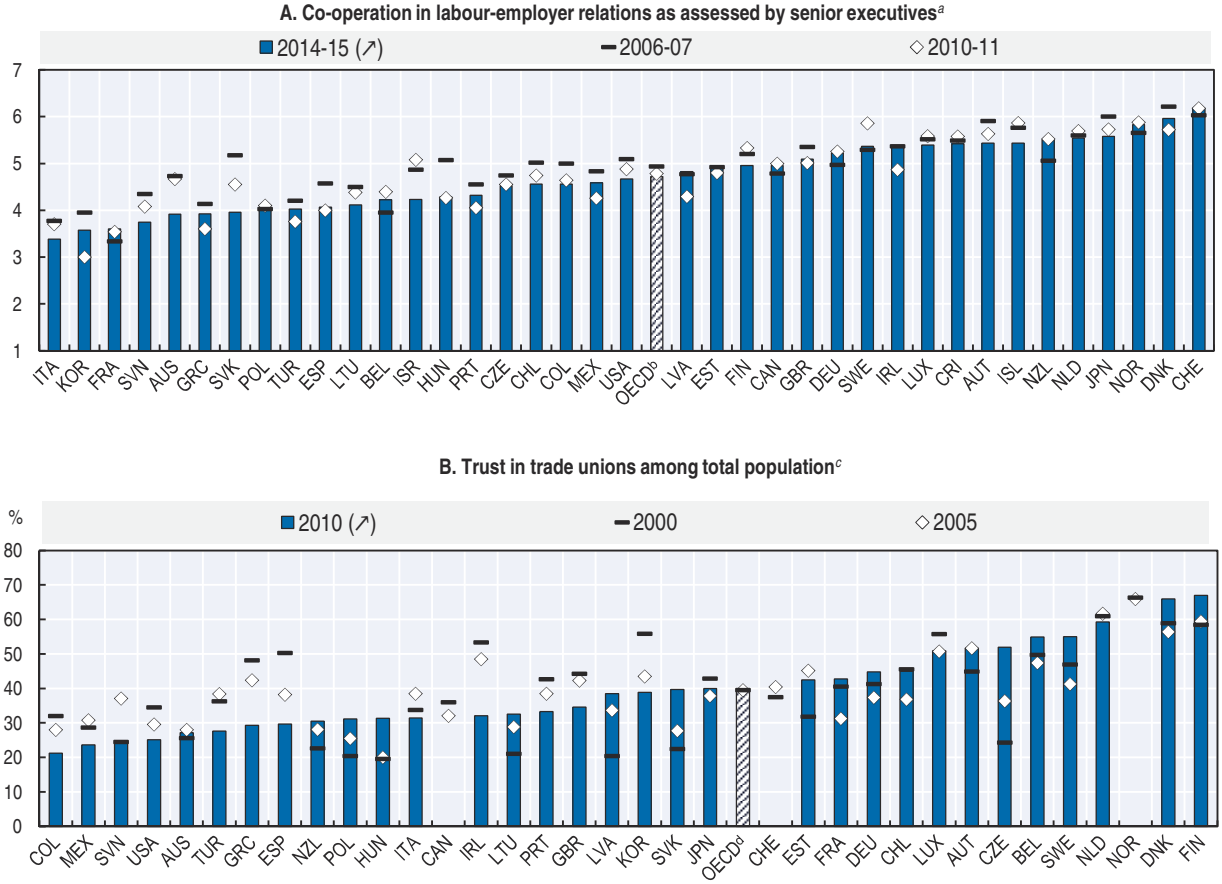
Since Blanchard and Philippon (2006) tried to establish a link between conflictual labour relations and high unemployment, there has been an increasing focus on the quality of labour relations and trust among social partners. Blanchard et al. (2014) argued that "*trust*

appears to be just as important in bringing macro flexibility as the structure of collective bargaining" as the effectiveness of co-ordination, in particular, is likely to be closely linked to relatively peaceful and co-operative industrial relations. IMF (2016) shows that unemployment rose less following the global financial crisis in those countries where trust was high.

Panel A in Figure 4.9 shows the degree of co-operation in labour relations as assessed by senior business executives in a survey published by the World Economic Forum. Among OECD and accession countries, managers consider labour relations most co-operative in Switzerland and least co-operative in Italy. The degree of perceived co-operation appears to have been largely unaffected by the crisis: if anything, labour relations have slightly deteriorated in countries where they were already relatively poorer.

Figure 4.9. **Quality of labour relations**



a) Average weighted national score based on a scale from 1 ("generally confrontational") to 7 ("generally co-operative") to the following question: "In your country, how would you characterise labour-employer relations?".

b) Unweighted average of the 35 OECD countries shown.

c) Percentage of persons (aged 15 or over) tending to trust trade unions for the European countries excepted Norway and Switzerland and percentage of persons (aged 15 or more) who are greatly or quit a lot confident in trade unions for all other countries, Norway and Switzerland.

d) Unweighted average of 31 OECD countries (not including Hungary, Iceland and Japan and also Canada, Norway and Switzerland for which data are not available in 2010).

Source: **Panel A:** The Global Competitiveness Index Historical Dataset © 2005-2014 World Economic Forum. **Panel B:** Eurobarometer for all European countries (not including Norway and Switzerland) and World Values Survey (*www.worldvaluessurvey.org/WVSOnline.jsp*) for all other countries.

StatLink http://dx.doi.org/10.1787/888933478032

The trust that citizens have in unions also varies considerably across countries (data on trust in employer organisations are not available) and is correlated with the national level of trust in institutions more generally. In 2010 on average, 40% of respondents across OECD and accession countries declare that they trust trade unions, but the share of people trusting unions varies from 65% in Finland and Denmark to 25% in the United States, Slovenia and Mexico. Between 2000 and 2010 trust in unions has increased markedly in Central and Eastern European countries where it was initially very low while it has decreased quite significantly in countries that have been deeply hit by the crisis, Greece, Ireland and Spain.

The quality of labour relations as assessed by senior executives and the degree of trust in trade unions by the general population are positively, yet not perfectly, correlated. In some countries such as Belgium executives report a low quality of labour relations, but 55% of people trust unions (a similar gap is found also in France and Korea, ranked among the lowest by executives and close to, or even above in the case of France, the OECD average by people). The opposite case is found in Mexico, where executives consider labour relations to be close to the OECD average, while only 25% people declare that they trust unions.

The quality of labour relations and trust in unions, in line with the findings by Blanchard and Philippon (2006), are found to be negatively correlated with the unemployment rate and with earnings inequality: on average across OECD countries, higher trust goes hand in hand (but the direction of the causality is not clear) with lower unemployment and lower earnings inequality[24] (see online annex at OECD, 2017c).

The level of co-operation and trust is the result of decades of history and is deeply rooted into broader societal and cultural factors. The evidence on the issue is very limited (see Addison, 2016 for a summary), but some of the features of collective bargaining systems themselves can help promoting more co-operative relations. Fragmented and poorly representative social partners are likely to be less inclusive and increase the level of strife. Therefore promoting co-operation between social partners (or at least not incentivising excessive competition) could have a positive effect on the quality of labour relations. More in general co-operation in a range of areas, involvement in committees, reforms, and institutions at higher levels, together with employee involvement and co-operation at the firm level can help building trust and a common understanding of challenges, solutions, and positions. Moreover, objective criteria, in particular with respect to opt out and extension requests, the availability of accurate information on the representativeness of social partners (see Section 1) and the presence of an independent body to mediate and settle disagreements, can also contribute to improve labour relations. Hijzen et al. (2017) also suggest that incentives for regular renegotiation might enhance trust (unless they force the conclusion of an agreement when there is no shared willingness to reach it). Mechanisms that ensure the actual enforcement of the terms of collective agreements (see Box 4.5) are also likely to strengthen the accountability of social partners and therefore reciprocal trust. Finally, institutional stability usually helps social partners by creating shared and mutual expectations (Brandl and Ibsen, 2016). Repeated piecemeal reforms are likely to increase adaptation costs and shorten the outlook over which social partners plan their negotiation strategies. Generally, ensuring the autonomy of social partners is likely to enhance trust between them.

Workers' voice and representation at firm level

As outlined before, collective bargaining takes place in many forms and can occur between trade unions and an individual firm (single-employer bargaining) or between

union federations and employer associations (multi-employer bargaining). These levels are however not mutually exclusive, and different topics can be handled at different levels. Investigating in depth which specific issues may have shifted from one level to another in different OECD countries is beyond the scope of this analysis. Instead this section focuses on the presence and the role of the various forms of workers' voice (i.e. the collective expressions of workers' interests) and representation at firm or establishment level[25] as key pillars of single-employer bargaining.

Worker representation differs considerably across OECD and accession countries both in terms of the nature and prerogatives of the representing entities and the share of workers they represent. Several bodies may indeed co-exist at the workplace level: local trade union representatives (either appointed by the trade union or elected by the employees); work councils which are usually a legally established body elected or appointed by all employees in the firm irrespective of their membership of a trade union;[26] or worker representatives, elected or appointed among the employees (either union members or independent). Moreover, in several OECD countries, occupational health and safety bodies/councils are present on the workplace, in charge of the implementation and control of safety and health conditions. Eurofound (2011), Van Gyes (2016) and Forth et al. (2017) provide a comprehensive picture of employee representation at firm level.

In most OECD and accession countries more than one form of worker representation can be found, often depending on the firm's size. France is an extreme case, as firms with more than 50 employees combine a work council (*comité d'entreprise*), union representatives (*délégué syndical* and/or *représentant de la section syndicale*), worker representatives (*délégué du personnel*) and a relatively powerful health and safety committee (see Askenazy and Breda, 2017 for more details). In other countries only one of these structures is present (Table 4.8). This is the case in Austria, Germany, Luxembourg, the Netherlands and Switzerland, where work councils are the sole eligible employee representative structure; this does not however prevent unions from playing any role, and even have a large influence or reserved seats in the work councils. In Canada, the United States, Sweden or Turkey trade unions are the sole representative body.

Figure 4.10 displays the share of employees covered by the different forms of worker representation as reported in the European Company Survey. The results show that on average, at least for European countries, the coverage of firm-level representation is not particularly higher in countries where firm-level bargaining dominates; instead it tends to be relatively high in multi-employer bargaining systems, with complementary effects between the two levels (notably in the Nordic countries, Germany or the Netherlands). On the other hand, the coverage of employees' representation is low in countries where firm-level bargaining is very limited, like in Greece or Portugal even after the recent reforms. Box 4.6 delves into the role of employees' expression and representation on the workplace and their impact on the "voice or exit" behaviour of workers.

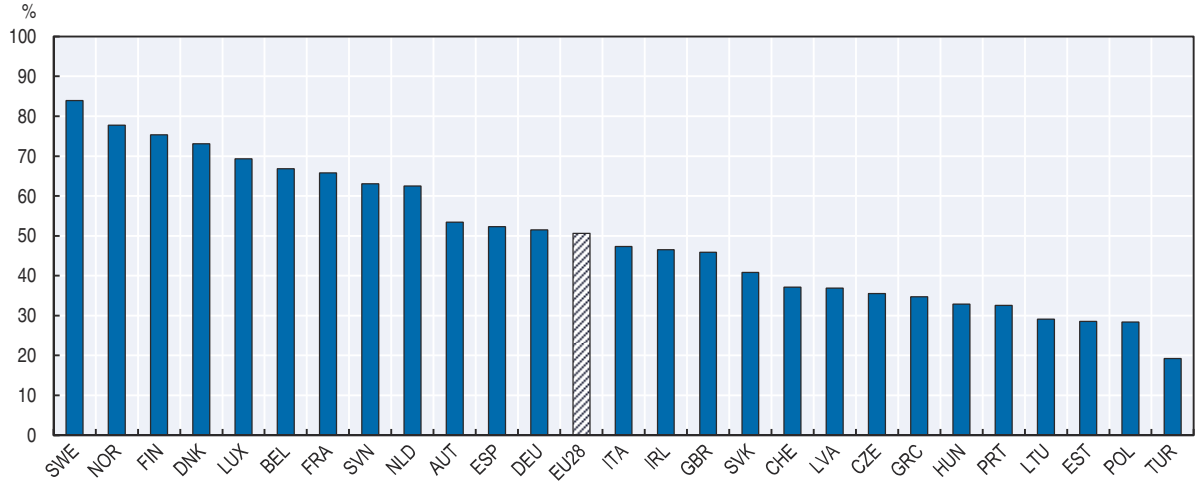
Finally, in some OECD countries workers can also be represented on company boards. As such, board level worker representation is not collective bargaining, but it nevertheless can contribute to increase workers' voice, strengthen their bargaining power and potentially enhance co-operative attitudes by allowing workers to engage in the strategic choices of the company.[27] Among OECD countries (for more details see online annex at OECD, 2017c), Austria, Denmark, Finland, France, Germany, Hungary, Luxembourg, Netherlands, Norway, Poland, the Slovak Republic, Slovenia, and Sweden have such provisions, allowing worker

Table 4.8. **Worker representation at the workplace, 2015**

	Country	
Work council	Austria Germany Luxembourg Netherlands	
Union or union representatives	Australia Canada Chile Colombia Costa Rica Iceland Israel	Japan Mexico New Zealand Sweden Turkey United States
Both but work council predominant	Hungary Italy Slovak Republic Spain United Kingdom	
Both but union predominant	Belgium Czech Republic Denmark Estonia Finland France Greece Ireland Korea	Latvia Lithuania Norway Poland Portugal Slovenia Switzerland*

* In the manufacturing sector.
Note: Non-union worker representatives can be present in Australia, Costa Rica, Finland, France, Greece, Japan, Korean and Latvia.
Source: OECD Policy Questionnaires and Eurofound (2011).

Figure 4.10. **Employee representation coverage in Europe**
Percentage of employees, 2015



Source: OECD calculations based on the Sixth European Working Conditions Survey 2015 (EWCS 2015).
StatLink http://dx.doi.org/10.1787/888933478040

representatives to sit on the boards of private companies in firms above a certain size.[28] In Chile, Greece, Ireland, Israel, Poland, Portugal and Spain worker representatives can sit on the boards only of state-owned enterprises.

Box 4.6. **Voice or exit? The role of employees' expression and representation on the workplace**

Workers, when not satisfied with their working conditions, have essentially two main options: *exit* (i.e. quit their job); or, *voice* their concerns (Hirschman, 1970). Freeman and Medoff (1984) brought some evidence that unions, by giving employees the opportunity to express their concerns and improve their situation, contribute to reduce voluntary quits, ultimately reducing labour turnover - even if the process of reaching resolutions may be conflictual and disruptive. This may thus benefit not only workers, but also firms, as lower turnover and longer tenure can reduce hiring and training costs and increase productivity.

Amossé and Forth (2016) have recently tested the "exit-voice" dichotomy using comparable establishment surveys for France (REPONSE) and Great Britain (WERS). They assess if Britain is an "exit" country and France a "voice" one, given their respective historical differences in the degree of regulation and influence of the unions (while trade union density is lower in France, union representatives at the workplace level are much more prevalent). They also test if the presence of a union representative at the workplace or arrangements for direct voice reduce quits and contribute to an increase in collective disputes.

The results by Amossé and Forth (2016) in Table 4.9 show that, as expected, voluntary quits are on average more frequent in Britain than in France. In both countries the presence of a union representative at the workplace is associated with a lower quit rate, as already found by Bryson and Forth (2009) and Bryson et al. (2013) for Britain. The effect is robust also when controlling for other factors.

Table 4.9. **Association between on-site union representation and direct voice and quits and collective disputes in 2011**

	Average		Net effect of union representative		Net effect of direct voice arrangements[a]	
	in Britain	in France	in Britain	in France	in Britain	in France
Quits (% of employees employed 1 year before)[b]	9.7	3.4	-2.3**	-1.0***	+2.2**	+0.1
Collective disputes (% of workplaces)[c]	1.8	20.5	+4.8*	+18.3***	-0.1	+1.7

*, **, ***: statistically significant at the 5 and 1% levels, respectively.

a) Direct voice arrangements include: regular departmental meetings, employee attitude survey, and the use of suggestion schemes.

b) Quits are based on workplaces with 50 or more employees.

c) Collective disputes are based on workplaces with 11 employees or more. In France disputes refer to the last three years; and to the last year in Britain.

Source: Excerpt from Table 3.5 in Amossé and Forth (2016) based on the establishment surveys WERS and REPONSE.

StatLink http://dx.doi.org/10.1787/888933478256

This result suggests that unions or worker representatives on site reduce exit by offering stronger collective voice. On the contrary, direct voice arrangements (regular departmental meetings, employee attitude surveys, suggestion schemes) have no statistically significant association with the quit rate in France, while they are positively correlated with quits in Britain. Whilst Freeman and Medoff (1984) suggested that voice may reduce exits, they also recognised that the articulation of voice (typically in the form of complaints) would be likely to lead to a degree of overt conflict in the workplace, whilst issues were being discussed and resolved.

Box 4.6. **Voice or exit? The role of employees' expression and representation on the workplace** *(cont.)*

The establishment data from WERS and REPONSE indicate that disputes at the workplace are much more common in France and that union presence is strongly and positively associated with a more frequent occurrence of collective disputes in both countries (this is also confirmed by managers' subjective rating of the social climate at the workplace as reported in the establishment surveys). Overall, the recent analysis by Amossé and Forth (2016) confirms that, at least in the case of France and Great Britain, the presence of a union representative effectively contributes to reduce turnover as suggested by Hirschman, Freeman and Medoff, but also increases collective disputes.

4. How do national collective bargaining systems compare?

The previous sections have described in detail the scope of the different national bargaining systems, their specific elements and adjustment devices, so as to capture as much as possible their granularity, complexity and diversity across OECD and accession countries. However, national collective bargaining systems should not be considered as just a sum of different elements but as a system with complex interactions between the different components. In this context it is useful to "zoom-out" so as to obtain an overarching view of each bargaining system.

Table 4.10 provides a summary of all the key features identified in Figure 4.1, a sort of dashboard of the different national collective bargaining systems. It clearly shows that collective bargaining coverage is high (above 50%) only in countries which have at least some forms of sector-level bargaining. In these countries high coverage either results from high employer organisation density or from a widespread use of administrative extensions. However, Table 4.10 emphasises that there is no single model of sector-level bargaining. Indeed, countries under this broad group differ greatly in terms of the degree of co-ordination and the room left to lower-level agreements to change the terms of employment. In particular:

- In Belgium and Finland, two rather centralised and co-ordinated countries, sectoral agreements play an important role, while leaving some room for lower-level agreements to change the standards set in higher level agreements. The specific feature of these two systems is the strong form of state imposed (or induced) co-ordination.
- In rather centralised and uncoordinated countries such as France, Iceland, Italy, Portugal and Slovenia, sectoral agreements play a strong role, extensions are used extensively and there is rather limited room for lower level agreements to derogate from higher level ones. Moreover, in these countries co-ordination tend to be generally weak.
- Spain and Switzerland are in many respects similar to the previous group but in Spain the recent reform has made it easier for lower-level agreements to derogate from higher level agreements while in Switzerland co-ordination still plays a non-minor role.
- Austria, Denmark, Germany, the Netherlands, Norway and Sweden have an organised decentralised and co-ordinated bargaining system: in these countries sector level agreements, even in the case of extensions, leave significant room for lower-level agreements to set the terms of employment by leaving up to bargaining parties the design of the hierarchy of agreements (Denmark, the Netherlands, Norway and Sweden) or by allowing for the possibility to opt-out (Germany and Austria). In these countries

Table 4.10. **Dashboard of collective bargaining systems, 2015**

Countries ordered by predominant level of collective bargaining, degree of centralisation, co-ordination, trade union density in the private sector, collective bargaining coverage, employer organisation density and quality of labour relations

	Predominant level	Degree of centralisation/ decentralisation	Co-ordination	Trade union density in the private sector	Employer's organisation density	Collective bargaining coverage rate	Quality of labour relations
Costa Rica	Company	Decentralised	No	Less than 5%	..	5-10%	..
Colombia	Company	Decentralised	No	Less than 5%	..	5-10%	Low
Turkey	Company	Decentralised	No	Less than 5%	20-30%	5-10%	Low
Estonia	Company	Decentralised	No	Less than 5%	20-30%	10-20%	High
Lithuania	Company	Decentralised	No	5-10%	10-20%	5-10%	Medium
Mexico	Company	Decentralised	No	5-10%	..	10-20%	Low
United States	Company	Decentralised	No	5-10%	..	10-20%	Medium
Korea	Company	Decentralised	No	5-10%	10-20%	10-20%	Low
Poland	Company	Decentralised	No	5-10%	20-30%	10-20%	Low
Latvia	Company	Decentralised	No	5-10%	40-50%	10-20%	Medium
Hungary	Company	Decentralised	No	5-10%	40-50%	20-30%	Medium
Chile	Company	Decentralised	No	10-20%	..	10-20%	Medium
New Zealand	Company	Decentralised	No	10-20%	..	10-20%	Medium
Canada	Company	Decentralised	No	10-20%	..	20-30%	Medium
United Kingdom	Company	Decentralised	No	10-20%	30-40%	20-30%	Medium
Czech Republic	Company	Decentralised	No	10-20%	60-70%	40-50%	High
Ireland	Company	Decentralised	No	20-30%	50-60%	40-50%	Medium
Japan	Company	Decentralised	High	10-20%	..	10-20%	High
Israel	Company/Sectoral	Decentralised	No	10-20%	..	20-30%	Low
Slovak Republic	Company/Sectoral	Decentralised	No	10-20%	30-40%	20-30%	Medium
Greece	Company/Sectoral	Decentralised	No	10-20%	40-50%	40-50%	Low
Australia[a]	Company/Sectoral	Decentralised	No	10-20%	..	50-60%	Low
Luxembourg	Company/Sectoral	Decentralised	No	20-30%	80-90%	50-60%	High
Spain	Sectoral	Organised decentralised	Low	10-20%	70-80%	70-80%	Low
Switzerland	Sectoral	Organised decentralised	High	10-20%	..	40-50%	High
Germany	Sectoral	Organised decentralised	High	10-20%	50-60%	50-60%	High
Netherlands	Sectoral	Organised decentralised	High	10-20%	80-90%	80-90%	High
Austria	Sectoral	Organised decentralised	High	20-30%	90% or more	90% or more	High
Norway	Sectoral	Organised decentralised	High	30-40%	60-70%	60-70%	High
Denmark	Sectoral	Organised decentralised	High	60-70%	60-70%	80-90%	High
Sweden	Sectoral	Organised decentralised	High	60-70%	80-90%	90% or more	High
Slovenia	Sectoral	Centralised	No	10-20%	60-70%	60-70%	Low
Iceland	Sectoral	Centralised	No	80-90%	60-70%	80-90%	High
France	Sectoral	Centralised	Low	5-10%	70-80%	90% or more	Medium
Portugal	Sectoral	Centralised	Low	10-20%	30-40%	60-70%	Medium
Italy	Sectoral	Centralised	Low	20-30%	50-60%	80-90%	Low
Finland	Sectoral/National	Centralised	High	50-60%	70-80%	80-90%	High
Belgium	Sectoral/National	Centralised	High	50-60%	80-90%	90% or more	Medium

..: not available.

Note: Statistics on trade union density in the private sector are based on figures shown in the Annex Figure 4.A1.5, those on collective bargaining coverage on figures shown in Figure 4.5 and those on employer organisation density on figures shown in Panel A of Figure 4.4. Quality of labour relations is based on a ranking of the average national scores as shown in Figure 4.9 (only based on scores reported in Panel A of Figure 4.9 for Iceland and Israel).

a) In Australia the classification company/sector refers to the use of Modern Awards which are industry-wide regulations providing a fair and relevant minimum safety net of terms and conditions. A proper sector-level bargaining does not exist in Australia.

Source: OECD elaboration based on the OECD Policy Questionnaires, ICTWSS data and national sources (for further details see Figure 4.4, Figure 4.5, Figure 4.9 and Annex Figure 4.A1.6).

StatLink http://dx.doi.org/10.1787/888933478266

co-ordination is relatively strong (at least in certain sectors), and usually takes the form of pattern bargaining.

In countries where bargaining takes place predominantly at company level, collective bargaining coverage is typically below 20% (the Czech Republic and Ireland are the only exceptions). In these countries coverage tends to go hand in hand with trade union membership since having a trade union or worker representation at the workplace is a necessary condition to be able to negotiate a collective agreement. Higher level agreements (or similar regulation mechanisms such as "Modern Awards" in Australia or "Sectoral Employment Orders" in Ireland) can set some general minimum wage and work organisation standards and thus limit coverage erosion to some extent. Finally, among countries with dominant firm-level bargaining Japan stands out due to the significant and unique degree of co-ordination (*Shunto*).

Finally, in all countries where co-ordination is strong, trust is medium/high. Trust is indeed a key precondition for co-ordination to be effective. By contrast, the quality of labour relations is not systematically related to level of collective bargaining, with very high quality labour relations observed among both decentralised and centralised systems.

Conclusions

This chapter has documented the granularity, diversity and complexity of the different national collective bargaining systems. The analysis confirms the need to go beyond standard macroeconomic indicators of collective bargaining and account for the various components and practices of bargaining systems. To enable this comprehensive approach to inform the reassessment and updating of the OECD Jobs Strategy, a deeper understanding of the role that collective bargaining can play in promoting better labour market performance is required. For example, new research is required to assess the extent to which collective bargaining can promote job quality while sustaining high level of employment; how collective bargaining can promote labour market inclusion and reduce inequalities; and how collective bargaining can enhance labour market adjustments and resilience.

Looking ahead, the biggest challenge for collective bargaining will be to remain relevant in a rapidly changing world of work. The declining trend in collective bargaining coverage since 1985 (and the steeper decline in union membership) represents a major test of its continuing effectiveness, especially if these trends continue in the future. The last decades have shown that in many cases the alternative to collective bargaining is not individual bargaining but either state regulation or no bargaining at all, as only few employees can effectively negotiate their terms of employment with their employer. The potential consequences of the loss of relevance of collective bargaining, for instance in terms of higher inequalities, higher transaction costs and increased atomisation, have yet to be fully assessed.

Maintaining the effectiveness of collective bargaining means more than ensuring high coverage. It also requires adapting it to the changing challenges and finding the right balance between inclusiveness and flexibility. Full centralisation for instance can ensure high coverage and inclusiveness without however much flexibility. At the opposite extreme, full decentralisation can leave substantial flexibility to employers and unions in individual firms, but can result in low coverage and thus has clear limits in terms of inclusiveness. The chapter suggests that the articulation between sectoral and firm-level bargaining, the content of collective agreements at sectoral level, the use of extensions and of "escape valves", such as opening clauses and exemptions from extensions, are some of the key tools to focus on to ensure the right balance between flexibility and inclusiveness.

An important open question is what role governments can and should play in shaping the evolution of collective bargaining systems. Past experience shows that even apparently well-crafted reforms of collective bargaining may be partially or totally ineffective, if they fail to change on-the-ground practices and the overall bargaining culture. Alternatively, they may lead to major and often unintended shifts in bargaining behaviour (e.g. a total blockage of collective bargaining), even if the initial intention was only to change specific elements of the system.

One of the preconditions for an inclusive and flexible labour market is a high level of self-regulation, and hence state regulations need to leave space for bargaining, and local representation. Without worker representatives, even the most willing employer cannot sign an agreement. At the same time, a high degree of organisation among employers is equally important as small firms are often unable to negotiate and sign firm-level agreements due to time and capacity constraints. Furthermore, addressing the increasing individualisation of the employment relationship also in the context of the digital transformation and development of the digital platforms, may also require adjusting other rules and practices, such as competition regulations which, in some countries, prevent independent workers from bargaining collectively (as in a recent case that opposed unions and employers in the arts-information-media sector in the Netherlands). Some innovative solutions are already emerging. These include non-standard workers setting up new unions or associations (such as the Freelancers Union in the United States or platform workers groups emerging in Europe) and "traditional" unions (such as the German IG Metall with the FairCrowdWork or the German independent service union ver.di, among many) trying to improve the coverage of non-standard forms of work. Another new development is the use of social media to help workers to organise and effectively express individual and collective grievances. In some cases, even without any (or only limited) pressure from unions or workers, companies extend the terms set in collective agreements for standard workers to non-standard workers and/or engage voluntarily in collective bargaining to: i) gain recognition from social partners and improve labour relations; and ii) co-define the regulation of the sector and therefore limit state intervention. Little is known, however, about the prevalence and effectiveness to date of these and other emergent approaches.

As outlined in the chapter, co-ordination mechanisms across sectors and firms are also key elements for ensuring inclusiveness and flexibility. Yet, to the extent co-ordination largely relies on traditions, unwritten practices and personal relationships where trust is fundamental, it is difficult to clearly define specific policy measures to effectively promote it. This is an important topic for future study.

Future work should also focus more on understanding the increasing heterogeneity of collective bargaining systems within countries. The functioning, and the relevance, of collective bargaining can vary significantly within the same country across sectors but so far the extent, drivers and effects of this divergence have not been studied in details.

Finally, while future research should look further into the details of how collective bargaining works, it should also assess the collective bargaining systems as a whole and not simply as the sum of their components. Taking such an overarching view is particularly important when assessing different policy reforms, because of key interactions, trade-offs and complementarities between components of the bargaining system, as well as with other key labour market institutions.

Notes

1. Estimate based on collective bargaining coverage rate and total number of employees from OECD ALFS.
2. This is adapted from Visser (2016a).
3. The recent increase in trade union density in Spain during the early phase of the crisis is due to a composition effect: the destruction of jobs in 2008-10 was mainly in temporary employment, with low representation in union members. In fact, the number of members of unions declined faster than employment during the crisis.
4. Belgium has a quasi-Ghent system since the government also plays a role in administering unemployment insurance.
5. Collective bargaining coverage is usually computed as the number of employees covered by the collective agreement, divided by the total number of wage and salary-earners.
6. In Germany, in order to prevent membership losses the German employer associations have created a special form of membership whereby companies are not bound by collective agreements (so called OT (*Ohne Tarifbindung)-Mitgliedschaft*), see Schulten and Bispinck (2014).
7. Functional equivalent to extensions are legal provisions that make agreements valid for all firms and workers (such as in Iceland, Italy and Spain) but, in a way, also compulsory membership to an employer association as in Austria.
8. The increasing fuzziness around the definition of "employer", "employee" and "place of work" is a challenge for the capacity of extensions to be an effective tool to guarantee fairness and a level-playing field.
9. Visser (2017) reports that it was used only once in 2004 but the government had to back down under pressure.
10. The exemption is subject to have concluded a firm-level agreement with a union.
11. The IAB Establishment Panel data allow identifying firms engaging in multi- or single-employer collective bargaining and firms simply orienting themselves to a sectoral agreement.
12. In Australia a collective agreement continues to apply until it is terminated or replaced.
13. But this may be driven by some outliers, i.e. few agreements not renewed since many years.
14. As a result of unions' opposition to full decentralisation and employer associations (dominated by large firms) resistance to more competition in wage setting. And also because of lack of capacity and worker representation to negotiate firm-level agreements.
15. Occupational and regional (state, provincial) bargaining level play more minor role and are a variant of sector bargaining: regional level is relevant in Austria, Germany, Spain and France, but adds little to decentralisation in these countries, since bargained wage rates tend to be harmonised across regions in the same sector. There has been also recently a move towards integration of blue-and white collar agreements (Visser, 2013).
16. The hierarchy between standards principle states that: i) legislation and regulations take precedence over collective agreements; ii) national, cross-sector agreements take precedence over sector agreements, and sector over firm-level agreements.
17. In the case of Italy there is a tension between the rules set by social partners autonomously, which define a hierarchical relationship between bargaining levels, and jurisprudence, according to which a firm-level agreement can always depart from sector-level agreements.
18. Australia's enterprise level agreement arrangements are underpinned by a safety net of minimum employment entitlements and condition.
19. Except for Quebec where it always applies and is established in Labour Law.
20. The term "opening clause" comes from the German term *Öffnungsklausel* where, since the 1990s they have been increasingly used.
21. In the Netherlands, for instance, derogations are used with the stated aim of not undermining the currently favourable support for the extensions of sector agreements
22. And are still, under the German Law, only allowed when the bargaining partners explicitly make provisions for them.

23. Traxler (2003) developed the "contingency thesis of collective bargaining" which states that the performance of a collective bargaining system critically hinges on the ability to enforce the terms of agreements.

24. Gould and Hijzen (2016) provide evidence for the United States and European Union countries that increasing inequality undermines trust.

25. The section refers to "firm level" but bargaining can also happen at establishment or workplace level. No specific distinction is made in this section.

26. Moreover, in the European Union, European Works Councils can be established, upon the initiative of the employer or the employees, in multinationals operating in more than two countries of the European Economic Area if they employ at least 1 000 employees in the EEA and at least 150 employees in two member states.

27. An extensive review of the literature by Conchon (2011) of the impact of board-level employee representation on company performance (mainly based on studies in Germany) shows that there is no clear correlation (nor causal evidence) between the presence of board-level employee representatives and better or worse company performance.

28. For instance in Germany, in firms with more than 500 employees, more than 300 employees in Austria, more than 35 employees in Denmark, more than 30 employees in Norway and more than 25 employees in Sweden.

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Glossary

The purpose of this glossary is to provide a common understanding of the concepts as they are used in the chapter. Definitions in this glossary should not be taken as validated/legal ones in any specific country, indeed these concepts may differ across countries and industrial relations contexts.

- **Collective bargaining:** according to Article 2, ILO Convention No. 154, collective bargaining extends to all negotiations which take place between an employer, a group of employers or one or more employer organisations, on the one hand, and one or more worker organisations, on the other, for:

  a) determining working conditions and terms of employment; and/or

  b) regulating relations between employers and workers; and/or

  c) regulating relations between employers or their organisations and a worker organisation or worker organisations.

  Collective bargaining normally results in a written document (*collective agreement*) that is mutually binding for a stipulated time.

- **Cross-sectoral (or national) agreement:** collective bargaining agreement signed by peak-level social partner organisations, covering the entire economy, the entire private sector or several sectors.

- **Derogations from the law and/or from higher level agreements:** opening or derogation clauses which allow to set lower standards, i.e. less favourable conditions for workers, in a generalised way and not specifically related to economic difficulties (in this latter case see "opt-out").

- *Erga omnes:* literally in Latin, "towards everybody". In labour law it refers to the extension of agreements for all workers, not only for members of signatories unions. For cases where agreements are extended to workers in non-signatories firms, please, refer to "extension".

- **Extension or administrative extension:** extending the terms of collective agreements at sectoral level also to workers in firms which have not signed the agreement or are not affiliated to an employer organisation which signed the agreement. This also includes automatic extensions which therefore do not need a formal legal act but rely on standard administrative practice or jurisprudence (for instance, relating to the setting of minimum wages, working hours or social insurance contributions and entitlements).

- **Firm-level agreement:** company-level collective agreements between an employer and a trade union or between an employer and an employee body, elected and/or mandated by the company's staff.

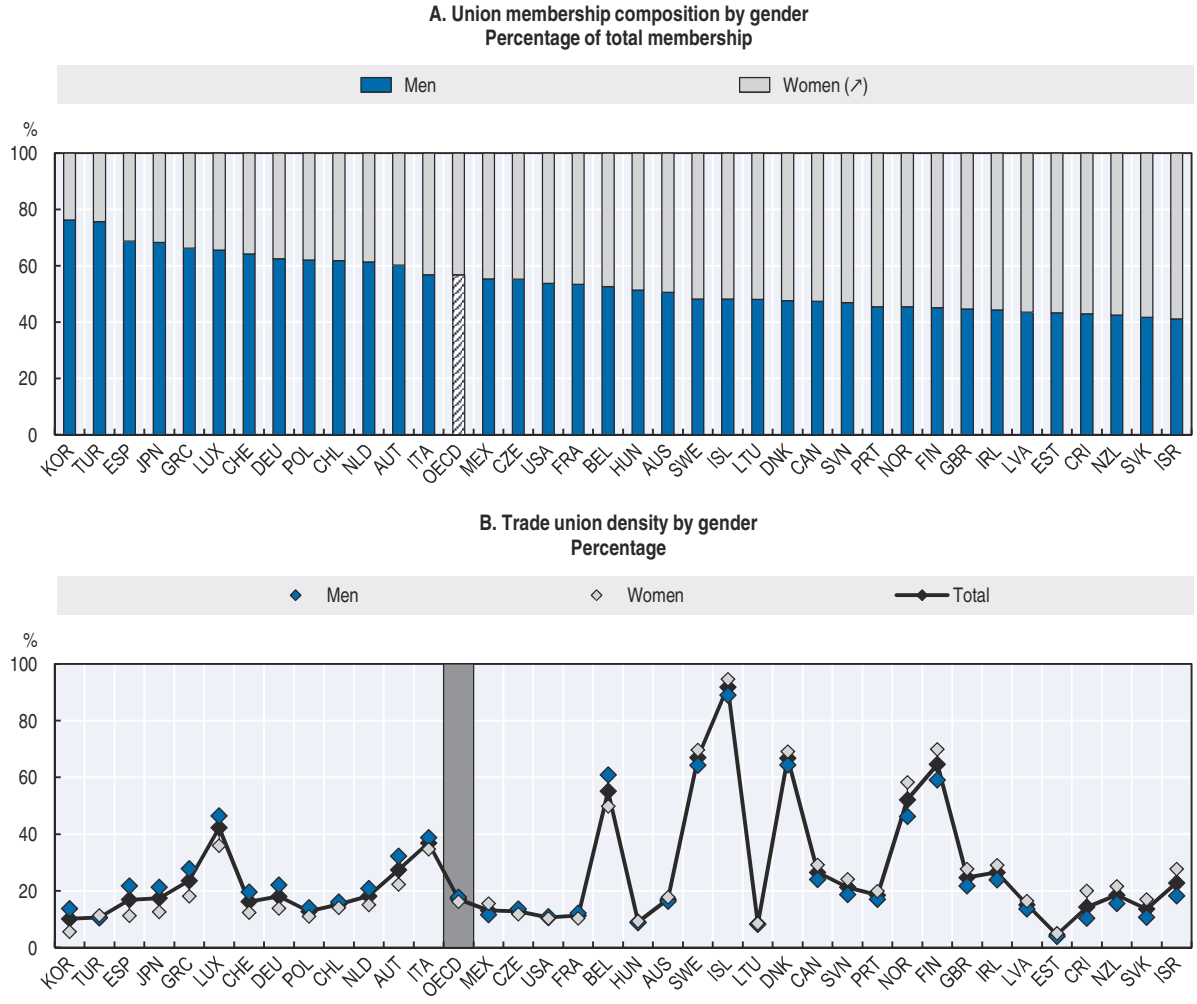
- **Favourability principle:** the most favourable conditions to employees apply in case of diverging standards in different agreements covering the same workers.

- **Opt-out clause:** temporary "inability to pay" clauses which allow the suspension or renegotiation of (part of) the agreement in cases of economic hardship.
- **Peace clause:** clause which states that unions which have signed the agreement, and their members, cannot lawfully strike on issues regulated in the agreement.
- **Retroactivity:** extension of the provisions of a newly signed agreement to a period before its actual signature or extension (usually to the period between the expiration of the previous agreement and the entry into force of the new one). Usually it implies the payment of arrears corresponding to the increase in negotiated wages.
- **Sectoral agreement:** collective bargaining agreement signed by trade unions and employer organisations which represent workers and employers of a specific sector (e.g. metal sector, chemical sector, etc.).
- **Social pact:** a peak-level deal (for instance at national level) over a comprehensive public policy package negotiated between governments, trade unions and/or employer's organisations.
- **Social partners:** representatives of employers and workers, usually employer organisations and trade unions.
- **Ultra-activity or after-life:** validity of the agreement beyond its termination date.
- **Wage co-ordination:** co-ordination between and/or within trade unions and/or employer organisations (sometimes with some role of the government) to set formal or informal objectives on wage increases or wage freezes/cuts. Wage co-ordination can take different forms, i.e. "pattern bargaining", where first a sector or a region starts and the others follow; formal or informal inter- or intra-associational guidelines to follow when negotiating; or wage increases or cuts agreed with a social pact or national agreement.
- **Work council:** official firm-level body which represents workers (often directly elected by employees and different from unions or union branches at firm level).

ANNEX 4.A1

Further material

Figure 4.A1.1. **Trade union membership by gender, 2015 or latest year available**[a]



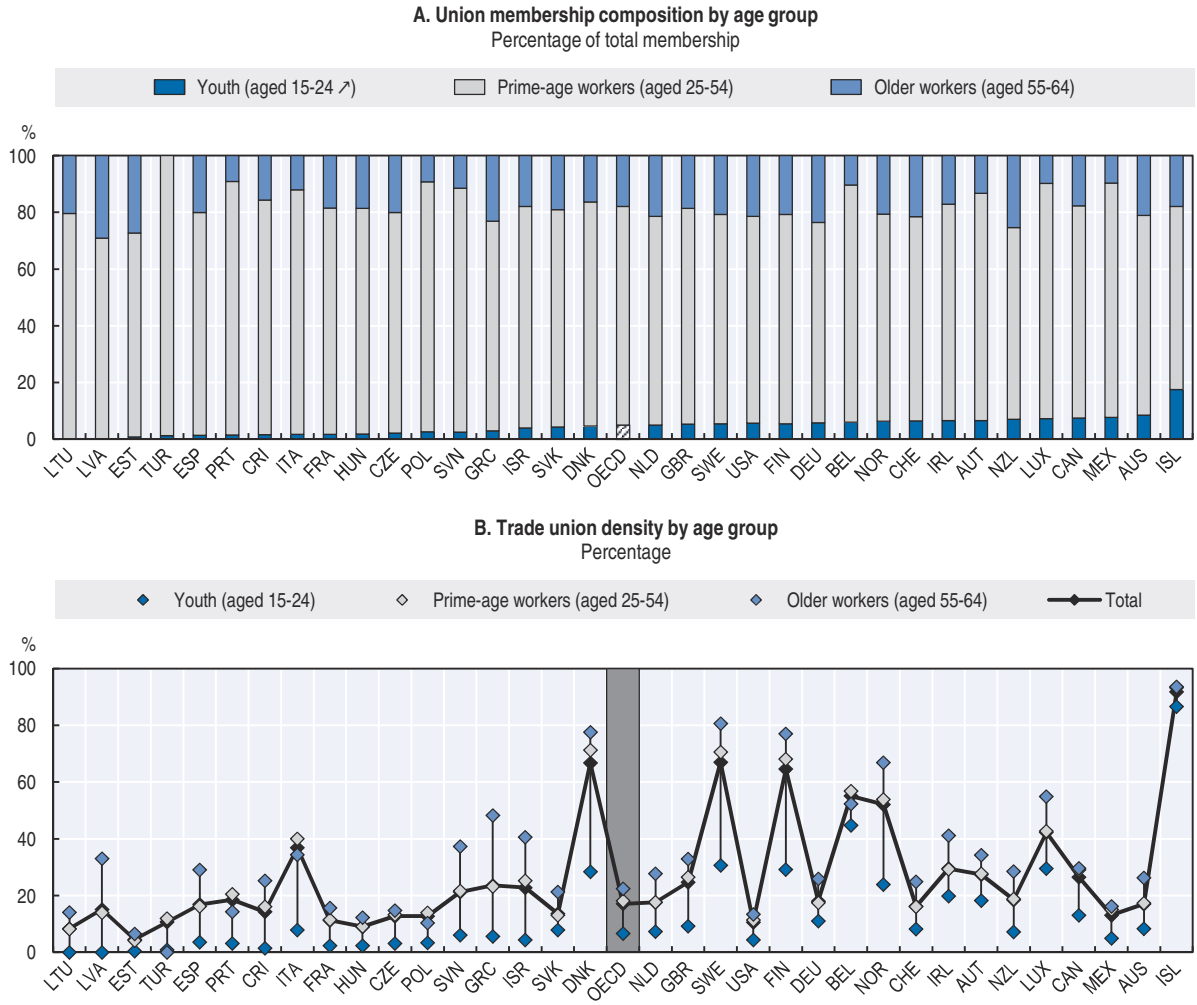
Note: Trade union density by gender reported in this figure has been adjusted for the overall trade union density shown in Figure 4.2 by using the share of each gender in total union membership and total number of employees. OECD average is the weighted average of the 35 OECD countries shown. Estimates based on the European Social Survey (due to size of the sample or of subcategories in certain countries) may be imprecise and are only reproduced to illustrate common patterns across OECD and accession countries.

a) 2004 for Luxembourg, 2008 for Greece, Latvia and Turkey, 2011 for Germany and the Netherlands, 2012 for Israel, Italy, Poland, Portugal and the Slovak Republic, 2013 for Australia, Austria, Belgium, the Czech Republic, Denmark, Finland, France, Lithuania, Norway, Slovenia, Spain and Switzerland, and 2014 for Korea and New Zealand.

Source: OECD estimates based on the European Social Survey (ESS) for Austria, Belgium, the Czech Republic, Denmark, Greece, Israel, Italy, Latvia, Lithuania, Luxembourg, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Switzerland and Turkey, Labour Force Survey for Canada, administrative data published by the *Unidad de Análisis Estadístico, Dirección del Trabajo* for Chile, the *Encuesta Nacional de Hogares* (ENAHO) provided by the *Instituto Nacional de Estadística y Censos* (INEC) for Costa Rica, *Statistiques sur les ressources et conditions de vie* (dispositif SRCV) for France, the German Socio-Economic Panel (SOEP) for Germany, the *Encuesta Nacional de Ocupación y Empleo* (ENOE) for Mexico, national results based on the Employee Earnings, Benefits and Trade Union Membership for Australia, Labour Force Survey (provided by Statistics Estonia) for Estonia, the 2013 edition of "Organization of wage and salary earners, the rate of organisation, the member structure of trade unions" published by the Ministry of Economic Affairs and Employment for Finland, supplements of the Labour Force Survey (provided by the Hungarian Central Statistical Office) for Hungary, Labour Force Survey (data provided by Statistics Iceland) for Iceland, the module on union membership of the Quarterly National Household Survey (QNHS) for Ireland, the Basic Survey on Labor Unions for Japan, administrative data published by the Ministry of Employment and Labor (MoEL) for Korea, Labour Force Survey for the Netherlands, administrative data from the Unions and Union Membership in New Zealand (data gratefully provided by the Centre for Labour, Employment and Work, School of Management, Victoria University of Wellington) for New Zealand, Labour Force Survey (estimates gratefully provided by *Forskningsstiftelsen Fafo*) for Norway, Labour Force Survey (data provided by Statistics Sweden) for Sweden, Labour Force Survey (estimates from the Department for Business, Innovation & Skills) for the United Kingdom and the Current Population Survey (CPS) for the United States.

StatLink http://dx.doi.org/10.1787/888933478054

Figure 4.A1.2. **Trade union membership by age group, 2015 or latest year available**[a]



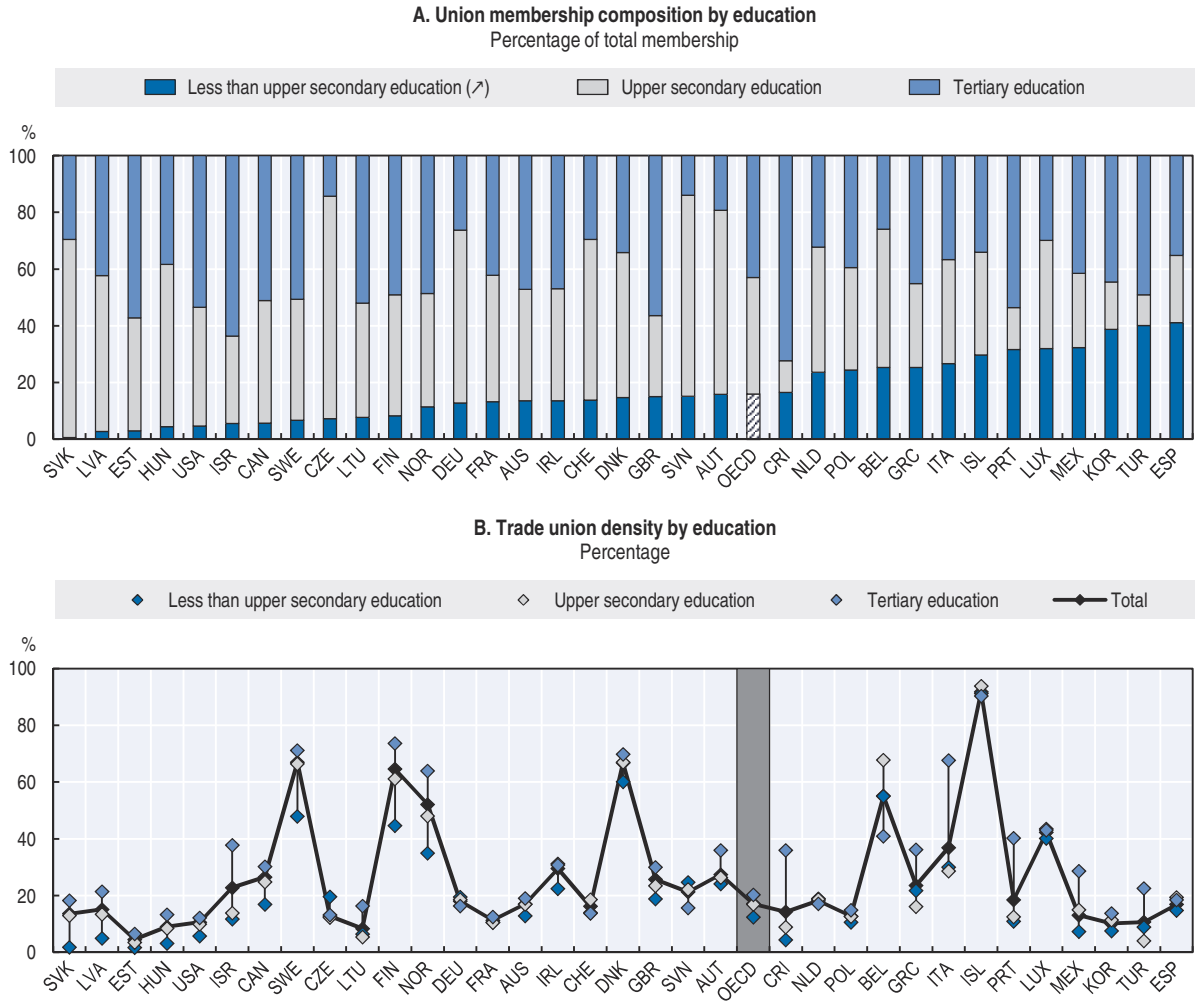
Note: Trade union density by age group reported in this figure has been adjusted for the overall trade union density shown in Figure 4.2 by using the share of each age group in total union membership and total number of employees. OECD average is the weighted average of the 32 OECD countries shown (not including Chile, Japan and Korea). Estimates based on the European Social Survey (due to size of the sample or of subcategories in certain countries) may be imprecise and are only reproduced to illustrate common patterns across OECD and accession countries.

a) 2004 for Luxembourg, 2008 for Greece, Latvia and Turkey, 2011 for Germany and the Netherlands, 2012 for Israel, Italy, Poland, Portugal and the Slovak Republic, 2013 for Australia, Austria, Belgium, the Czech Republic, Denmark, Finland, France, Ireland, Lithuania, Norway, Slovenia, Spain and Switzerland and 2014 for New Zealand.

Source: OECD estimates based on the European Social Survey (ESS) for Austria, Belgium, the Czech Republic, Denmark, Greece, Ireland, Israel, Italy, Latvia, Lithuania, Luxembourg, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Switzerland and Turkey, Labour Force Survey for Canada, *Encuesta Nacional de Hogares* (ENAHO) provided by the *Instituto Nacional de Estadística y Censos* (INEC) for Costa Rica, *Statistiques sur les ressources et conditions de vie* (dispositif SRCV) for France, German Socio-Economic Panel (SOEP) for Germany, *Encuesta Nacional de Ocupación y Empleo* (ENOE) for Mexico, national results based on the Employee Earnings, Benefits and Trade Union Membership for Australia, Labour Force Survey (provided by Statistics Estonia) for Estonia, Labour Force Survey (provided by Statistics Finland) for Finland, supplements of the Labour Force Survey (provided by the Hungarian Central Statistical Office) for Hungary, Labour Force Survey (data provided by Statistics Iceland) for Iceland, Labour Force Survey for the Netherlands, administrative data from the Unions and Union Membership in New Zealand (data gratefully provided by the Centre for Labour, Employment and Work, School of Management, Victoria University of Wellington) for New Zealand, Labour Force Survey (estimates gratefully provided by *Forskningsstiftelsen Fafo*) for Norway, Labour Force Survey (data provided by Statistics Sweden) for Sweden, Labour Force Survey (estimates from the Department for Business, Innovation & Skills) for the United Kingdom and the Current Population Survey (CPS) for the United States.

StatLink http://dx.doi.org/10.1787/888933478062

Figure 4.A1.3. **Trade union membership by education level, 2015 or latest available year**[a]



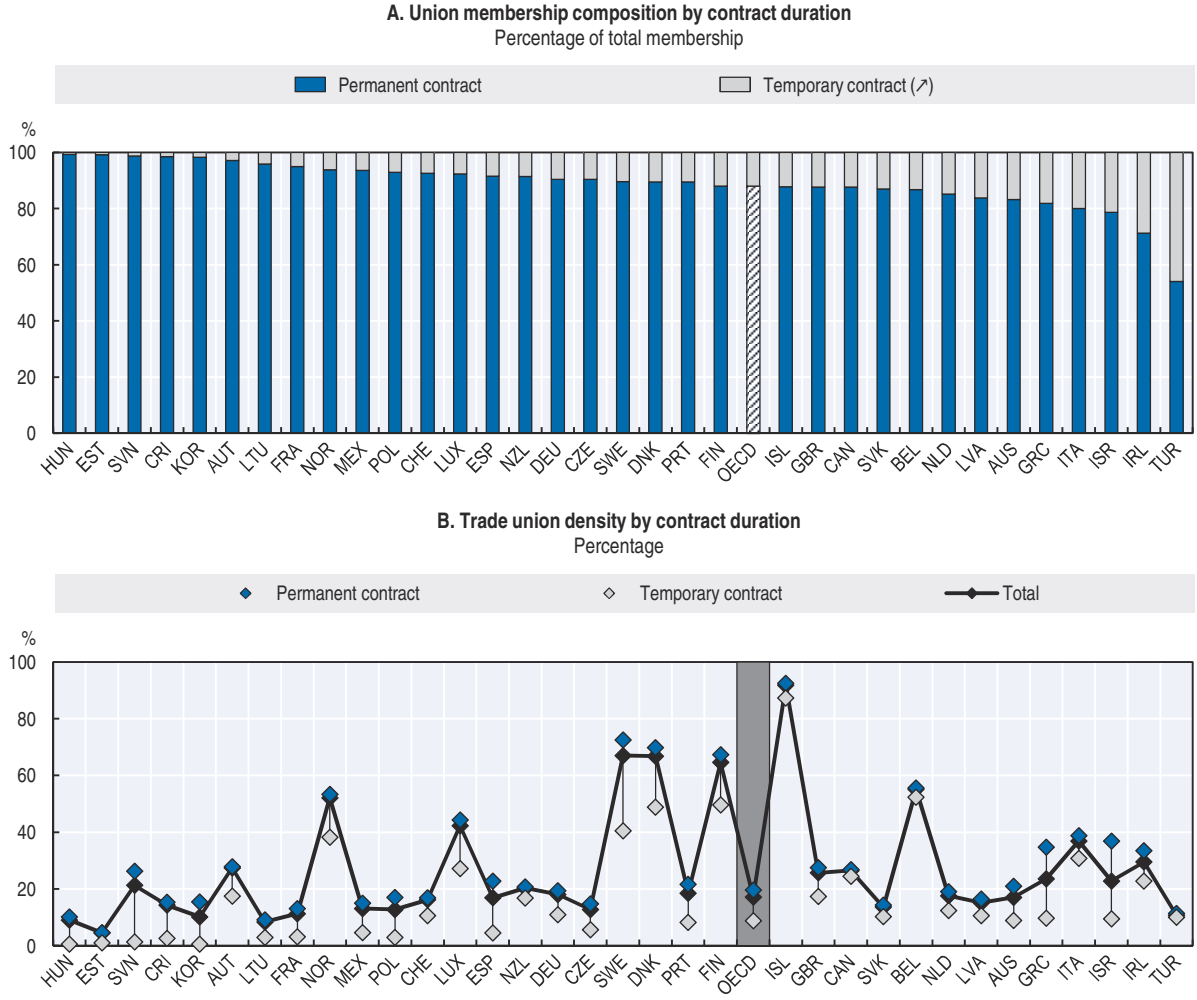
Note: Trade union density by education reported in this figure has been adjusted for the overall trade union density shown in Figure 4.2 by using the share of each education level in total union membership and total number of employees. OECD average is the weighted average of the 32 OECD countries shown (not including Chile, Japan and New Zealand). Estimates based on the European Social Survey (due to size of the sample or of subcategories in certain countries) may be imprecise and are only reproduced to illustrate common patterns across OECD and accession countries.

a) 2004 for Luxembourg, 2008 for Greece, Latvia and Turkey, 2011 for Germany and the Netherlands, 2012 for Israel, Italy, Poland, Portugal and the Slovak Republic, 2013 for Australia, Austria, Belgium, the Czech Republic, Denmark, Finland, France, Ireland, Lithuania, Norway, Slovenia, Spain, Switzerland and the United Kingdom and 2014 for Korea and New Zealand.

Source: OECD estimates based on the European Social Survey (ESS) for Austria, Belgium, the Czech Republic, Denmark, Greece, Ireland, Israel, Italy, Latvia, Lithuania, Luxembourg, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Switzerland, Turkey and the United Kingdom, Household, Income and Labour Dynamics in Australia (HILDA) Survey for Australia, Labour Force Survey for Canada, *Encuesta Nacional de Hogares* (ENAHO) provided by the *Instituto Nacional de Estadística y Censos* (INEC) for Costa Rica, *Statistiques sur les ressources et conditions de vie* (dispositif SRCV) for France, German Socio-Economic Panel (SOEP) for Germany, results from the August Supplement of the Economically Active Population Survey (EAPS) published by the Korean Labor Institute (KLI) for Korea, *Encuesta Nacional de Ocupación y Empleo* (ENOE) for Mexico, national results based on the Employee Earnings, Benefits and Trade Union Membership for Australia, Labour Force Survey (provided by Statistics Estonia) for Estonia, Labour Force Survey (provided by Statistics Finland) for Finland, supplements of the Labour Force Survey (provided by the Hungarian Central Statistical Office) for Hungary, Labour Force Survey (data provided by Statistics Iceland) for Iceland, Labour Force Survey for the Netherlands, Labour Force Survey (estimates gratefully provided by *Forskningsstiftelsen Fafo*) for Norway, Labour force Survey (data provided by Statistics Sweden) for Sweden and the Current Population Survey (CPS) for the United States.

StatLink http://dx.doi.org/10.1787/888933478072

Figure 4.A1.4. **Trade union membership by contract duration, 2015 or latest available year**[a]



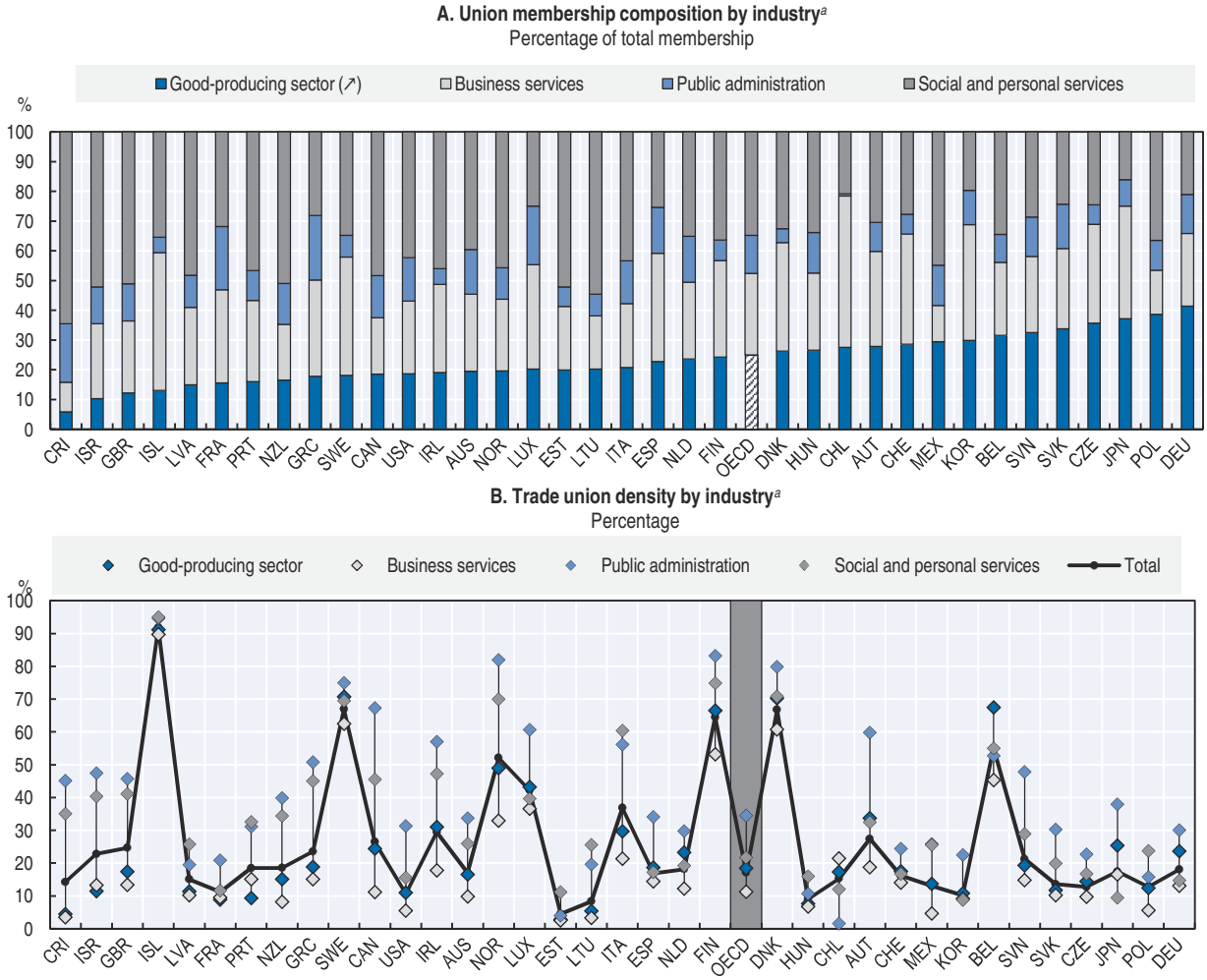
Note: Trade union density by contract duration reported in this figure has been adjusted for the overall trade union density shown in Figure 4.2 by using the share of each type of contract by duration in total union membership and total number of employees. OECD average is the weighted average of the 32 OECD countries shown (not including Chile, Japan and the United States). Estimates based on the European Social Survey (due to size of the sample or of subcategories in certain countries) may be imprecise and are only reproduced to illustrate common patterns across OECD and accession countries.

a) 2004 for Luxembourg, 2008 for Greece, Latvia and Turkey, 2011 for Germany, 2012 for Israel, Italy, New Zealand, Poland, Portugal and the Slovak Republic, 2013 for Australia, Austria, Belgium, the Czech Republic, Denmark, Finland, France, Ireland, Lithuania, the Netherlands, Norway, Slovenia, Spain, Switzerland and the United Kingdom and 2014 for Korea.

Source: OECD estimates based on the European Social Survey (ESS) for Austria, Belgium, the Czech Republic, Denmark, Greece, Ireland, Israel, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Switzerland, Turkey and the United Kingdom, Household, Income and Labour Dynamics in Australia (HILDA) Survey for Australia, Labour Force Survey for Canada, *Encuesta Nacional de Hogares* (ENAHO) provided by the *Instituto Nacional de Estadística y Censos* (INEC) for Costa Rica, *Statistiques sur les ressources et conditions de vie* (dispositif SRCV) for France, German Socio-Economic Panel (SOEP) for Germany, *Encuesta Nacional de Ocupación y Empleo* (ENOE) for Mexico, national results based on the Labour Force Survey (provided by Statistics Estonia) for Estonia, Labour Force Survey (provided by Statistics Finland) for Finland, supplements of the Labour Force Survey (provided by the Hungarian Central Statistical Office) for Hungary, Labour Force Survey (data provided by Statistics Iceland) for Iceland, results from the August Supplement of the Economically Active Population Survey (EAPS) published by the Korean Labour Institute (KLI) for Korea, results from the Survey of Working Life (SoWL) for New Zealand, Labour Force Survey (estimates gratefully provided by *Forskningsstiftelsen Fafo*) for Norway and Labour force Survey (data provided by Statistics Sweden) for Sweden.

StatLink http://dx.doi.org/10.1787/888933478086

Figure 4.A1.5. **Trade union membership by industry, 2015 or latest available year**[a]



Note: Trade union density by industry reported in this figure has been adjusted for the overall trade union density shown in Figure 4.2 by using the share of each industry in total union membership and total number of employees. OECD average is the weighted average of the 34 OECD countries shown (not including Turkey). Estimates based on the European Social Survey (due to size of the sample or of subcategories in certain countries) may be imprecise and are only reproduced to illustrate common patterns across OECD and accession countries.

a) 2004 for Luxembourg, 2008 for Greece and Latvia, 2011 for Germany and the Netherlands, 2012 for Israel, Italy, Poland, Portugal and the Slovak Republic, 2013 for Australia, Austria, Belgium, the Czech Republic, Denmark, Finland, France, Ireland, Lithuania, Norway, Slovenia, Spain and Switzerland and 2014 for Korea and New Zealand.

b) "Good-producing sector" refers to manufacturing (including mining and utilities) and construction; "Business services" refers to commerce and hospitality, transport and communication and financial services and real estate; and "Other services" refers to remaining social and personal services excepted activities of households as employers and activities of extraterritorial organisations.

Source: OECD estimates based on the European Social Survey (ESS) for Austria, Belgium, the Czech Republic, Denmark, Greece, Ireland, Israel, Italy, Latvia, Lithuania, Luxembourg, Poland, Portugal, the Slovak Republic, Slovenia, Spain and Switzerland, Labour Force Survey for Canada, administrative data published by the Unidad de Análisis Estadístico, Dirección del Trabajo for Chile, *Encuesta Nacional de Hogares* (ENAHO) provided by *the Instituto Nacional de Estadística y Censos* (INEC) for Costa Rica, *Statistiques sur les ressources et conditions de vie* (dispositif SRCV) for France, German Socio-Economic Panel (SOEP) for Germany, *Encuesta Nacional de Ocupación y Empleo* (ENOE) for Mexico, national results based on the Employee Earnings, Benefits and Trade Union Membership for Australia, Labour Force Survey (provided by Statistics Estonia) for Estonia, Labour Force Survey (provided by Statistics Finland) for Finland, supplements of the Labour Force Survey (provided by the Hungarian Central Statistical Office) for Hungary, Labour Force Survey (data provided by Statistics Iceland) for Iceland, the Basic Survey on Labor Unions for Japan, results from the August Supplement of the Economically Active Population Survey (EAPS) published by the Korean Labour Institute (KLI) for Korea, Labour Force Survey for the Netherlands, administrative data from the Unions and Union Membership in New Zealand (data gratefully provided by the Centre for Labour, Employment and Work, School of Management, Victoria University of Wellington) for New Zealand, Labour Force Survey (estimates gratefully provided by *Forskningsstiftelsen Fafo*) for Norway, Labour force Survey (data provided by Statistics Sweden) for Sweden, Labour Force Survey (estimates from the Department for Business, Innovation & Skills) for the United Kingdom and the Current Population Survey (CPS) for the United States.

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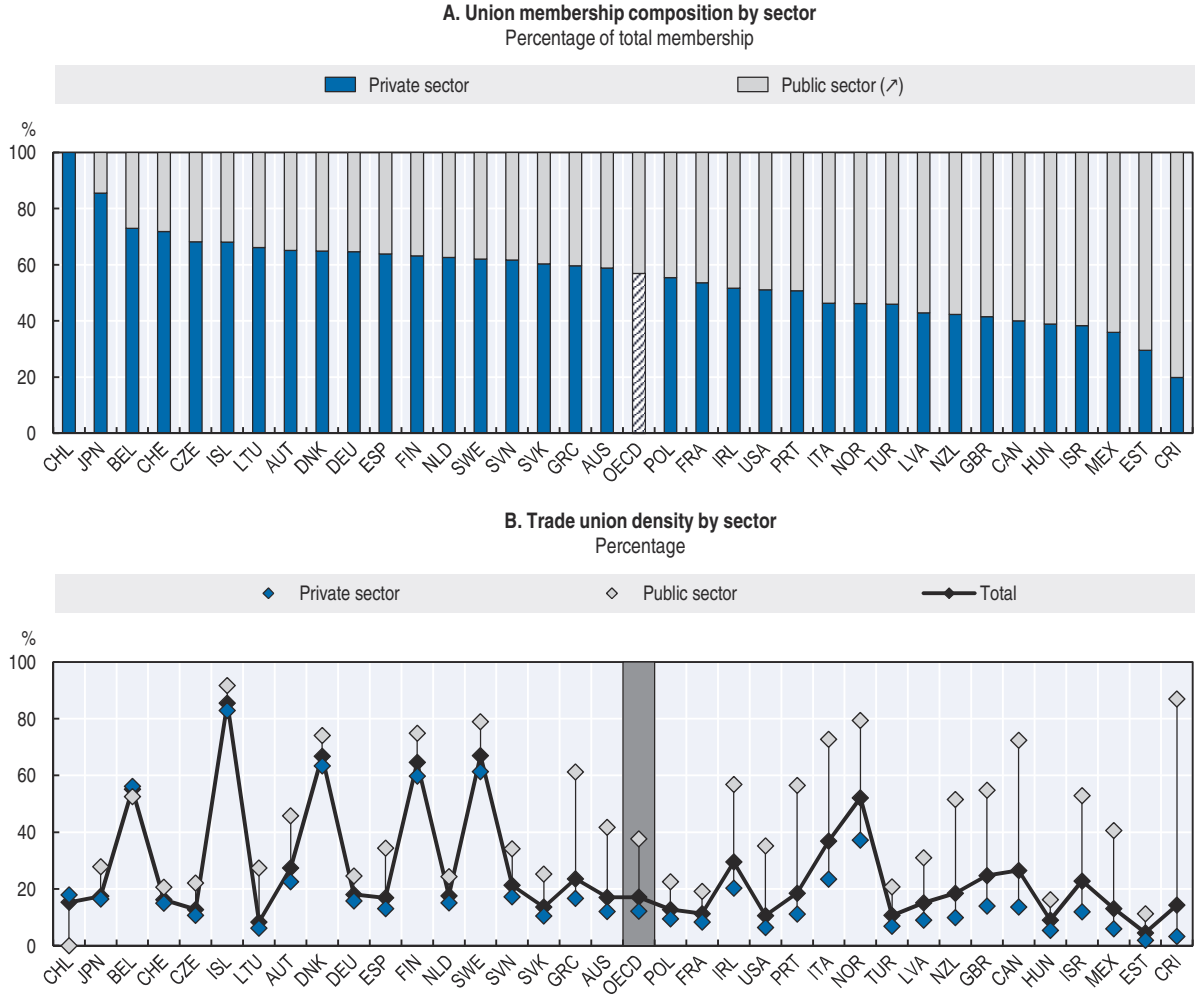
Figure 4.A1.6. **Trade union membership by sector, 2015 or latest available year**[a]



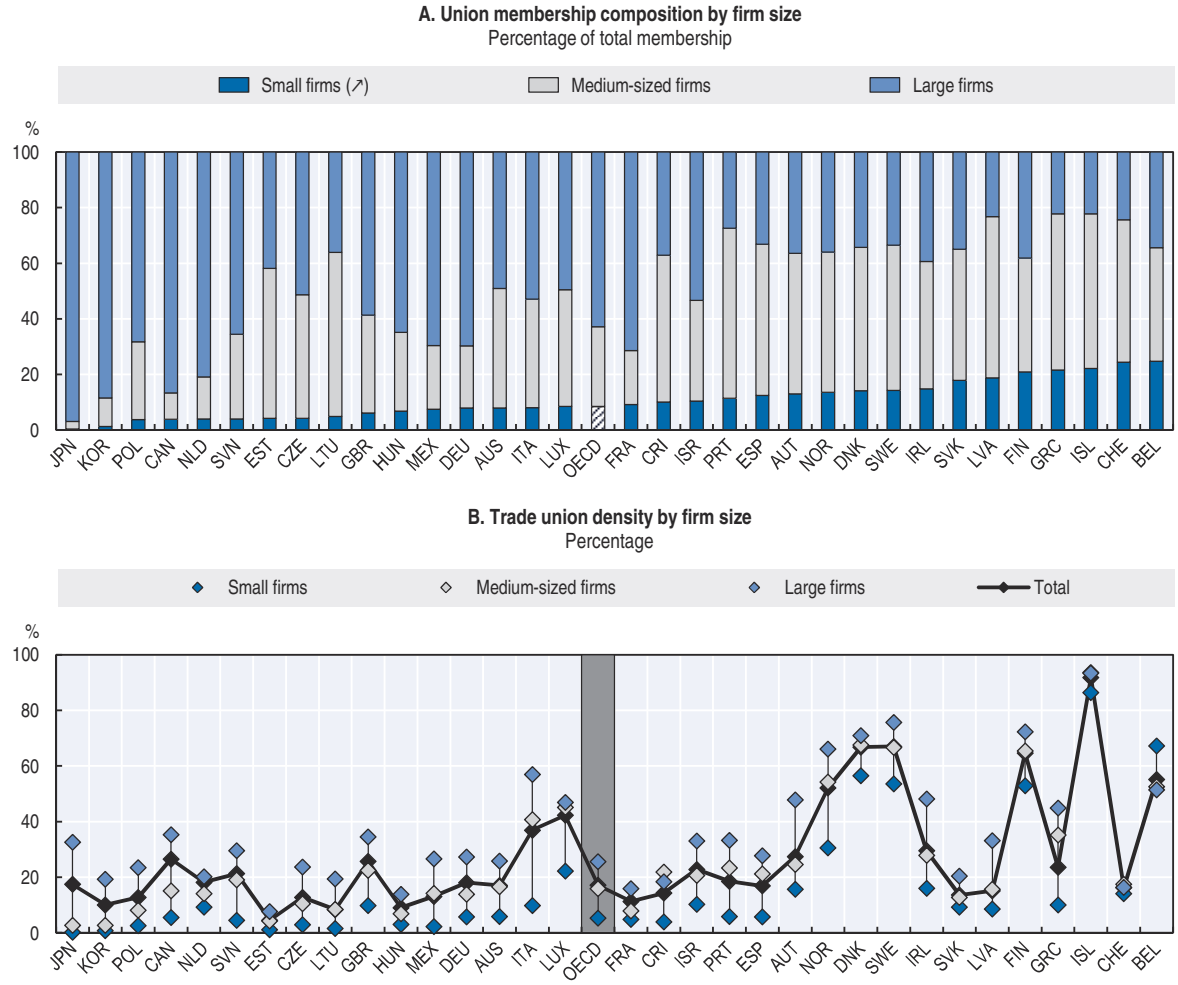
Note: Trade union density by sector (public and private) reported in this figure has been adjusted for the overall trade union density shown in Figure 4.2 by using the share of each sector in total union membership and total number of employees. OECD average is the weighted average of the 33 OECD countries shown (not including Korea and Luxembourg). Estimates based on the European Social Survey (due to size of the sample or of subcategories in certain countries) may be imprecise and are only reproduced to illustrate common patterns across OECD and accession countries.

a) 2008 for Greece, Latvia and Turkey, 2011 for Germany, 2012 for Iceland, Israel, Italy, Poland, Portugal and the Slovak Republic, 2013 for Australia, Austria, Belgium, the Czech Republic, Denmark, Finland, France, Ireland, Lithuania, the Netherlands, Norway, Slovenia, Spain and Switzerland and 2014 for New Zealand.

Source: OECD estimates based on the European Social Survey (ESS) for Austria, Belgium, the Czech Republic, Denmark, Greece, Iceland, Ireland, Israel, Italy, Latvia, Lithuania, the Netherlands, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Switzerland and Turkey, Labour Force Survey for Canada, administrative data published by the *Unidad de Análisis Estadístico, Dirección del Trabajo* for Chile, *Statistiques sur les ressources et conditions de vie* (dispositif SRCV) for France, German Socio-Economic Panel (SOEP) for Germany, *Encuesta Nacional de Ocupación y Empleo* (ENOE) for Mexico, national results based on the Employee Earnings, Benefits and Trade Union Membership for Australia, administrative data from the Ministry of Labor and Social Security for Costa Rica, Labour Force Survey (provided by Statistics Estonia) for Estonia, the 2013 edition of "Organisation of wage and salary earners, the rate of organisation, the member structure of trade unions" published by the Ministry of Economic Affairs and Employment for Finland, supplements of the Labour Force Survey (provided by the Hungarian Central Statistical Office) for Hungary, Basic Survey on Labor Unions for Japan, Labour Force Survey for the Netherlands, administrative data from the Unions and Union Membership in New Zealand (data gratefully provided by the Centre for Labour, Employment and Work, School of Management, Victoria University of Wellington) for New Zealand, Labour Force Survey (estimates gratefully provided by *Forskningsstiftelsen Fafo*) for Norway, Labour force Survey (data provided by Statistics Sweden) for Sweden, Labour Force Survey (estimates from the Department for Business, Innovation & Skills) for the United Kingdom and the Current Population Survey (CPS) for the United States.

StatLink http://dx.doi.org/10.1787/888933478107

Figure 4.A1.7. **Trade union membership by firm size,[a] 2015 or latest available year[b]**



Note: Trade union density by firm size reported in this figure has been adjusted for the overall trade union density shown in Figure 4.2 by using the share of each size of firms in total union membership and total number of employees. OECD average is the weighted average of the 31 OECD countries shown (not including Chile, New Zealand, Turkey and the United States). Estimates based on the European Social Survey (due to size of the sample or of subcategories in certain countries) may be imprecise and are only reproduced to illustrate common patterns across OECD and accession countries.

a) "Small firms", "Medium-sized firms" and "large firms" refers, respectively, to firms with fewer than ten employees, 10 to 99 employees and 100 or more employees, except for Canada (respectively, to fewer than 20 employees, 20 to 99 employees and 100 or more employees), France and Hungary (respectively, to fewer than 11 employees, 11 to 49 employees and 50 or more employees), Finland (respectively, to fewer than 10 employees, 10 to 49 employees and 50 or more employees), Germany (respectively, to fewer than 20 employees, 20 to 199 employees and 200 or more employees), Japan (respectively, to fewer than 30 employees, 30 to 99 employees and 100 or more employees) and Mexico (respectively, to fewer than 11 employees, 11 to 50 employees and 51 or more employees). Statistics refers to the size of the local unit for Australia, Finland, Hungary, Iceland, Mexico and Sweden.

b) 2004 for Luxembourg, 2008 for Greece and Latvia, 2011 for Germany and the Netherlands, 2012 for Israel, Italy, Korea, Poland, Portugal and the Slovak Republic, 2013 for Australia, Austria, Belgium, the Czech Republic, Denmark, Finland, France, Ireland, Lithuania, Norway, Slovenia, Spain, Switzerland and the United Kingdom.

Source: OECD estimates based on the European Social Survey (ESS) for Austria, Belgium, the Czech Republic, Denmark, Greece, Ireland, Israel, Italy, Latvia, Lithuania, Luxembourg, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Switzerland and the United Kingdom, Household, Income and Labour Dynamics in Australia (HILDA) Survey for Australia, Labour Force Survey for Canada, *Encuesta Nacional de Hogares* (ENAHO) provided by the *Instituto Nacional de Estadística y Censos* (INEC) for Costa Rica, *Statistiques sur les ressources et conditions de vie* (dispositif SRCV) for France, German Socio-Economic Panel (SOEP) for Germany, the Korea Labor & Income Panel Study (KLIPS) for Korea, *Encuesta Nacional de Ocupación y Empleo* (ENOE) for Mexico, national results based on the Labour Force Survey (provided by Statistics Estonia) for Estonia, Labour Force Survey (provided by Statistics Finland) for Finland, supplements of the Labour Force Survey (provided by the Hungarian Central Statistical Office) for Hungary, Labour Force Survey (data provided by Statistics Iceland) for Iceland, Basic Survey on Labor Unions for Japan, Labour Force Survey for the Netherlands, Labour Force Survey (estimates gratefully provided by *Forskningsstiftelsen Fafo*) for Norway and Labour force Survey (data provided by Statistics Sweden) for Sweden.

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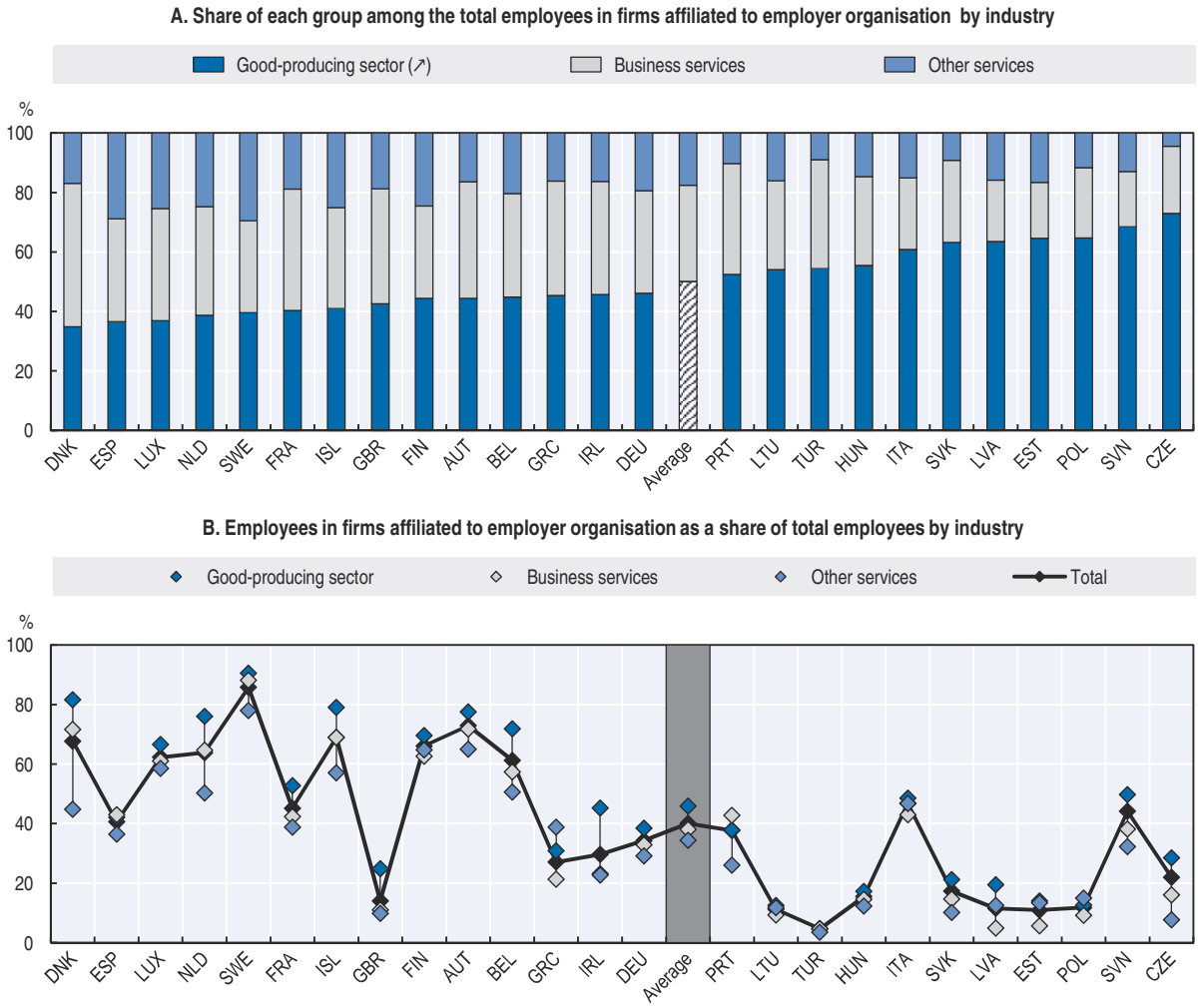
Figure 4.A1.8. **Employer organisation membership by industry,[a] 2013**



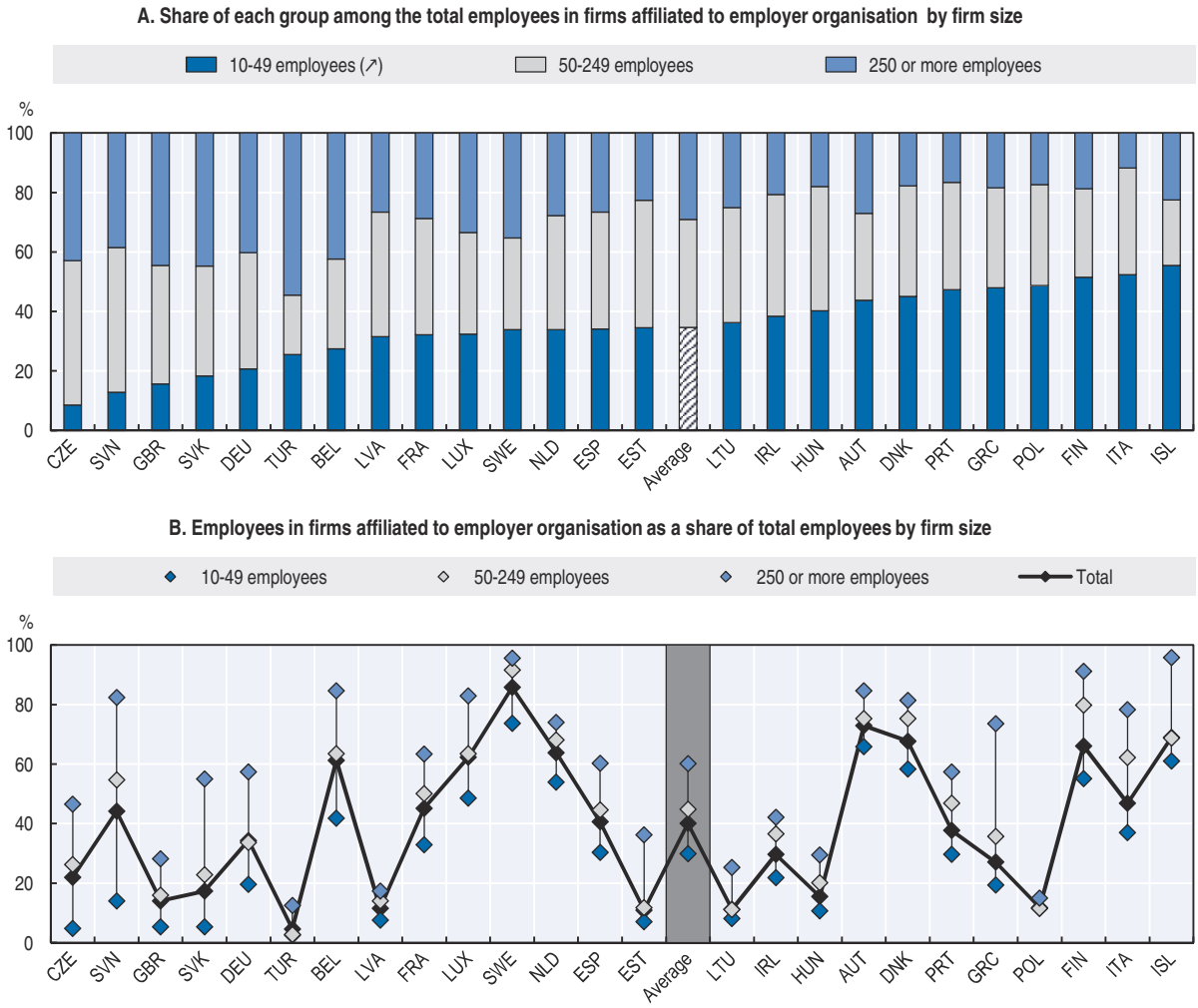
Note: Statistics refer to all establishments of the private sector with ten or more employees in all economic sectors except agriculture, activities of households as employers and activities of extraterritorial organisations. Unweighted average of 24 OECD countries (not including Australia, Canada, Chile, Israel, Japan, Korea, Mexico, New Zealand, Norway, Switzerland and the United States).

a) Good-producing sector refers to manufacturing (including mining and utilities) and construction; business services refers to commerce and hospitality, transport and communication and financial services and real estate; other services refers to remaining social and personal services excepted activities of households as employers and activities of extraterritorial organisations. .

Source: OECD calculations based on the third Eurofound European Company Survey (ECS 2013).

StatLink http://dx.doi.org/10.1787/888933478122

Figure 4.A1.9. **Employer organisation membership by firm size, 2013**



Note: Statistics refer to all establishments of the private sector with ten or more employees in all economic sectors except agriculture, activities of households as employers and activities of extraterritorial organisations. Average is the unweighted average of the 24 OECD countries shown (not including Australia, Canada, Chile, Israel, Japan, Korea, Mexico, New Zealand, Norway, Switzerland and the United States).

Source: OECD calculations based on the third Eurofound European Company Survey (ECS 2013).

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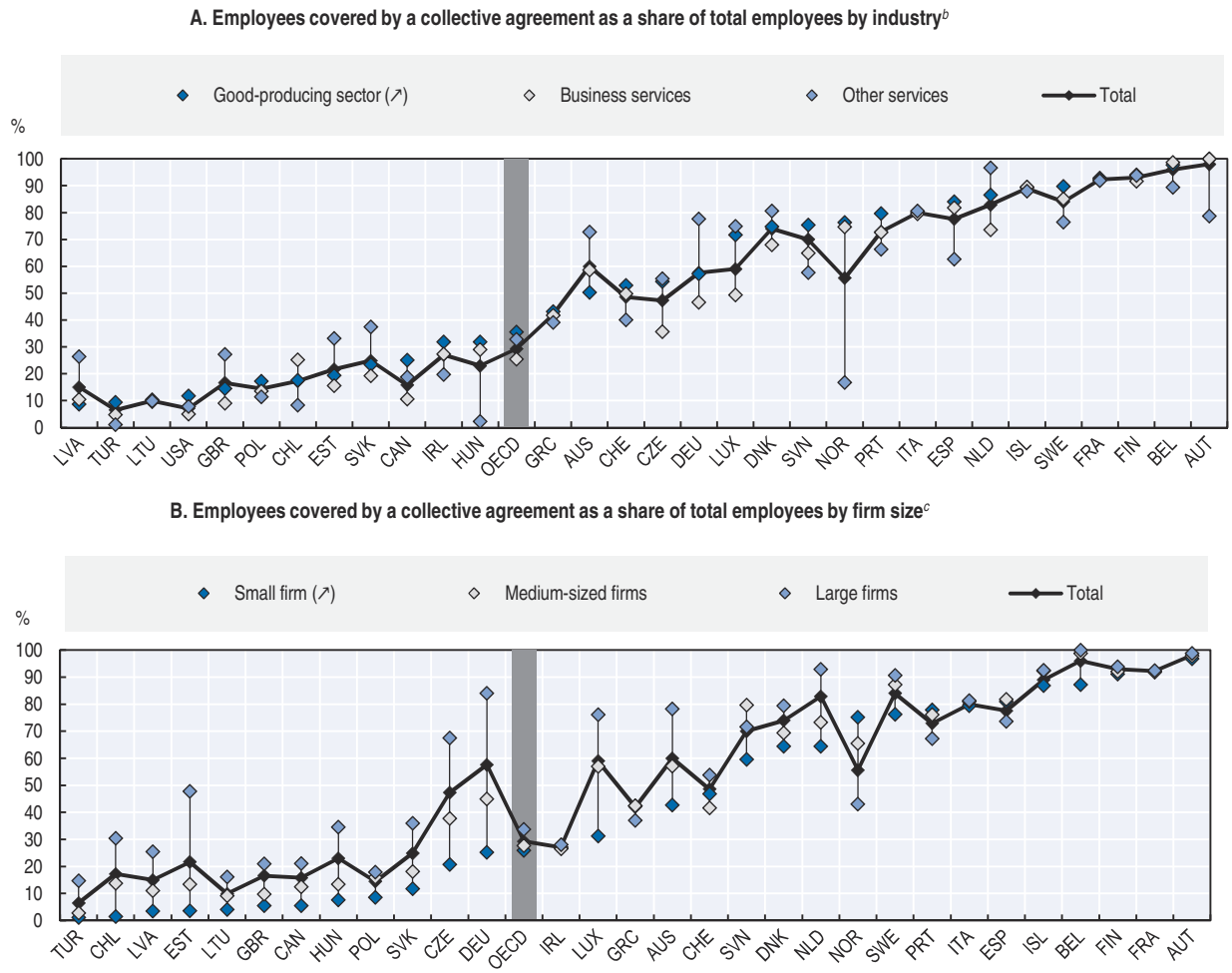
Figure 4.A1.10. **Collective agreement coverage by industry and firm size, latest year available**[a]



Note: Statistics refer to the private sector only and to all firms for Australia and Canada excepted firms with less than 5 employees for Chile, firms with less than 10 employees for Belgium, Greece, Italy, Slovenia and Sweden, and firms with less than 11 employees for other countries. OECD is the weighted average of the 30 OECD countries shown (not including Israel, Japan, Korea, Mexico and New Zealand) in Panel A and of the 29 OECD countries shown (not including countries previously listed and the United States) in Panel B.

a) Statistics based on 2013 data for Belgium, Greece, Iceland, Ireland, Italy, Slovenia and Sweden; 2014 for Chile and all other European countries; 2015 for Canada and the United States; and 2016 for Australia.

b) Good-producing sector includes mining, manufacturing and utilities; business services includes trade, transport, communication, accommodation and food services, business and real estate services; and other services refers to remaining social and personal services excepted activities of households as employers and activities of extraterritorial organisations.

c) "Small firms" refers to firms with fewer than 50 employees for Australia, 1 to 9 employees for Canada, 10 to 49 employees for Belgium, Greece, Iceland, Ireland, Italy, Slovenia and Sweden, and 11 to 49 employees for all other countries. "Medium-sized firms" refers to firms with 50 to 99 employees for Australia, 10 to 99 employees for Canada, 50 to 199 employees for Chile, and 50 to 249 employees for all other countries. "Large firms" refers to firms with 100 employees or more for Australia and Canada, 200 employees or more for Chile, and 250 employees or more for all other countries.

Source: OECD calculations based on the Survey of Employee Earnings and Hours (EEH) for Australia, Labour Force Survey for Canada, administrative data for Chile, the third Eurofound European Company Survey (ECS 2013) for Belgium, Greece, Iceland, Ireland, Italy, Slovenia and Sweden, and the 2014 Structure of Earnings Survey (SES 2014) for all other European countries, and the Current Population Survey (CPS) for the United States

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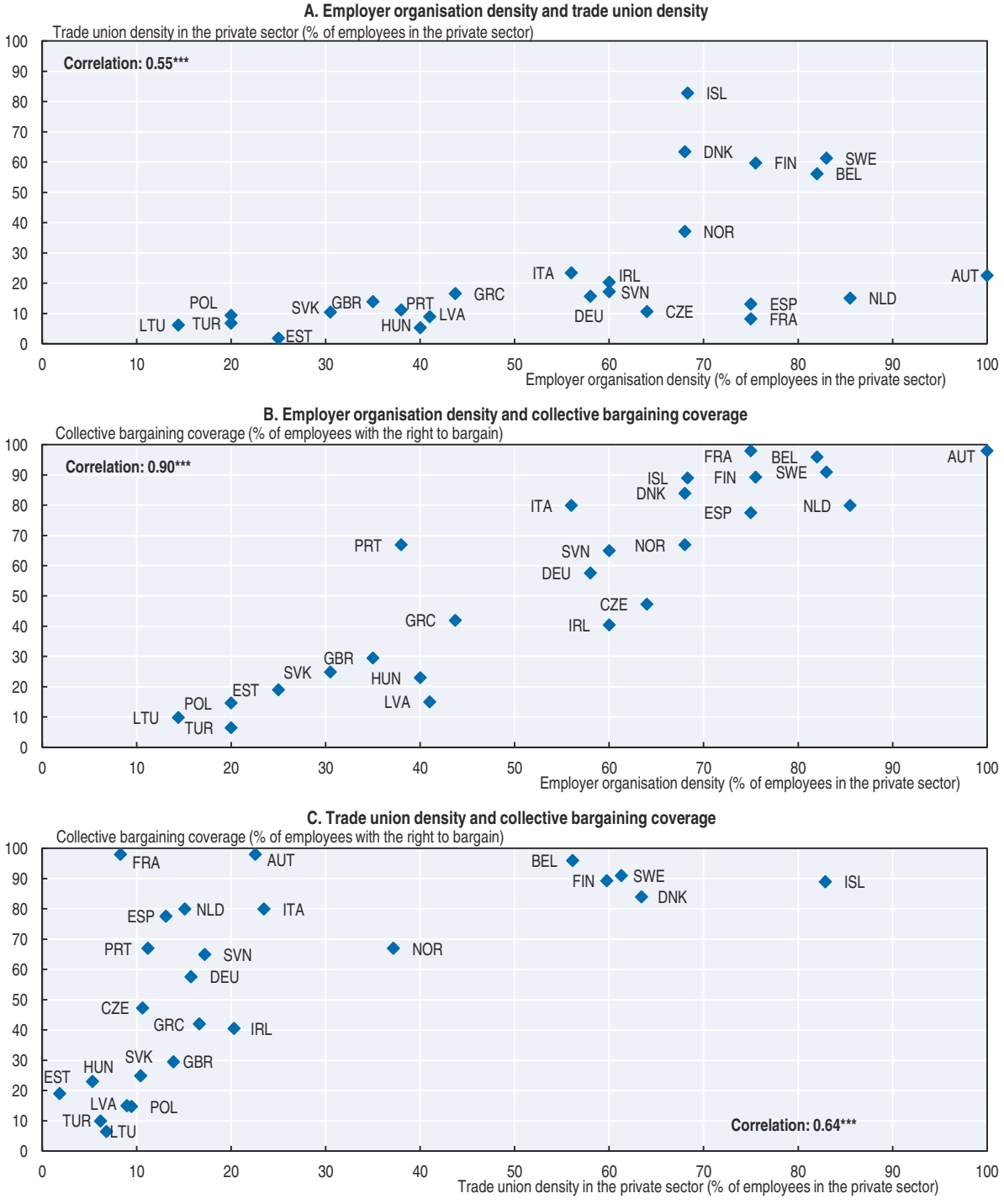
Figure 4.A1.11. **Correlation between employer organisation density and trade union density and collective bargaining coverage rate**



*** statistically significant at the 1% level.

Source: See Figure 4.3 (employer organisation density), Figures 4.5 (collective bargaining coverage) and Annex Figure 4.A1.6 (trade union density in the private sector).

StatLink http://dx.doi.org/10.1787/888933478157

Table 4.A1.1. **Correlation between quality and labour relations and labour market outcomes**

A. Correlation coefficients between trust in trade unions and labour market outcomes

	Sample	Correlation
Unemployment rate	All years	-35%***
	Year 2000 or closest	-45%***
	Year 2005 or closest	-36%**
	Year 2010 or latest	-24%
Youth unemployment rate	All years	-31%***
	Year 2000 or closest	-40%**
	Year 2005 or closest	-34%**
	Year 2010 or latest	-22%
Earnings inequality D9/D1	2010 or latest	-46%***
	All years	-32%***
Earnings inequality D9/D5	2014 or latest	-41%**
	All years	-25%**
Earnings inequality D5/D1	2014 or latest	-25%
	All years	-30%***

B. Correlation coefficients between cooperation in labour-employer relations and labour market outcomes

	Sample	Correlation
Unemployment rate	All years	-46%***
	Year 2007	-49%***
	Year 2011	-46%***
	Year 2015	-45%***
Youth unemployment rate	All years	-52%***
	Year 2007	-58%***
	Year 2011	-51%***
	Year 2015	-52%***
Earnings inequality D9/D1	2014 or latest	-25%
	All years	-31%***
Earnings inequality D9/D5	2014 or latest	-31%*
	All years	-38%***
Earnings inequality D5/D1	2014 or latest	-5%
	All years	-10%

***, **, * statistically significant at 1%, 5% and 10% levels respectively.

Note: Note: "Trust in trade unions" (Panel A) refers to the percentage of persons (aged 15 or over) tending to trust trade unions for the European countries excepted Norway and Switzerland and the percentage of persons (aged 15 or more) who are greatly or quit a lot confident in trade unions for all other countries, Norway and Switzerland. Co-operation in labour-employer relations" refers to the average national score based on a scale from 1 ("generally confrontational") to 7 ("generally co-operative") to the following question: "In your country, how would you characterise labour-employer relations?".

Source: Eurobarometer and World Value Survey, *www.worldvaluesurvey.org/WVSOnline.jsp* (Panel A) and The Global Competitiveness Index Historical Dataset © 2005-2014 World Economic Forum (Panel B) and the *OECD Employment Database, www.oecd.org/employment/database* for employment and earnings inequality measures.

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Statistical annex

Sources and definitions

The tables of the statistical annex show data for all 35 OECD countries. Data for Brazil, China, Colombia, Costa Rica, India, Indonesia, Lithuania, the Russian Federation and South Africa are included in a number of tables.

In general, *Tables A to K* and *Table M* report annual averages of monthly and quarterly estimates, when they are available, based on labour force surveys. The remaining *Tables L*, *N*, *O*, *P* and Q are based on a combination of survey and administrative sources. Data shown for a number of European countries in *Tables B*, *C*, *D*, *H, I, J*, *K* and *Table M* are based on the European Labour Force Survey (EU LFS), which are more comparable and sometime more consistent over time than data series from national LFS.

Statistical tables showing data for Israel are supplemented with the following footnote: "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".

Data on employment, unemployment and the labour force are not necessarily the same as the series used for analyses and forecasting by the OECD Economics Department that are reported in the *OECD Economic Outlook* and included in the first figure and online annex tables of Chapter 1 of this publication.

Most of the statistics shown in these tables can also be found in the OECD central data repository *OECD.Stat* (*http://stats.oecd.org*) accessible from the web page dedicated to employment statistics (*www.oecd.org/employment/database*).

The database contains both raw data and derived statistics. It contains longer time series and more detailed datasets by age group, gender, educational attainment, employee job tenure, part-time employment, involuntary part-time employment, temporary employment, duration of unemployment, and other series than are shown in this annex, such as, the distribution of employment by weekly usual hours worked intervals, potential labour force including people marginally attached to the labour force, etc. The datasets include information on definitions, notes and sources used by member countries. The online database also contains additional series on working time, earnings and features of institutional and regulatory environments affecting the functioning of labour markets. Among these are the following:

- Annual hours worked for comparisons of trends over time.
- Average gross annual wages per dependent employee in full-time equivalent unit.
- Distribution of gross earnings of full-time workers by upper earnings decile cut-offs and by sex to compute earnings dispersion measures.

- Statutory minimum wages: levels and ratio of minimum-to-median wages.
- Public expenditure on labour market programmes, number of beneficiaries and inflows into the labour market.
- Union members and employees.
- Synthetic indicators of employment protection.

Conventional signs

.. Data not available

() Data based on small sample sizes

| Break in series

– Nil or less than half of the last digit used

Major breaks in series

Table A: Breaks in series have been adjusted in most countries to ensure that harmonised unemployment rates are consistent over time.

Tables B to *K and Table M*: Most of the breaks in series in the data shown in the tables occurred for any of the following reasons: changes in survey design, survey questionnaire, survey frequency and administration, revisions of data series based on updated population census results. These changes have affected the comparability over time of employment and/or unemployment levels and to a certain extent the ratios reported in the aforementioned tables:

- *Introduction of a continuous survey producing quarterly results:* Austria (2003/04), France (2002/03), Germany (2004/05), Hungary (2005/06, monthly results), Iceland (2002/03), Italy (2003/04), Luxembourg (2002/03, quarterly results as of 2007) and Turkey (2013/14).
- *Redesign of labour force survey:* Introduction of a new survey in Chile since April 2010 (see below), Germany (2010/11), Hungary (2002/03), Portugal (2010/11), Poland (2004/05) and Turkey (2004/05 from quarterly to monthly results). Israel (2011/12), change from quarterly to monthly survey results and a change from "civilian" to "total" labour force (including those who are in compulsory or permanent military service). New Zealand (2015/16), the survey includes non-civilian personnel. New continuous quarterly survey in Mexico since 2005 (*Encuesta Nacional de Ocupación y Empleo*, ENOE) with a different questionnaire from that of the previous survey.
- *Change in the operational definition of employment:*
  - Neat application of the criterion of "at least one hour worked in a gainful job" in the Chilean *Nueva Encuesta Nacional de Empleo* (NENE), a quarterly continuous survey, from April 2010 onward.
- *Change in the operational definition of unemployment regarding:*
  - Active job-search methods: in particular a change from registration to contact with the public employment service: France (2002/03) and Spain (2000/01).
  - Duration of active job search: In Australia (2014/15) the duration of unemployment has been replaced by duration of job search. In Belgium (2010/11), the duration of job search has been changed from an unlimited duration to previous four weeks including the survey reference week. In Chile (2009/10), the duration of active job search has been shortened from last two months to previous four weeks including the survey reference week.

Major breaks in series *(cont.)*

- Availability to work criterion: In Sweden (2004/05), the work availability criterion changed from the reference week to two weeks from the reference week to be consistent with the operational definition in other EU countries. In Chile, the work availability criterion did not exist prior to 2010 in the *Encuesta Nacional de Empleo* (ENE) and has been introduced in the *Nueva Encuesta Nacional de Empleo* (NENE) since April 2010. It has been fixed to two weeks from the end of the reference week.
- Persons on lay-off considered as employed instead of unemployed: Norway (2005/06).
- Other minor changes: Australia (2000/01) and Poland (2003/04).

- *Changes in the questionnaire with impact on employment and unemployment estimates:* Germany (2010/11): new questionnaire design ensures better coverage of small jobs. This leads to higher than normal annual employment increase. Impact on employment and unemployment statistics in New Zealand (2015/16) with the inclusion of army personnel. Spain (2004/05): impact on employment and unemployment and impact on unemployment estimates in Norway (2005/06) and Sweden (2004/05).
- *Change from seasonal to calendar quarters:* Switzerland (2009/10) and the United Kingdom (2005/06). However, there is no break in series between 2005 and 2006 for the United Kingdom as calendar-quarter-based historical series are available since 1992.
- *Introduction of new EU harmonised questionnaire:* Sweden (2004/05) and Turkey (2003/04).
- *Change in lower age limit from 16 to 15 years:* Iceland (2008/09), Norway (2005/06) and Sweden (2006/07).
- *Change in lower age limit from 15 to 16 years:* Italy (2007/08).
- In Norway, since 2006, age is defined as years reached at the survey reference week, instead of completed years at the end of the year, as in previous years.
- *Inclusion of population controls based on census results in the estimation process:* Mexico (2009/10) and Turkey (2006/07).
- In Japan, data for 2011 exclude three prefectures (Iwate, Miyagi and Fukushima) due to the temporary suspension of the labour force survey operation following the Great East Japan earthquake.

Further explanations on breaks in series and their impact on employment and unemployment levels and on ratios can be found at: *www.oecd.org/employment/outlook*.

Colombia, Costa Rica and Lithuania are currently undergoing an accession process.

Table A. **Harmonised unemployment rates in OECD countries**

As a percentage of civilian labour force

	1991	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Australia	9.6	8.5	6.3	5.0	4.8	4.4	4.2	5.6	5.2	5.1	5.2	5.7	6.1	6.1	5.7
Austria	..	4.2	3.9	5.6	5.3	4.9	4.1	5.3	4.8	4.6	4.9	5.4	5.6	5.7	6.0
Belgium	6.4	9.7	6.9	8.4	8.3	7.5	7.0	7.9	8.3	7.2	7.6	8.5	8.5	8.5	7.9
Canada	10.3	9.5	6.8	6.8	6.3	6.1	6.1	8.4	8.1	7.5	7.3	7.1	6.9	6.9	7.0
Chile	8.2	7.3	9.7	9.2	7.8	7.1	7.8	9.7	8.2	7.1	6.4	5.9	6.4	6.2	6.5
Czech Republic	..	4.0	8.8	7.9	7.1	5.3	4.4	6.7	7.3	6.7	7.0	7.0	6.1	5.1	4.0
Denmark	7.9	6.7	4.3	4.8	3.9	3.8	3.5	6.0	7.5	7.6	7.5	7.0	6.5	6.2	6.2
Estonia	..	..	14.5	8.0	5.9	4.6	5.5	13.6	16.7	12.4	10.0	8.6	7.4	6.2	6.8
Finland	6.6	15.4	9.8	8.4	7.7	6.9	6.4	8.2	8.4	7.8	7.7	8.2	8.7	9.4	8.8
France	9.6	12.0	9.6	8.9	8.8	8.0	7.4	9.1	9.3	9.2	9.8	10.3	10.3	10.4	10.1
Germany	5.5	8.3	8.0	11.3	10.3	8.5	7.4	7.6	7.0	5.8	5.4	5.2	5.0	4.6	4.1
Greece	..	..	11.2	10.0	9.0	8.4	7.8	9.6	12.8	17.9	24.5	27.5	26.6	25.0	23.6
Hungary	..	..	6.3	7.2	7.5	7.4	7.8	10.0	11.2	11.1	11.0	10.1	7.7	6.8	5.1
Iceland	..	..	..	2.6	2.9	2.3	3.0	7.2	7.6	7.1	6.0	5.4	5.0	4.0	3.0
Ireland	14.8	12.3	4.3	4.4	4.5	4.7	6.4	12.0	13.9	14.7	14.7	13.1	11.3	9.5	7.9
Israel	..	6.9	8.8	9.0	8.4	7.3	6.1	7.5	6.6	5.6	6.9	6.2	5.9	5.2	4.8
Italy	8.5	11.2	10.1	7.7	6.8	6.1	6.7	7.8	8.4	8.4	10.6	12.1	12.7	11.9	11.7
Japan	2.1	3.2	4.7	4.4	4.1	3.8	4.0	5.1	5.1	4.6	4.4	4.0	3.6	3.4	3.1
Korea	2.5	2.1	4.4	3.7	3.5	3.3	3.2	3.7	3.7	3.4	3.2	3.1	3.5	3.6	3.7
Latvia	..	..	14.3	10.1	7.0	6.1	7.7	17.6	19.5	16.2	15.0	11.9	10.9	9.9	9.6
Luxembourg	1.7	2.9	2.2	4.7	4.6	4.2	4.9	5.1	4.6	4.8	5.1	5.9	6.1	6.5	6.3
Mexico	2.7	6.3	2.5	3.6	3.6	3.7	4.0	5.5	5.4	5.2	5.0	4.9	4.8	4.4	3.9
Netherlands	5.7	8.4	3.7	5.9	5.0	4.2	3.7	4.4	5.0	5.0	5.8	7.2	7.4	6.9	6.0
New Zealand	10.6	6.5	6.2	3.8	3.9	3.6	4.0	5.8	6.2	6.0	6.4	5.8	5.4	5.4	5.1
Norway	5.5	4.9	3.2	4.5	3.4	2.5	2.6	3.2	3.6	3.3	3.2	3.5	3.5	4.4	4.7
Poland	..	..	16.1	17.9	14.0	9.6	7.0	8.1	9.7	9.7	10.1	10.3	9.0	7.5	6.2
Portugal	4.2	7.2	5.1	8.8	8.9	9.1	8.8	10.7	12.0	12.9	15.8	16.5	14.1	12.7	11.2
Slovak Republic	..	..	18.9	16.4	13.5	11.2	9.6	12.1	14.5	13.7	14.0	14.2	13.2	11.5	9.7
Slovenia	..	..	6.7	6.5	6.0	4.9	4.4	5.9	7.3	8.2	8.9	10.1	9.7	9.0	8.0
Spain	15.5	20.8	11.9	9.2	8.5	8.2	11.3	17.9	19.9	21.4	24.8	26.1	24.5	22.1	19.7
Sweden	3.1	8.8	5.6	7.6	7.0	6.1	6.2	8.3	8.6	7.8	8.0	8.0	7.9	7.4	7.0
Switzerland	..	..	..	..	..	..	..	..	4.5	4.0	4.2	4.4	4.5	4.5	4.6
Turkey	..	..	..	9.2	8.8	8.8	9.7	12.6	10.7	8.8	8.2	8.7	10.0	10.3	10.9
United Kingdom	8.6	8.5	5.4	4.8	5.4	5.3	5.6	7.6	7.8	8.1	7.9	7.6	6.1	5.3	4.8
United States	6.8	5.6	4.0	5.1	4.6	4.6	5.8	9.3	9.6	9.0	8.1	7.4	6.2	5.3	4.9
OECD[a]	..	..	6.2	6.6	6.1	5.6	6.0	8.1	8.3	8.0	8.0	7.9	7.4	6.8	6.3

Note: The OECD harmonised unemployment rates are compiled for 35 OECD member countries and conform to the guidelines of the 13th Conference of Labour Statisticians of the International Labour Office (referred to as the ILO guidelines). In so far as possible, the data have been adjusted to ensure comparability over time. All series are benchmarked to labour-force-survey-based estimates. The unemployment rates for the European Union member countries, Norway and Turkey are produced by the Statistical Office of the European Communities (Eurostat). For the remaining OECD countries, the OECD is responsible for collecting data and calculating unemployment rates. Please refer to the following URL for methodological notes: *www.oecd.org/std/labourstatistics/44743407.pdf*.

a) Weighted average.

Source: OECD (2017), *Main Economic Indicators*, Vol. 2017/5, OECD Publishing, Paris, *http://dx.doi.org/10.1787/mei-v2017-5-en*.

StatLink *http://dx.doi.org/10.1787/888933478283*

Table B. **Employment/population ratios by selected age groups**

As a percentage of the population in each age group

	Total (15-64)				Youth (15-24)				Prime age (25-54)				Older population (55-64)			
	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016
Australia	69.1	72.8	72.2	72.4	61.7	64.1	58.5	58.4	76.2	79.9	79.3	79.7	46.1	56.5	62.1	62.5
Austria	68.3	69.9	71.1	71.5	52.8	53.8	51.3	51.0	82.5	82.9	83.5	83.6	28.3	36.0	46.3	49.2
Belgium	60.5	62.0	61.8	62.3	29.1	27.5	23.4	22.7	77.4	79.7	78.5	79.1	26.3	34.4	44.0	45.4
Canada	70.9	73.5	72.5	72.6	56.2	59.5	55.8	55.4	79.9	82.2	81.4	81.4	48.1	57.0	60.9	61.6
Chile[a]	54.5	57.6	62.4	62.2	29.0	29.0	30.2	29.2	65.6	70.1	74.9	74.8	47.7	54.8	64.5	63.8
Czech Republic	65.2	66.1	70.2	72.0	38.3	28.5	28.4	28.6	81.6	83.5	84.5	85.7	36.3	46.0	55.5	58.5
Denmark	76.3	77.0	73.5	74.9	66.0	65.3	55.4	58.2	84.2	86.1	82.1	82.5	55.7	58.9	64.7	67.8
Estonia	60.6	69.6	71.8	72.0	34.9	34.6	37.4	38.6	74.4	84.6	82.8	82.4	42.8	59.4	64.5	65.1
Finland	67.5	70.5	68.7	69.2	42.9	46.4	42.4	43.3	80.9	83.3	79.9	79.9	42.3	55.0	60.0	61.4
France	61.1	64.3	64.3	64.6	23.2	31.2	28.4	28.2	78.3	82.1	79.9	80.3	34.3	38.2	48.8	49.9
Germany	65.6	69.0	74.0	74.7	47.2	45.9	45.3	45.8	79.3	80.3	83.7	84.0	37.6	51.3	66.2	68.6
Greece	56.5	60.9	50.8	52.0	27.6	24.0	13.0	13.0	70.5	75.4	64.5	66.0	39.0	42.7	34.3	36.3
Hungary	56.0	57.0	63.9	66.5	32.5	21.1	25.7	28.1	73.0	74.7	80.6	82.2	21.9	32.2	45.3	49.8
Iceland[b]	84.6	85.7	84.2	86.3	68.2	74.3	72.6	77.1	90.6	89.4	87.8	89.6	84.2	84.9	84.5	84.4
Ireland	65.1	69.2	63.1	64.7	49.3	50.4	28.0	32.6	75.5	78.8	74.1	74.9	45.3	54.2	55.4	57.2
Israel[c]	62.1	64.5	68.3	68.6	48.1	46.4	44.4	44.3	71.3	74.0	78.7	79.2	46.5	57.1	66.2	66.5
Italy[b]	53.9	58.6	56.3	57.2	27.8	24.5	15.6	16.6	68.0	73.4	68.2	68.8	27.7	33.7	48.2	50.3
Japan	68.9	70.7	73.3	74.3	42.7	41.4	40.7	42.5	78.6	80.2	82.5	83.3	62.8	66.1	70.0	71.4
Korea	61.5	63.9	65.7	66.1	29.4	25.7	26.9	27.2	72.2	74.0	75.9	76.1	57.8	60.6	65.9	66.1
Latvia	57.3	68.1	68.1	68.7	29.2	38.1	34.5	33.0	73.5	82.1	79.2	79.7	35.9	58.0	59.4	61.4
Luxembourg	62.7	64.2	66.1	65.6	31.8	22.5	29.1	25.7	78.2	81.9	82.6	82.5	(27.2)	(32.0)	(38.4)	(40.4)
Mexico	60.1	61.0	60.7	61.0	48.9	44.9	41.0	40.8	67.4	70.0	70.8	71.2	51.7	54.5	54.7	55.0
Netherlands	72.1	74.4	74.1	74.8	66.5	65.5	60.8	60.8	81.0	84.4	82.2	82.9	37.6	48.8	61.7	63.5
New Zealand	70.3	75.1	74.3	75.6	54.2	58.0	53.1	54.3	78.2	81.8	81.7	83.1	56.9	71.8	75.2	76.1
Norway[b]	77.9	76.9	74.9	74.4	58.1	55.1	51.1	49.2	85.3	85.8	83.1	82.7	67.1	69.0	72.2	72.6
Poland	55.0	57.0	62.9	64.5	24.5	25.8	26.0	28.4	70.9	74.9	79.5	80.3	28.4	29.7	44.3	46.2
Portugal	68.3	67.6	63.9	65.2	41.8	34.4	22.8	23.9	81.8	80.9	78.8	80.2	50.8	51.0	49.9	52.1
Slovak Republic	56.8	60.7	62.7	64.9	29.0	27.6	23.3	25.2	74.7	78.0	78.1	80.0	21.3	35.7	46.9	49.0
Slovenia	62.8	67.8	65.2	65.8	32.8	37.6	29.6	28.6	82.6	85.3	82.9	83.5	22.7	33.5	36.6	38.5
Spain[b]	57.4	66.8	58.7	60.5	36.3	43.0	20.0	20.5	68.4	77.1	69.4	71.5	37.0	44.5	46.9	49.1
Sweden[b]	74.3	74.2	75.5	76.2	46.7	42.1	43.7	44.3	83.8	86.1	85.6	85.9	65.1	70.1	74.6	75.6
Switzerland	78.3	78.6	79.2	79.6	65.0	62.6	61.6	62.5	85.4	86.1	86.3	86.3	63.3	67.2	70.3	71.5
Turkey	48.9	44.6	50.2	50.6	37.0	30.2	34.2	34.1	56.7	53.2	59.5	60.0	36.4	27.1	31.9	33.4
United Kingdom[b]	72.2	72.4	73.2	74.3	61.5	56.4	52.5	53.7	80.2	81.4	82.2	83.0	50.4	57.3	61.8	63.6
United States[b]	74.1	71.8	68.7	69.4	59.7	53.1	48.6	49.4	81.5	79.9	77.2	77.9	57.8	61.8	61.5	61.8
OECD[d]	65.4	66.5	66.3	67.0	45.3	43.4	40.5	41.1	75.9	77.0	76.5	77.1	47.8	53.5	58.1	59.2
Colombia[e]	60.3	60.2	67.6	67.2	41.4	38.0	45.0	43.8	71.0	72.0	78.6	78.3	52.0	51.9	62.5	62.8
Costa Rica	59.6	64.1	60.7	58.7	44.9	46.3	35.3	33.2	69.1	74.6	73.1	71.6	46.4	54.8	54.4	50.8
Lithuania	58.8	65.0	67.2	69.4	25.2	24.8	28.3	30.2	75.0	82.2	81.6	82.7	40.3	53.2	60.4	64.6
Brazil[e]	64.3	67.4	64.4	..	50.7	52.9	43.5	..	73.1	76.1	74.9	..	51.2	53.8	52.5	..
China[f]	79.3	..	75.1	..	61.9	..	53.7	..	88.0	..	85.8	..	59.2	..	59.0	..
India[f]	58.2	..	53.3	..	41.3	..	30.7	..	67.4	..	64.1	..	54.1	..	52.5	..
Indonesia[f]	..	62.4	64.6	..	..	39.1	37.9	..	..	72.1	75.1	..	..	67.6	66.7	..
Russian Fed.	63.3	68.5	69.3	70.0	34.6	33.7	31.8	31.5	80.2	84.7	85.6	86.1	34.8	52.0	47.8	48.2
South Africa[e]	44.1	44.4	43.7	43.0	15.9	15.7	13.3	12.3	60.3	60.6	58.3	57.5	43.2	42.2	40.0	39.5

Table B. **Employment/population ratios by selected age groups** *(cont.)*

As a percentage of the male population in each age group

	Men (15-64)				Youth (15-24)				Prime age (25-54)				Older population (55-64)			
	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016
Australia	76.9	79.5	77.5	77.5	62.6	65.0	58.2	58.0	85.6	88.1	86.2	86.5	57.6	65.7	69.3	68.4
Austria	77.3	76.3	75.1	75.4	57.6	57.0	54.0	52.9	91.4	89.0	86.6	86.6	40.5	46.0	54.1	57.6
Belgium	69.5	68.7	65.5	66.5	32.8	29.9	25.0	24.0	87.3	87.0	82.5	83.8	36.4	42.9	48.9	50.7
Canada	76.2	77.0	75.6	75.4	56.7	59.2	54.4	54.1	85.8	86.2	85.3	85.0	57.4	63.5	66.0	66.4
Chile[a]	72.4	72.9	73.0	72.4	37.5	36.0	35.2	33.6	86.4	88.0	86.9	86.2	70.6	76.0	82.9	81.6
Czech Republic	73.6	74.8	77.9	79.3	42.8	32.8	33.1	33.8	89.3	91.7	91.9	92.7	51.7	59.6	65.5	68.2
Denmark	80.8	80.8	76.6	77.7	68.5	66.5	54.6	56.5	88.5	89.8	85.9	86.4	64.1	64.9	69.8	71.9
Estonia	64.1	73.2	75.4	75.6	40.8	39.1	41.4	41.1	75.8	89.4	87.5	87.6	51.0	58.1	63.1	63.5
Finland	70.5	72.4	69.7	70.8	45.7	47.9	41.9	43.3	84.1	85.9	82.5	83.0	43.7	55.1	57.4	59.8
France	68.1	69.2	67.5	68.0	26.6	34.2	30.3	30.2	87.1	88.4	84.1	84.7	38.5	40.5	50.8	51.6
Germany	72.9	74.7	78.0	78.5	49.7	48.2	46.5	47.0	87.2	86.4	88.1	88.1	46.4	59.4	71.3	73.7
Greece	71.5	74.2	59.3	61.0	32.7	29.1	15.2	14.7	88.5	90.1	73.7	76.0	55.2	59.1	44.9	46.2
Hungary	62.7	63.7	70.3	73.0	36.0	24.4	28.1	31.5	79.2	81.6	86.8	88.2	32.8	40.1	54.4	59.7
Iceland[b]	88.2	89.5	86.6	89.0	66.1	73.6	69.4	76.6	95.1	94.2	91.5	92.8	94.2	89.6	88.7	89.4
Ireland	76.3	77.5	68.7	69.9	53.4	53.2	29.1	32.9	88.4	87.9	80.5	81.0	63.6	68.1	65.1	65.8
Israel[c]	68.9	70.1	72.1	72.0	51.2	49.3	45.5	44.9	79.6	80.6	83.4	83.4	56.9	65.1	73.2	73.4
Italy[b]	68.2	70.6	65.5	66.5	33.2	29.4	18.6	19.2	84.9	87.4	78.6	79.3	40.9	45.0	59.3	61.7
Japan	80.9	81.7	81.8	82.5	42.5	41.3	40.4	42.0	93.4	92.8	92.1	92.5	78.4	81.5	82.4	83.5
Korea	73.1	74.7	75.7	75.8	24.6	20.5	22.9	23.4	88.0	87.3	88.0	87.8	68.5	74.7	79.1	79.0
Latvia	61.1	72.7	69.9	70.0	34.3	43.8	37.1	34.0	74.4	86.0	81.2	81.4	48.1	64.3	60.1	61.3
Luxembourg	75.0	72.3	71.3	70.5	35.3	26.5	29.4	24.9	92.8	92.2	89.3	88.5	(37.9)	(35.6)	(43.0)	(47.7)
Mexico	82.8	80.8	78.3	78.6	64.7	58.5	53.4	53.1	93.8	92.7	90.8	91.1	78.1	78.3	75.8	75.8
Netherlands	81.2	81.1	79.0	79.6	67.9	66.9	59.9	59.6	91.4	91.4	87.5	88.1	49.7	60.0	71.1	72.8
New Zealand	77.8	82.0	79.6	80.7	56.2	60.3	55.0	56.5	87.0	90.0	88.9	89.8	67.9	80.7	80.5	81.7
Norway[b]	81.7	79.7	76.6	75.8	61.0	54.0	50.0	48.1	88.8	89.2	85.3	84.5	73.1	73.9	75.6	75.7
Poland	61.2	63.6	69.3	71.0	27.3	29.2	30.5	32.8	77.6	81.1	84.9	86.1	36.7	41.4	54.2	55.7
Portugal	76.3	73.6	66.9	68.3	47.3	38.5	24.1	25.5	90.0	87.2	81.8	83.0	62.2	58.7	55.9	58.5
Slovak Republic	62.2	68.4	69.4	71.4	29.8	30.9	28.4	31.9	79.6	85.0	85.1	86.3	35.4	52.6	53.6	55.1
Slovenia	67.2	72.7	69.2	68.9	35.7	43.2	32.0	31.1	85.7	88.1	86.1	85.6	32.3	45.3	42.6	43.6
Spain[b]	72.7	77.3	64.0	65.8	43.2	48.6	20.9	21.8	85.6	87.5	75.1	77.4	55.2	59.6	54.0	55.7
Sweden[b]	76.3	76.5	77.0	77.5	47.9	41.9	42.2	42.9	85.9	89.0	87.9	88.0	67.7	73.1	77.0	77.6
Switzerland	87.3	85.6	83.6	83.7	66.5	65.4	60.6	61.8	95.2	93.6	91.5	91.2	77.0	76.4	76.7	77.2
Turkey	71.7	66.8	69.8	70.0	49.7	41.5	45.2	44.9	85.0	80.7	83.1	83.1	51.9	40.5	46.4	49.1
United Kingdom[b]	78.9	78.7	77.9	79.1	64.0	57.9	52.2	53.3	87.4	88.3	88.0	89.2	59.7	66.0	68.5	69.3
United States[b]	80.6	77.8	74.2	74.8	61.9	54.4	49.0	50.1	89.0	87.5	84.4	85.0	65.7	67.4	67.1	67.5
OECD[d]	76.1	75.9	74.2	74.8	50.0	47.4	43.5	44.1	88.1	87.9	85.8	86.3	59.4	63.8	66.8	67.8
Colombia[e]	75.5	75.2	79.9	79.2	52.1	47.9	55.0	52.5	87.6	88.9	91.1	91.0	73.4	72.8	80.3	79.9
Costa Rica	80.1	81.4	73.9	72.8	58.6	58.3	42.6	41.9	92.5	94.1	88.2	88.0	74.3	79.3	73.9	69.8
Lithuania	60.1	68.2	68.0	70.0	28.3	29.4	30.8	32.5	73.8	84.2	81.8	82.6	49.9	60.7	62.4	66.8
Brazil[e]	78.2	79.7	75.7	..	62.0	63.0	51.8	..	88.1	89.0	86.7	..	68.1	70.1	68.5	..
China[f]	84.6	..	82.0	..	61.8	..	55.9	..	94.2	..	93.3	..	70.4	..	70.1	..
India[f]	81.1	..	78.5	..	57.2	..	44.3	..	93.8	..	95.2	..	78.7	..	80.4	..
Indonesia[f]	..	78.4	80.1	..	..	47.9	45.5	..	..	91.8	93.7	..	..	83.4	83.3	..
Russian Fed.	67.6	72.0	74.4	75.2	38.2	36.6	35.4	35.2	82.7	87.0	89.4	89.8	46.8	63.9	58.4	59.0
South Africa[e]	50.7	52.2	49.9	49.2	18.0	18.8	15.8	15.0	69.4	71.3	66.1	65.1	55.0	55.3	48.1	47.2

Table B. **Employment/population ratios by selected age groups** *(cont.)*

As a percentage of the female population in each age group

	Women (15-64)				Youth (15-24)				Prime age (25-54)				Older population (55-64)			
	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016
Australia	61.3	66.1	66.8	67.4	60.8	63.2	58.8	58.8	67.0	71.9	72.5	73.0	34.2	47.3	55.2	56.7
Austria	59.4	63.5	67.1	67.7	48.1	50.6	48.7	49.0	73.6	76.7	80.3	80.6	16.8	26.5	38.8	41.1
Belgium	51.5	55.3	58.0	58.1	25.4	25.0	21.7	21.4	67.2	72.3	74.5	74.3	16.6	26.0	39.3	40.2
Canada	65.6	69.9	69.4	69.7	55.7	59.8	57.2	56.8	73.9	78.2	77.5	77.8	39.1	50.7	55.8	56.9
Chile[a]	36.8	42.3	51.9	52.0	20.2	21.7	24.4	24.1	45.0	52.3	63.4	63.8	26.6	35.1	47.3	47.0
Czech Republic	56.9	57.3	62.4	64.4	33.6	23.9	23.4	23.2	73.7	74.9	76.7	78.4	22.4	33.5	45.9	49.3
Denmark	71.6	73.2	70.4	72.0	63.3	64.0	56.2	60.0	79.8	82.3	78.3	78.5	46.6	52.9	59.6	63.6
Estonia	57.3	66.1	68.4	68.5	28.5	29.8	33.2	36.0	73.2	79.9	78.0	77.0	36.5	60.5	65.6	66.4
Finland	64.5	68.5	67.7	67.6	39.9	44.7	42.9	43.3	77.6	80.7	77.3	76.7	40.9	54.8	62.6	63.0
France	54.3	59.6	61.1	61.4	19.8	28.1	26.4	26.3	69.6	76.1	75.9	75.9	30.3	36.0	47.0	48.3
Germany	58.1	63.2	69.9	70.8	44.6	43.5	44.0	44.5	71.2	74.0	79.2	79.8	29.0	43.4	61.2	63.6
Greece	41.7	47.7	42.5	43.3	22.4	18.8	10.9	11.3	52.7	60.9	55.4	55.9	24.3	27.0	24.7	27.2
Hungary	49.6	50.7	57.8	60.2	28.8	17.7	23.1	24.6	66.9	67.9	74.4	76.2	13.1	25.8	37.7	41.5
Iceland[b]	81.0	81.7	81.8	83.4	70.5	75.0	76.0	77.7	86.0	84.1	84.1	86.4	74.4	80.0	80.3	79.3
Ireland	53.7	60.6	57.6	59.5	45.1	47.6	27.0	32.2	62.6	69.5	68.0	69.0	26.8	40.0	45.8	48.7
Israel[c]	55.5	59.0	64.6	65.2	44.8	43.4	43.3	43.6	63.5	67.7	74.3	75.1	36.8	49.3	59.7	60.0
Italy[b]	39.6	46.6	47.2	48.1	22.1	19.5	12.4	13.7	50.9	59.6	57.9	58.5	15.3	23.0	37.9	39.7
Japan	56.7	59.5	64.6	66.1	43.0	41.5	40.9	42.9	63.6	67.4	72.7	73.9	47.9	51.2	57.8	59.6
Korea	50.0	53.2	55.7	56.2	33.7	30.4	30.7	30.8	56.0	60.5	63.3	63.9	47.9	46.9	53.1	53.5
Latvia	53.8	63.9	66.4	67.6	23.8	32.2	31.9	31.9	72.6	78.4	77.3	78.1	26.8	53.4	58.9	61.4
Luxembourg	50.0	56.1	60.8	60.4	28.3	18.4	28.8	26.5	63.0	71.7	75.7	76.4	(16.8)	(28.6)	(33.7)	(32.9)
Mexico	39.6	43.6	44.7	45.1	34.0	32.2	28.4	28.4	44.3	50.6	53.2	53.6	27.7	33.1	36.6	37.1
Netherlands	62.7	67.5	69.2	70.1	65.1	64.0	61.7	62.1	70.3	77.3	77.0	77.8	25.5	37.5	52.4	54.2
New Zealand	63.1	68.6	69.2	70.7	52.1	55.6	51.1	52.0	69.9	74.2	75.0	76.9	46.1	63.2	70.2	70.9
Norway[b]	74.0	74.0	73.0	72.8	55.0	56.3	52.2	50.3	81.6	82.3	80.7	80.8	61.2	64.0	68.7	69.5
Poland	48.9	50.6	56.6	58.1	21.8	22.4	21.3	23.7	64.3	68.8	73.9	74.5	21.4	19.4	35.5	37.6
Portugal	60.5	61.8	61.1	62.4	36.1	30.2	21.5	22.2	73.9	74.8	76.1	77.6	40.9	44.3	44.5	46.3
Slovak Republic	51.5	53.0	55.9	58.3	28.2	24.1	18.0	18.2	69.8	71.0	70.9	73.5	9.8	21.2	41.0	43.5
Slovenia	58.4	62.6	61.0	62.6	29.7	31.4	27.1	26.1	79.3	82.4	79.5	81.2	13.8	22.2	30.5	33.4
Spain[b]	42.0	56.0	53.4	55.1	29.0	37.2	19.2	19.2	51.0	66.3	63.7	65.6	20.1	30.2	40.2	42.8
Sweden[b]	72.2	71.8	74.0	74.8	45.4	42.2	45.3	45.9	81.7	83.0	83.2	83.7	62.4	67.2	72.3	73.6
Switzerland	69.3	71.6	74.7	75.4	63.4	59.7	62.6	63.2	75.6	78.5	80.9	81.3	50.1	58.1	63.9	65.8
Turkey	26.2	22.8	30.5	31.2	24.8	19.3	23.2	23.2	27.6	25.6	35.7	36.7	21.5	14.6	17.7	18.1
United Kingdom[b]	65.6	66.3	68.6	69.5	59.1	54.9	52.8	54.2	73.1	74.6	76.6	76.9	41.4	48.8	55.3	58.0
United States[b]	67.8	65.9	63.4	64.0	57.4	51.8	48.2	48.8	74.2	72.5	70.3	71.1	50.6	56.6	56.4	56.5
OECD[d]	55.0	57.2	58.6	59.4	40.6	39.4	37.3	37.9	63.8	66.3	67.4	68.1	36.8	43.7	50.0	51.1
Colombia[e]	46.0	46.0	56.0	55.7	30.8	28.2	35.1	35.0	55.4	56.3	66.8	66.1	32.9	33.4	47.1	48.1
Costa Rica	38.8	46.3	47.2	44.3	30.2	33.3	27.0	22.7	45.7	55.2	57.8	55.3	20.3	31.2	37.2	33.3
Lithuania	57.5	62.0	66.5	68.8	22.1	20.0	25.7	27.8	76.1	80.2	81.4	82.9	33.0	47.5	58.8	62.8
Brazil[e]	51.2	55.9	53.8	..	39.7	42.7	34.9	..	59.2	64.3	63.9	..	36.5	39.5	39.1	..
China[f]	73.8	..	68.0	..	62.1	..	51.5	..	81.6	..	78.0	..	47.1	..	47.8	..
India[f]	34.5	..	27.3	..	24.1	..	15.5	..	40.4	..	33.0	..	29.5	..	25.2	..
Indonesia[f]	..	46.3	49.0	..	..	30.0	30.1	..	..	52.8	56.5	..	..	50.3	49.6	..
Russian Fed.	59.3	65.3	64.6	65.2	30.9	30.8	28.0	27.5	77.8	82.5	82.0	82.6	25.9	43.1	39.9	40.1
South Africa[e]	38.1	37.4	37.7	37.0	14.0	12.6	10.7	9.6	52.3	51.2	50.7	50.0	33.8	31.8	33.3	33.1

a) The introduction of a new labour force survey since April 2010 caused a break in series between 2009 and 2010. To remove the break, data prior to 2010 are spliced using *new-to-old* chaining coefficients based on data of fourth quarter of 2009.
b) The lower age limit is 16 instead of 15. For Iceland up to 2008, Italy after 2007, Norway up to 2005 and Sweden up to 2006.
c) The introduction of a redesigned monthly labour force survey since January 2012 caused a break in series between 2011 and 2012. To remove the break, data prior to 2012 are spliced using *new-to-old* chaining coefficients between monthly and quarterly surveys based on data of fourth quarter of 2011.
d) Weighted average.
e) Data for 2000 refer to 2001.
f) Data for 2015 refer to 2010 for China, 2012 for India and 2013 for Indonesia.

Source and definition: OECD Employment Database, *www.oecd.org/employment/database* and *www.oecd.org/els/emp/lfsnotes_sources.pdf*.

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Table C. **Labour force participation rates by selected age groups**

As a percentage of the population in each age group

	Total (15-64)				Youth (15-24)				Prime age (25-54)				Older population (55-64)			
	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016
Australia	73.8	76.2	76.9	76.9	70.2	70.8	67.3	66.9	80.3	82.7	83.4	83.4	48.2	58.1	64.9	65.2
Austria	70.8	73.5	75.5	76.2	55.7	59.4	57.4	57.5	85.2	86.5	88.0	88.4	29.8	37.2	48.6	51.7
Belgium	65.1	67.1	67.6	67.6	35.3	33.9	30.0	28.5	82.4	85.3	85.1	85.1	27.1	35.9	46.6	48.1
Canada	76.2	78.3	78.0	78.1	64.4	67.0	64.2	63.7	84.8	86.6	86.4	86.5	50.9	60.0	64.8	65.8
Chile[a]	61.0	63.0	66.8	66.8	38.6	37.0	35.7	34.6	71.5	75.1	79.4	79.6	51.3	57.6	66.5	66.4
Czech Republic	71.6	69.8	74.0	75.0	46.1	31.9	32.5	32.0	88.4	87.8	88.6	88.9	38.2	48.2	58.0	60.8
Denmark	80.0	80.1	78.5	80.0	70.7	70.6	62.1	66.2	87.9	88.9	87.1	87.4	58.2	61.0	67.6	70.6
Estonia	71.1	73.0	76.6	77.4	44.8	38.4	42.8	44.3	86.6	88.3	87.7	87.6	48.3	61.6	68.6	70.8
Finland	74.9	75.7	75.9	76.0	53.8	55.0	53.7	53.5	87.9	88.0	86.6	86.3	46.6	58.8	65.3	66.4
France	68.0	69.7	71.5	71.7	29.3	38.4	37.3	37.2	86.2	87.9	87.8	87.8	37.3	40.0	52.6	53.7
Germany	71.1	75.6	77.6	78.0	51.5	52.0	48.8	49.3	85.3	87.2	87.6	87.4	42.9	57.2	69.4	71.3
Greece	63.8	66.5	67.8	68.2	39.0	31.0	26.0	24.6	78.1	81.8	85.4	85.5	40.5	44.2	41.6	44.9
Hungary	59.9	61.6	68.6	70.1	37.2	25.7	31.0	32.3	77.3	80.1	85.8	86.1	22.6	33.7	48.1	52.1
Iceland[b]	86.6	87.8	87.9	89.0	71.6	80.1	79.5	82.5	92.2	90.6	90.7	91.9	85.7	85.7	87.3	86.3
Ireland	68.2	72.7	70.1	70.9	53.6	56.2	36.1	40.2	78.7	82.1	81.4	81.3	46.5	55.5	60.1	61.1
Israel[c]	69.9	71.2	72.2	72.1	58.2	55.5	49.0	48.5	78.7	80.3	82.6	82.7	50.9	61.2	68.9	69.2
Italy[b]	60.3	62.4	64.0	64.9	39.5	30.8	26.2	26.6	74.3	77.5	76.8	77.5	29.0	34.5	51.1	53.4
Japan	72.5	73.6	75.9	76.9	47.0	44.9	43.0	44.8	81.9	83.3	85.4	86.0	66.5	68.4	72.2	73.6
Korea	64.4	66.2	68.3	68.7	33.0	28.2	30.1	30.5	75.2	76.4	78.5	78.8	59.5	62.0	67.8	68.0
Latvia	67.0	72.6	75.7	76.3	37.4	42.6	41.3	39.4	85.5	87.1	87.6	87.8	39.8	60.7	65.5	67.6
Luxembourg	64.2	66.9	70.9	70.0	34.0	26.5	35.2	28.5	79.8	84.7	87.7	87.2	(27.6)	(32.7)	(40.3)	(40.4)
Mexico	61.7	63.4	63.6	63.6	51.5	48.4	44.8	44.2	68.6	72.0	73.5	73.7	52.4	55.6	56.1	56.1
Netherlands	74.3	77.1	79.6	79.7	70.8	70.4	68.5	68.2	83.1	86.8	87.1	86.9	38.5	50.8	67.1	68.4
New Zealand	75.0	78.1	79.0	79.9	62.7	64.5	62.2	62.6	82.0	84.0	85.4	86.5	59.7	72.9	78.1	78.6
Norway[b]	80.7	78.9	78.4	78.2	64.7	59.4	56.7	55.3	87.6	87.5	86.6	86.4	68.0	69.7	73.4	74.1
Poland	65.8	63.2	68.1	68.8	37.8	33.0	32.9	34.5	82.4	81.7	85.1	84.9	31.3	31.8	46.9	48.3
Portugal	71.2	73.9	73.4	73.7	45.7	41.3	33.5	33.2	84.8	87.7	88.8	89.1	52.5	54.6	57.0	58.5
Slovak Republic	69.9	68.2	70.9	71.8	46.0	34.5	31.7	32.4	88.4	86.8	87.3	87.5	24.3	38.8	51.8	53.9
Slovenia	67.5	71.3	71.8	71.6	39.2	41.8	35.3	33.7	87.4	89.3	90.8	90.5	24.0	34.6	39.7	41.2
Spain[b]	66.7	72.8	75.5	75.4	48.5	52.5	38.8	36.9	78.0	83.1	87.4	87.4	40.9	47.4	57.6	59.2
Sweden[b]	79.0	79.1	81.7	82.0	52.9	52.1	54.9	54.7	88.2	90.0	90.9	90.9	69.3	73.0	78.9	79.8
Switzerland	80.5	81.6	83.3	83.9	68.3	67.4	67.5	68.4	87.4	88.9	90.2	90.6	65.1	69.3	73.2	74.3
Turkey	52.4	49.8	56.1	57.0	42.5	37.7	42.0	42.4	59.6	58.2	65.5	66.5	37.2	28.3	34.2	35.6
United Kingdom[b]	76.4	76.5	77.6	78.2	69.7	65.7	62.0	61.9	83.9	84.5	85.8	86.1	52.7	59.2	64.0	66.0
United States[b]	77.2	75.3	72.6	73.0	65.8	59.4	55.0	55.2	84.0	83.0	80.9	81.3	59.2	63.8	63.9	64.1
OECD[d]	69.9	70.6	71.3	71.7	51.6	49.4	47.0	47.2	80.2	81.0	81.6	81.9	50.3	55.7	61.1	62.1
Colombia[e]	71.3	68.0	74.5	74.3	57.1	48.8	54.7	53.7	80.6	79.1	84.9	84.8	56.5	55.2	66.1	66.5
Costa Rica	62.8	67.2	67.3	65.0	50.4	51.9	45.9	43.2	71.4	76.8	78.9	77.2	47.7	56.0	57.2	53.3
Lithuania	70.5	67.9	74.1	75.5	36.2	27.1	33.8	35.3	88.8	85.6	89.3	89.3	45.4	55.3	66.2	70.0
Brazil[e]	71.1	73.5	71.4	..	61.8	63.6	56.6	..	78.5	81.1	80.8	..	53.4	55.4	54.5	..
China[f]	82.3	..	77.4	..	67.9	..	57.4	..	90.5	..	88.0	..	59.4	..	59.7	..
India[f]	60.9	..	55.4	..	45.9	..	34.4	..	69.4	..	65.6	..	55.0	..	53.2	..
Indonesia[f]	..	68.9	69.0	..	..	52.3	48.3	..	..	76.4	77.7	..	..	68.8	67.5	..
Russian Fed.	70.9	72.9	73.4	74.1	43.6	39.4	37.9	37.6	88.3	89.2	89.9	90.5	37.5	53.7	49.6	50.0
South Africa[e]	59.1	57.2	58.5	58.7	31.5	29.3	26.6	26.4	76.5	74.5	75.6	75.8	47.2	44.8	43.8	43.4

Table C. **Labour force participation rates by selected age groups** *(cont.)*

As a percentage of the male population in each age group

	Men (15-64)				Youth (15-24)				Prime age (25-54)				Older population (55-64)			
	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016
Australia	82.3	83.0	82.7	82.3	71.9	71.8	67.9	67.3	90.2	90.8	90.3	90.2	60.9	67.7	72.8	71.9
Austria	79.9	80.0	80.1	80.7	60.6	62.9	60.7	60.2	94.0	92.5	91.6	91.8	42.8	47.6	57.4	61.2
Belgium	73.7	73.6	72.2	72.3	38.7	36.1	32.8	30.7	91.8	92.5	89.9	90.4	37.5	44.4	52.2	53.6
Canada	81.9	82.4	81.8	81.8	65.8	67.4	64.1	63.5	91.0	91.1	90.9	90.9	60.7	67.0	70.7	71.4
Chile[a]	80.1	78.5	77.7	77.4	47.6	44.0	40.8	39.2	93.5	93.0	91.8	91.4	76.8	79.8	85.6	84.8
Czech Republic	79.4	78.1	81.4	82.2	51.3	36.7	37.4	37.5	94.9	95.0	95.4	95.4	54.5	62.4	68.3	70.9
Denmark	84.2	83.7	81.6	82.6	73.4	72.0	61.7	65.0	91.7	92.3	90.8	90.8	66.7	66.9	72.7	74.9
Estonia	76.3	77.5	80.4	81.7	52.1	44.3	47.5	48.1	89.2	93.2	92.4	93.3	60.0	62.4	67.7	70.2
Finland	77.6	77.4	77.4	77.9	56.4	56.3	54.1	53.8	90.7	90.3	89.6	89.7	48.1	59.2	63.1	65.1
France	74.4	74.7	75.5	75.6	32.6	41.9	40.5	40.0	94.2	94.1	92.7	92.7	41.7	42.5	55.1	56.0
Germany	78.9	81.8	82.1	82.2	54.7	54.9	50.5	51.0	93.4	93.8	92.5	92.0	52.4	65.8	75.3	76.9
Greece	77.4	78.4	75.9	76.2	41.7	34.4	27.7	26.4	94.4	94.6	93.1	93.2	57.3	60.9	54.9	57.3
Hungary	67.5	68.6	75.3	76.9	41.8	29.5	34.4	36.1	84.4	87.2	92.0	92.4	34.1	42.1	57.8	62.4
Iceland[b]	89.8	91.6	90.3	91.8	70.1	80.0	77.7	82.0	96.1	95.3	93.9	94.9	94.7	90.4	91.5	91.9
Ireland	80.0	81.6	77.6	77.7	57.8	59.6	38.3	41.5	92.3	91.7	89.8	89.2	65.2	69.8	71.5	71.5
Israel[c]	77.5	77.0	76.1	75.6	61.9	58.3	49.9	49.0	87.5	87.0	87.3	86.9	63.5	70.3	76.6	76.8
Italy[b]	74.3	74.3	74.1	74.8	44.6	36.0	30.4	30.2	90.6	91.0	87.7	88.2	42.7	46.2	63.3	65.9
Japan	85.2	85.2	85.0	85.4	47.4	45.1	43.0	44.6	97.1	96.3	95.5	95.5	84.1	84.9	85.6	86.4
Korea	77.1	77.6	78.6	78.9	28.4	23.1	25.9	26.3	92.2	90.5	91.1	91.1	71.3	76.8	81.8	81.7
Latvia	72.3	77.9	78.9	78.8	43.4	49.2	45.2	43.3	87.8	91.6	90.6	90.2	53.9	67.6	68.0	69.4
Luxembourg	76.4	75.0	76.0	75.1	37.4	30.6	36.2	28.8	94.2	94.9	93.9	93.1	(38.6)	(36.4)	(45.5)	(47.7)
Mexico	84.7	83.8	82.0	81.8	67.7	62.6	57.9	57.2	95.2	95.2	94.2	94.2	79.3	80.2	78.1	77.8
Netherlands	83.2	83.8	84.6	84.4	71.6	71.4	67.5	67.2	93.2	93.5	92.1	91.7	50.9	62.6	77.6	78.2
New Zealand	83.1	84.9	84.2	85.0	65.8	67.1	64.4	64.9	91.1	92.1	92.2	92.9	71.9	81.9	83.5	84.3
Norway[b]	84.8	81.8	80.5	80.3	67.5	58.6	56.3	55.1	91.4	90.9	89.1	88.9	74.4	74.7	76.9	77.8
Poland	71.7	70.0	74.8	75.7	40.9	36.5	38.4	39.8	88.3	87.9	90.6	90.8	40.4	44.8	57.5	58.6
Portugal	78.9	79.2	76.7	77.2	50.5	44.7	34.2	35.0	92.5	92.9	91.7	91.9	64.5	63.2	65.0	67.0
Slovak Republic	76.8	75.8	77.5	78.3	49.4	38.7	38.3	39.8	93.9	93.0	93.6	93.5	41.0	56.9	58.4	60.1
Slovenia	71.9	75.8	75.4	74.5	41.7	47.6	38.9	36.8	90.6	91.3	92.9	92.0	34.6	46.7	46.4	47.1
Spain[b]	80.4	82.6	80.9	80.5	53.6	57.3	40.6	38.9	93.0	92.5	92.6	92.5	60.5	62.8	66.2	67.0
Sweden[b]	81.5	81.4	83.5	83.9	54.4	51.5	53.6	54.0	90.7	92.9	93.3	93.3	72.6	76.4	82.0	82.6
Switzerland	89.4	88.2	87.8	88.2	70.5	70.2	66.8	67.8	96.7	95.8	95.5	95.5	79.3	78.4	80.2	80.7
Turkey	76.9	74.4	77.0	77.6	57.6	51.6	54.2	54.3	89.5	88.1	90.4	90.8	53.4	42.9	50.3	53.0
United Kingdom[b]	84.1	83.3	82.8	83.4	73.6	68.7	63.1	62.7	91.9	91.7	91.7	92.3	63.2	68.8	71.1	72.5
United States[b]	83.9	81.7	78.5	78.8	68.6	61.5	56.2	56.5	91.6	90.9	88.3	88.5	67.3	69.6	69.8	70.2
OECD[d]	80.8	80.4	79.7	80.0	56.8	54.0	50.8	50.9	92.6	92.2	91.2	91.3	62.8	66.6	70.5	71.4
Colombia[e]	86.1	82.6	85.8	85.4	67.2	58.2	63.4	61.3	96.5	95.2	96.1	96.3	80.2	77.7	85.1	85.1
Costa Rica	83.8	84.2	80.4	79.2	64.7	63.6	53.3	51.7	95.2	95.7	93.4	93.4	76.3	80.9	78.0	73.8
Lithuania	74.3	71.3	75.8	77.1	41.6	31.6	36.7	38.7	89.7	87.7	90.4	90.2	57.9	63.3	69.8	73.6
Brazil[e]	84.7	84.9	82.4	..	72.6	72.3	64.0	..	93.0	92.8	92.1	..	71.1	72.3	71.1	..
China[f]	87.8	..	84.3	..	68.0	..	59.6	..	96.8	..	95.4	..	70.8	..	71.0	..
India[f]	84.9	..	81.4	..	63.6	..	49.5	..	96.7	..	97.3	..	80.0	..	81.4	..
Indonesia[f]	..	85.6	85.4	..	..	62.8	57.7	..	..	96.3	97.0	..	..	84.9	84.4	..
Russian Fed.	75.9	76.9	79.1	79.8	47.5	42.7	41.9	41.8	91.4	92.0	94.0	94.4	50.6	66.3	61.0	61.7
South Africa[e]	66.0	64.3	65.1	65.4	33.9	32.0	29.5	29.3	85.6	84.0	83.5	83.6	60.6	59.1	53.6	53.2

Table C. **Labour force participation rates by selected age groups** *(cont.)*

As a percentage of the female population in each age group

	Women (15-64)				Youth (15-24)				Prime age (25-54)				Older population (55-64)			
	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016
Australia	65.3	69.4	71.2	71.6	68.5	69.7	66.7	66.4	70.5	74.8	76.6	76.8	35.3	48.6	57.3	58.8
Austria	61.8	67.1	70.9	71.7	50.8	56.0	54.1	54.6	76.3	80.5	84.4	84.9	17.6	27.5	40.2	42.7
Belgium	56.4	60.4	63.0	62.9	31.8	31.6	27.1	26.2	72.7	78.0	80.2	79.8	17.1	27.5	41.2	42.8
Canada	70.4	74.2	74.2	74.4	62.9	66.5	64.4	64.0	78.5	82.1	82.0	82.2	41.4	53.3	59.0	60.3
Chile[a]	42.1	47.6	55.8	56.1	29.4	29.7	29.9	29.2	49.7	57.3	67.5	68.2	27.8	36.8	48.6	49.0
Czech Republic	63.7	61.5	66.5	67.6	40.6	26.9	27.4	26.2	81.8	80.3	81.4	82.1	23.7	35.2	48.3	51.2
Denmark	75.6	76.4	75.3	77.2	67.8	69.1	62.5	67.3	84.0	85.3	83.4	83.8	49.0	55.1	62.6	66.4
Estonia	66.3	68.8	72.9	73.1	37.1	32.1	37.7	40.2	84.1	83.4	82.8	81.6	39.4	61.0	69.4	71.3
Finland	72.1	73.9	74.4	74.1	51.1	53.7	53.3	53.2	85.0	85.6	83.5	82.8	45.2	58.3	67.4	67.6
France	61.7	64.9	67.6	67.9	26.0	34.9	34.2	34.3	78.4	82.0	83.0	83.1	33.0	37.6	50.4	51.5
Germany	63.3	69.4	73.1	73.6	48.2	49.0	47.1	47.4	76.9	80.6	82.5	82.7	33.5	48.9	63.8	65.9
Greece	50.5	54.8	59.9	60.4	36.2	27.5	24.3	22.9	62.0	69.2	77.7	77.7	25.4	28.2	29.5	33.6
Hungary	52.6	54.9	62.2	63.5	32.5	21.8	27.5	28.2	70.5	73.2	79.6	79.8	13.3	26.9	39.9	43.5
Iceland[b]	83.3	83.6	85.5	86.2	73.2	80.1	81.5	83.0	88.2	85.4	87.5	88.8	76.8	80.7	83.0	80.5
Ireland	56.3	63.5	62.8	64.1	49.2	52.7	33.8	38.8	65.1	72.2	73.4	73.7	27.6	40.8	48.8	50.9
Israel[c]	62.5	65.5	68.3	68.6	54.3	52.5	48.0	48.0	70.3	73.9	78.1	78.5	39.1	52.4	61.8	61.8
Italy[b]	46.3	50.6	54.1	55.2	34.3	25.4	21.7	22.8	57.9	64.1	65.9	66.8	16.1	23.4	39.6	41.7
Japan	59.6	61.9	66.7	68.1	46.6	44.7	43.1	44.9	66.5	70.1	75.2	76.3	49.7	52.5	59.2	61.0
Korea	52.0	54.8	57.9	58.4	37.0	32.7	34.1	34.4	57.8	62.0	65.4	66.0	48.8	47.6	54.2	54.7
Latvia	62.1	67.8	72.8	74.0	31.2	35.8	37.1	35.4	83.3	82.8	84.6	85.5	29.2	55.7	63.5	66.1
Luxembourg	51.7	58.9	65.6	64.7	30.6	22.3	34.1	28.2	64.9	74.7	81.3	81.1	(16.8)	(29.1)	(35.0)	(32.9)
Mexico	41.0	45.4	46.8	47.0	36.3	35.1	31.6	31.2	45.4	52.3	55.2	55.5	28.0	33.4	37.2	37.5
Netherlands	65.2	70.4	74.7	75.0	70.0	69.4	69.4	69.2	72.7	79.9	82.1	82.2	25.9	38.9	56.7	58.5
New Zealand	67.2	71.5	74.1	74.9	59.5	61.9	59.9	60.0	73.4	76.5	79.1	80.5	47.8	64.1	73.0	73.2
Norway[b]	76.5	75.9	76.2	75.9	61.8	60.3	57.2	55.5	83.5	84.0	83.9	83.9	61.6	64.6	69.8	70.4
Poland	59.9	56.5	61.4	62.0	34.8	29.3	27.0	28.9	76.5	75.6	79.6	79.0	23.7	20.6	37.3	39.0
Portugal	63.8	68.7	70.3	70.5	40.9	37.8	32.8	31.3	77.3	82.7	86.0	86.6	42.0	47.0	49.9	51.0
Slovak Republic	63.2	60.7	64.3	65.3	42.6	30.1	24.9	24.7	82.9	80.5	80.8	81.4	10.7	23.3	45.8	48.2
Slovenia	62.9	66.6	67.9	68.6	36.4	35.4	31.7	30.6	84.2	87.3	88.6	88.9	14.1	23.1	32.9	35.2
Spain[b]	52.9	62.8	70.0	70.2	43.3	47.5	36.8	34.9	62.8	73.3	82.0	82.3	22.6	32.7	49.4	51.7
Sweden[b]	76.4	76.8	79.9	80.2	51.2	52.6	56.3	55.4	85.6	87.1	88.3	88.4	65.9	69.6	75.7	76.9
Switzerland	71.6	75.0	78.6	79.5	66.0	64.5	68.3	69.0	78.0	81.9	84.8	85.5	51.3	60.3	66.2	67.9
Turkey	28.0	25.7	35.0	36.2	28.1	24.4	29.8	30.4	28.9	28.0	40.3	42.0	21.6	14.8	18.3	18.6
United Kingdom[b]	68.9	69.8	72.5	73.0	65.7	62.7	60.9	61.1	76.2	77.5	80.0	80.1	42.5	49.9	57.1	59.7
United States[b]	70.7	69.1	66.9	67.3	63.0	57.2	53.8	53.8	76.7	75.4	73.7	74.3	51.9	58.3	58.5	58.4
OECD[d]	59.2	60.9	63.0	63.6	46.3	44.7	43.1	43.3	68.0	70.1	72.1	72.6	38.6	45.4	52.2	53.3
Colombia[e]	57.4	54.2	63.7	63.6	47.2	39.5	46.0	46.0	65.7	64.2	74.3	73.9	35.3	35.2	49.7	50.4
Costa Rica	41.6	49.7	53.9	50.4	35.2	39.2	37.5	32.9	47.7	57.8	64.2	61.1	21.0	31.9	38.9	34.5
Lithuania	67.1	64.9	72.5	73.9	30.5	22.3	30.8	31.9	87.9	83.6	88.2	88.5	35.9	49.2	63.3	67.2
Brazil[e]	58.3	62.8	61.1	..	51.2	54.7	48.8	..	65.1	70.2	70.3	..	37.9	40.6	40.5	..
China[f]	76.7	..	70.3	..	67.8	..	55.1	..	84.0	..	80.4	..	47.2	..	48.3	..
India[f]	36.0	..	28.5	..	26.9	..	17.5	..	41.5	..	34.0	..	30.0	..	25.6	..
Indonesia[f]	..	52.1	52.5	..	..	41.3	38.6	..	..	56.8	58.4	..	..	51.3	50.1	..
Russian Fed.	66.2	69.2	68.2	68.9	39.7	36.0	33.7	33.2	85.3	86.6	85.9	86.7	27.8	44.2	41.2	41.3
South Africa[e]	52.9	50.8	52.1	52.2	29.3	26.6	23.8	23.6	68.6	66.2	67.8	68.0	36.4	33.3	35.8	35.3

a) The introduction of a new labour force survey since April 2010 caused a break in series between 2009 and 2010. To remove the break, data prior to 2010 are spliced using *new-to-old* chaining coefficients based on data of fourth quarter of 2009.
b) The lower age limit is 16 instead of 15. For Iceland up to 2008, Italy after 2007, Norway up to 2005 and Sweden up to 2006.
c) The introduction of a redesigned monthly labour force survey since January 2012 caused a break in series between 2011 and 2012. To remove the break, data prior to 2012 are spliced using *new-to-old* chaining coefficients between monthly and quarterly surveys based on data of fourth quarter of 2011.
d) Weighted average.
e) Data for 2000 refer to 2001.
f) Data for 2015 refer to 2010 for China, 2012 for India and 2013 for Indonesia.

Source and definition: OECD Employment Database, www.oecd.org/employment/database and *www.oecd.org/els/emp/lfsnotes_sources.pdf.*

StatLink http://dx.doi.org/10.1787/888933478301

Table D. **Unemployment rates by selected age groups**

As a percentage of the total labour force in each age group

	Total (15-64)				Youth (15-24)				Prime age (25-54)				Older population (55-64)			
	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016
Australia	6.4	4.4	6.2	5.9	12.1	9.4	13.1	12.7	5.0	3.4	4.9	4.5	4.5	2.7	4.3	4.3
Austria	3.5	4.9	5.8	6.1	5.1	9.4	10.6	11.2	3.1	4.2	5.2	5.4	5.2	3.4	4.7	5.0
Belgium	7.0	7.5	8.6	7.9	17.5	18.8	22.1	20.1	6.1	6.6	7.7	7.1	3.0	4.2	5.6	5.7
Canada	6.9	6.1	7.0	7.1	12.7	11.2	13.2	13.1	5.8	5.1	5.8	6.0	5.5	5.1	6.1	6.4
Chile[a]	10.7	8.7	6.5	6.8	25.0	21.6	15.5	15.6	8.2	6.6	5.7	6.0	7.0	4.7	3.1	3.9
Czech Republic	8.8	5.4	5.1	4.0	17.0	10.7	12.6	10.5	7.7	4.9	4.6	3.5	5.2	4.6	4.4	3.8
Denmark	4.6	3.8	6.3	6.3	6.7	7.5	10.8	12.0	4.2	3.1	5.7	5.5	4.4	3.4	4.4	4.0
Estonia	14.8	4.7	6.3	6.9	22.2	9.9	12.6	12.8	14.0	4.2	5.5	5.9	11.5	3.6	6.0	8.1
Finland	9.8	6.9	9.5	8.9	20.3	15.7	21.1	19.1	8.0	5.3	7.7	7.4	9.4	6.5	8.0	7.5
France	10.1	7.7	10.1	9.8	20.7	18.8	24.0	24.1	9.2	6.6	8.9	8.6	7.9	4.4	7.2	7.1
Germany	7.8	8.7	4.7	4.2	8.4	11.7	7.2	7.0	7.0	8.0	4.4	3.9	12.3	10.3	4.7	3.9
Greece	11.6	8.5	25.1	23.7	29.2	22.7	49.8	47.3	9.7	7.8	24.4	22.8	3.9	3.4	17.5	19.2
Hungary	6.4	7.5	6.8	5.1	12.7	18.0	17.3	12.9	5.7	6.9	6.0	4.5	3.0	4.4	5.8	4.4
Iceland[b]	2.3	2.3	4.2	3.1	4.7	7.2	8.7	6.5	1.7	1.3	3.2	2.5	1.7	0.9	3.2	2.2
Ireland	4.7	4.9	10.0	8.7	7.9	10.3	22.4	19.0	4.0	4.0	9.0	7.9	2.6	2.3	7.8	6.5
Israel[c]	11.2	9.4	5.3	4.9	17.3	16.3	9.3	8.6	9.4	7.8	4.7	4.2	8.7	6.8	3.9	3.8
Italy[b]	10.6	6.2	12.1	11.9	29.7	20.4	40.3	37.8	8.5	5.3	11.2	11.1	4.5	2.4	5.5	5.7
Japan	5.0	4.1	3.5	3.3	9.2	7.7	5.5	5.1	4.1	3.7	3.4	3.1	5.6	3.4	3.1	2.9
Korea	4.6	3.4	3.7	3.8	10.8	8.8	10.5	10.7	4.0	3.1	3.3	3.4	2.9	2.2	2.8	2.8
Latvia	14.5	6.2	10.1	9.9	22.1	10.6	16.3	16.4	14.0	5.7	9.5	9.3	9.6	4.5	9.3	9.2
Luxembourg	2.4	4.1	6.7	6.3	6.4	15.2	17.3	10.0	2.0	3.4	5.8	5.3	(1.4)	(2.1)	(4.7)	-
Mexico	2.6	3.8	4.5	4.0	5.1	7.2	8.6	7.7	1.8	2.9	3.7	3.4	1.4	1.9	2.4	2.1
Netherlands	3.1	3.6	6.9	6.1	6.1	7.0	11.3	10.8	2.5	2.8	5.6	4.6	2.1	4.0	8.1	7.2
New Zealand	6.2	3.8	6.0	5.3	13.5	10.1	14.7	13.2	4.7	2.6	4.4	3.9	4.7	1.4	3.7	3.1
Norway[b]	3.5	2.6	4.5	4.9	10.2	7.3	10.0	11.0	2.6	1.9	4.1	4.4	1.3	1.0	1.7	2.0
Poland	16.4	9.7	7.6	6.2	35.2	21.7	20.8	17.7	13.9	8.4	6.6	5.4	9.4	6.8	5.4	4.4
Portugal	4.2	8.5	12.9	11.5	8.6	16.7	32.0	28.0	3.5	7.7	11.2	10.0	3.2	6.5	12.5	11.0
Slovak Republic	18.8	11.0	11.5	9.7	37.0	20.1	26.4	22.2	15.5	10.1	10.5	8.6	12.3	8.1	9.3	9.0
Slovenia	6.9	5.0	9.1	8.1	16.3	10.1	16.3	15.2	5.6	4.5	8.7	7.7	5.3	3.3	7.8	6.5
Spain[b]	13.9	8.3	22.2	19.7	25.3	18.1	48.3	44.4	12.3	7.2	20.6	18.2	9.4	6.0	18.6	17.0
Sweden[b]	5.9	6.2	7.6	7.1	11.7	19.2	20.3	18.9	4.9	4.4	5.8	5.5	6.1	3.9	5.3	5.3
Switzerland	2.7	3.7	4.9	5.1	4.8	7.1	8.8	8.6	2.3	3.1	4.4	4.7	2.7	3.1	4.0	3.8
Turkey	6.7	10.5	10.5	11.1	13.1	20.0	18.5	19.6	4.9	8.5	9.1	9.7	2.1	4.3	6.7	6.2
United Kingdom[b]	5.5	5.3	5.7	5.0	11.7	14.2	15.4	13.2	4.4	3.8	4.2	3.7	4.4	3.3	3.5	3.6
United States[b]	4.0	4.7	5.4	4.9	9.3	10.5	11.6	10.4	3.1	3.7	4.5	4.2	2.5	3.1	3.8	3.6
OECD[d]	6.4	5.8	7.0	6.5	12.2	12.1	13.9	12.9	5.4	4.9	6.2	5.8	5.0	4.0	4.9	4.6
Colombia[e]	15.4	11.5	9.2	9.5	27.9	22.2	17.7	18.4	11.9	9.0	7.4	7.7	7.9	5.9	5.5	5.5
Costa Rica	5.2	4.6	9.8	9.7	11.0	10.8	23.0	23.1	3.2	2.8	7.3	7.2	2.8	2.0	4.9	4.7
Lithuania	16.7	4.3	9.3	8.1	30.2	8.4	16.3	14.5	15.6	4.0	8.6	7.4	11.2	3.7	8.7	7.7
Brazil[e]	9.6	8.3	9.8	..	17.9	16.8	23.1	..	6.9	6.1	7.3	..	4.1	2.9	3.6	..
China[f]	3.7	..	2.9	..	8.8	..	6.4	..	2.8	..	2.5	..	0.4	..	1.2	..
India[f]	4.4	..	3.7	..	10.1	..	10.7	..	2.9	..	2.3	..	1.6	..	1.4	..
Indonesia[f]	..	9.5	6.4	..	..	25.1	21.6	..	..	5.6	3.3	..	..	1.8	1.3	..
Russian Fed.	10.7	6.1	5.6	5.6	20.7	14.4	16.0	16.3	9.2	5.1	4.8	4.8	7.3	3.1	3.7	3.7
South Africa[e]	25.4	22.3	25.3	26.7	49.6	46.5	50.1	53.3	21.2	18.6	22.8	24.1	8.4	5.6	8.7	9.0

Table D. **Unemployment rates by selected age groups** *(cont.)*

As a percentage of the male labour force in each age group

	Men (15-64)				Youth (15-24)				Prime age (25-54)				Older population (55-64)			
	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016
Australia	6.6	4.1	6.2	5.8	12.9	9.5	14.3	13.9	5.1	3.0	4.6	4.1	5.3	2.8	4.8	4.8
Austria	3.3	4.6	6.2	6.6	5.0	9.3	11.1	12.1	2.8	3.8	5.5	5.7	5.4	3.4	5.7	5.9
Belgium	5.8	6.7	9.2	8.1	15.3	17.1	23.8	21.7	4.9	5.9	8.2	7.3	3.0	3.6	6.3	5.4
Canada	7.0	6.5	7.6	7.8	13.8	12.3	15.0	14.8	5.7	5.3	6.2	6.5	5.5	5.2	6.6	7.0
Chile[a]	9.7	7.2	6.1	6.4	21.2	18.2	13.8	14.4	7.6	5.4	5.3	5.7	8.0	4.8	3.2	3.8
Czech Republic	7.4	4.3	4.3	3.4	16.7	10.6	11.3	9.9	6.0	3.5	3.7	2.8	5.0	4.5	4.0	3.8
Denmark	4.1	3.5	6.1	6.0	6.8	7.6	11.6	13.1	3.5	2.7	5.4	4.8	3.9	3.0	4.0	4.0
Estonia	16.0	5.5	6.3	7.5	21.7	11.8	12.9	14.6	15.0	4.2	5.3	6.2	15.0	6.9	6.9	9.5
Finland	9.1	6.5	10.0	9.2	18.9	14.8	22.5	19.6	7.2	4.8	7.9	7.5	9.3	6.9	9.1	8.2
France	8.5	7.3	10.6	10.1	18.4	18.3	25.1	24.6	7.5	6.1	9.2	8.6	7.6	4.7	7.8	7.9
Germany	7.6	8.6	5.1	4.5	9.2	12.2	7.9	7.8	6.6	7.8	4.7	4.2	11.5	9.7	5.2	4.1
Greece	7.6	5.3	21.9	19.9	21.6	15.5	45.2	44.3	6.2	4.7	20.9	18.4	3.7	2.9	18.1	19.3
Hungary	7.1	7.2	6.6	5.2	13.8	17.4	18.3	12.9	6.2	6.5	5.6	4.5	3.7	4.8	6.0	4.3
Iceland[b]	1.8	2.3	4.1	3.1	5.7	8.0	10.7	6.6	1.1	1.2	2.6	2.2	0.5	0.9	3.2	2.8
Ireland	4.7	5.0	11.4	10.1	7.6	10.7	24.2	20.6	4.2	4.2	10.4	9.1	2.5	2.4	9.0	8.1
Israel[c]	11.1	9.0	5.2	4.8	17.3	15.3	8.9	8.2	9.1	7.4	4.5	4.0	10.4	7.4	4.4	4.5
Italy[b]	8.2	5.0	11.6	11.1	25.4	18.4	38.8	36.5	6.3	4.0	10.4	10.1	4.4	2.6	6.4	6.4
Japan	5.1	4.1	3.7	3.4	10.4	8.3	5.9	5.7	3.9	3.6	3.5	3.2	6.8	4.1	3.7	3.4
Korea	5.1	3.8	3.8	3.9	13.5	11.4	11.3	11.0	4.5	3.6	3.3	3.6	3.9	2.7	3.3	3.2
Latvia	15.5	6.7	11.4	11.2	20.9	11.0	18.0	21.4	15.3	6.1	10.4	9.8	10.7	4.9	11.6	11.8
Luxembourg	1.8	3.6	6.2	6.0	5.7	13.5	18.9	13.6	1.4	2.8	5.0	5.0	(2.0)	(2.3)	(5.4)	-
Mexico	2.3	3.5	4.4	4.0	4.4	6.6	7.8	7.2	1.5	2.7	3.7	3.3	1.5	2.4	3.0	2.5
Netherlands	2.5	3.2	6.6	5.6	5.3	6.3	11.3	11.4	1.9	2.3	5.0	4.0	2.5	4.2	8.4	7.0
New Zealand	6.4	3.5	5.5	5.0	14.5	10.0	14.6	13.1	4.6	2.2	3.6	3.4	5.5	1.5	3.6	3.2
Norway[b]	3.6	2.6	4.8	5.6	9.5	7.9	11.1	12.6	2.9	1.9	4.3	5.0	1.8	1.1	1.8	2.7
Poland	14.6	9.1	7.4	6.2	33.3	20.0	20.7	17.4	12.1	7.8	6.2	5.1	9.1	7.4	5.9	5.1
Portugal	3.3	7.0	12.8	11.5	6.3	13.8	29.6	27.2	2.7	6.1	10.8	9.7	3.6	7.1	14.0	12.6
Slovak Republic	19.0	9.8	10.4	8.8	39.7	20.3	25.8	19.8	15.2	8.6	9.1	7.7	13.5	7.7	8.2	8.4
Slovenia	6.6	4.1	8.2	7.6	14.6	9.4	17.7	15.6	5.4	3.4	7.3	6.9	6.6	3.0	8.1	7.5
Spain[b]	9.6	6.5	20.9	18.2	19.4	15.2	48.6	44.0	8.0	5.5	18.9	16.3	8.6	5.0	18.5	16.9
Sweden[b]	6.3	6.0	7.8	7.5	12.1	18.6	21.2	20.5	5.3	4.1	5.8	5.6	6.8	4.3	6.0	6.1
Switzerland	2.3	3.0	4.8	5.0	5.6	6.8	9.2	8.8	1.6	2.3	4.1	4.5	3.0	2.6	4.4	4.3
Turkey	6.8	10.2	9.4	9.8	13.7	19.6	16.5	17.4	5.0	8.5	8.1	8.5	2.9	5.4	7.9	7.3
United Kingdom[b]	6.1	5.6	5.9	5.1	13.2	15.8	17.3	14.9	4.8	3.7	4.1	3.4	5.5	4.1	3.7	4.3
United States[b]	3.9	4.8	5.5	5.0	9.7	11.6	12.8	11.5	2.9	3.7	4.4	4.0	2.4	3.2	3.9	3.8
OECD[d]	5.9	5.6	6.9	6.4	12.0	12.3	14.3	13.3	4.8	4.6	6.0	5.6	5.4	4.2	5.3	5.0
Colombia[e]	12.3	8.9	6.9	7.3	22.5	17.8	13.2	14.3	9.2	6.6	5.2	5.4	8.5	6.3	5.6	6.2
Costa Rica	4.4	3.3	8.1	8.1	9.3	8.3	20.0	18.9	2.8	1.7	5.6	5.8	2.6	2.0	5.2	5.4
Lithuania	19.1	4.3	10.3	9.3	32.1	7.0	16.0	15.9	17.7	3.9	9.5	8.4	13.7	4.1	10.6	9.2
Brazil[e]	7.7	6.1	8.1	..	14.7	12.9	19.1	..	5.3	4.2	5.9	..	4.3	3.0	3.6	..
China[f]	3.6	..	2.7	..	9.2	..	6.3	..	2.7	..	2.2	..	0.6	..	1.4	..
India[f]	4.5	..	3.5	..	10.1	..	10.4	..	2.9	..	2.1	..	1.6	..	1.2	..
Indonesia[f]	..	8.4	6.3	..	..	23.8	21.2	..	..	4.7	3.3	..	..	1.8	1.3	..
Russian Fed.	10.9	6.4	5.9	5.8	19.5	14.5	15.3	15.7	9.6	5.4	5.0	4.9	7.5	3.5	4.3	4.4
South Africa[e]	23.1	18.8	23.4	24.7	47.1	41.1	46.3	48.6	18.9	15.1	20.8	22.1	9.3	6.4	10.1	11.3

Table D. **Unemployment rates by selected age groups** *(cont.)*

As a percentage of the female labour force in each age group

	Women (15-64)				Youth (15-24)				Prime age (25-54)				Older population (55-64)			
	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016
Australia	6.1	4.8	6.2	5.9	11.2	9.2	11.9	11.4	4.9	3.9	5.2	5.0	3.2	2.6	3.5	3.6
Austria	3.8	5.4	5.4	5.6	5.2	9.6	10.0	10.2	3.5	4.7	4.9	5.1	4.7	3.5	3.4	3.8
Belgium	8.7	8.5	7.8	7.6	20.3	20.9	20.0	18.2	7.6	7.4	7.1	6.9	2.9	5.3	4.7	6.0
Canada	6.7	5.7	6.4	6.3	11.4	10.1	11.3	11.3	5.8	4.8	5.4	5.4	5.5	4.9	5.4	5.6
Chile[a]	12.7	11.1	7.0	7.3	31.3	26.9	18.2	17.6	9.4	8.7	6.1	6.4	4.3	4.6	2.8	4.2
Czech Republic	10.6	6.8	6.2	4.8	17.4	11.0	14.4	11.4	9.9	6.7	5.8	4.5	5.4	4.8	4.9	3.8
Denmark	5.3	4.2	6.5	6.8	6.7	7.4	10.1	10.9	5.0	3.6	6.1	6.4	5.1	4.0	4.8	4.1
Estonia	13.5	3.9	6.2	6.3	23.0	7.2	12.2	10.6	12.9	4.2	5.8	5.6	7.5	0.9	5.4	6.9
Finland	10.6	7.3	9.0	8.7	21.8	16.8	19.6	18.6	8.8	5.8	7.5	7.4	9.4	6.0	7.1	6.9
France	11.9	8.1	9.6	9.6	23.7	19.5	22.7	23.5	11.1	7.2	8.6	8.6	8.3	4.1	6.6	6.2
Germany	8.1	8.9	4.3	3.8	7.5	11.1	6.5	6.1	7.5	8.1	4.0	3.5	13.6	11.2	4.1	3.6
Greece	17.5	13.0	29.1	28.3	38.2	31.7	55.0	50.7	15.1	12.0	28.7	28.1	4.3	4.3	16.5	19.0
Hungary	5.7	7.8	7.1	5.1	11.2	18.9	16.0	12.9	5.0	7.3	6.6	4.5	1.6	3.9	5.5	4.5
Iceland[b]	2.8	2.4	4.3	3.2	3.6	6.3	6.7	6.4	2.4	1.6	3.8	2.8	3.2	0.9	3.3	1.5
Ireland	4.7	4.7	8.3	7.2	8.3	9.8	20.3	17.0	3.8	3.7	7.3	6.4	2.9	2.0	6.1	4.3
Israel[c]	11.2	9.9	5.5	5.0	17.4	17.3	9.7	9.1	9.7	8.4	4.9	4.4	6.0	6.0	3.4	3.0
Italy[b]	14.6	7.9	12.8	12.9	35.4	23.3	42.6	39.6	12.1	7.1	12.2	12.5	4.7	2.1	4.3	4.8
Japan	4.7	3.9	3.3	3.1	7.9	7.1	5.1	4.5	4.4	3.9	3.3	3.1	3.6	2.4	2.3	2.3
Korea	3.8	2.8	3.7	3.7	9.0	7.1	10.0	10.5	3.0	2.4	3.2	3.2	1.6	1.4	2.0	2.1
Latvia	13.4	5.7	8.8	8.6	23.7	10.0	14.2	9.9	12.8	5.3	8.6	8.7	8.0	4.1	7.3	7.1
Luxembourg	3.2	4.7	7.4	6.6	7.3	17.5	15.7	6.1	2.9	4.0	6.9	5.8	-	(1.7)	(3.8)	-
Mexico	3.4	4.1	4.6	4.1	6.2	8.2	10.1	8.8	2.4	3.2	3.8	3.4	0.9	1.0	1.5	1.2
Netherlands	3.9	4.1	7.3	6.5	7.0	7.8	11.2	10.3	3.3	3.3	6.3	5.4	1.5	3.8	7.6	7.4
New Zealand	6.0	4.0	6.6	5.7	12.4	10.2	14.7	13.4	4.8	3.0	5.2	4.5	3.6	1.3	3.8	3.1
Norway[b]	3.2	2.5	4.2	4.1	10.9	6.6	8.8	9.3	2.3	2.0	3.9	3.7	0.7	0.8	1.6	1.3
Poland	18.4	10.4	7.8	6.3	37.3	23.8	20.9	18.0	16.0	9.1	7.1	5.7	9.7	5.7	4.8	3.5
Portugal	5.2	10.1	13.1	11.5	11.6	20.3	34.5	28.8	4.4	9.5	11.6	10.4	2.6	5.8	10.7	9.1
Slovak Republic	18.6	12.6	12.9	10.8	33.8	19.9	27.5	26.3	15.8	11.9	12.2	9.7	8.7	9.1	10.6	9.7
Slovenia	7.2	6.0	10.2	8.7	18.5	11.2	14.6	14.7	5.8	5.6	10.2	8.7	2.5	3.8	7.2	5.1
Spain[b]	20.6	10.7	23.7	21.5	32.9	21.7	48.0	44.9	18.9	9.5	22.4	20.3	11.3	7.7	18.7	17.2
Sweden[b]	5.4	6.5	7.4	6.7	11.3	19.8	19.4	17.2	4.5	4.7	5.8	5.3	5.4	3.5	4.6	4.4
Switzerland	3.2	4.6	5.0	5.1	3.9	7.4	8.4	8.4	3.1	4.1	4.6	4.9	2.3	3.8	3.5	3.1
Turkey	6.5	11.3	12.9	14.0	11.9	20.8	22.2	23.7	4.6	8.8	11.4	12.6	0.5	1.1	3.4	2.9
United Kingdom[b]	4.8	5.0	5.4	4.8	10.1	12.5	13.3	11.3	4.0	3.8	4.3	3.9	2.7	2.2	3.2	2.8
United States[b]	4.1	4.6	5.3	4.8	8.9	9.4	10.4	9.3	3.3	3.8	4.6	4.3	2.5	3.0	3.6	3.3
OECD[d]	7.0	6.1	7.0	6.6	12.4	11.9	13.4	12.5	6.2	5.3	6.5	6.1	4.4	3.7	4.4	4.1
Colombia[e]	19.8	15.1	12.2	12.4	34.8	28.6	23.8	23.9	15.7	12.3	10.1	10.5	6.7	5.0	5.2	4.7
Costa Rica	6.7	6.9	12.4	12.2	14.2	15.1	28.0	31.1	4.2	4.6	9.9	9.5	3.3	2.1	4.3	3.4
Lithuania	14.3	4.4	8.4	6.8	27.5	10.4	16.6	12.6	13.5	4.0	7.8	6.4	8.1	3.4	7.1	6.5
Brazil[e]	12.2	11.0	12.0	..	22.5	21.9	28.5	..	9.1	8.5	9.1	..	3.7	2.7	3.6	..
China[f]	3.8	..	3.3	..	8.4	..	6.5	..	2.9	..	2.9	..	0.2	..	0.9	..
India[f]	4.2	..	4.3	..	10.2	..	11.6	..	2.6	..	2.9	..	1.6	..	1.8	..
Indonesia[f]	..	11.2	6.7	..	..	27.3	22.1	..	..	7.2	3.3	..	..	1.9	1.1	..
Russian Fed.	10.4	5.7	5.3	5.3	22.2	14.4	16.9	17.1	8.8	4.8	4.6	4.7	7.1	2.6	3.0	2.9
South Africa[e]	27.9	26.4	27.7	29.1	52.2	52.8	54.9	59.3	23.8	22.6	25.2	26.5	7.2	4.5	6.9	6.3

a) The introduction of a new labour force survey since April 2010 caused a break in series between 2009 and 2010. To remove the break, data prior to 2010 are spliced using *new-to-old* chaining coefficients based on data of fourth quarter of 2009.
b) The lower age limit is 16 instead of 15. For Iceland up to 2008, Italy after 2007, Norway up to 2005 and Sweden up to 2006.
c) The introduction of a redesigned monthly labour force survey since January 2012 caused a break in series between 2011 and 2012. To remove the break, data prior to 2012 are spliced using *new-to-old* chaining coefficients between monthly and quarterly surveys based on data of fourth quarter of 2011.
d) Weighted average.
e) Data for 2000 refer to 2001.
f) Data for 2015 refer to 2010 for China, 2012 for India and 2013 for Indonesia.

Source and definition: OECD Employment Database, www.oecd.org/employment/database and *www.oecd.org/els/emp/lfsnotes_sources.pdf.*

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Table E. **Employment/population ratios by educational attainment, 2015**

Persons aged 25-64, as a percentage of the population in each gender

	Total			Men			Women		
	Below upper secondary education	Upper secondary or post-secondary non-tertiary education	Tertiary education	Below upper secondary education	Upper secondary or post-secondary non-tertiary education	Tertiary education	Below upper secondary education	Upper secondary or post-secondary non-tertiary education	Tertiary education
Australia	58.5	78.0	83.1	68.2	85.1	88.8	50.1	68.4	78.6
Austria	52.9	75.7	85.4	59.3	79.1	87.4	49.1	72.0	83.1
Belgium	46.6	72.2	84.6	54.4	77.6	86.8	38.1	66.0	82.7
Canada	55.2	73.5	81.8	63.0	78.8	85.7	45.3	66.7	78.6
Chile[a]	61.3	71.6	84.0	84.2	86.3	90.7	41.8	58.7	78.2
Czech Republic	41.9	78.9	84.8	52.6	86.3	92.7	35.6	70.7	77.6
Denmark	60.5	80.3	85.9	68.9	83.9	89.4	50.9	75.8	83.3
Estonia	57.3	76.8	85.7	61.6	81.9	91.0	50.6	70.4	82.7
Finland	53.4	72.8	82.7	58.2	75.1	84.4	45.6	70.0	81.4
France[b]	54.1	72.7	83.8	61.2	76.3	86.4	47.9	68.8	81.7
Germany	58.7	79.9	88.1	68.0	83.5	91.3	51.5	76.5	84.1
Greece	48.5	56.4	68.7	60.2	68.9	73.1	35.6	44.6	64.7
Hungary	48.1	73.7	83.0	58.5	80.5	89.8	39.9	66.1	78.0
Iceland	78.4	88.1	91.8	85.2	91.8	94.2	71.4	82.6	90.1
Ireland	48.8	68.9	82.1	61.1	77.8	86.8	33.2	59.9	78.4
Israel	48.6	73.4	86.5	63.6	78.3	90.2	32.2	67.6	83.5
Italy	50.2	70.1	78.6	64.8	79.9	84.7	34.5	60.4	74.0
Japan[c]	..	..	82.3	..	..	92.8	..	..	71.7
Korea	65.8	72.4	77.4	77.0	84.4	89.5	58.6	60.3	62.8
Latvia	56.4	71.8	85.8	62.8	75.6	88.9	45.4	67.7	84.3
Luxembourg	62.3	71.8	84.8	70.3	77.3	89.0	54.3	65.8	80.4
Mexico	64.3	70.6	80.1	88.3	88.8	88.6	43.7	55.0	71.6
Netherlands	60.0	78.2	88.2	71.8	83.7	91.1	49.0	72.6	85.3
New Zealand	69.1	81.3	87.5	77.3	89.3	92.5	62.2	72.4	83.5
Norway	61.0	80.5	89.2	65.7	84.0	90.6	55.9	76.0	88.1
Poland	40.8	67.2	87.1	51.4	76.1	91.5	29.9	57.0	84.1
Portugal	64.3	78.7	83.7	70.7	81.1	85.2	57.5	76.4	82.8
Slovak Republic	34.5	72.6	80.3	39.8	79.5	88.2	30.6	64.9	74.2
Slovenia	49.0	69.7	84.4	56.9	74.2	88.3	42.0	63.4	81.7
Spain	51.6	67.7	78.5	60.5	73.9	82.4	41.7	61.3	75.2
Sweden	65.9	85.1	89.3	72.9	87.4	90.2	57.7	81.9	88.6
Switzerland	68.8	83.2	89.2	77.9	88.1	92.8	61.6	78.8	84.5
Turkey	50.9	62.1	76.2	74.3	81.4	84.9	27.7	32.2	64.4
United Kingdom[d]	58.6	80.7	85.9	69.4	86.2	90.3	48.9	74.7	81.8
United States	54.7	68.6	81.2	67.2	75.0	86.3	40.5	62.0	76.9
OECD[e]	55.9	74.3	83.8	66.1	81.1	88.5	45.9	66.7	79.5
Colombia	71.9	77.0	83.8	89.3	89.1	90.1	54.7	65.4	78.8
Costa Rica	64.5	71.7	81.2	84.4	87.3	87.8	44.4	56.1	75.3
Lithuania	50.0	71.0	89.6	54.1	74.1	92.0	42.6	67.7	88.1
Brazil[b]	67.8	76.7	85.0	83.4	88.3	91.2	51.9	66.7	80.8
Russian Federation[a]	49.4	72.4	82.6	57.6	79.5	88.6	39.6	63.9	78.5

Note: In most countries data refer to ISCED 2011. The countries with data that refer to ISCED-97 are: Brazil and the Russian Federation. See the description of the levels of education in *www.oecd.org/els/emp/definitions-education.pdf*.

a) Year of reference 2013.

b) Year of reference 2014.

c) Data for total tertiary education include upper secondary and post-secondary non-tertiary programmes (less than 5% of the adults are under this group).

d) Data for upper secondary attainment include completion of a sufficient volume and standard of programmes that would be classified individually as completion of intermediate upper secondary programmes (18% of the adults are under this group).

e) Unweighted average.

Source: OECD (2016), *Education at a Glance, Indicator* A5, *www.oecd.org/edu/education-at-a-glance-19991487.htm*.

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Table F. **Labour force participation rates by educational attainment, 2015**

Persons aged 25-64, as a percentage of the population in each gender

	Total			Men			Women		
	Below upper secondary education	Upper secondary or post-secondary non-tertiary education	Tertiary education	Below upper secondary education	Upper secondary or post-secondary non-tertiary education	Tertiary education	Below upper secondary education	Upper secondary or post-secondary non-tertiary education	Tertiary education
Australia	63.5	81.7	86.3	74.3	88.5	92.1	54.2	72.5	81.6
Austria	59.1	79.6	88.5	68.0	83.6	90.9	54.0	75.4	86.0
Belgium	54.7	78.0	88.2	64.4	83.6	90.9	44.2	71.7	86.0
Canada	61.9	79.0	85.8	70.8	84.9	90.0	50.7	71.2	82.4
Chile[a]	64.7	75.9	88.4	88.1	91.1	94.8	44.7	62.5	82.8
Czech Republic	52.9	82.6	86.7	66.0	89.4	94.6	45.2	74.9	79.5
Denmark	66.2	84.2	90.2	74.9	87.7	93.4	56.1	80.0	87.8
Estonia	65.5	81.9	89.1	70.0	86.9	94.2	58.5	75.5	86.1
Finland	60.7	79.3	88.3	65.4	81.9	90.6	53.1	76.1	86.7
France[b]	62.9	79.7	89.0	71.7	83.3	91.8	55.2	75.7	86.6
Germany	66.3	83.5	90.2	78.3	87.6	93.3	56.8	79.5	86.3
Greece	65.8	75.7	84.9	79.9	86.7	87.2	50.3	65.3	82.7
Hungary	56.9	78.2	84.9	68.5	85.0	91.5	47.8	70.5	80.0
Iceland	81.7	91.0	94.4	88.1	94.4	96.2	75.0	85.7	93.2
Ireland	58.0	76.5	86.6	74.0	87.4	91.9	37.8	65.5	82.4
Israel	52.0	77.6	89.8	68.3	82.6	93.2	34.1	71.8	87.0
Italy	58.5	76.9	84.3	75.0	86.8	89.4	40.8	67.1	80.5
Japan[c]	..	..	84.5	..	..	95.3	..	..	73.5
Korea	67.6	74.9	80.0	80.1	87.4	92.4	59.7	62.2	65.0
Latvia	70.2	80.5	89.9	76.3	85.5	92.6	59.5	74.9	88.5
Luxembourg	67.9	75.9	88.8	76.5	80.9	92.9	59.3	70.5	84.6
Mexico	66.4	73.5	83.6	91.1	92.4	92.3	45.1	57.3	74.9
Netherlands	66.1	84.0	91.6	78.8	89.3	94.3	54.4	78.5	88.9
New Zealand	73.7	85.4	89.9	81.5	92.4	95.1	67.0	77.6	85.9
Norway	66.1	83.3	91.6	71.5	86.8	93.0	60.3	78.7	90.3
Poland	48.3	72.4	90.3	60.6	81.3	94.4	35.7	62.2	87.5
Portugal	73.9	88.9	91.2	81.4	90.3	92.4	66.0	87.5	90.5
Slovak Republic	52.4	80.6	85.0	62.4	86.5	92.5	45.1	73.9	79.2
Slovenia	56.7	76.9	89.6	65.5	80.5	92.5	48.8	72.0	87.5
Spain	72.6	83.8	89.6	82.7	89.0	92.0	61.5	78.5	87.6
Sweden	75.8	89.2	93.0	82.6	91.6	94.6	67.9	86.0	91.8
Switzerland	76.1	86.3	92.1	86.1	91.4	95.7	68.0	81.8	87.4
Turkey	56.0	68.3	83.2	81.7	87.4	90.5	30.5	38.8	73.3
United Kingdom[d]	62.9	83.8	88.2	74.2	89.4	92.7	52.7	77.5	84.1
United States	60.2	73.1	83.5	73.4	80.0	88.9	45.3	65.8	78.9
OECD[e]	63.6	80.1	88.0	75.1	86.9	92.6	52.5	72.5	83.9
Colombia	76.6	83.9	90.9	93.3	94.8	96.2	59.9	73.3	86.7
Costa Rica	69.6	77.6	86.1	89.5	92.5	92.4	49.6	62.6	80.5
Lithuania	65.2	80.1	92.6	70.3	83.8	95.0	56.2	76.1	91.1
Brazil[b]	71.0	81.3	88.0	86.2	91.9	93.7	55.3	72.2	84.2
Russian Federation[a]	56.5	77.2	85.1	65.8	84.6	91.4	45.4	68.2	80.8

Note: In most countries data refer to ISCED 2011. The countries with data that refer to ISCED-97 are: Brazil and the Russian Federation. See the description of the levels of education in *www.oecd.org/els/emp/definitions-education.pdf*.

a) Year of reference 2013.

b) Year of reference 2014.

c) Data for total tertiary education include upper secondary and post-secondary non-tertiary programmes (less than 5% of the adults are under this group).

d) Data for upper secondary attainment include completion of a sufficient volume and standard of programmes that would be classified individually as completion of intermediate upper secondary programmes (18% of the adults are under this group).

e) Unweighted average.

Source: OECD (2016), *Education at a Glance, Indicator* A5, *www.oecd.org/edu/education-at-a-glance-19991487.htm*.

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Table G. **Unemployment rates by educational attainment, 2015**

Persons aged 25-64, as a percentage of the population in each gender

	Total			Men			Women		
	Below upper secondary education	Upper secondary or post-secondary non-tertiary education	Tertiary education	Below upper secondary education	Upper secondary or post-secondary non-tertiary education	Tertiary education	Below upper secondary education	Upper secondary or post-secondary non-tertiary education	Tertiary education
Australia	8.0	4.7	3.6	7.6	3.9	3.4	8.4	6.0	3.7
Austria	10.6	4.9	3.6	12.9	5.3	3.9	9.0	4.5	3.3
Belgium	14.8	7.5	4.1	15.4	7.2	4.5	13.7	8.0	3.8
Canada	10.4	6.8	4.7	10.8	7.2	4.8	9.6	6.3	4.6
Chile[a]	5.2	5.6	4.9	4.4	5.3	4.3	6.5	6.1	5.5
Czech Republic	20.7	4.4	2.2	20.3	3.5	2.0	21.1	5.6	2.4
Denmark	8.5	4.7	4.8	8.0	4.3	4.3	9.3	5.3	5.1
Estonia	12.5	6.2	3.8	12.0	5.8	3.3	13.5	6.8	4.0
Finland	12.1	8.2	6.4	11.1	8.3	6.9	14.2	8.0	6.0
France[b]	14.0	8.8	5.7	14.6	8.4	5.8	13.2	9.1	5.7
Germany	11.4	4.3	2.3	13.2	4.7	2.2	9.3	3.8	2.5
Greece	26.3	25.5	19.0	24.6	20.5	16.1	29.1	31.7	21.8
Hungary	15.5	5.7	2.2	14.5	5.3	1.9	16.6	6.3	2.4
Iceland	4.0	3.1	2.8	3.3	2.8	2.1	4.8	3.6	3.3
Ireland	15.9	9.9	5.1	17.4	10.9	5.5	12.1	8.6	4.8
Israel	6.5	5.4	3.6	6.9	5.2	3.3	5.5	5.8	4.0
Italy	14.2	8.9	6.8	13.5	8.0	5.4	15.6	10.1	8.0
Japan[c]	..	..	2.6	..	..	2.6	..	..	2.5
Korea	2.7	3.3	3.2	3.9	3.5	3.1	1.7	3.1	3.3
Latvia	19.6	10.7	4.5	17.8	11.6	4.0	23.8	9.6	4.7
Luxembourg	8.3	5.4	4.6	8.1	4.5	4.3	8.5	6.7	4.9
Mexico	3.1	4.0	4.2	3.1	3.9	4.0	3.1	4.1	4.5
Netherlands	9.3	6.8	3.7	8.9	6.2	3.4	9.9	7.5	4.0
New Zealand	6.2	4.8	2.8	5.2	3.4	2.8	7.2	6.7	2.7
Norway	7.7	3.3	2.5	8.1	3.3	2.6	7.2	3.4	2.5
Poland	15.5	7.1	3.5	15.0	6.4	3.0	16.5	8.2	3.9
Portugal	13.0	11.4	8.2	13.2	10.2	7.8	12.8	12.7	8.5
Slovak Republic	34.2	9.9	5.6	36.3	8.1	4.7	32.2	12.2	6.3
Slovenia	13.6	9.4	5.7	13.2	7.8	4.5	14.1	12.0	6.6
Spain	28.9	19.2	12.4	26.8	17.0	10.4	32.2	21.9	14.1
Sweden	13.1	4.6	4.0	11.7	4.6	4.6	15.0	4.7	3.5
Switzerland	9.6	3.6	3.2	9.6	3.6	3.0	9.5	3.6	3.4
Turkey	9.1	9.2	8.4	9.0	7.0	6.2	9.3	16.9	12.2
United Kingdom[d]	6.8	3.6	2.7	6.5	3.7	2.6	7.1	3.6	2.7
United States	9.2	6.0	2.7	8.4	6.3	2.9	10.6	5.7	2.5
OECD[e]	12.4	7.3	4.9	12.2	6.7	4.5	12.7	8.2	5.3
Colombia	6.0	8.2	7.8	4.3	6.1	6.3	8.6	10.9	9.1
Costa Rica	7.4	7.6	5.7	5.7	5.7	5.0	10.5	10.5	6.5
Lithuania	23.3	11.3	3.2	23.0	11.5	3.1	24.2	11.1	3.2
Brazil[b]	4.4	5.7	3.5	3.3	4.0	2.7	6.2	7.6	4.0
Russian Federation[a]	12.5	6.2	-	12.4	6.1	3.1	12.7	-	-

Note: In most countries data refer to ISCED 2011. The countries with data that refer to ISCED-97 are: Brazil and the Russian Federation. See the description of the levels of education in *www.oecd.org/els/emp/definitions-education.pdf*.

a) Year of reference 2013.

b) Year of reference 2014.

c) Data for total tertiary education include upper secondary and post-secondary non-tertiary programmes (less than 5% of the adults are under this group).

d) Data for upper secondary attainment include completion of a sufficient volume and standard of programmes that would be classified individually as completion of intermediate upper secondary programmes (18% of the adults are under this group).

e) Unweighted average.

Source: OECD (2016), *Education at a Glance, Indicator* A5, *www.oecd.org/edu/education-at-a-glance-19991487.htm*.

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Table H. **Incidence and composition of part-time employment**[a]

Persons aged 15 and over, percentages

	Part-time employment as a proportion of total employment												Women's share in part-time employment			
	Total				Men				Women							
	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016
Australia[b, c]	23.8	23.7	25.2	25.9	11.7	12.3	14.3	15.1	38.8	37.7	38.0	38.4	72.7	71.5	69.5	68.8
Austria	11.7	17.3	21.0	20.9	2.4	5.6	8.6	8.6	23.9	31.4	35.0	34.7	88.6	82.4	78.4	78.3
Belgium	19.3	18.1	18.2	17.8	6.9	6.4	7.3	6.9	35.5	32.2	30.2	30.0	79.5	80.7	78.9	79.4
Canada	18.1	18.3	18.9	19.2	10.4	11.1	12.1	12.6	27.2	26.3	26.4	26.4	69.1	68.0	66.4	65.6
Chile	4.7	8.0	16.8	17.4	3.1	5.2	11.5	12.2	8.7	13.9	24.5	25.0	53.9	56.9	59.4	58.6
Czech Republic	3.2	3.5	4.7	4.9	1.6	1.7	2.5	2.6	5.4	5.9	7.4	8.0	72.5	72.3	69.5	70.9
Denmark	15.3	17.3	20.0	21.7	9.1	11.9	15.0	17.3	22.4	23.4	25.8	26.7	68.1	63.3	60.3	57.7
Estonia	7.2	6.8	8.6	8.7	4.6	3.6	5.1	5.6	10.0	10.1	12.2	11.9	67.9	73.2	69.8	67.2
Finland	10.4	11.7	13.4	14.0	7.1	8.2	10.6	10.6	13.9	15.5	16.4	17.7	63.8	63.7	59.5	60.8
France	14.2	13.3	14.4	14.2	5.3	4.9	6.9	7.0	24.3	22.8	22.3	22.0	80.1	80.5	75.2	74.7
Germany	17.6	22.0	22.4	22.1	4.8	7.8	9.3	9.1	33.9	39.1	37.4	36.9	84.5	80.7	77.9	78.1
Greece	5.3	7.7	11.1	11.0	3.0	4.1	7.3	7.2	9.4	13.3	16.3	16.1	65.0	67.7	61.9	61.9
Hungary	3.2	3.1	4.4	4.0	1.7	1.8	3.0	2.6	4.7	4.5	6.0	5.5	71.2	68.6	63.6	64.8
Iceland[b, d]	20.4	15.9	17.2	17.7	8.8	8.0	11.3	11.6	33.7	25.4	23.7	24.6	77.0	72.7	65.6	65.1
Ireland	18.1	19.9	23.3	22.8	7.3	7.4	12.3	11.9	32.0	35.0	35.4	34.8	77.1	79.8	72.1	72.4
Israel	15.6	16.1	15.9	15.5	7.4	8.1	9.4	9.1	25.4	25.3	23.3	22.8	74.5	73.3	68.3	68.5
Italy[d]	11.7	15.3	18.7	18.6	5.4	5.5	8.5	8.5	22.5	29.8	32.8	32.6	70.9	78.2	73.5	73.6
Japan[e]	15.9	18.9	22.7	22.8	7.1	9.2	12.0	11.9	29.0	32.6	36.9	37.1	73.7	71.5	69.8	70.3
Korea[e]	7.0	8.9	10.6	10.9	5.1	6.3	6.9	6.8	9.8	12.5	15.9	16.5	57.7	58.9	62.6	63.6
Latvia	8.8	5.4	6.8	7.3	6.3	3.4	4.2	4.8	11.4	7.4	9.4	9.7	64.6	67.5	69.7	67.7
Luxembourg	13.0	13.1	14.9	13.6	2.1	1.4	5.2	4.9	28.9	27.6	26.7	24.1	90.4	93.9	80.8	80.4
Mexico	13.5	17.8	18.1	17.7	7.1	11.4	12.3	12.0	25.6	28.5	27.5	26.9	65.1	60.0	57.8	58.1
Netherlands	32.1	35.9	38.5	37.7	13.1	16.1	19.5	18.7	57.3	59.9	60.7	59.8	76.7	75.5	72.7	73.3
New Zealand	22.2	21.9	21.3	21.2	10.9	11.0	11.2	11.6	35.7	34.5	32.7	32.1	73.2	73.2	72.3	71.3
Norway[d]	20.2	20.4	19.4	19.2	8.7	10.5	12.1	12.0	33.4	31.6	27.6	27.2	77.0	72.9	67.1	67.1
Poland	12.8	10.1	6.4	6.0	8.8	6.0	3.8	3.4	17.9	15.0	9.6	9.0	61.7	67.0	67.0	68.2
Portugal	9.3	10.0	10.5	9.1	4.9	6.3	8.5	6.8	14.7	14.4	12.6	11.5	70.9	66.7	59.3	62.5
Slovak Republic	1.9	2.4	5.7	5.8	1.0	1.1	4.1	4.2	2.9	4.0	7.8	7.6	70.6	74.0	59.9	59.0
Slovenia	4.9	7.8	9.2	8.0	3.9	6.3	6.7	5.2	6.1	9.7	12.1	11.1	56.8	56.2	59.8	64.8
Spain[d]	7.5	10.5	14.5	14.1	2.6	3.6	7.2	7.1	16.1	20.1	23.1	22.3	78.3	80.0	73.3	72.8
Sweden[d]	14.0	14.4	14.1	13.8	7.3	9.5	10.6	10.1	21.4	19.7	18.0	17.8	72.9	65.0	60.7	61.8
Switzerland	24.4	25.4	27.0	27.0	8.4	8.7	11.0	11.4	44.7	45.6	45.5	44.9	80.6	81.3	78.2	77.4
Turkey	9.4	8.1	9.9	9.5	5.7	4.4	5.9	5.8	19.3	18.6	19.0	17.8	55.4	59.6	58.2	57.4
United Kingdom[d]	23.3	22.9	24.0	23.8	8.5	9.7	11.9	11.6	40.7	38.2	37.7	37.5	80.2	77.2	73.7	74.1
United States[d, f]	12.8	12.6	12.7	12.9	8.0	7.6	8.4	8.5	18.0	17.9	17.4	17.6	67.5	68.4	65.9	65.8
OECD[g]	13.9	15.4	16.8	16.7	6.7	7.8	9.5	9.4	23.7	25.3	25.9	25.8	72.4	71.5	68.7	68.8
Colombia[c]	17.9	14.5	16.6	15.9	11.4	9.2	9.1	8.5	28.2	22.8	27.0	26.1	61.1	61.3	68.3	69.0
Costa Rica	..	..	18.2	15.6	..	..	11.1	9.7	..	..	29.8	25.8	..	..	62.2	60.6
Lithuania	10.6	6.1	6.8	6.9	7.7	3.6	4.1	4.4	13.5	8.6	9.3	9.3	64.5	69.9	70.0	70.2
Brazil[c]	16.8	18.3	17.9	..	8.8	10.3	11.5	..	28.4	29.1	26.5	..	69.1	67.6	63.2	..
Russian Fed.	7.4	5.1	4.2	4.3	4.9	3.5	2.9	3.1	10.0	6.6	5.6	5.6	66.0	64.8	64.9	62.9
South Africa	..	..	8.8	9.0	..	..	5.5	5.6	..	..	13.0	13.3	..	..	64.6	64.6

a) Part-time employment refers to persons who usually work less than 30 hours per week in their main job.
b) Part-time employment based on hours worked at all jobs.
c) Data for 2000 refer to 2001.
d) The lower age limit is 16 instead of 15. For Iceland up to 2008, Italy after 2007, Norway up to 2005 and Sweden up to 2006.
e) Data are based on actual hours worked.
f) Data are for wage and salary workers only.
g) Weighted average.

Source and definition: OECD Employment Database, www.oecd.org/employment/database. See van Bastelaer, A., G. Lemaître and P. Marianna (1997), "The Definition of Part-Time Work for the Purpose of International Comparisons", *Labour Market and Social Policy Occasional Paper*, No. 22, OECD Publishing, Paris, *http://dx.doi.org/10.1787/132721856632*.

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Table I. **Incidence and composition of involuntary part-time employment**[a, b]

Persons aged 15 and over, percentages

	Involuntary part-time employment as a proportion of total employment												Involuntary part-time employment as a proportion of part-time employment			
	Total				Men				Women							
	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016
Australia	6.3	6.6	8.9	8.9	4.3	4.5	6.4	6.6	8.8	9.3	11.8	11.5	23.8	23.5	28.8	28.0
Austria	1.8	2.7	3.4	3.6	0.9	1.0	1.8	2.0	3.0	4.6	5.1	5.3	11.1	11.7	11.9	12.4
Belgium	4.6	3.2	2.4	2.2	1.7	1.5	1.4	1.3	8.4	5.5	3.6	3.2	22.1	14.6	9.7	8.8
Canada	4.6	4.0	4.9	4.8	2.8	2.6	3.4	3.5	6.6	5.6	6.7	6.2	25.4	22.0	26.2	25.0
Chile	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Czech Republic	1.4	0.8	1.1	0.9	0.3	0.3	0.6	0.4	2.9	1.4	1.7	1.6	27.1	16.4	17.2	13.9
Denmark	2.9	3.1	3.8	3.6	1.1	1.3	2.1	2.0	5.1	5.0	5.8	5.4	13.8	13.0	15.1	13.1
Estonia	..	1.2	1.4	0.9	..	0.7	0.9	0.6	..	1.8	1.8	1.3	..	15.3	12.6	9.4
Finland	3.5	2.9	4.0	4.3	1.5	1.3	2.5	2.6	5.7	4.6	5.6	6.1	28.7	20.7	25.8	26.3
France	4.6	5.2	7.7	7.8	2.3	1.8	3.5	3.5	7.3	9.0	12.1	12.4	27.0	29.9	40.9	41.6
Germany	2.3	5.3	3.6	3.1	0.8	2.7	1.9	1.7	4.2	8.4	5.5	4.7	12.0	20.3	12.8	11.2
Greece	1.9	2.4	6.5	6.8	1.2	1.2	5.1	5.1	3.2	4.3	8.5	9.2	42.9	42.6	68.8	70.1
Hungary	0.7	1.1	2.1	1.4	0.4	0.7	1.7	1.1	1.2	1.5	2.5	1.9	19.0	26.0	34.7	27.3
Iceland[c]	2.2	1.2	3.4	3.0	0.8	0.0	0.9	1.1	3.8	2.7	6.1	5.2	8.5	5.5	14.4	12.3
Ireland	2.7	1.8	7.8	6.6	2.2	1.3	6.2	5.5	3.4	2.5	9.7	7.8	16.4	10.1	34.2	29.5
Israel	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Italy[c]	3.2	5.2	11.8	11.7	1.8	2.4	6.4	6.5	5.4	9.5	19.4	19.1	37.1	38.3	63.9	62.5
Japan	..	4.5	4.7	4.4	..	2.6	2.7	2.5	..	7.1	7.2	7.0	..	23.6	20.6	19.5
Korea	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Latvia	..	1.4	2.3	3.0	..	1.0	1.5	2.3	..	1.8	3.2	3.8	..	22.5	29.8	35.9
Luxembourg	0.8	0.8	2.6	2.3	0.2	0.4	0.9	0.4	1.7	1.5	4.7	4.7	6.8	4.7	13.7	12.5
Mexico	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Netherlands	1.4	2.1	4.2	4.2	0.9	1.1	2.9	3.1	2.2	3.3	5.7	5.6	3.6	4.6	8.6	8.7
New Zealand	6.0	3.9	4.6	5.2	3.5	2.5	2.7	3.2	9.0	5.4	6.7	7.6	26.0	16.6	20.3	24.5
Norway[c]	1.6	1.5	1.5	1.7	0.8	0.7	0.9	1.2	2.6	2.3	2.2	2.3	6.4	5.6	5.9	6.6
Poland[d]	2.7	2.0	2.0	1.6	2.3	1.3	1.3	0.9	3.1	2.8	3.0	2.4	26.0	21.3	27.5	23.5
Portugal	2.5	3.3	4.8	4.5	1.0	1.5	3.0	2.8	4.3	5.4	6.8	6.3	22.4	26.8	38.6	37.5
Slovak Republic	0.7	0.9	4.0	3.8	0.2	0.3	3.0	3.1	1.3	1.6	5.1	4.8	33.5	33.8	65.4	63.7
Slovenia	..	0.4	1.2	1.3	..	0.2	0.7	0.6	..	0.7	1.9	2.1	..	4.5	11.2	13.9
Spain[c]	1.8	3.9	10.0	9.4	0.6	1.4	5.5	5.0	3.8	7.4	15.3	14.7	22.1	33.6	63.4	61.9
Sweden[c]	3.4	7.7	7.0	5.9	1.7	4.3	5.1	4.4	5.3	11.5	9.1	7.5	16.0	32.4	30.8	26.3
Switzerland	1.3	1.8	2.8	2.9	0.8	0.8	1.6	1.5	1.9	3.1	4.3	4.5	4.4	5.7	7.9	8.0
Turkey	..	0.6	0.9	1.1	..	0.5	0.9	1.1	..	0.7	1.0	1.1	..	7.3	9.5	11.5
United Kingdom[c]	2.4	2.3	4.3	3.8	1.8	1.8	3.5	3.0	3.2	3.0	5.2	4.7	9.7	9.3	15.9	14.3
United States[c]	0.7	0.8	1.5	1.3	0.5	0.6	1.2	1.1	0.9	1.0	1.9	1.6	4.1	4.8	8.3	7.3
OECD[e]	1.8	2.6	3.5	3.3	1.0	1.4	2.2	2.1	2.9	4.1	5.2	4.9	10.6	14.0	17.3	16.4
Colombia[d]	10.9	7.6	6.9	6.8	7.9	5.4	4.6	4.6	15.6	11.0	10.1	10.0	60.4	52.1	41.8	43.1
Lithuania	..	2.4	2.5	2.3	..	2.0	1.5	1.8	..	2.8	3.4	2.8	..	26.4	29.4	31.3
Russian Fed.	0.3	0.1	0.3	0.2	0.3	0.1	0.2	0.2	0.4	0.2	0.3	0.3	3.0	1.9	3.3	3.2

a) Involuntary part-time employment refers to part-time workers who could not find full-time work.
b) Part-time employment is based on national definitions.
c) The lower age limit is 16 instead of 15. For Iceland up to 2008, Italy after 2007, Norway up to 2005 and Sweden up to 2006.
d) Data for 2000 refer to 2001.
e) Weighted average.

Source and definition: OECD Employment Database, www.oecd.org/employment/database and www.oecd.org/els/emp/lfsnotes_sources.pdf.

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Table J. **Incidence and composition of temporary employment**[a]

As a percentage of dependent employment in each age group

	Total (15+)				Youth (15-24)				Prime age (25-54)				Women's share in temporary employment			
	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016
Australia[b]	4.8	6.3	4.6	..	4.6	6.0	4.3	..	5.0	6.4	4.7	..	53.1	52.3	58.8	..
Austria	7.9	8.8	9.1	9.0	33.0	34.8	35.8	33.9	3.8	4.3	5.2	5.5	47.1	47.5	48.4	49.1
Belgium	9.1	8.7	9.0	9.2	30.8	31.6	36.6	39.0	6.9	6.6	7.3	7.4	58.3	57.3	52.3	52.9
Canada	12.5	13.0	13.4	13.3	29.1	28.9	31.3	30.7	8.8	9.2	9.8	9.9	51.0	51.8	50.9	52.3
Chile	..	..	29.1	28.7	..	..	45.0	45.6	..	..	27.7	27.5	..	..	36.8	37.6
Czech Republic	9.3	8.6	10.5	10.2	19.6	17.4	31.0	32.4	5.2	5.6	8.7	8.4	46.6	54.3	54.6	55.1
Denmark	9.7	9.1	8.6	13.6	27.4	22.5	22.7	33.6	6.6	6.9	6.7	10.6	54.8	55.7	52.8	54.1
Estonia	3.0	2.1	3.5	3.6	6.4	6.6	11.4	13.1	2.6	1.6	2.9	3.1	27.4	37.6	45.1	46.4
Finland	16.5	15.9	15.3	15.7	45.6	42.4	41.9	43.3	13.0	13.2	12.9	13.2	60.3	61.9	60.5	59.5
France	15.4	15.1	16.7	16.2	55.1	53.6	59.6	58.6	11.6	11.1	13.3	12.8	49.6	52.5	52.6	51.3
Germany	12.7	14.6	13.1	13.1	52.4	57.4	53.6	53.3	7.5	9.1	9.6	9.7	46.2	46.7	48.4	48.1
Greece	13.5	11.0	12.0	11.2	29.5	26.5	33.3	31.0	11.6	10.0	11.1	10.5	46.5	50.9	48.4	49.7
Hungary	7.1	7.3	11.4	9.7	13.9	18.9	24.1	20.2	5.9	6.5	10.3	8.8	43.8	44.2	46.2	49.0
Iceland[c]	12.3	12.5	13.0	12.0	28.9	32.0	33.3	29.5	7.5	8.9	9.5	8.9	54.0	54.0	55.2	53.0
Ireland	6.0	8.5	8.7	8.2	15.9	21.2	32.7	29.3	3.0	5.6	6.5	6.2	55.1	56.6	50.7	52.1
Israel	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Italy[c]	10.1	13.2	14.0	14.0	26.6	42.2	57.1	54.7	8.5	11.4	13.2	13.3	48.1	51.7	46.7	47.1
Japan[d]	14.5	13.9	7.5	7.2	24.9	26.4	14.1	13.4	9.5	10.9	5.3	4.9	61.7	65.1	60.5	60.5
Korea	..	24.7	22.3	21.9	..	30.0	27.0	25.5	..	21.3	16.7	16.3	..	44.4	48.2	48.7
Latvia	6.6	4.1	3.8	3.7	10.9	9.0	10.9	8.3	6.0	3.5	2.9	3.4	33.6	33.8	41.5	40.3
Luxembourg	3.4	6.8	10.2	9.0	14.5	34.1	47.1	40.4	2.3	5.3	7.7	7.2	54.0	49.9	45.4	46.3
Mexico[e]	20.5	20.3	..	..	25.7	26.4	..	..	17.8	17.9	..	..	19.7	20.6	..	..
Netherlands	13.7	18.1	20.2	20.8	35.5	45.1	53.4	55.6	9.1	12.9	14.9	15.2	53.7	51.1	50.6	51.0
New Zealand	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Norway[c]	9.3	9.5	8.0	8.7	28.5	27.3	24.1	27.9	6.9	7.4	6.3	6.8	59.4	60.2	57.5	57.7
Poland	..	28.2	28.0	27.5	..	65.7	72.7	70.7	..	24.0	25.6	25.0	..	45.9	46.9	47.4
Portugal	19.9	22.3	22.0	22.3	41.4	53.1	67.5	66.3	16.4	19.7	20.1	20.7	50.0	49.1	50.3	50.9
Slovak Republic	4.8	5.1	10.6	10.1	10.5	13.7	29.1	25.4	3.4	3.7	9.4	8.9	44.6	48.3	50.1	48.7
Slovenia	13.7	18.5	18.0	17.1	46.3	68.3	75.5	74.0	9.4	12.9	14.4	13.7	51.3	52.4	49.4	51.2
Spain[c]	32.2	31.6	25.1	26.1	68.3	62.7	70.4	72.9	27.7	29.3	24.8	25.7	40.7	45.4	48.0	48.4
Sweden[c]	15.2	17.5	17.2	16.7	49.5	57.3	55.9	54.3	11.9	13.0	12.3	11.9	57.6	56.9	54.6	54.7
Switzerland	11.5	12.9	13.6	13.2	47.0	50.3	52.3	50.7	5.1	6.4	7.9	7.8	50.1	47.1	47.3	47.6
Turkey	20.3	11.9	13.2	13.6	23.7	12.4	23.4	29.1	18.6	11.3	10.6	10.4	12.1	21.6	23.7	25.8
United Kingdom[c]	7.0	5.8	6.2	6.0	14.2	13.4	15.0	15.2	5.4	4.2	4.6	4.3	54.4	53.9	52.7	53.7
United States[b, c, e]	4.0	4.2	..	..	8.1	8.1	..	..	3.2	3.5	..	..	49.8	48.2	..	..
OECD[f]	11.4	12.2	11.3	11.2	21.9	25.6	24.4	24.6	8.9	10.0	9.4	9.3	45.7	47.5	46.1	46.3
Colombia[b, g]	26.2	29.7	29.2	28.3	41.3	42.3	39.6	38.5	23.8	27.9	28.1	27.1	45.5	44.3	46.8	48.4
Costa Rica	..	..	8.8	9.4	..	..	14.2	14.7	..	..	7.4	8.2	..	..	26.2	27.5
Lithuania	4.4	3.8	2.1	1.9	9.4	10.5	6.5	7.8	4.1	3.1	1.6	1.5	38.0	33.0	45.0	47.7
Russian Fed.	5.5	12.3	9.0	8.4	14.5	23.1	18.4	17.7	4.2	11.2	8.4	7.8	36.5	41.9	37.0	36.8

a) Temporary employees are wage and salary workers whose job has a pre-determined termination date as opposed to permanent employees whose job is of unlimited duration. To be included in these groups are: i) persons with a seasonal job; ii) persons engaged by an employment agency or business and hired out to a third party for carrying out a "work mission"; iii) persons with specific training contracts (including apprentices, trainees, research assistants, probationary period of a contract, etc.). National definitions broadly conform to this generic definition, but may vary depending on national circumstances. Country-specific details can be found in the PDF reported below.

b) Data for 2000 refer to 2001.

c) The lower age limit is 16 instead of 15. For Iceland up to 2008, Italy after 2007, Norway up to 2005 and Sweden up to 2006.

d) Japan applies a maximum duration threshold of one year to classify jobs as temporary employment. As a result, a regular employee with a fixed-term contract lasting more than one year is not included in temporary employment.

e) Data for 2007 refer to 2005 for the United States and to 2004 for Mexico.

f) Weighted average.

g) The data cover only salaried employees who reported a written labour contract.

Source and definition: OECD Employment Database, www.oecd.org/employment/database and www.oecd.org/els/emp/lfsnotes_sources.pdf.

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Table K. **Incidence of job tenure, less than 12 months**

As a percentage of total employment in each age group

	Total (15-64)				Youth (15-24)				Prime age (25-54)				Older population (55-64)			
	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016
Australia[a]	22.8	23.6	19.8	..	47.7	47.7	41.1	..	18.6	20.1	17.7	..	8.8	10.2	7.8	..
Austria	..	15.5	15.2	15.4	..	39.7	39.3	40.4	..	12.3	12.8	13.2	..	5.0	5.4	5.1
Belgium	13.2	13.0	11.2	11.6	50.8	48.8	47.0	50.0	10.1	10.7	9.7	10.2	2.4	2.7	2.0	2.4
Canada	21.4	21.0	18.8	19.1	54.0	53.2	49.8	48.9	16.2	16.1	15.1	15.4	8.0	8.3	7.5	7.1
Chile	..	..	28.6	28.4	..	..	60.3	60.1	..	..	26.7	26.8	..	..	16.0	15.9
Czech Republic[a]	14.6	10.7	10.3	10.4	34.9	35.0	37.8	38.9	11.6	8.8	9.4	9.3	16.5	7.6	4.4	5.3
Denmark	22.5	26.0	21.4	23.5	53.5	56.4	50.2	50.3	18.9	23.3	18.3	21.0	6.5	10.2	8.4	9.4
Estonia	..	15.1	15.5	16.2	..	42.5	49.2	52.3	..	12.7	13.9	14.3	..	7.9	7.0	8.3
Finland	20.6	20.3	17.6	19.1	65.2	62.6	58.0	60.3	16.1	16.8	14.6	16.1	5.8	6.3	6.1	6.8
France	15.8	15.4	12.9	13.6	56.7	55.0	52.2	54.6	12.6	12.3	10.7	11.4	3.6	4.6	4.1	4.1
Germany	14.9	14.9	13.6	13.9	38.8	40.9	39.4	40.9	13.0	12.7	12.4	12.8	4.7	4.9	4.8	4.8
Greece	9.5	8.4	10.2	9.7	31.0	28.8	39.0	41.0	7.7	7.5	9.6	9.2	2.8	3.1	5.0	4.0
Hungary	11.7	11.7	14.2	14.3	29.7	39.1	43.3	43.9	9.3	10.3	12.6	12.9	4.5	5.3	9.2	8.0
Iceland[b]	25.4	22.5	19.5	20.4	59.1	53.1	46.0	49.4	20.0	18.3	16.4	16.8	6.1	7.2	6.2	6.4
Ireland	19.4	18.0	15.0	15.9	46.8	45.0	50.6	52.1	13.6	14.1	13.3	13.9	5.7	4.6	4.6	5.5
Israel	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Italy[b]	10.6	11.6	10.2	10.5	36.8	41.1	43.0	43.5	8.9	10.3	9.8	10.2	3.3	3.7	3.8	3.7
Japan	..	14.1	..	..	..	41.2	..	..	..	10.3	..	..	..	6.3	..	..
Korea[c]	..	38.1	30.9	30.3	..	70.7	69.3	68.6	..	33.8	25.8	25.3	..	44.7	34.7	33.9
Latvia[a]	15.8	19.3	14.9	14.0	36.0	50.1	46.0	47.8	14.1	15.7	13.3	12.2	9.2	10.2	7.6	8.2
Luxembourg	11.6	10.6	14.2	12.1	40.4	44.0	50.9	45.2	9.6	9.0	12.1	10.5	0.5	1.9	4.3	5.4
Mexico	..	24.1	21.7	21.9	..	45.7	43.8	45.1	..	19.3	18.1	18.1	..	10.4	8.8	9.3
Netherlands	..	9.8	15.7	16.8	..	34.3	44.8	46.9	..	8.2	11.9	12.9	..	2.5	4.3	4.8
New Zealand	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Norway[b]	..	20.9	14.7	14.6	..	52.5	39.8	40.0	..	18.1	12.7	12.8	..	4.9	3.5	3.6
Poland	13.7	15.7	11.5	11.9	41.2	47.3	41.3	40.3	11.0	12.8	10.1	10.7	6.0	6.9	5.0	5.2
Portugal	14.1	13.1	14.7	14.9	39.2	40.0	53.6	56.3	11.4	11.7	13.6	13.8	3.2	3.6	5.3	5.0
Slovak Republic[a]	8.5	11.8	11.9	12.3	26.1	35.7	39.0	41.7	6.6	9.5	10.9	10.9	2.6	6.3	5.5	6.9
Slovenia	..	13.9	12.9	11.4	..	51.1	50.2	47.6	..	10.5	11.0	9.7	..	2.8	5.0	3.8
Spain[b]	21.2	21.9	16.8	17.2	54.5	55.5	60.8	63.5	17.8	19.8	16.4	16.8	6.5	6.1	5.7	6.0
Sweden[b]	15.8	20.4	20.0	20.5	49.4	65.4	61.0	59.1	14.0	17.0	16.7	17.7	4.6	6.5	7.3	8.0
Switzerland	16.5	15.3	16.9	16.2	44.6	41.4	42.4	40.6	13.4	12.7	15.1	14.4	3.9	4.2	5.4	5.3
Turkey	..	19.6	27.7	27.1	..	41.6	56.9	57.4	..	15.7	23.2	22.5	..	6.4	13.6	14.3
United Kingdom[b]	19.8	17.9	17.0	16.6	48.5	46.0	45.4	43.8	16.1	14.5	14.1	13.9	8.1	7.2	7.1	7.3
United States[b, c, d]	27.1	23.4	20.2	23.3	61.8	56.6	54.6	56.5	21.7	19.3	16.3	19.7	11.2	9.4	9.4	10.2
OECD[e]	20.1	19.8	17.8	18.8	49.2	49.6	49.1	50.1	16.1	16.1	14.8	15.9	8.3	8.3	8.1	8.4
Colombia	..	37.4	37.5	37.1	..	65.0	64.3	65.0	..	32.6	33.7	33.2	..	19.6	19.2	19.1
Costa Rica	..	..	28.3	26.6	..	..	52.8	51.9	..	..	25.5	23.7	..	..	16.4	14.2
Lithuania	14.2	15.0	15.8	19.4	37.1	45.3	48.7	56.9	12.7	13.1	13.9	17.3	5.7	6.7	8.6	12.0
Brazil[a]	20.6	18.8	16.5	..	36.6	37.6	37.2	..	16.6	14.7	13.7	..	8.3	6.5	5.7	..
Russian Federation	..	..	9.5	9.1	..	..	35.8	37.1	..	..	7.8	7.4	..	..	4.4	4.4

Table K. **Incidence of job tenure, less than 12 months** *(cont.)*

As a percentage of male employment in each age group

	Men (15-64)				Youth (15-24)				Prime age (25-54)				Older population (55-64)			
	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016
Australia[a]	21.7	22.2	19.0	..	46.4	45.6	40.5	..	18.1	19.0	16.9	..	8.8	9.9	8.0	..
Austria	..	14.7	14.7	14.7	..	39.8	37.5	38.1	..	11.6	12.6	12.8	..	5.0	5.4	4.4
Belgium	12.8	12.5	11.3	11.6	49.3	46.2	45.2	46.6	9.9	10.4	10.0	10.4	2.5	2.8	2.1	2.5
Canada	20.6	20.8	18.9	18.9	53.9	52.8	49.6	48.1	15.6	16.2	15.5	15.5	8.3	8.7	8.1	7.7
Chile	..	..	29.2	28.8	..	..	60.0	59.2	..	..	27.2	27.5	..	..	16.3	16.0
Czech Republic[a]	13.1	9.5	8.7	8.8	34.9	34.3	34.7	36.3	10.6	7.5	7.5	7.5	10.3	6.0	4.0	4.5
Denmark	20.7	24.1	20.9	22.4	49.5	51.6	50.6	49.0	17.5	21.7	17.6	20.2	6.1	9.8	9.0	9.1
Estonia	..	14.6	14.4	15.7	..	39.2	44.6	46.8	..	11.9	12.3	13.5	..	7.7	8.1	10.3
Finland	19.5	18.9	16.3	18.1	62.5	60.2	56.2	60.2	15.3	15.2	13.5	15.0	5.8	6.9	5.6	7.3
France	15.7	15.2	12.7	13.6	56.7	53.3	49.4	52.3	12.4	12.1	10.5	11.3	4.1	4.5	4.2	4.2
Germany	13.8	14.4	12.9	13.5	37.9	39.7	37.3	39.6	12.0	12.4	11.7	12.4	4.1	4.9	4.7	4.8
Greece	8.6	7.6	9.5	9.2	29.0	26.5	35.3	37.4	7.1	6.8	9.1	8.8	2.5	3.2	4.8	4.2
Hungary	11.8	11.9	13.7	13.4	29.1	38.2	43.9	41.3	9.6	10.4	11.9	12.1	4.5	6.2	9.1	7.2
Iceland[b]	23.9	21.1	18.6	19.9	58.0	52.1	46.9	49.7	19.4	17.1	15.3	15.8	2.8	6.4	5.9	5.4
Ireland	17.1	16.3	14.9	15.9	44.0	40.8	49.5	52.3	12.2	13.2	13.5	14.0	4.9	4.2	5.0	6.1
Israel	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Italy[b]	9.6	10.4	9.6	9.6	36.2	38.7	40.8	41.5	8.0	9.0	9.0	9.1	3.2	3.5	3.9	3.7
Japan	..	10.7	..	..	..	39.6	..	..	..	7.1	..	..	..	6.3	..	..
Korea[c]	..	34.0	28.0	27.5	..	81.1	77.3	75.0	..	30.0	23.2	22.9	..	40.2	32.8	31.9
Latvia[a]	17.6	20.8	16.1	15.3	35.4	47.7	45.7	45.3	15.6	16.9	14.2	13.5	12.7	12.3	8.6	9.7
Luxembourg	10.3	10.0	14.1	11.8	41.2	43.8	51.1	46.5	8.3	8.2	12.1	10.1	0.8	1.3	4.8	6.8
Mexico	..	22.5	20.5	20.9	..	43.1	41.1	42.7	..	17.9	16.8	16.9	..	9.9	8.0	8.9
Netherlands	..	9.3	15.0	15.9	..	31.5	43.4	45.5	..	8.1	11.7	12.5	..	2.6	4.8	5.0
New Zealand	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Norway[b]	..	20.2	14.3	13.9	..	51.1	39.6	38.9	..	17.9	12.3	12.2	..	5.1	4.2	3.8
Poland	14.6	15.8	11.2	11.7	40.3	45.5	37.9	37.7	12.2	13.1	9.7	10.3	6.2	7.6	5.6	5.9
Portugal	14.0	13.0	14.8	15.2	38.6	38.4	49.3	51.7	11.1	11.5	14.0	14.3	3.7	3.5	5.6	5.5
Slovak Republic[a]	8.6	11.6	11.4	12.1	27.4	34.8	38.6	40.2	6.7	9.5	10.0	10.1	3.0	5.3	5.6	7.8
Slovenia	..	13.5	12.4	10.8	..	49.4	47.9	46.3	..	9.9	10.6	9.1	..	3.1	5.1	2.9
Spain[b]	19.4	20.4	16.8	17.1	52.8	53.2	59.1	62.9	16.3	18.6	16.6	16.6	6.2	5.7	5.8	6.5
Sweden[b]	16.0	20.3	19.0	19.7	46.2	62.7	58.6	55.9	14.7	17.3	16.0	17.2	4.7	7.3	7.4	8.0
Switzerland	15.2	13.8	15.4	14.8	41.8	39.2	39.3	38.7	12.6	11.3	13.8	13.2	4.2	3.6	5.2	4.7
Turkey	..	19.7	27.8	27.2	..	43.3	59.4	59.1	..	15.9	23.2	22.6	..	7.2	13.9	14.4
United Kingdom[b]	18.7	17.3	16.2	15.9	47.1	44.4	43.8	42.5	15.1	14.1	13.4	13.3	8.6	7.8	7.3	7.2
United States[b, c, d]	25.9	22.8	21.6	22.6	59.4	55.6	53.8	55.1	20.6	19.0	18.0	19.1	11.3	8.5	10.0	10.6
OECD[e]	18.5	18.7	17.8	18.1	47.2	47.9	47.9	48.7	14.7	15.2	14.8	15.1	8.0	8.1	8.4	8.6
Colombia	..	40.2	40.9	40.9	..	62.1	61.3	61.8	..	30.7	30.8	30.2	..	19.4	17.7	16.9
Costa Rica	..	..	28.3	27.3	..	..	53.9	53.7	..	..	25.2	23.7	..	..	15.3	15.2
Lithuania	16.4	16.7	17.7	20.8	36.4	45.7	47.0	54.3	14.9	14.4	15.6	18.6	7.8	8.5	10.9	13.2
Brazil[a]	19.9	18.0	16.2	..	34.1	35.3	36.0	..	16.1	14.1	13.3	..	9.0	6.4	5.9	..
Russian Federation	..	..	10.3	9.9	..	..	34.8	36.2	..	..	8.6	8.1	..	..	4.9	4.7

Table K. **Incidence of job tenure, less than 12 months** *(cont.)*

As a percentage of female employment in each age group

	Women (15-64)				Youth (15-24)				Prime age (25-54)				Older population (55-64)			
	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016
Australia[a]	24.1	25.4	20.8	..	49.1	50.1	41.6	..	19.2	21.4	18.6	..	8.9	10.6	7.6	..
Austria	..	16.3	15.7	16.3	..	39.6	41.2	43.0	..	13.1	13.1	13.6	..	5.1	5.5	6.0
Belgium	13.8	13.6	11.1	11.7	52.7	52.0	49.0	53.9	10.4	10.9	9.5	9.9	2.2	2.7	1.9	2.0
Canada	22.3	21.2	18.6	19.3	54.2	53.6	49.9	49.7	16.9	16.1	14.6	15.3	7.7	7.8	6.8	6.6
Chile	..	..	27.8	27.7	..	..	60.7	61.6	..	..	25.9	25.9	..	..	15.6	15.6
Czech Republic[a]	16.4	12.3	12.4	12.4	34.9	36.1	42.2	42.9	12.8	10.5	11.7	11.6	29.2	10.1	5.0	6.3
Denmark	24.6	28.2	22.1	24.7	58.1	61.7	49.9	51.6	20.4	24.9	19.1	21.9	7.2	10.7	7.7	9.8
Estonia	..	15.7	16.7	16.8	..	46.9	54.8	58.4	..	13.5	15.8	15.1	..	8.1	6.2	6.4
Finland	21.7	21.9	19.0	20.2	67.9	64.9	59.5	60.6	17.0	18.5	15.8	17.4	5.8	5.8	6.5	6.5
France	15.9	15.6	13.1	13.5	56.7	57.2	55.6	57.4	12.8	12.6	10.9	11.4	2.9	4.6	4.0	3.9
Germany	16.4	15.5	14.3	14.4	39.8	42.2	41.7	42.5	14.2	13.0	13.1	13.3	5.8	4.9	4.8	4.9
Greece	11.0	9.6	11.1	10.3	34.0	32.6	44.0	45.6	8.9	8.5	10.4	9.7	3.2	3.1	5.2	3.6
Hungary	11.5	11.5	14.7	15.4	30.4	40.3	42.6	47.3	9.0	10.2	13.5	14.0	4.5	4.2	9.2	9.0
Iceland[b]	27.1	24.2	20.5	21.1	60.1	54.2	45.1	49.0	20.7	19.7	17.5	17.8	10.1	8.2	6.5	4.7
Ireland	22.6	20.3	15.1	15.9	50.2	49.8	51.7	51.9	15.7	15.1	13.2	13.8	7.7	5.4	4.2	4.7
Israel	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Italy[b]	12.4	13.5	11.0	11.7	37.7	44.7	46.4	46.3	10.4	12.2	10.8	11.6	3.3	4.0	3.6	3.8
Japan	..	18.6	..	..	..	42.9	..	..	..	14.5	..	..	..	6.4	..	..
Korea[c]	..	43.8	34.6	34.0	..	64.6	63.8	64.1	..	39.4	29.4	28.7	..	52.1	37.3	36.4
Latvia[a]	14.0	17.7	13.7	12.7	36.9	53.4	46.4	50.7	12.7	14.4	12.4	10.9	5.4	8.3	6.8	7.0
Luxembourg	13.6	11.4	14.3	12.5	39.4	44.4	50.8	44.0	11.5	10.1	12.0	10.9	-	2.6	3.6	0.4
Mexico	..	26.8	23.7	23.5	..	50.3	49.2	49.8	..	21.6	20.0	19.8	..	11.4	10.2	9.9
Netherlands	..	10.5	16.5	17.8	..	37.7	46.2	48.3	..	8.3	12.2	13.4	..	2.3	3.7	4.4
New Zealand	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Norway[b]	..	21.7	15.1	15.3	..	53.9	40.0	41.1	..	18.3	13.2	13.4	..	4.5	2.8	3.3
Poland	12.7	15.5	11.9	12.2	42.4	49.9	46.5	44.0	9.7	12.5	10.6	11.1	5.8	5.6	4.2	4.3
Portugal	14.2	13.3	14.5	14.6	39.9	42.1	58.6	61.7	11.8	11.8	13.2	13.2	2.5	3.7	4.9	4.5
Slovak Republic[a]	8.4	12.1	12.6	12.6	24.6	37.0	39.7	44.4	6.5	9.5	12.0	11.9	1.1	8.6	5.5	5.9
Slovenia	..	14.3	13.5	12.1	..	53.5	52.9	49.7	..	11.1	11.5	10.3	..	2.3	5.0	4.4
Spain[b]	24.3	23.9	16.8	17.4	57.0	58.5	62.7	64.2	20.4	21.5	16.1	17.0	7.3	6.8	5.5	5.3
Sweden[b]	15.7	20.5	21.1	21.4	52.7	68.3	63.5	62.3	13.3	16.6	17.6	18.3	4.4	5.6	7.2	8.0
Switzerland	18.2	17.1	18.7	17.7	47.6	43.8	45.5	42.6	14.5	14.3	16.5	15.7	3.5	5.0	5.7	6.0
Turkey	..	19.5	27.3	26.9	..	38.2	51.9	54.1	..	15.1	23.1	22.2	..	4.3	12.8	13.8
United Kingdom[b]	21.1	18.6	18.0	17.5	49.9	47.6	47.0	45.1	17.3	15.0	15.0	14.6	7.3	6.3	6.9	7.4
United States[b, c, d]	28.4	24.0	18.9	24.0	64.2	57.7	55.5	57.9	22.9	19.7	14.8	20.4	11.2	10.3	8.8	9.8
OECD[e]	22.2	21.2	17.8	19.7	51.5	51.6	50.6	51.7	18.0	17.3	14.6	16.7	8.8	8.6	7.9	8.2
Colombia	..	40.2	40.9	40.9	..	69.7	69.1	69.8	..	35.4	37.3	37.2	..	19.9	21.5	22.3
Costa Rica	..	..	28.4	25.5	..	..	50.9	48.1	..	..	25.9	23.8	..	..	18.3	12.2
Lithuania	12.0	13.1	13.9	18.1	38.0	44.7	50.9	60.1	10.6	11.8	12.3	16.1	3.3	4.9	6.6	10.9
Brazil[a]	21.5	19.7	16.9	..	40.4	41.0	39.1	..	16.8	15.5	14.2	..	7.3	6.7	5.5	..
Russian Federation	..	..	8.6	8.3	..	..	37.1	38.2	..	..	7.0	6.7	..	..	3.9	4.0

a) Data for 2000 refer to 2001.
b) The lower age limit is 16 instead of 15. For Iceland up to 2008, Italy after 2007, Norway up to 2005 and Sweden up to 2006.
c) Data cover dependent employment.
d) Data for 2007 refer to 2008 and data for 2015 refer to 2014.
e) Weighted average.

Source and definition: OECD Employment Database, www.oecd.org/employment/database and *www.oecd.org/els/emp/lfsnotes_sources.pdf.*

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Table L. **Average annual hours actually worked per person in employment**[a]

	Total employment								Dependent employment							
	1979	1983	1990	1995	2000	2007	2015	2016	1979	1983	1990	1995	2000	2007	2015	2016
Australia	1 834	1 791	1 780	1 794	1 779	1 712	1 682	1 669	..	..	..	..	..	..	..	..
Austria	..	..	..	1 783	1 807	1 736	1 608	1 601	..	..	..	1 455	1 509	1 526	1 429	1 419
Belgium	1 727	1 675	1 663	1 585	1 595	1 577	1 551	..	..	..	..	1 447	1 459	1 448	1 423	1 426
Canada	1 841	1 779	1 797	1 775	1 779	1 741	1 707	1 703	1 812	1 761	1 782	1 768	1 772	1 740	1 713	..
Chile	..	..	2 422	2 338	2 263	2 128	1 988	1 974	..	..	..		2 318	2 168	2 059	2 049
Czech Republic	..	..	..	1 858	1 896	1 784	1 779	1 770	..	..	..	1 987	2 018	1 914	1 811	1 833
Denmark	1 564	1 546	1 441	1 419	1 466	1 433	1 412	1 410	1 470	1 469	1 381	1 366	1 407	1 390	1 407	1 416 [b]
Estonia	..	..	..	..	1 978	1 998	1 852	1 855	..	..	..	..	..	2 055	1 995	2 003
Finland	1 869	1 823	1 769	1 776	1 742	1 691	1 641	1 653	..	..	1 666	1 672	1 638	1 594	1 574	1 602
France	1 832	1 712	1 665	1 605	1 535	1 500	1 482	1 472 [b]	1 666	1 555	1 536	1 489	1 428	1 407	1 399	1 383 [b]
Germany	..	..	..	1 528	1 452	1 424	1 368	1 363				1 442	1 360	1 346	1 301	1 298
Greece	..	..	2 084	2 111	2 108	2 111	2 033	2 035		1 760	1 761	1 785	1 818	1 780	1 733	1 726
Hungary[c]	..	2 080	1 945	2 006	2 033	1 979	1 746	1 761		1 829	1 710	1 765	1 795	1 778	1 816	1 819
Iceland	2 042	2 026	2 003	1 975	2 040	1 932	1 880	1 883				1 968	2 017	1 888	1 852	1 849
Ireland	..	..	..	..	1 933	1 865	1 820	1 879	..	1 678	1 689	1 632	1 574	1 530	1 475	1 500
Israel	..	..	..	1 995	2 017	1 931	1 858	1 889	..	..	..	..	..	..	..	..
Italy	1 855	1 873	1 864	1 856	1 851	1 818	1 723	1 730	..	..	..	1 680	1 696	1 652	1 578	1 586
Japan[d]	2 126	2 095	2 031	1 884	1 821	1 785	1 719	1 713	..	..	..	1 910	1 853	1 808	1 734	1 724
Korea	..	..	..	..	..	..	2 082	2 069	..	..	..	..	..	..	2 071	2 052
Latvia	..	..	..	1 976	1 976	1 878	1 909	1 910	..	..	..	..	..	1 869	1 704	1 674
Luxembourg	1 710	1 645	1 635	1 593	1 602	1 566	1 515	1 512	..	..	..	1 587	1 605	1 570	1 507	..
Mexico	..	..	..	2 294	2 311	2 260	2 248	2 255	..	..	..	2 360	2 360	2 337	2 348	2 348
Netherlands	1 556	1 524	1 451	1 479	1 462	1 430	1 422	1 435	1 512	1 491	1 434	1 424	1 394	1 359	1 347	1 359 [b]
New Zealand	1 866	1 845	1 809	1 841	1 836	1 774	1 757	1 752	..	..	1 734	1 766	1 777	1 754	1 754	1 740
Norway	1 580	1 553	1 503	1 488	1 455	1 426	1 424	1 424	..	..	..	..	..	..	..	..
Poland	..	..	..	..	1 988	1 976	1 963	1 928	..	..	..	..	1 963	1 953	1 923	1 890
Portugal	2 053	1 980	1 959	1 893	1 917	1 900	1 869	1 842	..	..	1 830	1 778	1 729	1 731	1 683	1 679
Slovak Republic	..	..	..	1 853	1 816	1 791	1 754	1 740	..	..	..	..	1 768	1 774	1 704	1 680
Slovenia	..	..	..	1 755	1 710	1 655	1 688	1 682	..	..	..	..	1 606	1 593	1 645	1 633
Spain	1 954	1 848	1 763	1 755	1 753	1 704	1 701	1 695	1 864	1 769	1 696	1 686	1 705	1 662	1 652	1 647
Sweden	1 530	1 546	1 575	1 640	1 642	1 612	1 611	1 621	..	..	..	..	..	..	..	..
Switzerland[e]	1 928	1 860	1 791	1 700	1 688	1 644	1 589	..	..	..	..	..	..	..	..	..
Turkey	1 964	1 935	1 866	1 876	1 937	1 911	1 832 [b]	..	..	..	..	..	..	..	..	..
United Kingdom	1 813	1 711	1 765	1 731	1 700	1 677	1 674	1 676 [b]	1 747	1 649	1 700	1 695	1 680	1 658	1 663	1 694
United States	1 829	1 820	1 831	1 841	1 834	1 796	1 786	1 783	1 828	1 827	1 832	1 845	1 833	1 797	1 791	1 789
OECD (weighted)	1 935	1 912	1 885	1 865	1 842	1 801	1 766	1 764	..	..	..	..	..	..	..	..
Costa Rica	..	..	2 364	2 351	2 368	2 393	2 157	2 212	..	..	..	..	..	..	2 216	2 244
Lithuania	..	..	..	1 729	1 846	1 904	1 860	1 885	..	..	..	..	..	1 661	1 623	1 643
Russian Fed.	..	..	..	1 891	1 982	1 999	1 978	1 974	..	..	..	1 886	2 000	2 020	1 997	1 996

a) Total hours worked per year divided by the average number of people in employment. The data are intended for comparisons of trends over time; they are unsuitable for comparisons of the level of average annual hours of work for a given year, because of differences in their sources and method of calculation. Part-time and part-year workers are covered as well as full-time workers.

b) Provisional estimates.

c) Data for dependent employment refer to establishments in manufacturing with five or more employees.

d) Data for dependent employment refer to establishments with five or more regular employees.

e) OECD estimates on hours per worker are obtained by dividing total hours worked from the Federal Statistical Office (FSO) by SPAO-based average employment from the FSO website, both series referring to National Accounts domestic concept.

Source: The series on annual hours actually worked per person in total employment presented in this table for all 35 OECD countries are consistent with the series retained for the calculation of productivity measures in the *OECD Productivity Database* (*www.oecd.org/std/productivity-stats*). However, there may be differences for some countries given that the main purpose of the latter database is to report data series on labour input (i.e. total hours worked) and also because the updating of databases occurs at different moments of the year.

Hours actually worked per person in employment are according to National Accounts concepts for 25 countries: Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Korea, Luxembourg, Lithuania, the Netherlands, Norway, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland and Turkey. OECD estimates of annual hours worked per person in dependent employment for Austria, Estonia, Greece, Ireland, Latvia, Lithuania, Portugal and the Slovak Republic are based on the European Labour Force Survey. The table includes labour-force-survey-based estimates for Costa Rica and the Russian Federation.

Country specific notes can be found at *www.oecd.org/employment/outlook* and data at the *OECD Employment Database*, *www.oecd.org/employment/database*.

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Table M. **Incidence of long-term unemployment,[a] 12 months and over**

As a percentage of total unemployment in each age group

	Total (15+)				Youth (15-24)				Prime age (25-54)				Older population (55+)			
	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016
Australia	25.9	15.4	23.5	23.7	14.9	9.9	18.0	18.2	30.7	17.2	24.9	24.4	45.6	30.5	35.0	38.5
Austria	25.8	27.2	29.2	32.3	12.7	13.4	15.8	18.1	25.5	30.2	30.5	34.0	49.7	58.1	52.8	53.4
Belgium	54.2	50.4	51.7	52.0	29.1	29.7	35.7	31.4	61.9	54.8	53.4	53.4	79.4	80.3	76.2	83.2
Canada	11.3	7.5	11.6	11.6	4.0	2.2	5.1	4.9	12.2	7.7	10.5	11.0	18.7	12.5	18.0	17.4
Chile	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Czech Republic	48.8	53.4	48.3	43.2	37.8	33.6	30.9	24.5	53.3	58.3	50.8	45.2	45.6	51.7	56.6	54.6
Denmark	21.7	16.1	26.9	22.5	2.1	4.2	8.0	8.2	24.7	16.6	32.4	26.9	41.2	38.3	41.6	39.2
Estonia	45.1	49.8	38.3	31.6	26.3	30.5	15.5	20.4	49.4	52.7	43.9	30.0	52.5	73.5	40.9	43.9
Finland	29.0	23.0	25.1	26.6	8.8	5.5	8.0	8.0	34.0	25.9	27.8	30.5	56.5	47.6	47.2	44.8
France	42.6	39.9	42.8	44.4	20.6	24.6	27.3	27.7	45.3	43.0	44.6	46.3	69.7	67.7	63.3	66.8
Germany	51.5	56.6	44.0	41.2	23.5	32.2	22.5	21.9	51.0	57.5	44.3	41.3	69.1	76.9	60.1	57.9
Greece	54.7	49.7	73.1	72.0	50.2	41.4	56.1	53.3	56.9	51.5	74.3	73.0	56.2	59.5	84.8	83.3
Hungary	48.9	47.5	46.7	47.3	37.8	36.6	27.2	28.1	52.6	49.6	48.8	48.6	57.9	54.3	64.8	68.0
Iceland[b]	(11.8)	(8.0)	(16.1)	(8.8)	-	-	(1.6)	(1.2)	(17.0)	(8.6)	(16.9)	(10.1)	(33.0)	(56.8)	(48.7)	(23.5)
Ireland	37.3	30.0	57.6	55.3	19.9	21.0	38.5	35.0	44.9	33.5	60.0	57.6	47.6	42.4	74.0	75.6
Israel	12.0	24.9	11.5	9.6	6.1	13.2	4.8	13.3	13.5	27.3	11.4	10.2	21.8	41.6	25.3	6.5
Italy[b]	61.8	47.5	58.9	58.3	57.5	41.1	55.7	52.4	63.8	49.4	59.2	59.3	63.7	53.4	65.1	63.8
Japan	25.5	32.0	35.5	39.5	21.5	20.0	25.0	34.6	22.5	33.1	38.4	41.7	36.0	39.6	33.3	36.2
Korea	(2.3)	(0.6)	(0.4)	(0.9)	(1.0)	(0.4)	-	(0.5)	(2.8)	(0.7)	-	(1.1)	(3.0)	-	-	(0.7)
Latvia	58.6	27.1	45.5	42.6	43.4	11.1	27.1	29.4	61.3	30.6	47.8	42.7	67.5	38.4	51.1	52.1
Luxembourg	(22.4)	(28.7)	(28.4)	(39.5)	(14.3)	(23.0)	(8.5)	(11.4)	(24.9)	(29.9)	(33.1)	(41.5)	(26.4)	(43.7)	(42.9)	(82.2)
Mexico	1.2	1.9	1.7	2.0	0.9	0.9	0.9	1.4	1.2	2.1	1.9	2.1	4.3	6.8	3.8	4.2
Netherlands	..	39.4	43.6	42.7	..	12.6	18.7	17.1	..	44.1	45.5	44.6	..	74.4	68.4	69.5
New Zealand	19.9	6.0	13.2	14.1	9.8	2.4	6.9	6.5	23.1	8.6	15.5	17.4	44.8	15.8	26.3	29.0
Norway[b]	(5.3)	(8.8)	(11.7)	(12.5)	(1.3)	(2.6)	(3.1)	(3.8)	7.3)	(11.8)	(14.7)	(14.9)	(14.1)	(19.5)	(23.8)	(27.3)
Poland	37.9	45.9	39.3	35.0	28.0	30.0	29.2	24.5	41.5	50.6	40.8	36.8	44.2	57.0	50.3	45.6
Portugal	42.2	47.2	57.4	55.4	21.2	27.4	30.9	29.4	47.9	49.6	60.2	57.6	68.5	67.8	76.4	75.4
Slovak Republic	54.6	70.8	62.3	56.6	43.1	53.9	51.2	44.7	59.9	74.5	64.3	58.6	60.1	82.6	66.4	61.8
Slovenia	61.4	45.7	52.3	54.5	42.4	29.2	35.8	47.4	67.9	49.8	53.7	52.4	86.2	57.4	63.0	83.4
Spain[b]	41.7	20.4	51.6	48.4	29.3	10.1	35.0	28.9	45.0	21.2	51.9	48.6	58.0	46.8	70.9	69.2
Sweden[b]	26.4	12.8	17.6	16.8	8.9	3.5	4.4	3.9	26.6	16.4	21.8	20.5	49.3	27.8	34.0	32.0
Switzerland	29.0	40.8	39.6	39.4	..	..	..	..	..	..	..	..	..	..	..	..
Turkey	21.1	30.3	21.2	20.6	19.8	26.6	13.8	14.3	21.8	32.2	22.9	22.2	31.4	41.0	40.6	36.0
United Kingdom[b]	26.7	23.8	30.7	27.2	12.3	15.7	21.9	17.0	32.9	28.4	35.0	30.2	43.4	35.5	40.9	44.6
United States[b]	6.0	10.0	18.7	13.3	3.9	6.5	11.4	9.0	6.6	11.1	20.5	13.7	11.9	14.3	25.9	18.3
OECD[c]	31.0	28.2	33.7	30.5	19.7	16.2	19.7	17.8	34.5	31.9	37.2	33.4	41.7	39.0	42.5	38.5
Colombia[d]	26.5	12.0	7.7	7.3	23.0	8.4	5.0	4.3	28.8	14.2	8.8	8.6	31.5	16.3	12.5	12.5
Costa Rica	..	..	15.9	16.7	..	..	11.3	14.2	..	..	18.2	18.4	..	..	25.6	18.2
Lithuania	49.8	32.4	42.9	38.6	43.1	21.1	16.4	14.4	51.4	33.0	45.7	40.6	52.0	45.6	55.4	49.9
Russian Fed.	46.2	40.6	27.3	29.6	32.6	28.6	17.2	20.3	50.2	45.9	30.0	32.1	62.8	44.2	34.5	35.0
South Africa[d]	68.4	57.7	57.0	58.8	46.8	36.2	35.7	35.1	72.0	61.8	59.4	61.4	85.3	80.5	70.6	70.9

Table M. **Incidence of long-term unemployment,[a] 12 months and over** *(cont.)*

As a percentage of male unemployment in each age group

	Men (15+)				Youth (15-24)				Prime age (25-54)				Older population (55+)			
	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016
Australia	28.8	16.4	25.0	24.9	15.6	10.0	19.8	19.9	33.9	18.9	25.8	25.2	49.5	30.7	37.5	37.9
Austria	28.1	26.9	31.8	34.3	10.0	14.0	16.3	20.5	27.2	29.2	32.4	35.6	56.4	57.1	58.6	53.4
Belgium	54.1	49.3	52.5	52.7	27.2	30.1	38.9	30.7	62.8	53.0	53.4	55.0	75.1	80.2	76.5	85.3
Canada	12.3	8.4	12.0	12.5	4.4	2.3	5.7	5.4	13.7	9.4	10.5	11.6	20.0	13.4	18.6	18.8
Chile	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Czech Republic	47.5	51.7	48.8	42.8	37.2	35.4	31.0	24.7	53.3	56.5	51.5	45.0	45.2	54.9	58.5	54.2
Denmark	21.0	15.6	27.6	23.2	0.9	3.3	8.7	8.1	25.2	17.6	33.5	29.7	38.8	35.4	44.7	38.0
Estonia	47.1	53.3	40.8	32.8	31.3	33.8	18.9	17.6	51.2	55.2	45.0	32.2	51.3	80.4	50.6	47.6
Finland	32.2	26.5	28.5	29.0	8.8	5.9	10.4	10.3	39.1	30.2	31.9	33.7	58.3	52.4	50.2	44.5
France	41.2	40.2	43.8	46.4	20.0	28.8	29.4	30.2	43.8	42.1	45.8	48.0	68.7	66.8	62.8	69.8
Germany	50.1	56.7	45.7	43.1	23.7	33.5	24.4	23.8	49.1	57.9	46.2	43.9	69.0	76.2	60.9	58.8
Greece	48.0	41.5	72.7	71.2	42.9	32.8	56.0	54.3	49.9	42.5	73.3	71.2	55.8	58.0	84.9	84.3
Hungary	51.1	47.2	48.1	46.5	40.7	38.0	29.3	30.8	54.4	48.9	50.2	47.0	62.9	54.7	68.4	67.4
Iceland[b]	(8.7)	(9.5)	(13.1)	(9.5)	-	-	(1.0)	-	(17.1)	(14.3)	(18.8)	(12.9)	..	(59.3)	(33.6)	(20.3)
Ireland	46.7	35.4	63.4	61.5	21.5	24.8	41.3	39.0	56.1	39.6	66.5	64.2	58.5	44.8	77.9	79.8
Israel	13.5	28.9	12.8	12.0	8.1	15.7	6.0	16.5	13.7	31.0	11.8	13.2	25.5	44.4	27.8	7.9
Italy[b]	61.8	45.6	59.0	58.1	56.7	41.0	57.8	52.9	64.0	46.7	58.5	58.6	67.0	54.2	66.0	64.7
Japan	30.7	40.3	45.4	49.6	26.3	24.0	31.3	40.0	29.4	43.0	50.6	54.8	35.6	44.7	40.0	42.4
Korea	(3.1)	(0.7)	(0.5)	(1.1)	(1.4)	(0.3)	-	(0.1)	(3.5)	(0.9)	-	(1.3)	(3.6)	-	-	(1.1)
Latvia	58.8	30.1	48.6	46.1	46.7	11.6	32.3	33.6	61.1	37.2	52.1	47.2	64.8	29.3	49.0	54.2
Luxembourg	(26.4)	(35.4)	(31.0)	(42.7)	(20.4)	(30.5)	(3.9)	-	(28.7)	(36.5)	(38.5)	(46.6)	(26.4)	(46.5)	(51.1)	(72.7)
Mexico	0.6	2.0	1.8	2.2	-	0.8	1.0	1.5	0.5	2.1	2.0	2.4	5.3	7.5	3.9	3.9
Netherlands	..	41.8	46.1	43.5	..	12.2	20.3	18.1	..	45.9	46.7	45.1	..	75.3	70.4	69.5
New Zealand	23.7	6.6	14.0	14.9	12.1	2.3	7.9	7.1	27.4	10.0	17.0	19.0	47.6	18.2	26.3	29.2
Norway[b]	(6.9)	(10.2)	(12.9)	(13.5)	(1.3)	(3.1)	(4.1)	(4.6)	(9.3)	(14.4)	(15.8)	(16.2)	(16.6)	(18.5)	(27.0)	(24.7)
Poland	34.1	45.8	39.7	35.8	25.5	31.0	29.8	25.4	37.3	49.9	41.4	37.6	43.3	57.2	49.9	46.6
Portugal	43.9	47.6	58.7	57.4	20.3	26.2	32.4	32.6	47.5	50.1	60.3	59.3	73.9	66.6	77.9	74.9
Slovak Republic	54.1	72.3	63.9	59.1	43.9	57.8	54.5	48.4	59.2	75.6	66.3	62.0	59.3	86.5	67.4	59.4
Slovenia	62.8	45.3	50.7	55.2	41.7	27.8	34.1	46.1	68.9	51.1	52.9	52.6	86.8	57.9	59.4	81.0
Spain[b]	35.3	17.4	50.4	46.1	25.5	8.6	36.5	29.2	35.9	17.4	49.8	45.5	58.9	42.3	70.2	67.5
Sweden[b]	29.3	14.2	19.3	17.8	11.0	3.3	4.4	4.5	30.1	18.9	24.0	21.7	48.6	28.1	36.0	32.7
Switzerland	28.2	37.9	38.6	38.4	..	..	..	..	..	..	..	..	..	..	..	..
Turkey	18.1	27.0	17.7	17.3	16.0	23.3	11.4	12.3	19.0	28.3	17.6	17.4	31.4	40.4	40.8	35.3
United Kingdom[b]	32.6	28.5	34.3	30.4	14.6	18.9	25.3	19.1	40.2	34.7	39.7	34.6	49.0	39.6	42.5	48.3
United States[b]	6.7	10.7	19.8	18.6	4.5	7.6	12.5	12.2	6.7	11.4	21.9	19.7	15.6	16.8	27.4	26.5
OECD[c]	29.9	28.3	34.0	32.5	18.8	16.8	20.8	19.5	32.8	31.5	37.0	35.2	42.1	40.0	43.4	42.5
Colombia[d]	24.1	10.8	6.2	6.3	21.8	8.3	3.5	4.2	24.9	12.0	6.7	6.5	31.3	16.0	12.6	11.7
Costa Rica	..	..	10.8	10.1	..	..	9.3	11.0	..	..	9.0	8.8	..	..	25.2	13.0
Lithuania	51.4	34.9	43.5	37.8	50.2	22.9	16.8	17.6	52.0	34.6	46.1	40.2	49.2	53.3	56.8	47.5
Russian Fed.	42.7	39.1	26.7	28.6	31.2	28.4	16.7	20.1	45.7	43.7	29.3	30.7	59.2	44.4	33.9	35.1
South Africa[d]	66.3	52.6	52.1	53.7	41.7	34.2	32.4	31.2	69.9	55.5	54.5	55.8	84.7	80.7	65.9	70.4

Table M. **Incidence of long-term unemployment,[a] 12 months and over** *(cont.)*

As a percentage of female unemployment in each age group

	Women (15+)				Youth (15-24)				Prime age (25-54)				Older population (55+)			
	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016	2000	2007	2015	2016
Australia	21.9	14.4	21.6	22.5	14.1	9.9	15.6	15.9	26.4	15.6	23.9	23.6	33.9	30.2	30.8	39.5
Austria	22.8	27.6	25.9	29.7	16.5	12.8	15.2	14.9	23.5	31.1	28.1	31.9	31.7	59.6	40.0	53.5
Belgium	54.3	51.4	50.7	51.2	30.8	29.3	30.9	32.5	61.3	56.6	53.3	51.4	89.1	80.3	75.6	81.0
Canada	10.0	6.3	11.0	10.4	3.4	2.2	4.2	4.2	10.5	5.6	10.5	10.2	17.0	11.4	17.3	15.4
Chile	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Czech Republic	49.8	54.7	47.9	43.7	38.5	31.1	30.8	24.3	53.3	59.4	50.2	45.2	46.3	46.6	54.4	55.2
Denmark	22.4	16.6	26.2	21.8	3.5	5.3	7.3	8.4	24.4	15.8	31.4	24.6	43.9	41.0	38.6	40.6
Estonia	42.6	44.4	35.7	30.1	19.4	22.8	10.7	25.2	47.3	49.9	42.8	27.2	54.9	29.6	32.0	39.8
Finland	26.2	19.5	21.0	23.8	8.8	5.0	5.0	5.4	29.6	21.8	22.9	26.8	54.5	42.2	43.5	45.1
France	43.7	39.7	41.6	42.2	21.1	19.9	24.5	24.7	46.5	43.9	43.4	44.5	70.7	68.8	63.9	62.9
Germany	53.1	56.5	41.6	38.5	23.2	30.4	19.8	18.9	52.9	57.0	41.7	37.9	69.1	77.8	59.0	56.8
Greece	59.2	54.4	73.5	72.7	55.1	46.7	56.2	52.3	61.2	56.3	75.2	74.4	57.0	61.6	84.7	81.7
Hungary	45.7	47.9	45.1	48.3	33.1	34.7	24.0	24.6	50.1	50.3	47.5	50.4	37.5	53.6	59.9	68.7
Iceland[b]	(14.1)	(5.7)	(19.4)	(8.1)	-	-	(2.6)	(2.6)	(16.9)	(2.7)	(15.4)	(7.7)	(27.4)	(53.1)	(64.4)	(29.7)
Ireland	23.0	21.7	47.5	45.0	18.1	15.5	34.0	29.0	26.2	23.9	49.1	47.1	19.9	37.2	64.7	65.3
Israel	10.4	20.9	10.0	7.0	4.2	11.2	3.7	10.2	13.2	23.8	11.0	7.0	12.4	36.3	21.3	5.2
Italy[b]	61.8	49.2	58.8	58.6	58.3	41.1	53.0	51.7	63.6	51.5	60.0	60.0	56.1	51.6	63.0	62.2
Japan	17.1	19.4	20.2	24.1	14.8	15.0	16.7	27.3	13.8	20.6	22.0	24.1	37.5	20.0	15.4	21.4
Korea	(0.8)	(0.3)	(0.2)	(0.7)	(0.5)	(0.5)	-	(0.7)	(0.9)	(0.2)	-	(0.9)	(1.1)	-	-	-
Latvia	58.3	23.4	41.5	38.0	39.3	10.4	18.4	16.6	61.5	22.8	42.4	37.6	72.0	47.2	53.7	49.3
Luxembourg	(18.8)	(22.3)	(25.9)	(36.2)	(8.4)	(14.8)	(14.8)	(21.1)	(21.9)	(24.0)	(28.4)	(36.3)	-	(39.1)	(27.7)	-
Mexico	2.0	1.7	1.4	1.6	2.1	1.1	0.7	1.4	1.9	2.1	1.8	1.6	-	2.9	3.4	5.6
Netherlands	..	37.1	41.0	42.0	..	13.0	17.0	16.0	..	42.7	44.4	44.2	..	72.8	65.2	69.6
New Zealand	14.9	5.4	12.5	13.4	7.0	2.4	5.7	5.7	18.1	7.5	14.4	16.1	37.5	12.5	26.3	28.8
Norway[b]	(3.3)	(7.1)	(10.1)	(10.9)	(1.4)	(2.0)	(1.9)	(2.6)	(4.4)	(9.2)	(13.3)	(13.0)	(9.3)	(21.4)	(19.3)	(33.5)
Poland	41.3	46.0	38.8	34.0	30.7	29.0	28.3	23.3	45.1	51.3	40.1	36.1	45.7	56.7	51.0	43.5
Portugal	41.0	46.9	56.0	53.4	21.8	28.3	29.5	25.9	48.2	49.3	60.1	56.1	58.6	69.6	74.0	76.4
Slovak Republic	55.1	69.4	60.7	54.2	42.0	48.5	46.1	40.1	60.5	73.5	62.6	55.3	63.3	75.8	65.6	64.2
Slovenia	59.8	46.1	53.8	53.8	43.0	31.1	38.4	49.2	66.9	48.9	54.3	52.1	82.9	56.7	68.8	89.1
Spain[b]	46.3	22.8	52.8	50.6	32.4	11.3	33.1	28.6	50.8	24.0	53.8	51.3	56.3	52.2	71.8	71.2
Sweden[b]	22.8	11.3	15.5	15.6	6.4	3.7	4.4	3.3	22.1	14.0	19.3	19.1	50.3	27.3	31.1	31.1
Switzerland	29.7	43.0	40.6	40.6	..	..	..	..	..	..	..	..	..	..	..	..
Turkey	29.8	38.9	26.8	25.5	28.5	32.9	17.2	17.0	31.3	43.8	31.4	29.2	..	50.0	39.1	40.9
United Kingdom[b]	18.1	17.6	26.2	23.4	9.4	11.2	17.3	13.9	22.6	21.4	30.0	25.8	28.3	25.7	38.6	39.0
United States[b]	5.3	9.0	17.2	9.4	3.1	5.1	10.0	5.8	6.4	10.7	18.9	9.8	7.4	11.2	24.2	12.4
OECD[c]	32.3	28.2	33.4	28.5	20.8	15.3	18.3	15.8	36.2	32.4	37.4	31.7	40.9	37.3	41.0	33.4
Colombia[d]	28.7	13.1	8.8	8.1	24.1	8.6	6.1	4.3	32.3	16.1	10.3	10.0	32.1	17.4	12.4	14.2
Costa Rica	..	..	21.1	23.8	..	..	13.6	17.9	..	..	25.8	27.2	..	..	26.5	36.2
Lithuania	47.7	29.9	42.1	39.7	31.4	19.3	15.9	8.0	50.7	31.5	45.2	41.1	58.0	36.3	53.6	53.0
Russian Fed.	50.0	42.4	28.0	30.7	34.2	28.7	17.7	20.4	55.1	48.3	30.8	33.5	67.4	43.9	35.3	34.9
South Africa[d]	70.5	62.3	62.5	64.6	51.8	38.3	40.1	39.8	74.1	66.9	64.8	67.7	86.7	79.8	79.4	72.2

Note: For country details related to data on unemployment by duration of job search, see PDF in source below. Data in brackets are based on small sample sizes.

a) Persons for whom no duration of unemployment was specified are excluded from the total used in the calculation.

b) The lower age limit is 16 instead of 15. For Iceland up to 2008, Italy after 2007, Norway up to 2005 and Sweden up to 2006.

c) Weighted average.

d) Data for 2000 refer to 2001.

Source and definition: OECD Employment Database, *www.oecd.org/employment/database* and *www.oecd.org/els/emp/lfsnotes_sources.pdf*.

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Table N. **Real average annual wages and real unit labour costs in the total economy**

Annualised growth rates, percentages

	Average wages in 2016 in USD PPPs[a]	Average wages[b]					Unit labour costs[b]				
		2000-07	2007-16	2007	2015	2016	2000-07	2007-16	2007	2015	2016
Australia	52 063	1.5	0.6	2.5	-1.3	0.1	0.9	-0.2	2.1	-1.6	-0.7
Austria	48 295	0.8	0.4	0.5	0.5	0.1	-1.1	0.5	-1.0	0.8	-0.1
Belgium	49 587	0.2	0.3	-0.2	0.2	-1.0	-0.5	0.1	-1.0	-1.0	-1.6
Canada	48 403	1.5	1.2	2.3	0.6	0.4	0.9	0.5	2.4	0.7	0.1
Chile[c]	28434	1.5	2.6	0.9	-1.2	2.9	-0.3	1.7	2.2	-1.2	1.1
Czech Republic	23 722	4.8	1.1	3.1	2.3	3.1	0.7	0.2	-0.1	-0.1	2.9
Denmark	52 580	1.7	1.1	1.1	1.0	2.2	1.1	0.1	3.6	0.7	1.5
Estonia	23 621	7.7	1.3	15.7	7.9	5.3	1.8	1.0	7.6	7.0	3.1
Finland	42 127	1.8	0.5	1.5	1.4	0.4	-0.1	0.6	-1.5	0.4	-0.2
France	42 992	1.3	1.0	0.2	1.5	1.3	0.1	0.6	-0.5	0.2	0.8
Germany	46 389	0.2	1.1	0.0	2.4	1.3	-1.9	1.1	-2.2	1.5	1.3
Greece	25 124	2.6	-2.3	0.0	-1.5	1.6	1.6	-0.3	0.4	-0.4	3.4
Hungary	21 711	4.3	0.0	-1.2	1.4	5.1	0.7	-0.3	-0.6	1.4	5.5
Iceland[c]	55 984	3.1	-0.3	3.1	6.2	8.9	1.2	-0.6	0.0	4.8	4.1
Ireland	51 681	2.4	1.1	2.4	1.8	1.6	0.8	-2.7	2.3	..	-0.2
Israel	34 023	-0.3	0.5	1.8	3.2	4.0	-0.6	-0.1	-0.3	3.0	2.5
Italy	35 397	0.5	-0.1	0.0	1.0	0.8	0.6	0.5	0.0	1.2	1.5
Japan	39 113	-0.2	0.0	-0.2	-0.3	1.2	-1.0	0.2	-0.6	-0.1	1.7
Korea	32 399	2.6	0.5	2.1	1.2	1.1	0.5	0.1	-0.1	1.9	1.4
Latvia	22 389	9.1	1.5	23.0	7.6	6.0	2.4	0.0	15.0	5.1	3.2
Luxembourg	62 636	1.1	0.7	2.4	2.3	0.1	0.7	1.2	-1.6	1.3	-0.7
Mexico[c]	15 311	1.9	-0.7	1.3	0.0	0.5	0.5	-2.0	0.2	-1.8	1.0
Netherlands	52 833	0.8	0.7	1.1	2.2	0.2	-0.7	0.2	0.0	-0.7	0.0
New Zealand[c]	39 397	2.8	0.7	5.7	1.8	2.3	2.1	0.6	2.7	1.0	3.0
Norway	53 643	3.1	1.3	4.1	0.3	-1.8	2.3	1.6	6.6	-0.9	-2.4
Poland	25 921	1.1	2.0	3.1	2.3	5.4	-1.4	0.2	2.3	0.7	1.3
Portugal	24 529	-0.2	-0.4	0.8	-0.5	-0.3	-0.7	-0.5	-1.7	0.0	1.1
Slovak Republic	23 508	3.5	1.7	6.2	3.5	2.5	-2.6	0.1	-2.9	1.9	1.6
Slovenia	34 965	2.9	0.9	2.2	2.1	2.4	-0.3	0.2	-1.2	1.1	2.5
Spain	37 333	0.1	0.6	1.2	1.0	0.2	0.5	-1.0	1.3	0.8	0.1
Sweden	42 816	2.1	1.3	3.5	1.8	1.5	0.2	0.9	2.6	0.3	0.6
Switzerland	60 124	1.1	0.6	1.5	-0.5	-0.2	0.1	1.2	-0.2	1.8	0.2
Turkey	..	..	..	..	..	..	..	..	..	..	..
United Kingdom	42 835	2.4	-0.3	2.8	1.0	1.3	1.1	-0.6	1.4	0.7	0.7
United States	60 154	1.2	0.7	2.2	2.5	0.8	-0.4	0.0	0.9	1.7	1.2
OECD[d]	42 786	1.1	0.5	1.4	1.3	1.0	-0.4	0.1	0.3	0.6	0.9
Lithuania	22 949	9.3	1.1	6.5	5.9	3.3	2.7	-0.3	2.0	5.6	3.8

Note: Average annual wages per full-time equivalent dependent employee are obtained by dividing the national-accounts-based total wage bill by the average number of employees in the total economy, which is then multiplied by the ratio of average usual weekly hours per full-time employee to average usually weekly hours for all employees. For more details, see: *www.oecd.org/employment/outlook*.

a) Average wages are converted in USD PPPs using 2016 USD PPPs for private consumption.

b) Average annual wages and unit labour costs are deflated by a price deflator for private final consumption expenditures in 2016 prices.

c) Real compensation per employee (instead of real wages) are considered for Chile, Iceland, Mexico and New Zealand.

d) The OECD average real wage growth is a weighted average computed based on dependent employment weights in 2016 for the countries shown.

Source: OECD estimates based on *OECD Economic Outlook*, Vol. 2017, No. 1, OECD Publishing, Paris, *http://dx.doi.org/10.1787/eco_outlook-v2017-1-en* and *OECD Annual National Accounts Prices and Purchasing Parities Database*, *http://stats.oecd.org/Index.aspx?DataSetCode=SNA_TABLE4*.

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Table O. **Earnings dispersion and incidence of high and low pay**

	Earnings dispersion[a]						Incidence of			
	9th to 1st earnings deciles		9th to 5th earnings deciles		5th to 1st earnings deciles		Low pay[b] (%)		High pay[c] (%)	
	2005	2015	2005	2015	2005	2015	2005	2015	2005	2015
Australia	3.12	3.40	1.85	2.00	1.69	1.70	15.9	15.3	20.6	22.1
Austria	3.26	3.32	1.92	1.94	1.70	1.71	15.3	15.9	20.0	20.9
Belgium	2.49	2.33	1.78	1.74	1.40	1.34	6.7	3.4	13.4	12.9
Canada	3.74	3.71	1.87	1.91	2.00	1.94	21.3	22.2	10.9	9.7
Chile	5.33	4.32	3.00	2.71	1.78	1.59	19.9	11.9	28.6	26.4
Czech Republic	3.44	3.57	1.81	1.85	1.90	1.93	20.0	20.7	..	..
Denmark	..	2.56	..	1.75	..	1.46	..	8.2	..	2.9
Estonia	4.39	3.78	2.14	1.97	2.05	1.92	22.9	22.1	25.8	22.7
Finland	2.49	2.56	1.75	1.77	1.42	1.44	6.9	7.8	16.3	17.0
France	2.78	2.81	1.91	1.90	1.45	1.48	7.6	9.1	19.2	19.1
Germany	3.15	3.41	1.72	1.82	1.83	1.87	17.6	18.4	16.0	19.0
Greece	3.36	3.27	1.95	1.90	1.73	1.72	19.7	17.9	19.5	19.6
Hungary	4.46	3.72	2.30	2.27	1.94	1.64	23.1	19.8	..	..
Iceland	3.11	2.94	1.74	1.78	1.79	1.65	17.6	15.7	16.1	18.5
Ireland	3.73	3.99	2.04	1.96	1.83	2.04	20.1	24.0	..	..
Israel	5.11	4.91	2.68	2.65	1.90	1.85	23.1	22.1	28.8	27.9
Italy	2.40	2.17	1.60	1.44	1.50	1.50	9.4	7.6	11.4	8.0
Japan	3.12	2.94	1.86	1.85	1.68	1.59	16.1	13.5	..	..
Korea	5.12	4.59	2.42	2.39	2.12	1.92	24.9	23.5	..	..
Latvia	5.99	4.00	2.45	2.15	2.44	1.86	31.6	26.0	30.8	25.4
Luxembourg	3.22	3.15	1.99	2.07	1.62	1.52	14.8	12.2	22.3	24.4
Mexico	3.75	3.88	2.14	2.11	1.75	1.83	17.9	17.3	20.1	20.8
Netherlands	2.88	3.02	1.78	1.86	1.62	1.62	14.0	14.5	18.8	19.2
New Zealand	2.77	2.95	1.77	1.88	1.57	1.57	12.4	13.9	..	..
Norway	2.12	2.55	1.45	1.52	1.46	1.68	..	..	..	..
Poland	4.11	4.03	2.07	2.10	1.98	1.92	22.2	22.6	..	..
Portugal	4.31	3.89	2.67	2.49	1.61	1.56	16.0	20.3	27.6	27.8
Slovak Republic	3.40	3.56	1.97	2.01	1.72	1.78	18.0	19.0	..	..
Slovenia	3.73	3.33	2.08	2.00	1.79	1.67	19.6	19.2	24.6	23.2
Spain	3.10	3.12	1.99	1.94	1.56	1.61	12.3	14.6	23.6	22.8
Sweden	2.23	2.28	1.65	1.67	1.35	1.36	..	..	..	..
Switzerland	2.64	2.72	1.76	1.78	1.50	1.53	..	10.1	..	..
Turkey	4.10	3.53	3.56	2.85	1.15	1.24	..	..	..	..
United Kingdom[d]	3.60	3.50	1.98	1.96	1.82	1.78	20.7	20.0	..	..
United States	4.86	5.04	2.31	2.40	2.10	2.10	24.0	25.0	..	..
OECD[e]	3.57	3.40	2.06	2.01	1.73	1.68	17.7	16.7	20.7	19.5

Note: Estimates of earnings used in the calculations refer to gross earnings of full-time wage and salary workers. However, this definition may slightly vary from one country to another. Further information on the national data sources and earnings concepts used in the caculations can be found at: *www.oecd.org/employment/outlook*.

a) Earnings dispersion is measured by the ratio of 9th to 1st deciles limits of earnings, 9th to 5th deciles and 5th to 1st deciles. Instead of 2005, data refer to 2004 for Italy, Poland and Switzerland; and to 2006 for Chile, Estonia, France, Korea, Latvia, Luxembourg, the Netherlands, Slovenia, Spain and Turkey. Instead of 2015, they refer to 2011 for Israel; to 2013 for Sweden; and to 2014 for Belgium, Estonia, France, Germany, Greece, Iceland, Italy, Japan, Latvia, Luxembourg, the Netherlands, New Zealand, Poland, Portugal, Slovenia, Spain, Switzerland and Turkey.

b) The incidence of low pay refers to the share of workers earning less than two-thirds of median earnings. See note *a)* for countries with different time periods.

c) The incidence of high pay refers to the share of workers earning more than one-and-a-half times median earnings. See note *a)* for countries with different time periods.

d) For the Czech Republic, there are breaks in series in 2010 and 2012. For the United Kingdom, there are breaks in series in 1997, 2004, 2006 and 2011. In each case, data were spliced from *new-to-old* series to remove the breaks in the series.

e) Unweighted average for above countries.

Source: OECD Earnings Distribution Database, *www.oecd.org/employment/emp/employmentdatabase-earningsandwages.htm*.

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Table P. **Relative earnings: Gender, age and education gaps**

Percentages

	Gender[a]		Age[b]				Education/Skills[c]			
	Women / Men		15-24 / 25-54		55-64 / 25-54		Low / Medium		High / Medium	
	2005	2015	2005	2015	2005	2015	2005	2014	2005	2014
Australia	16	13	38	47	2	-3	12	12	-36	-36
Austria	22	17	36	33	-17	-22	..	26	..	-50
Belgium	12	3	34	35	-31	-28	10	10	-32	-36
Canada	21	19	43	42	-4	1	23	20	-34	-30
Chile	4	21	45	39	-7	2	..	36	..	-139
Czech Republic	16	16	35	35	-6	1	..	24	..	-92
Denmark	..	6	..	40	..	-2	..	11	..	-25
Estonia	30	28	17	28	19	19	16	9	-25	-30
Finland	19	18	32	35	-6	-5	4	1	-43	-34
France	9	10	36	36	-32	-18	..	11	..	-41
Germany	17	17	47	40	-9	-11	..	18	..	-55
Greece	17	9	..	42	..	-33	..	29	..	-37
Hungary	4	10	36	36	-18	0	..	24	..	-107
Iceland	13	14	37	38	2	-1	..	..	..	..
Ireland	14	14	43	55	-4	-14	17	7	-72	-65
Israel	22	22	55	54	-25	-19	..	22	..	-55
Italy	7	6	32	24	-29	-20	..	14	..	-42
Japan	33	26	44	42	-2	0	..	..	..	..
Korea	40	37	44	42	10	9	8	15	-34	-45
Latvia	11	21	19	21	12	17	..	11	..	-45
Luxembourg	8	3	40	41	-34	-27	..	33	..	-54
Mexico	17	17	29	30	-6	-1	..	40	..	-105
Netherlands	16	14	49	48	-14	-11	13	14	-47	-49
New Zealand	10	6	37	41	-2	4	19	14	-23	-35
Norway	9	7	31	35	-5	-8	12	12	-26	-26
Poland	11	11	41	35	-23	-2	..	16	..	-62
Portugal	16	19	38	39	-32	-27	35	27	-77	-68
Slovak Republic	20	13	..	33	..	6	27	26	-42	-70
Slovenia	7	5	36	34	-31	-14	..	20	..	-72
Spain	14	12	34	34	-22	-17	17	20	-35	-40
Sweden	14	13	27	30	-10	-9	..	12	..	-18
Switzerland	22	17	37	37	-11	-15	..	27	..	-74
Turkey	3	7	41	36	-60	-27	..	..	..	..
United Kingdom	22	17	49	49	8	2	..	24	..	-48
United States	19	19	48	48	-9	-11	..	26	..	-68
OECD[d]	16	14	38	38	-12	-8	..	19	..	-55

a) See note to Table O. The gender wage gap is unadjusted and is calculated as the difference between median earnings of men and women relative to median earnings of men. Instead of 2005, data refer to 2004 for Italy, Poland and Switzerland; and to 2006 for Chile, Estonia, France, Korea, Latvia, Luxembourg, the Netherlands, Slovenia, Spain and Turkey. Instead of 2015, they refer to 2011 for Israel; to 2013 for Sweden; and to 2014 for Belgium, Estonia, France, Germany, Greece, Iceland, Italy, Latvia, Luxembourg, the Netherlands, New Zealand, Poland, Portugal, Slovenia, Spain, Switzerland and Turkey.

b) Age wage gaps are calculated as the difference between mean earnings of 25-54 year-olds and that of 15-24 year-olds (respectively 55-64 year-olds) relative to mean earnings of 25-54 year-olds. Data refer to 55-year-olds and over for Hungary and Norway. Instead of 2005, data refer to 2004 for Switzerland, and to 2006 for Austria, Chile, Estonia, France, Iceland, Italy, Korea, Latvia, Luxembourg, the Netherlands, Slovenia, Spain and Turkey. Instead of 2015, they refer to 2011 for Israel, and to 2014 for Austria, Belgium, Estonia, France, Germany, Greece, Iceland, Italy, Latvia, Luxembourg, the Netherlands, New Zealand, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland and Turkey.

c) Earnings by skill (or education levels) refer to mean annual earnings of full-time full-year for 25-64 year-old employees. Earnings gaps by skill levels are calculated as the difference between mean earnings of medium-skilled employees and low- (respectively high-) skilled employees relative to mean earnings of medium-skilled employees.

The skill levels are based on the International Standard Classification of Education (ISCED, 2011). *Low* (skills) corresponds to less than upper secondary ISCED Levels 0, 1, 2 (Less than primary, primary and lower secondary education). *Medium* (skills) corresponds to upper secondary and post-secondary non-tertiary ISCED Level 3 (including partial level completion), and ISCED Level 4 (Upper secondary and post-secondary non-tertiary education). *High* (skills) corresponds to tertiary ISCED Levels 5, 6, 7 and 8 (short-cycle tertiary education, bachelors or equivalent level, masters or equivalent level, doctoral or equivalent level). Data refer to 2006 (instead of 2005) for Korea. They refer to 2010 (instead of 2014) for the Netherlands; to 2012 for Australia, France, Italy and Sweden; and to 2013 for Belgium, Canada, Chile, the Czech Republic, Finland, Luxembourg, Spain and Turkey. For Korea, data are provided by national authorities.

d) Unweighted average for above countries.

Source: OECD Earnings Distribution Database, www.oecd.org/employment/emp/onlineoecdemploymentdatabase.htm#earndisp for earnings gaps by gender and age; and OECD (2016), *Education at a Glance 2016: OECD Indicators*, OECD Publishing, *http://dx.doi.org/10.1787/eag-2016-en* for earnings gaps by skills or education levels.

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Table Q. **Public expenditure and participant stocks in labour market programmes in OECD countries, 2014 and 2015**

	Public expenditure (% of GDP)								Participant stocks (% of labour force)			
	Total		Active programmes		*of which:* Active measures not including PES and administration		Passive programmes		Active measures not including PES and administration		Passive programmes	
	2014	2015	2014	2015	2014	2015	2014	2015	2014	2015	2014	2015
Australia	0.94	0.91	0.25	0.23	0.09	0.09	0.68	0.68	1.93	2.21	6.95	6.61
Austria	2.20	2.23	0.79	0.74	0.62	0.57	1.40	1.49	3.76	3.41	7.21	7.84
Belgium	2.68	2.43	0.74	0.72	0.52	0.52	1.94	1.71	6.43	6.91	15.74	14.13
Canada	0.79	0.86	0.22	0.24	0.12	0.12	0.56	0.62	0.49	0.52	2.64	2.80
Chile	0.42	0.53	0.11	0.17	0.08	0.13	0.31	0.36	..	..	2.07	2.08
Czech Republic	0.59	0.62	0.36	0.43	0.24	0.31	0.22	0.19	1.56	1.68	2.19	1.92
Denmark	3.44	3.33	2.04	2.05	1.65	1.66	1.40	1.28	6.17	6.66	5.52	5.16
Estonia	0.59	..	0.20	..	0.10	..	0.39	..	0.57	..	2.18	..
Finland	2.88	2.94	1.06	1.00	0.91	0.85	1.82	1.93	4.77	4.63	11.27	11.85
France	3.01	2.98	1.01	1.01	0.75	0.76	2.00	1.98	6.32	6.54	13.24	13.78
Germany	1.59	1.51	0.65	0.63	0.29	0.27	0.94	0.88	3.06	2.92	6.67	6.37
Greece	..	..	..	..	0.30	0.24	0.51	0.49	..	..	..	..
Hungary	1.11	1.15	0.85	0.90	0.76	0.80	0.26	0.25	5.31	5.48	4.25	4.05
Ireland	2.58	1.83	0.79	0.58	0.67	0.49	1.79	1.25	4.38	4.25	16.36	14.40
Israel	0.72	0.68	0.16	0.16	0.14	0.14	0.56	0.52	3.28	3.72	4.71	4.83
Italy	1.92	1.80	0.39	0.51	0.30	0.42	1.54	1.29	4.49	..	5.38	5.19
Japan	0.34	0.32	0.16	0.14	0.09	0.08	0.19	0.17	..	..	..	..
Korea	0.66	0.67	0.36	0.36	0.33	0.32	0.30	0.32	..	..	..	..
Latvia	0.55	0.56	0.19	0.14	0.15	0.10	0.36	0.41	1.33	0.77	3.45	3.70
Luxembourg	1.38	1.34	0.64	0.66	0.58	0.60	0.74	0.68	9.86	8.71	3.86	3.90
Mexico	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	..	..	..	..
Netherlands	2.81	2.60	0.83	0.77	0.55	0.53	1.97	1.82	3.99	3.95	9.82	9.89
New Zealand	0.72	..	0.33	..	0.16	..	0.39	..	2.19	..	2.69	..
Norway	0.89	0.97	0.51	0.52	0.38	0.39	0.38	0.46	1.92	1.93	2.15	2.42
Poland	0.79	0.73	0.48	0.46	0.40	0.38	0.31	0.27	3.24	3.42	2.50	2.31
Portugal	1.90	1.55	0.57	0.55	0.53	0.48	1.33	1.01	5.31	5.58	6.94	5.69
Slovak Republic	0.55	0.53	0.20	0.20	0.17	0.16	0.35	0.34	2.47	2.10	2.09	1.93
Slovenia	1.00	0.76	0.37	0.24	0.28	0.16	0.63	0.53	1.85	1.15	2.37	2.12
Spain	3.00	2.52	0.55	0.60	0.45	0.45	2.45	1.92	8.04	8.20	11.08	9.56
Sweden	1.94	1.82	1.33	1.27	1.07	1.01	0.61	0.55	5.35	5.22	5.09	5.18
Switzerland	1.18	1.25	0.57	0.59	0.46	0.48	0.61	0.65	1.21	1.27	2.40	2.59
United Kingdom	..	..	..	..	..	..	..	..	..	..	..	..
United States	0.29	0.28	0.11	0.10	0.08	0.08	0.18	0.18	..	..	..	..
OECD	1.40	1.32	0.54	0.53	0.41	0.40	0.85	0.78	3.92	4.11	6.05	6.11
Lithuania	0.43	0.53	0.24	0.31	0.18	0.25	0.19	0.23	1.51	1.63	2.19	2.41

Note: The data shown should not be treated as strictly comparable across countries or through time, since data at the level of individual countries in some cases deviate from standard definitions and methods and certain programmes or programme categories are not always included in the data for participants stocks. OECD average has variable country coverage. See *www.oecd.org/els/emp/employment-outlook-statistical-annex.htm* which provides a general introductory note about scope and comparability, tables for expenditure and participants in the main programme categories and subcategories, country-specific notes, and access to the online database.
Fiscal years for Australia, Canada, Japan, New Zealand, the United Kingdom and the United States.
Source: For European Union countries and Norway, European Commission (2017), *Labour Market Policy, http://ec.europa.eu/eurostat/web/labour-market/labour-market-policy/database* and detailed underlying data supplied to the OECD by the European Commission with certain Secretariat adjustments. For other countries: *OECD Database on Labour Market Programmes*, *http://dx.doi.org/10.1787/data-00312-en*.
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The 2017 edition of the *OECD Employment Outlook* reviews recent labour market trends and short-term prospects in OECD countries. Chapter 1 presents a comparative scoreboard of labour market performance that encompasses the quantity and quality of employment, as well as the inclusiveness of the labour market. During the past decade, most countries managed to better integrate women and potentially disadvantaged groups into the labour market and improve the quality of the working environment, whereas earnings quality was more or less stable and labour market security worsened. Chapter 2 looks at the resilience of labour markets following the global crisis and shows how both structural reforms and expansionary fiscal policy mitigate the unemployment costs of adverse aggregate shocks. OECD countries generally have avoided an increase in structural unemployment, but not a marked deceleration of wage and productivity growth. Chapter 3 documents the impact of technological progress and globalisation on OECD labour markets over the past two decades. Technology is shown to have been strongly associated with both job polarisation and de-industrialisation. The impact of trade integration is difficult to detect and probably small, although rising imports from China has a small effect in depressing employment in manufacturing. Chapter 4 provides an exceptionally rich portrait of collective bargaining in OECD countries that makes it possible to understand better how national systems differ and the implications of those differences for economic performance.

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