OECD Employment Outlook 2014

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Foreword

The OECD Employment Outlook *provides an annual assessment of key labour market developments and prospects in 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 special chapters cover four topics: recent wage developments, job quality, non-regular employment, and the employment impact of skills and qualifications. Reference statistics are also included.*

The 2014 OECD Employment Outlook *is the joint work of staff of the Directorate for Employment, Labour and Social Affairs. 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.*

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Editorial

Both more and better jobs are needed for an inclusive recovery from the crisis

More and better jobs are needed to lower unemployment and improve well-being

Despite recent improvements, further progress in labour market conditions remains largely dependent upon a broader and sustained economic recovery. Although unemployment has declined in response to renewed job creation, large job gaps remain in many countries with deep scars from the crisis both for people with work and those without. The unemployed have borne considerable personal, economic and social costs that may prove to be long-lasting. This is especially true for those who have endured a long spell of joblessness, who are facing a depreciation of their skills and a risk of labour market exclusion. Among those who have kept their jobs, an increasing number of workers and their families have experienced economic hardship as a result of declines in the spending power of their earnings from work. The crisis has also deepened a long-standing issue of poor job quality in advanced and emerging countries alike.

These dual impacts on the unemployed and the employed emphasise the need to foster the creation of not just more jobs but also better jobs – a task that is now the defining challenge for many governments around the world. Meeting this challenge will require a broad range of policy actions; from sound macroeconomic policies to sustain the recovery, to reforms aimed at fostering competition and productivity in the markets for goods and services, facilitating worker mobility towards more productive and rewarding jobs, shoring up incomes of low-paid workers and strengthening worker training and retraining.

Tackling persistently high unemployment remains a priority

Unemployment is finally on a downward path in many countries. After nearly three years of little change, the OECD harmonised unemployment rate fell to 7.3% in June 2014, down from a post-war high of 8.5% in October 2009, but was still significantly higher than before the crisis. Almost 45 million persons are without work in the OECD area, 11.9 million more than just before the crisis. However, there are sharp differences across countries. In the United States, unemployment fell to 6.2% in July 2014; in Japan it has declined since mid-2009 and it reached 3.7% in June 2014; in the euro area, wide differences persist, but thanks to some recent easing also in some of the hard-hit countries, the area-wide unemployment rate declined to 11.5%. According to the most recent OECD economic projections from May 2014, unemployment in the OECD area will continue to decline but will remain well above its pre-crisis level for the rest of this year and throughout 2015.

Long-term unemployment has probably peaked in most countries, but it remains a major source of concern. For the OECD area as a whole, 16.3 million persons – more than one in three of all unemployed – had been out of work for 12 months or more in the first quarter of 2014. The size of this group has increased by 85% since 2007. For countries that saw the biggest increases, there is growing evidence that part of what was originally a cyclical increase in unemployment has become structural and will thus be more difficult to reverse during the economic recovery. Therefore, tackling unemployment where it remains high and driving down long-term unemployment remain key policy priorities.

Wage adjustments have helped the labour market weather the crisis, but cannot on their own restore the labour market to full health

Wage adjustments have played an important role in helping the labour market weather the deep cyclical downturn, reducing job losses in the downturn and promoting employment growth in the recovery. The slowdown in real wage growth was particularly marked in the euro area where it declined from an average annual growth rate of 2.1% at the start of the crisis to -0.1% since 2009; however similar trends were also observed in the United States and Japan. These wage adjustments have contributed to foster external competitiveness, especially in some euro-area countries. Indeed, following the introduction of the euro, labour costs grew considerably faster than labour productivity in several European countries, notably Greece, Portugal, Ireland and Spain, especially when compared with Germany. This gap has been partially reversed during the crisis.

However, stagnant or falling real earnings can have a major impact on household incomes, further contributing to economic hardship, especially among the most disadvantaged. This edition of the *OECD Employment Outlook* shows that, on average across a range of OECD countries, half of all workers saw the real value of their earnings fall in 2010. In one third of these cases, this was because earnings growth was outpaced by inflation; in the other two-thirds, it was because nominal earnings actually fell, not necessarily as a result of wage cuts but more likely because of reduced overtime pay and bonuses. Further downward adjustments in wages in the hardest-hit countries risk being counterproductive: especially in a context of near-zero inflation, it may be difficult to achieve in the first place; or it may do little to create jobs while increasing the risk of poverty and depressing aggregate demand. Other policy measures are required. Macroeconomic policies have still an important role to play but they need to be complemented by structural policy reforms to boost productivity and potential growth.

Enhancing product market competition and labour market policies to promote mobility and inclusion are needed

The *Outlook* finds that the significant wage moderation observed in many countries during the crisis has not been fully translated into lower price dynamics so as to promote competitiveness and strengthen output and employment growth. This is partly explained by the necessary efforts of many troubled firms to restore their profitability. But it could also reflect a lack of competition in markets for goods and services. Therefore, it would be timely to pursue further structural reforms to enhance effective competition in product markets and to ensure that the gains from labour market reforms can fully materialise. Such actions could strengthen productivity and potential output growth and fuel job creation.

It should also be made easier for workers to move between sectors and firms. As the economy recovers, many of the new jobs that are created may be in different firms and sectors and may require different skills than the jobs that have been lost. Programmes facilitating labour mobility and providing training and work-experience are essential to allow countries with persistently large labour market slack to foster job creation. Even though public finances are squeezed in many countries, it is essential to provide funding for such programmes to ensure the economic recovery becomes a jobs recovery. This, in turn, could help reduce both income inequality and poverty.

It is important also to address gaps in employment protection between permanent and temporary workers. The crisis demonstrated that when these gaps are excessive, the impact of a downturn on job losses is greater, especially among those on "atypical" and precarious jobs. They also leave many workers in these jobs with poor and weakened employment prospects. As the *Outlook* shows, temporary or other atypical jobs are not an automatic stepping-stone to permanent work: in Europe, for example, less than half of temporary workers in a given year had full-time permanent contracts three years later; and in several countries, including Korea, those on temporary or other atypical contracts have a much higher probability of moving into inactivity. Workers on these contracts are also less likely to receive the training that could enhance their employment prospects. The gap in effective protection is even larger in emerging economies where informal-sector workers are largely excluded from employment and social protection provisions. Governments should thus seek to narrow gaps in terms of employment protection between permanent and atypical workers so as to tackle labour market segmentation and promote investment in workers' human capital.

It is encouraging that, often prompted by the crisis, a number of countries have recently undertaken significant reforms in this area. These reforms seek to reduce the gap between permanent and atypical labour contracts, clarify conditions for hiring and separation of workers under different contracts and, in a number of cases, tackle abuses in the use of temporary contracts. In a number of emerging economies, efforts have also been made to strengthen social protection for all workers. These reforms take time to deliver better outcomes and so it is essential that countries stay the course, while at the same time evaluating the impact of these reforms and, if needed, undertaking adjustments to improve their effectiveness in promoting better labour market outcomes.

Policies such as minimum wages, progressive taxation and in-work benefits can help to share more fairly the costs of economic adjustment

Policies must address not just the level of wage adjustment but also its distribution. Low-paid workers and their families are most at risk of severe economic hardship from cuts in the spending power of their wages, but also have the most to gain from measures to ensure the short-term costs of economic adjustment are fairly shared.

Mandatory minimum wages, which now exist – or are being implemented – in 26 OECD countries and a number of emerging economies, can help underpin the wages of low-paid workers. Evidence suggests that, when set at an appropriate level, minimum wages tend to have only a small adverse effect on employment. Sensible minimum-wage design includes: taking account of differences by region according to the average income level, as well as by age in experience and productivity; ensuring that the level and adjustments of the minimum wage involve independent commissions; and reducing social security contributions to lower non-wage labour costs at the minimum wage.

More progressive taxation of income can also help ensure that those doing best in the economy pay their fair share. As earnings (and other sources of income) become more unequally distributed, the case for examining the distributive impact of tax exemptions and allowances becomes even stronger. Moreover, a number of OECD countries have introduced or recently scaled up in-work benefits schemes to support low-paid workers and reduce household income inequality.

Setting an agenda to promote more productive and rewarding jobs

Going forward, more attention should be paid not only to the number of job opportunities available and for whom, but also on the quality of these jobs and their contribution to well-being. After all, most people spend a substantial part of their time at work and work for much of their life. Job quality embraces a range of aspects that matter for well-being. These include the level and distribution of earnings; the risk and the consequence of job loss in terms of lost income; and the extent to which workers have the resources they need to meet the demands of their jobs. Therefore, in responding to the legacy of the crisis, governments must take action to foster the conditions needed for employment growth and improve access to productive and rewarding jobs.

The good news is that the preliminary findings in this *Outlook* suggest that, overall, there is little sign of a trade-off between job quantity and job quality across countries. Thus, policy makers do not have to choose one at the expense of the other. But they do need to pursue a consistent set of policies, including wage-setting arrangements, employment protection legislation, social protection schemes and occupational health and safety requirements – that promote job growth while enhancing job quality. In the long-term, the success of countries in creating more and better jobs will also be largely determined by providing people with the skills they need and by ensuring that they can adapt and improve those skills to face the challenges of a rapidly evolving labour market.

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

Acronyms and abbreviation

BMI	Body mass index
CA	Collective agreement
CHD	Coronary heart disease
CPI	Consumer price index
CPS	Current Population Survey
CVD	Cardiovascular disorder
DSE	Dependent self-employed
DSEW	Dependent self-employed workers
DWR	Downward wage rigidities
EPL	Employment protection legislation
EPRC	Employment protection for regular workers against individual and collective dismissals
EPT	Employment protection legislation concerning temporary contracts
ERI	Effort-reward Imbalance
ESS	European Social Survey
EUR	Euro
EU-SILC	European Union Statistics on Income and Living Conditions
EWCS	European Working Conditions Survey
FTC	Fixed-term contract
GDP	Gross domestic product
GSOEP	German Socio-Economic Panel
HILDA	Household, Income and Labour Dynamics
ICT	Information and communication technology
ILO	International Labour Organization
ISCED	International Standard Classification of Education
ISCO	International Standard Classification of Occupations
ISSP	International Social Survey Program
KLIPS	Korean Income and Labour Panel Study
MDD	Major depressive disorder
MSD	Musculoskeletal disorders
NAIRU	Non-accelerating inflation rate of unemployment
NEET	Neither in employment nor in education or training
OLS	Ordinary least squares
PES	Public employment service
PIAAC	OECD Programme for the International Assessment of Adult Competencies
PPP	Purchasing power parity
QWE	Quality of the working environment
TRE	Technology-rich environments

TWA	Temporary work agency
UNECE	United Nations Economic Commission for Europe
UNFD	Unfair dismissal
USD	United States dollar
VET	Vocational Education and Training

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Executive summary

The labour market recovery in the OECD area remains incomplete

Unemployment remains well above its pre-crisis levels in many OECD countries despite a recovery in job growth. Modest declines in unemployment are projected over the rest of 2014 and in 2015. The persistence of high levels of unemployment has been translated into a rise in structural unemployment in some countries, which may not be automatically reversed by a pick-up in economic growth, as it has led to a loss in human capital and motivation to find work, especially among the long-term unemployed. For the OECD area as a whole, 16.3 million people – over one in three of the unemployed – had been out of work for 12 months or more in the first quarter of 2014, almost twice the number in 2007. Given these developments, promoting demand should remain a key policy objective where the recovery has been less robust, accompanied by reinforced measures to combat structural unemployment. Priority should be given to employment and training measures for the long-term unemployed who typically face significant barriers to finding work and are most likely to quit the labour force.

Real wage growth has slowed substantially

Many of those who kept their jobs have seen their real earnings grow more slowly or even fall because of the crisis. A persistent increase in unemployment in many OECD countries has exerted considerable downward pressure on real wage growth. This has helped to curb unit labour costs and thus promote external competitiveness in a number of countries, particularly in the euro area. Further wage adjustment, especially given low inflation, would require painful wage cuts and could increase the number of working poor. A range of policies are needed to promote competitiveness, growth and job creation. In addition to sound macroeconomic policies to promote the recovery, these include: reforms to increase competition in the markets for goods and services; helping displaced workers shift to new areas of employment; and shoring up incomes of low-paid workers.

Better job quality should be promoted

Labour market performance should be assessed in terms of both the number and quality of job opportunities, i.e. policies should seek to promote more and better jobs. A new conceptual and operational framework has been developed to measure job quality via three dimensions: the level and distribution of earnings; labour market security; and the quality of the work environment. There are large differences across countries in each of these dimensions but there does not appear to be any major trade-off between job quality and job quantity: some countries manage to do well on both counts. There are also considerable differences in job quality between socioeconomic groups within countries. Youth, low-skilled workers and those with temporary jobs appear to cumulate many

disadvantages. In contrast, high-skilled workers not only obtain access to more jobs, but also to the best quality jobs. The level and distribution of earnings depend on the role of growth-promoting policies, the accessibility and quality of education, the nature of wage-setting institutions (e.g. minimum wages, collective bargaining), and the design of the tax and benefits systems. Labour market security is determined by the interplay of employment protection, unemployment compensation systems (unemployment benefits and severance pay) and active labour market policies. The quality of the work environment is largely determined by the effectiveness of occupational health and safety regulations to prevent work-related health problems, but also by social dialogue and the degree of employer social responsibility.

Overreliance on temporary work is damaging to individuals and the economy

Non-regular employment – that is all forms of employment that do not benefit from a permanent or open-ended contract – can provide flexibility for firms to adjust their workforce in changing economic circumstances. They can also be a voluntary choice for workers who prefer the flexibility associated with these types of contract. However, extensive use of non-regular contracts can have an adverse impact on both equity and efficiency. Workers on these contracts often face a higher degree of job insecurity than employees on regular contracts. And firms tend to invest less in non-regular workers, which in turn may depress their productivity and human capital development. Over the two decades prior to the global financial crisis, non-regular work expanded in many countries as governments sought to promote flexibility in the labour market largely by easing regulations on non-regular contracts while leaving in place relatively stricter conditions for those on regular contracts. Policy options to reduce the labour market divide between regular and non-regular workers include regulating more strictly the use of temporary contracts while relaxing regulations on dismissal of permanent workers. Going further, convergence of termination costs across contracts could be obtained by introducing a single or unified contract. Each of these options involves overcoming implementation difficulties and requires complementary reforms to be effective.

Both qualifications and skills matter for early labour market outcomes and beyond

The OECD's international Survey of Adult Skills provides new insights on the contribution of educational qualifications and a range of skills to two key labour market outcomes for young people aged 16 to 29 years: the risk of being out of school and out of work; and, if in work, the level of hourly wages. The findings underscore the importance of promoting higher educational attainment, but also of enhancing literacy, numeracy and problem-solving skills and improving the information available to young people when choosing their field of study. Work experience also positively affects wages early on as well as generic skills. Nevertheless, in several countries, few youth appear to combine work and study, and most students who work do so outside of formal programmes involving work experience such as vocational education and training (VET) courses or apprenticeships. This suggests that, in order to familiarise students more closely with the labour market, not only should work-based modules in VET and apprenticeship schemes be introduced or expanded, but measures that make it easier for all students to gain work experience should be strengthened. Such measures could include removing barriers for firms to take on part-time workers and possibly introducing tax incentives for students working up to a certain number of hours.

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Chapter 1

An update on the labour market situation

This chapter provides an overview of recent labour market developments in OECD countries and short-term prospects. Despite some signs of a recovery in job growth, unemployment remains well above pre-crisis levels in many countries, although some further modest declines are projected over the rest of 2014 and in 2015. Moreover, an assessment of the available evidence suggests that the persistence of high levels of unemployment has been translated into a rise in structural unemployment in some countries, which will not be automatically reversed by a pick-up in economic growth. Given these developments, promoting aggregate demand should remain a key policy objective where the recovery has been less robust but accompanied by reinforced measures to combat rising structural unemployment. In particular, priority should be given to employment and training measures for the long-term unemployed who typically face significant barriers to finding work and are most likely to drop out of the labour force.

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

Six years after the global financial crisis began, the labour market recovery in the OECD area as a whole remains subdued but with considerable differences across countries:

- The OECD is still recording a jobs deficit. In the OECD area as a whole, employment growth has picked up only slightly and consequently the employment rate – the share of the population aged 15 and over in employment – remains about 2 percentage points below its level at the onset of the crisis and only slightly above its post-crisis trough. In most euro area countries and Denmark, the employment rate is currently at, or close to, its lowest level since the start of the crisis and little employment growth has been recorded. By contrast, in seven other OECD countries the employment rate is higher than it was prior to the downturn.
- The crisis explains most, but not all, of the decline in employment. Long-term trends such as population ageing and upskilling are increasingly important factors in explaining employment dynamics. While the two processes more or less cancel each other out OECD-wide, their effect differs significantly across countries. For example, the adverse impact of population ageing prevails in the United States, while the positive effect of skills upgrading dominates in the European Union. The importance of such trends suggests that the crisis should not be held accountable for all the changes in employment observed since it began.
- In the United States, a large decline in labour force participation accounts for the majority of the persistent shortfall in jobs. The US employment rate among people aged 16 to 64 dropped by 5 percentage points from 72% in 2007 to 67% in 2010 and has since remained stubbornly close to its post-crisis trough. One-third of this decline can be ascribed to an increase in joblessness, half of which stems from the rise in the number of people who have been unemployed for more than a year. The remaining two-thirds of the fall in employment is accounted for by the decline in labour force participation which is attributable to increases in school enrolment and (self-reported) disability and, to a lesser extent, higher numbers of discouraged workers and women taking up unpaid personal care and housekeeping responsibilities.

Nevertheless, there are now signs of a more broadly based pick-up in the labour market. The euro area has at last turned the corner, while net job creation in the United States has strengthened:

- A small but welcome decline in unemployment has been recorded. After remaining essentially unchanged at around 8% for nearly three years, the OECD unemployment rate fell to 7.4% in the few months to May 2014. The drop was down 1.1 percentage point from the post-war high of 8.5% in October 2009, but still 1.8 percentage points higher than at the start of the crisis. Almost 45 million persons are currently unemployed in the OECD area, which is 12.1 million more than immediately before the crisis.

- The decline was driven by the United States and, to a lesser extent, the euro area and Japan. In the United States, the decline in unemployment gathered pace in the six months to June 2014, when it stood at to 6.1% – 3.9 percentage points below its cyclical peak and 1.1 percentage points above its pre-crisis level. The jobless rate declined moderately to 11.6% in May 2014 in the euro area, while, in Japan, unemployment actually fell below its pre-crisis level to 3.5%.
- But there are still large country disparities in unemployment. In May 2014 (unless stated otherwise), the highest unemployment rates were recorded in Greece (26.8%, March 2014), Spain (25.1%), Portugal (14.3%), the Slovak Republic (13.9%), Italy (12.6%), Ireland (12%), and France (10.1%). The lowest were those of Norway (3.3%, April 2014), Japan (3.5%), Korea (3.7%), Austria (4.7%), Switzerland (4.8%, Q1 2014), Mexico (4.9%), and Germany (5.1%).
- Despite some decline in overall unemployment, long-term unemployment has continued to increase. For the OECD area as a whole, 16.7 million people – over one in three of the unemployed – had been out of work for 12 months or more in the last quarter of 2013, almost twice the number in 2007. The largest increases occurred in those countries – e.g. Iceland, Ireland, New Zealand, Spain and the United States – where the global economic crisis hit labour markets particularly hard. By contrast, the incidence of long-term joblessness fell markedly in Germany, where the recession's impact on the labour market was relatively mild, but it still remains nearly 10 percentage points above the OECD average.
- Further modest declines in unemployment are projected. The OECD projections of May 2014 suggest that the recent decline in unemployment will continue at its current pace, with the OECD unemployment rate reaching 7.1% in the last quarter of 2015. The biggest falls in unemployment between the fourth quarters of 2013 and 2015 are expected in Spain (down 2.2 percentage points), Ireland (2.1), the Slovak Republic and the United States (1.1). Despite these somewhat encouraging trends, jobless rates are expected to remain well above 20% in Greece and Spain and between 10% and 15% in several other euro area countries by the end of 2015. By contrast, Germany and Iceland look set to join the group of countries with unemployment rates of below 5%.

The prolonged period of high unemployment and the rise in long-term unemployment has raised concerns that structural joblessness has increased, with stronger economic growth alone failing to drive unemployment back down to its pre-crisis levels. The evidence presented in this chapter supports both a cyclical and structural explanation for the persistence of high levels of unemployment:

- Weak aggregate demand accounts for a significant part of the persistence of high unemployment. The continued importance of cyclical factors is illustrated by the facts that gross domestic product (GDP) is still well below its potential level in many countries and the ratio of job vacancies to the number of unemployed jobseekers remains depressed. Moreover, it is estimated that the bulk of the increase in unemployment since the crisis remains cyclical and that more than half of the decline in the unemployed's job-finding prospects since the onset of the global financial crisis is associated with cyclical factors, i.e. a lower number of vacancies per unemployed jobseeker.
- Nevertheless, there is also evidence that some of the cyclical increase in unemployment has become structural. OECD estimates of the NAIRU (Non-accelerating inflation rate of unemployment) suggest that it has tended to increase since the start of the crisis in

several OECD countries and particularly in Greece, Portugal and Spain. There is also evidence that a growing share of the unemployed experiences increased difficulties in finding work – even after the reduced number of job vacancies is taken into account. Matching efficiency – i.e. the ease with which jobseekers find jobs and fill job vacancies – appears to have deteriorated, particularly in New Zealand and the United States. Both countries have been hit hard by the global financial crisis and witnessed a sharp increase in the incidence of long-term unemployed.

- The rise in structural unemployment does not appear to reflect a misalignment or mismatch of job vacancies and unemployed jobseekers across sectors. Sectoral mismatch increased sharply in the aftermath of the global financial crisis, but has also tended to recede quickly as the labour market has recovered.

The dominant cyclical component in the unemployment rates observed in many OECD countries suggests that promoting aggregate demand and job creation remains a key policy priority going forward. This is all the more urgent because of the growing risk that for the many who have accumulated long jobless spells, discouragement and loss of human capital make their reintegration more difficult, that is, their unemployment risks becoming structural in nature. This latter risk also suggests that macro policies to stimulate demand should be accompanied by reinforced measures to overcome structural obstacles to finding work. In particular, governments should give priority to providing employment and training measures for the long-term unemployed who experience a range of difficulties in finding jobs and are most likely to drop out of the labour force.

Introduction

While economic recovery from the global financial crisis is gradually strengthening and becoming more widespread, the pick-up in jobs and decline in unemployment have been more modest in many OECD countries. A key question for policy is to assess how much of the persistence of high levels of unemployment is due to cyclical factors, i.e. a lack of aggregate demand, and how much to structural factors, i.e. the growing mismatch between job vacancies and job seekers. This chapter seeks to sheds light on this important question.

First, recent labour market developments and short-term prospects are reviewed, and the extent to which the recovery in jobs remains incomplete is evaluated (Section 1). This includes an assessment of the contribution to employment changes since the start of the crisis of both short-term factors related to the crisis as well as long-term trends in population ageing and skills upgrading. Second, it examines in more detail the evidence for a structural rise in unemployment as a result of the weakening effect of prolonged cyclical unemployment on effective labour supply (Section 2). This is mainly based on evidence from how the relationship between job vacancies and unemployment has been changing over recent years. The chapter concludes with a brief discussion of the implications for policy.

1. Taking stock of the labour market recovery and the short-term outlook

This section assesses recent labour market developments and the short-term outlook based on the latest OECD projections from May 2014 (OECD, 2014a). It begins with an evaluation of the size of the shortfall in jobs that still remains in some countries relative to the pre-crisis situation and the role of both short-term changes in GDP growth and long-term changes in the age and skill composition of each country's population. The

situation of the unemployed and the long-term unemployed is then examined in more detail. Further details on the current and projected labour market situation in each country can be found in Annex Tables 1.A1.1 and 1.A1.2 at the end of this chapter.

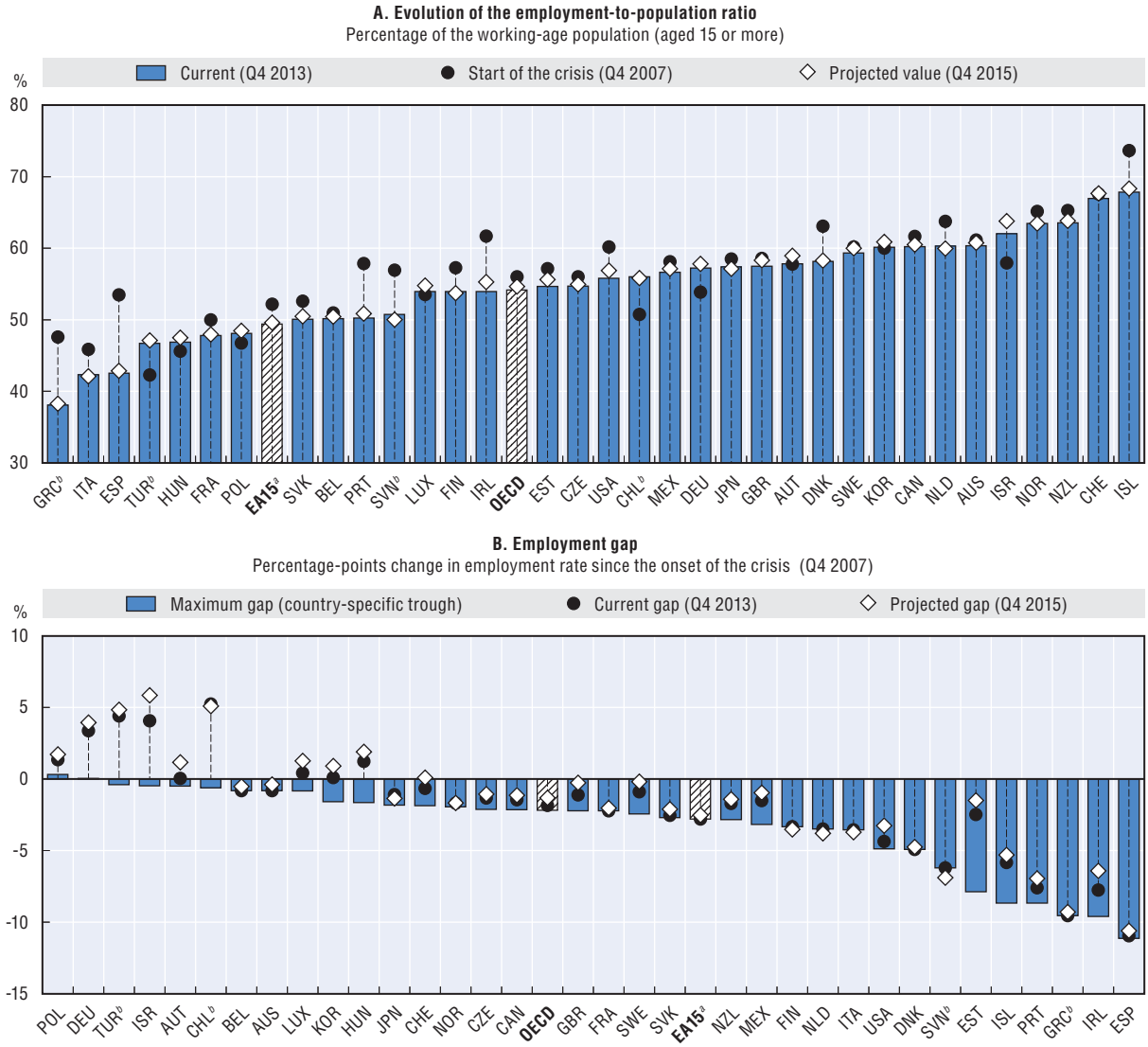
Further progress is needed on the jobs front

The global economic recovery remains modest and uneven, with significant differences in economic performance both between and within advanced and emerging economies. On average in the OECD area, real GDP grew by 1.3% in 2013. The euro area remained in recession in 2013 for the second year running as a result of poor economic performance in the southern European economies as well as in Finland, Ireland and the Netherlands. Outside the euro area, the economy continued to expand at a moderate pace, with GDP growth rates of 1.5% in Japan and 1.9% in the United States. Nevertheless, even in countries where the economic recovery is well underway, it often has not been strong enough to close the gap between actual and potential output. For 2013, real GDP for the OECD as a whole is estimated to have been 2.5% below its potential value. While there are large differences in the size of the output gap across OECD countries, it remains negative in the large majority of them. Looking ahead, the OECD projections from May 2014 suggest that the economic recovery is expected to broaden with the euro area returning to positive economic growth in 2014 and the recovery gathering pace in many other countries. As a result, real GDP growth in the OECD area may be approaching 3% in 2015.

In response to the economic recovery, the employment situation has started to improve, but there is still a long way to go to make up for the job losses that occurred as a result of the global financial crisis. In Figure 1.1, changes in the employment rate are shown relative to the pre-crisis situation (Q4 2007). For the OECD as a whole, the jobs recovery has only just begun: the OECD employment rate (the share of the population aged 15 and over in employment) is currently 1.8 percentage points below its level at the start of the global financial crisis compared with 2.2 percentage points at the depth of the crisis (Figure 1.1). However, the picture differs markedly across countries. In most euro area countries as well as Denmark, the employment rate is currently at, or close to, its lowest level since the start of the crisis and the jobs recovery has yet to begin. By contrast, in seven countries where the decline in employment in the wake of the crisis tended to be small, the employment rate is currently higher than at the start of the crisis. The situation of Estonia is particularly notable. By mid-2013, its employment rate had almost recovered from the large drop (8 percentage points) experienced during the deep crisis of 2008-09. In the other countries, employment rates have recovered only modestly from their cyclical lows. In the United States, the employment rate is currently 4.4 percentage points lower than at the start of the crisis compared with 4.9 at the depth of the crisis. In Japan, the employment rate is currently 1.1 percentage points lower, compared with 1.8 percentage points at the trough.

Looking ahead, the employment situation is expected to stabilise or improve in the majority of OECD countries. For the OECD as a whole, the jobs gap (i.e. the difference between the employment rate and its level at the start of the crisis) is projected to narrow further from 1.8 percentage points in the fourth quarter of 2013 to 1.3 percentage points by the end of 2015. This reflects modest improvements in the euro area and the United States, but a slight deterioration in Japan, partly as a result of population ageing.

Figure 1.1. **The jobs recovery has not gone very far yet**



Note: Countries shown by ascending order of the current employment rate (Q4 2013) in Panel A and of the maximum gap (country-specific trough) in Panel B.

a) Aggregate of 15 OECD countries of the euro area.

b) Annual values.

Source: OECD calculations based on *OECD Economic Outlook* (database), *http://dx.doi.org/10.1787/data-00688-en*.

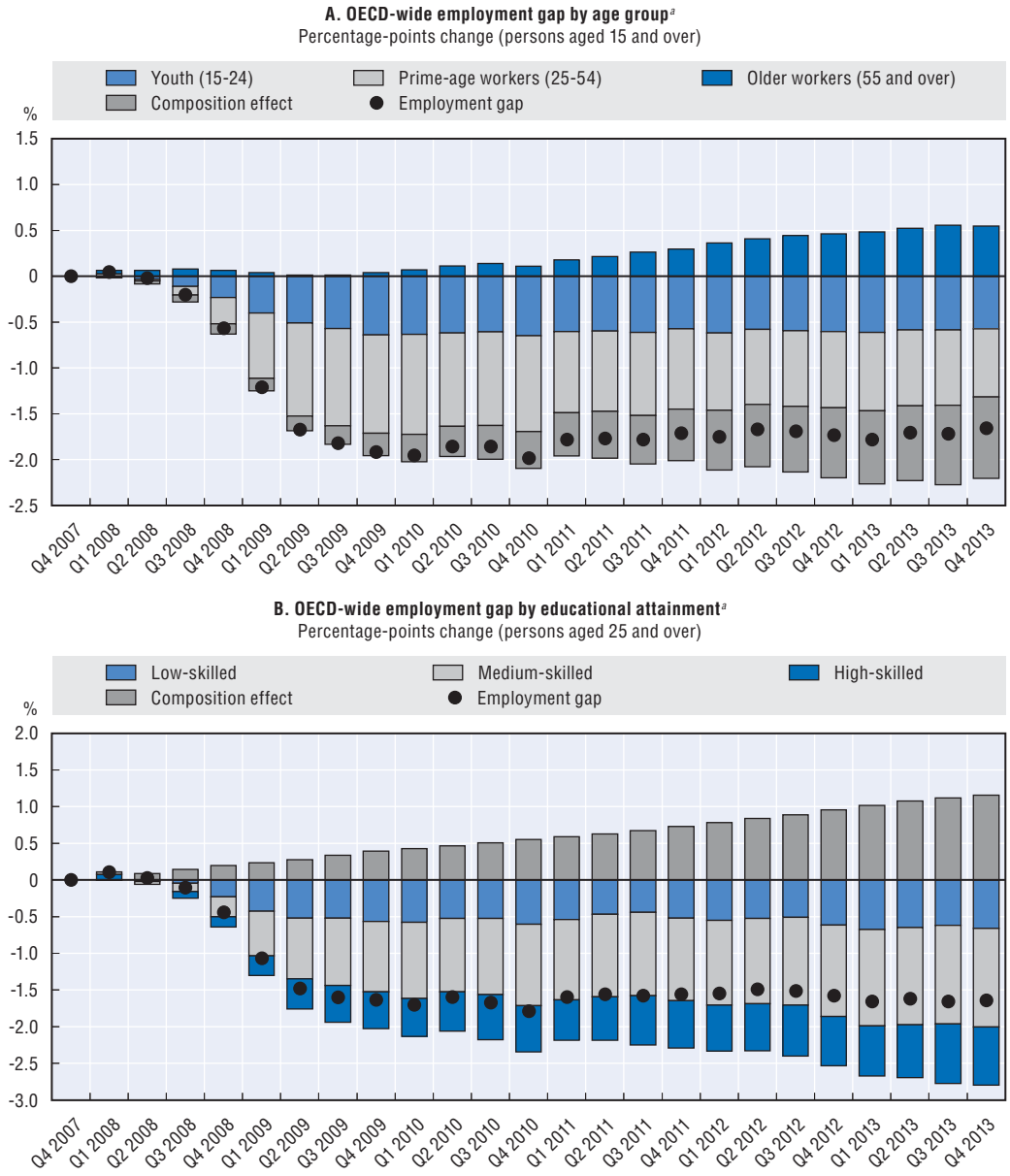
StatLink *http://dx.doi.org/10.1787/888933131823*

Changes in the age and skill composition of the population have also affected employment growth

Some of the changes in employment rates may reflect longer term trends in the age and educational composition of the population. On the one hand, population ageing is likely to lower the overall employment rate, while rising levels of educational attainment are expected to increase it, on the other. The impact of these compositional changes by age and education on the employment gap is shown in Figure 1.2. The employment gap is defined as the difference between the OECD employment rate in each period and its pre-crisis level in the last quarter of 2007. This gap is decomposed into a "within group" part, which captures the contribution of changes in employment rates for specific age and

Figure 1.2. **Population ageing and skill upgrading are having a significant impact on employment**

Decomposition of the overall change in the employment rate by age and education since the onset of the crisis (Q4 2007)



a) OECD is the weighted average of 34 countries for statistics by age groups and 30 countries (excluding Australia, Chile, Japan and New Zealand) by level of education.

Source: OECD calculations based on *OECD Short-Term Labour Market Statistics* (database), *http://dx.doi.org/10.1787/data-00046-en* and quarterly national labour force surveys.

StatLink http://dx.doi.org/10.1787/888933131842

skill groups to the aggregate change in the employment rate, and a "between group" part which captures the role of changes in the age and skill composition of the population for the overall employment rate. The contribution of each group is measured as the change in the group-specific employment rate times its average share in the population over the period.[1] The between component is defined as the sum of the changes in the population shares times the average group-specific employment rate.[2]

In terms of employment changes by age (Panel A of Figure 1.2), the initial decline in the OECD employment rate (persons aged 15 and over) up to the end of 2009 was largely driven by job losses among prime-age workers and youth, reflecting the relative dominance of prime-age workers in the population and the disproportionate impact of the crisis on jobs held by youth. The OECD employment rate has been broadly stable since the end of 2009. While employment rates of older and prime-age workers have started to rise, that of youth has remained largely unchanged at a much lower level than before the crisis. The composition (between group) effect is negative and increases gradually over time, reaching 0.9 percentage points in the fourth quarter of 2013. This reflects the increasing share of older persons in the working-age population and relatively low employment rates among older workers. Apart from the weak recovery in aggregate demand, population ageing provides another reason why employment rates have not returned to their pre-crisis levels in many OECD countries.

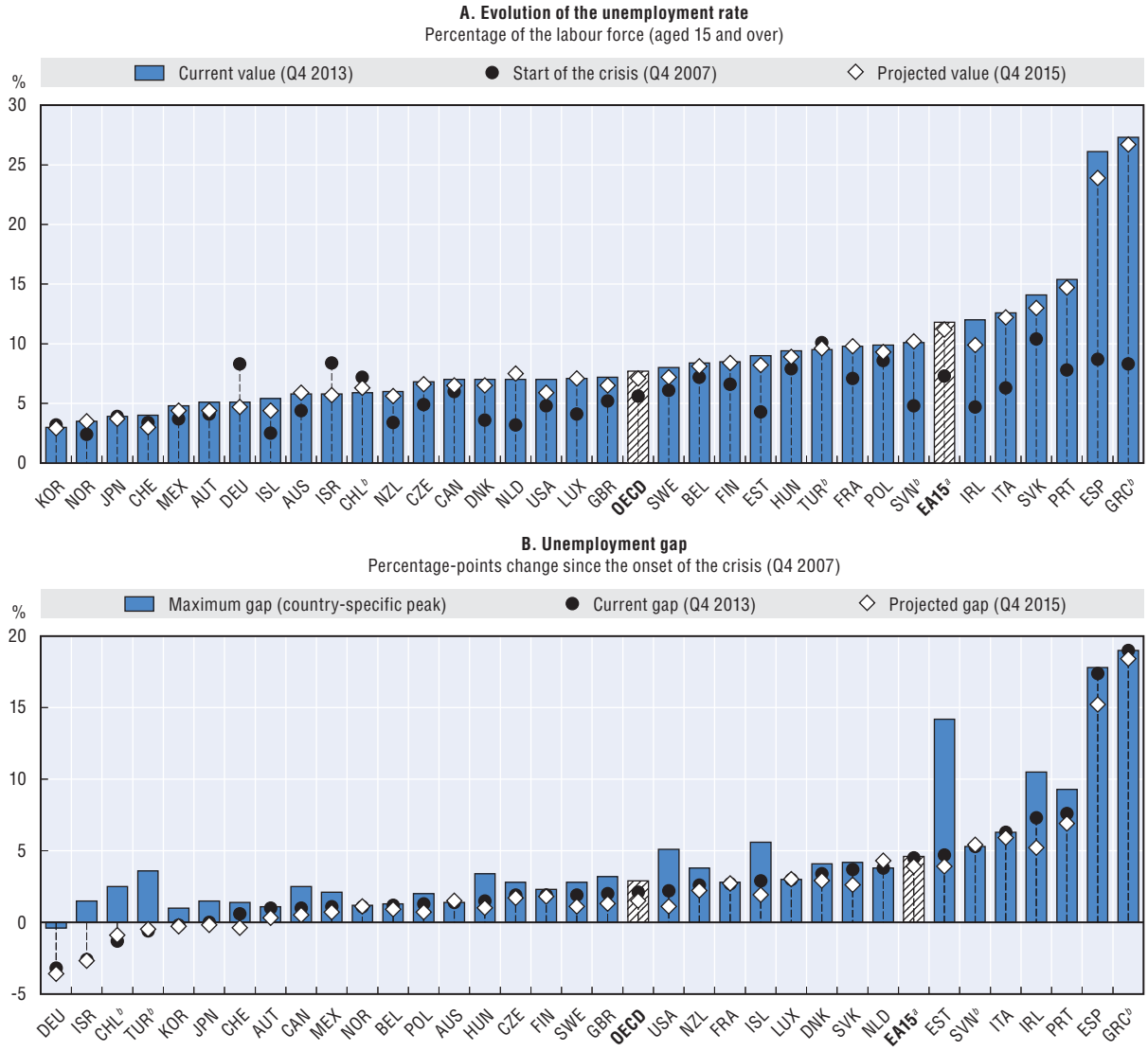
Turning to employment by education (Panel B of Figure 1.2), the initial decline in the OECD employment rate (persons aged 25 and over) up to the end of 2009 was driven by employment losses among medium-skilled workers, accounting for about the same change in overall employment as low and high-skilled workers together. The contributions of medium-skilled and high-skilled workers to overall employment have continued to decline since, while that of low-skilled workers has been largely constant. Changes in the relative size of each skill group have also played an important role. The figure suggests that if group-specific employment rates had stayed constant since the start of the crisis, the overall employment rate would have increased by 1.2 percentage points as a result of the gradual upskilling of the population.

In short, the initial fall in the overall employment rate was to a significant extent driven by declines in the employment rates of prime-age and medium-skilled workers, reflecting the combination of job losses experienced by these groups and their relatively large shares in the population. However, composition effects related to the processes of population ageing and upskilling are also playing an increasingly important role in explaining employment dynamics since the start of the global financial crisis. Incidentally, the two processes of population ageing and upskilling approximately cancel out for the OECD as whole, i.e. population ageing has been depressing the employment rate while upskilling has been raising it by roughly the same amount. While the two processes are widely shared across OECD countries, their relative importance can differ substantially across countries as shown in Annex Table 1.A2.1 available through the web (see OECD, 2014b, *www.oecd.org/employment/outlook*). For example, the adverse impact of population ageing dominates in the United States, while the positive impact of skill upgrading dominates in the European Union. More generally, it would appear that the overall decline in employment rates since the start of the crisis, as documented in Figure 1.1, not only reflects weak labour demand or rising structural unemployment, but also a number of long-term trends such as population ageing and skill upgrading. This underlines the importance of taking into account a range of indicators in order to document labour market performance.

Unemployment and long-term unemployment remain persistently high

The path of unemployment since the start of the crisis is almost a mirror image of that for employment with an initial steep rise followed by some decline leaving unemployment still well above its pre-crisis level. As of May 2014, OECD unemployment amounted to

Figure 1.3. **Unemployment has started to decline, but further progress is required**



Note: Countries shown by ascending order of the current unemployment rate (Q4 2013) in Panel A and of the current unemployment gap (Q4 2013) in Panel B.

a) Aggregate of 15 OECD countries of the euro area.

b) Annual values.

Source: OECD calculations based on *OECD Economic Outlook* (database), *http://dx.doi.org/10.1787/data-00688-en*.

StatLink *http://dx.doi.org/10.1787/888933131861*

7.4% of the labour force, just 1.1 percentage points below its cyclical peak and still 1.8 percentage points higher than at the start of the crisis. There are currently almost 45 million persons unemployed in the OECD area, 12.1 million more than at the end of 2007. A similar picture is also obtained from Figure 1.3 that compares the change in unemployment rates since the start of the crisis and the last quarter of 2013 with the change in unemployment since the start of the crisis at its post-crisis peak.

Nevertheless, the most recent unemployment data offer encouraging signs that the OECD unemployment rate may be back on a downwards path, declining 0.6 percentage points since the middle of 2013, after having been relatively stable at around 8% for almost

three years. The unemployment rate in the euro area peaked at 12% and declined moderately to 11.6% in May 2014. Unemployment rates in a number of the euro area countries worst affected by the crisis are now considerably below their cyclical peaks, notably in Ireland (-3.1 percentage points), Portugal (-3.1), Spain (-1.2) and Greece (-1.1). In the United States, unemployment has been declining for the past three years, but the decline gained pace during the past six months, and the unemployment rate reached 6.1% in June 2014, 3.9 percentage points below its cyclical peak but still 1.1 percentage points above its pre-crisis level. In Japan, the unemployment rate fell below its pre-crisis level to 3.5% in May 2014.

The OECD projections of May 2014 suggest that the recent decline in unemployment will continue at its current pace, with the OECD area unemployment rate reaching 7.1% in the last quarter of 2015 (Figure 1.3 and Annex Table 1.A1.2). The biggest declines in unemployment between Q4 2013 and Q42015 are projected in Spain (-2.2 percentage points), Ireland (-2.1), the Slovak Republic and the United States (both -1.1). Nevertheless, unemployment at the end of 2015 is projected to remain at a very high level in both Spain (around 24%) and Greece (around 27%). Several other euro area countries also face persistently high unemployment rates between 10 and 15%. These include Italy, Portugal, the Slovak Republic and Slovenia as well as the euro area as a whole where unemployment is projected to decline from 11.8 to 11.2% in the last quarter of 2015. By contrast, eight OECD countries are expected to have unemployment rates below 5% by the end of 2015. These are Austria, Germany, Iceland, Japan, Korea, Mexico, Norway and Switzerland.

The fact that employment and unemployment rates for the OECD as a whole provide a similar message with respect to the labour market recovery so far suggests that changes in labour force participation have been relatively minor for the OECD as a whole.[3] However, the same is not true in all countries. Labour force participation has increased substantially in some countries (e.g. Chile, Estonia, Turkey), while it has declined substantially in others (e.g. Denmark, Ireland, Portugal and the United States). Importantly, this implies that assessing the extent of the labour market recovery in terms of employment or unemployment rates can provide very different answers which depend on changes in labour force participation and whether this reflects predominantly cyclical or longer run factors. This question has been intensively debated in several OECD countries and is discussed in more detail in Box 1.1 for the case of the United States.

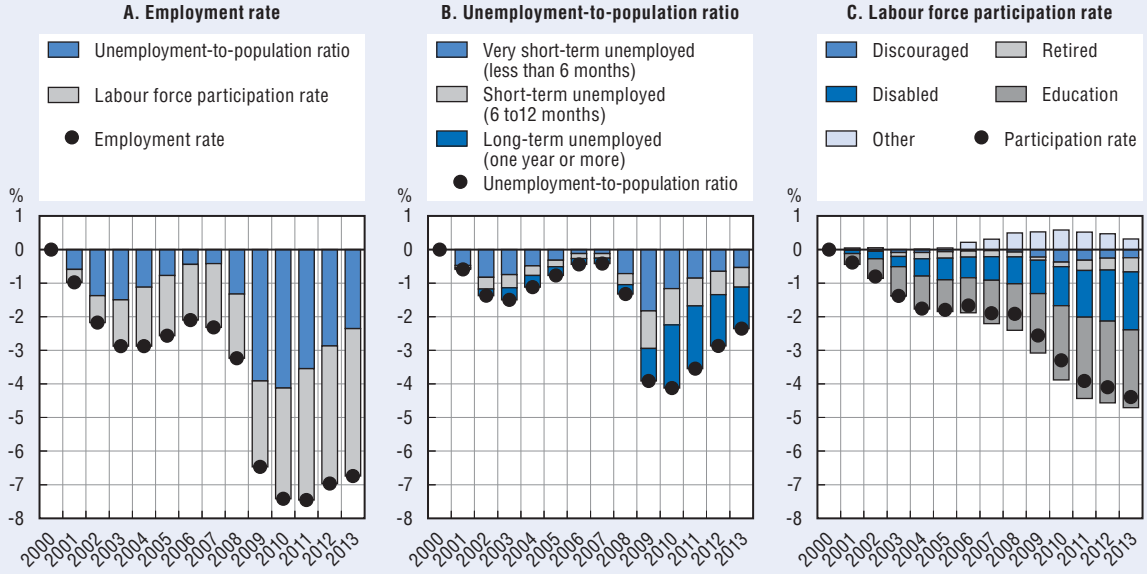
The lack of a stronger recovery in the labour market is also reflected in a substantial increase in long-term unemployment. As of the last quarter of 2013, more than one in three unemployed persons had been out of work for 12 months or more across the OECD. This corresponds to 16.7 million persons, almost double the number at the onset of the crisis. The sharpest increases in long-term unemployment occurred in countries where labour markets were hit particularly hard by the global financial crisis. In the United States, the share of unemployed people who have been jobless for a year or more rose from just under 10% in Q4 2007 to a post-war high of around one-third in Q3 2011, before declining to 26% in Q4 2013. Similarly, in Spain, the share of long-term unemployed increased from 19% to 52% between Q4 2007 and Q4 2013, from 29% to 62% in Ireland, from 5% to 24% in Iceland and from 5% to 12% in New Zealand. In contrast, the incidence of long-term unemployment fell in one third of the 33 OECD countries for which data are available. Germany recorded the sharpest reduction as the labour market impact of the global recession was relatively mild and long-term unemployment was already declining prior to the crisis. Nevertheless,

Box 1.1. **What explains stubbornly low employment rates in the United States?**

Since the start of the global financial crisis the share of the working-age population in employment in the United States dropped by 5 percentage points from 71.8% in 2007 to 66.7% in 2010 and has since remained stubbornly close to its crisis trough, recovering only modestly to 67.3% in 2013 (see Panel A of the figure below). Whether this reflects the continued weakness in aggregate demand or instead other underlying structural trends is crucial for determining the appropriate speed of fiscal consolidation and the phasing out of quantitative easing. To shed light on this issue, it is useful to decompose changes in the employment rate in terms of changes in unemployment and labour force participation. During the period 2007-10, rising unemployment and declining labour force participation accounted for an approximately equal share of the decline in the employment rate. From 2010 onwards, however, unemployment started to fall, while the labour force continued to shrink, explaining the weak recovery in the employment rate. These patterns may reflect the possibility that unemployment has declined, in part, because unemployed jobseekers have become discouraged from looking for work and dropped out of the labour force, but it is equally possible that the decline in labour force participation is driven by structural factors that were already at work before the crisis.

Decomposition of the change in employment in the United States

Percentage-point change in the share of the working-age population in a given labour market status,[a] 2000-13



a) *Discouraged persons* are persons not in the labour force who want and are available for a job and who have looked for work sometime in the past 12 months, but who are not currently looking for work because they believe there are no suitable jobs available. *Disabled persons* have at least one of the following conditions: serious hearing or seeing difficulties (even using glasses or hearing aids); serious physical or mental health problems; serious physical mobility limitations.

Source: OECD calculations based on the Current Population Survey (CPS).

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A comparison with previous recoveries suggests that this recovery has not been exceptional. While the dotcom crisis in the early 2000s was much less severe than the recent global financial crisis and did not raise major concerns about rising structural unemployment, the pattern at the time is very similar to that observed during the current recovery. While the unemployment rate almost entirely recovered to its level before the dotcom crisis, the employment and labour force participation rates remained about 2 percentage points below their pre-crisis levels in 2000 due to persistent increases in the school enrolment and disability rates among working-age persons.

Box 1.1. **What explains stubbornly low employment rates in the United States?** *(cont.)*

In the current recovery, one-third of the decline in the employment rate since the start of the recent financial crisis can be attributed to an increase in the unemployment rate, which was 2 percentage points higher in 2013 than at the start of the global financial crisis. Half of the difference in unemployment since the start of the crisis reflects the increase in the number of persons who have been unemployed for more than a year (Panel B). The Congressional Budget Office (2014) estimates that approximately half of the difference in unemployment reflects cyclical factors related to the shortfall in aggregate demand, while the other half can be attributed to structural factors related to: the role of stigma effects and skill depreciation among the long-term unemployed; the mismatch between job vacancies and jobseekers across occupations and states; and to a lesser extent, the extended duration of unemployment insurance benefits. While increased structural unemployment is a major concern, it is, however, likely that much of its increase will dissipate gradually as the economic recovery proceeds.

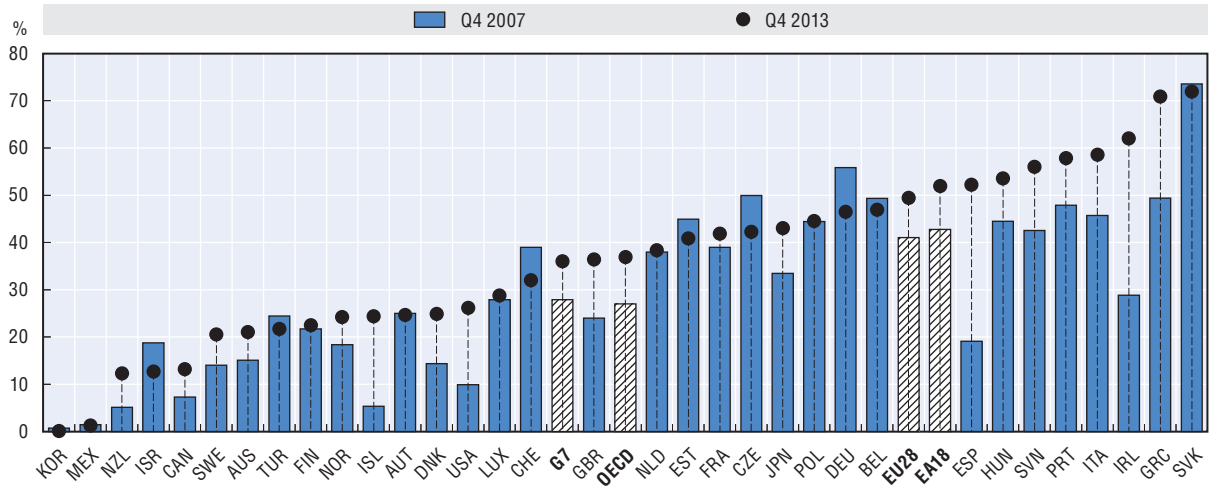
Two-thirds of the decline in the employment rate can be accounted for by the decline in the labour force participation rate which is about 3 percentage points lower than at the start of the crisis. Of this, one third can be attributed to an increase in the school enrolment rate, one third to the increase in the (self-reported) disability rate and the remaining to the combination of increased numbers of discouraged workers and an increase in the rate of persons, mainly women, taking up unpaid personal care and house-keeping responsibilities (Panel C). However, this does not by itself say much about the cyclical nature of the decline in labour force participation and the state of the US economy more generally. Some of the decline in labour force participation is linked to non-cyclical or structural factors, such as the gradual rise in the school enrolment rate which reflects a continuation of pre-crisis trends. Moreover, the rise in the number of discouraged workers is relatively small and has not risen as unemployment started to decline. Yet, a number of more in-depth studies indicate that there is also a cyclical component in the decline in labour force participation which extends beyond the category of discouraged workers (Aaronson et al., 2012; van Zandweghe, 2012; Bengali et al., 2014, Blanchflower and Posen, 2014).

All in all, the recovery in the US labour market still appears to be far from complete, although there is considerable uncertainty about the exact amount of slack in terms of both unemployment and labour force participation. The uncertainty about the current degree of labour market slack greatly complicates the task of projecting the evolution of employment and unemployment in the medium term. The OECD projections of May 2014 assume that 1 percentage point of the decline in labour force participation (for the population aged 15 and over) is cyclical. It is expected that the current slack in the labour force will be absorbed by end-2015 and that the labour force will stabilise close to its current level.

long-term unemployment remains still a challenge in Germany as its incidence remains nearly 10 percentage points above the OECD average. The incidence of long-term unemployment is of particular concern because of the hardship it imposes for the individuals concerned and their families as well as potentially contributing to a rise in structural unemployment as a result of skill depreciation and declining motivation to find a job.

Figure 1.4. **Long-term unemployment remains persistently high**

Long-term unemployed of one year or more as a percentage of total unemployment, Q4 2007 and Q4 2013[a, b]



Note: Countries are shown in ascending order of the incidence of long-term unemployment in Q4 2013.

a) Data are not seasonally adjusted but smoothed using three-quarter moving averages. OECD is the weighted average of 33 OECD countries excluding Chile.

b) 2013 for Israel.

Source: OECD calculations based on national labour force surveys.

StatLink http://dx.doi.org/10.1787/888933131880

2. How much of the persistently high increase in unemployment has become structural?

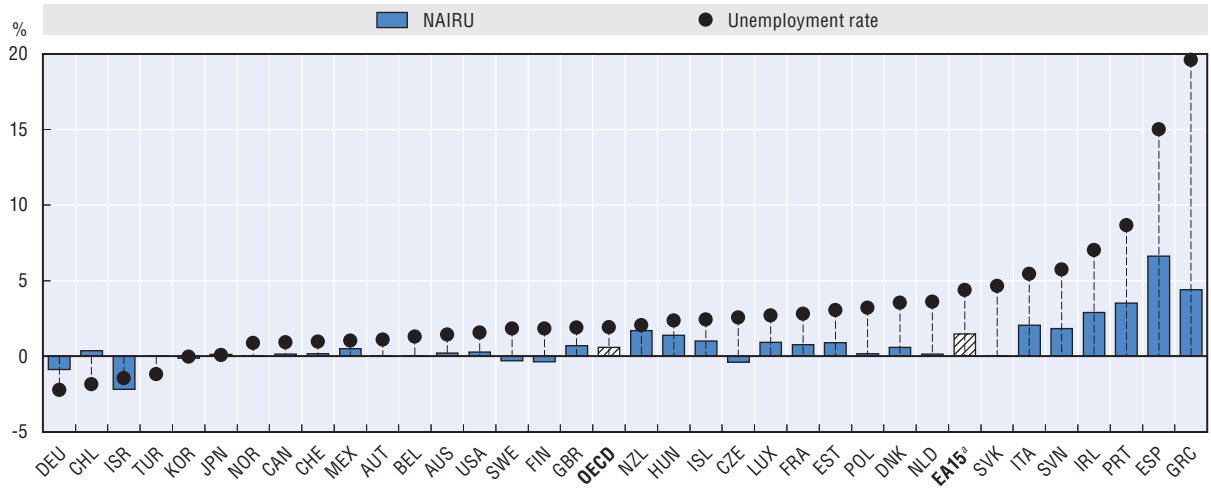
A key question for those countries where employment rates have still not returned to their pre-crisis levels is how much of the increase is due to a cyclical increase that can be expected to dissipate quickly as the economic recovery strengthens, and how much represents a structural increase that may take several years to dispel even after the economy has fully recovered. Assessing the importance of cyclical and structural factors for the evaluation of employment and unemployment patterns since the start of the crisis is an important but difficult task, and any estimate of these different components is likely to be subject to considerable uncertainty irrespective of the particular approach used.

While the rise in unemployment remains largely cyclical its structural component has also increased

One measure of structural unemployment is the non-accelerating inflation rate of unemployment (NAIRU), i.e. the level of the unemployment rate that is consistent with a constant rate of inflation. The OECD provides time-varying estimates of the NAIRU based on a reduced-form Phillips-curve equation that links inflation to the unemployment gap. More specifically, following Laubach (2001), the NAIRU is modelled as an unobserved stochastic variable that is derived from its ability to explain inflationary developments. This approach has the advantage that it can yield reasonably precise estimates of the NAIRU while not having to explicitly specify all factors that affect it (Richardson et al., 2000; Guichard and Rustacelli, 2011). The estimated change in the NAIRU along with the actual change in the unemployment rate since the start of the global financial crisis is shown in Figure 1.5. The NAIRU has increased significantly, by 3 percentage points or more, in Greece, Spain and Portugal, while it has increased moderately by between 1 and

Figure 1.5. **The rise in unemployment remains largely cyclical but its structural component has increased**

Percentage-points change in the NAIRU since the start of the global financial crisis, 2008-13



Note: NAIRU: Non-accelerating inflation rate of unemployment. The countries are shown by ascending order of the change in the unemployment rate.

a) Aggregate of 15 OECD countries of the euro area.

Source: OECD calculations based on *OECD Economic Outlook* (database), *http://dx.doi.org/10.1787/data-00688-en*.

StatLink *http://dx.doi.org/10.1787/888933131918*

3 percentage points in Hungary, Iceland, Ireland Italy, New Zealand and Slovenia. In none of the countries where the NAIRU is estimated to have increased does it account for more than half of the overall increase in unemployment, except Hungary.

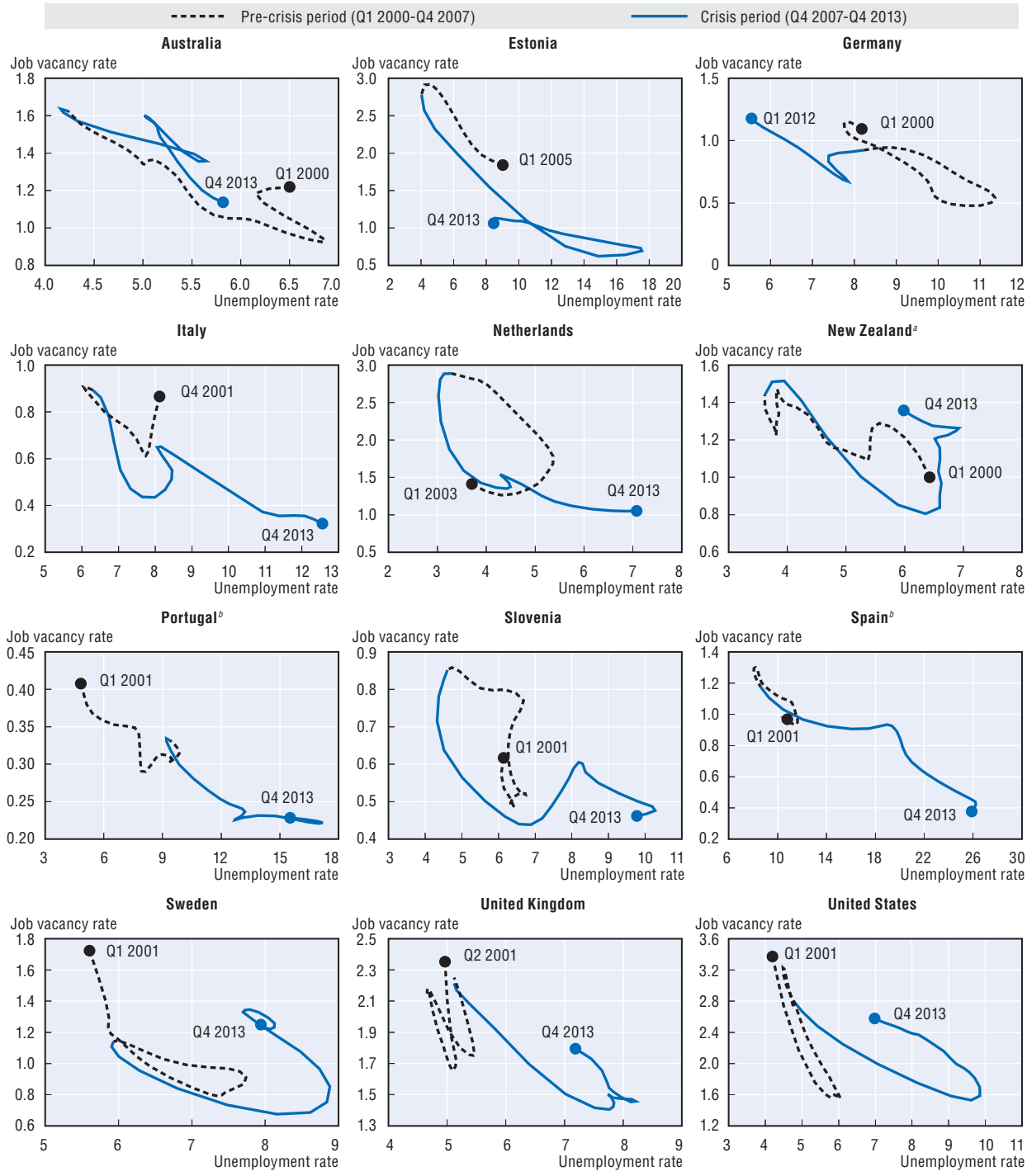
An alternative approach is to define structural unemployment as the level of unemployment that arises in equilibrium, i.e. when the demand for labour by employers equals the supply of labour by workers, as a result of matching frictions. Although in the long-run the two approaches should converge, in the short-run, they may lead to very different assessments of the level of structural unemployment. The remainder of this section analyses to what extent structural unemployment has increased since the start of the global financial crisis using the latter approach.

Matching efficiency may have declined in some countries where long-term unemployment has risen sharply

Figure 1.6 documents the relationship between unemployment and job vacancy rates from Q1 2000 until Q4 2013 for selected OECD countries, while Annex Figure 1.A3.1 available through the web (see OECD, 2014b) provides the same information for a larger number of OECD countries.[4] In economic downturns, unemployment increases while job vacancies fall and the opposite occurs during upturns. Thus, when the relationship between job vacancies and unemployment is traced out over the business cycle this gives rise to a negatively sloped curve referred to as the Beveridge curve. An outward shift in the Beveridge curve implies that a given number of vacancies is associated with a higher level of unemployment and that it is more difficult for unemployed jobseekers to find suitable job vacancies (and for firms to fill existing vacancies with qualified jobseekers). This may therefore be interpreted as a reduction in matching efficiency.

Figure 1.6. **The Beveridge curve has shifted out in some countries, but not in others**

Percentage of the labour force



a) The job vacancy rate for New Zealand refers to ratio of an index of job vacancies divided by an index of the labour force with base Q1 2000 in both cases.

b) Breaks in job vacancy series have been removed to ensure time-series comparability for Portugal (Q2 2011) and Spain (Q1 2010).

Source: OECD estimates based on the *OECD Short-Term Labour Market Statistics* (database), *http://dx.doi.org/10.1787/data-00046-en* and national estimates of job vacancies. See the web Annex 1.A3 (OECD, 2014b, *www.oecd.org/employment/outlook*) for further details.

StatLink *http://dx.doi.org/10.1787/888933131937*

Figure 1.6 shows that since the start of the global financial crisis, countries initially moved down along the Beveridge curves, as a result of the increase in unemployment and the reduction in job vacancies. Some countries where the labour market has started to recover, such as Estonia and, more recently, Portugal, have begun to move back up on the Beveridge curve. However, in other countries, such as New Zealand, Sweden, the United Kingdom and the United States, the recovery in unemployment was associated with a marked outward shift of the Beveridge curve.[5]

In order to gain a better understanding of the factors that drive shifts in the Beveridge curve two alternative sets of Beveridge curves have been constructed (see Annex Figure 1.A3.2 and Annex Figure 1.A3.3, available through the web in OECD, 2014b). The first alternative is a *short-term* Beveridge curve which is used to assess to what extent changes in the incidence of long-term unemployment may be associated with shifts in the Beveridge curve. The short-term Beveridge curve is constructed by using the number of persons unemployed for less than a year as a share of the labour force instead of the overall unemployment rate. The second is a *counterfactual* Beveridge curve that keeps the unemployment-inflow rate constant at its initial level, following the approach used in Elsby et al. (2014).[6] Keeping the unemployment-inflow rate constant is potentially important because changes in the unemployment-inflow rate also give rise to shifts in the Beveridge curve, but do not affect matching efficiency. More specifically, an increase in the unemployment-inflow rate would shift the Beveridge curve outward, while a reduction would shift it inward.

For the four countries where there appears to have been an outward shift of the Beveridge curve, a comparison with the two alternative measures of the Beveridge curve yields two main insights:

- Controlling for changes in the unemployment-inflow rate suggests, if anything, an even greater deterioration in matching efficiency in New Zealand, the United Kingdom and the United States than is implied by Figure 1.6.[7] However, in Sweden, a marked outward shift in the Beveridge curve is no longer observed. Thus, changes in the unemployment-inflow rate do not account for the observed outward shift in the Beveridge curve in the three English-speaking countries.
- The outward shift in the Beveridge curve in the United Kingdom and the United States appears to an important extent to be related to the rise in the incidence of long-term unemployment (Figure 1.4).[8, 9] This reflects the tendency of job-finding probability to fall with the duration of unemployment. While the incidence of long-term unemployment may be systematically related to shifts in the Beveridge curve, it is not clear, *a priori*, whether this is the *cause* of a deterioration in matching efficiency or, instead, reflects the *result* of a deterioration in matching efficiency. In the absence of evidence on the relative importance of each of these possibilities, policies to tackle unemployment should focus both on specific measures for the long-term unemployed and labour market programmes that seek to reduce matching frictions generally and, thereby, prevent the build-up of long-term unemployment in the first place.[10]
- Indeed, without additional, well-targeted support there is a substantial risk that the long-term unemployed leave the labour market altogether. For example, Krueger et al. (2014) show in the context of the United States that those unemployed six months or more are twice as likely to leave the labour force than to return to employment when observed 15 months later. Moreover, those who regain employment tend to return to the occupations and industries from which they were displaced. This may indicate that the long-term unemployed face significant barriers to mobility between occupations and industries.

In the majority of countries in the euro area where the labour market continued to deteriorate as a result of the sovereign debt crisis, it is difficult to tell from visual inspection whether countries continued to move down their Beveridge curve or whether it may have simultaneously shifted outwards. In order to address this issue, it is useful to estimate the matching function that provides the basis for the alternative measure of the Beveridge curve that keeps the unemployment-inflow rate constant. It also allows for an assessment of the extent to which any changes in the speed of job-finding and job-filling are related to cyclical factors or to changes in matching efficiency.[11]

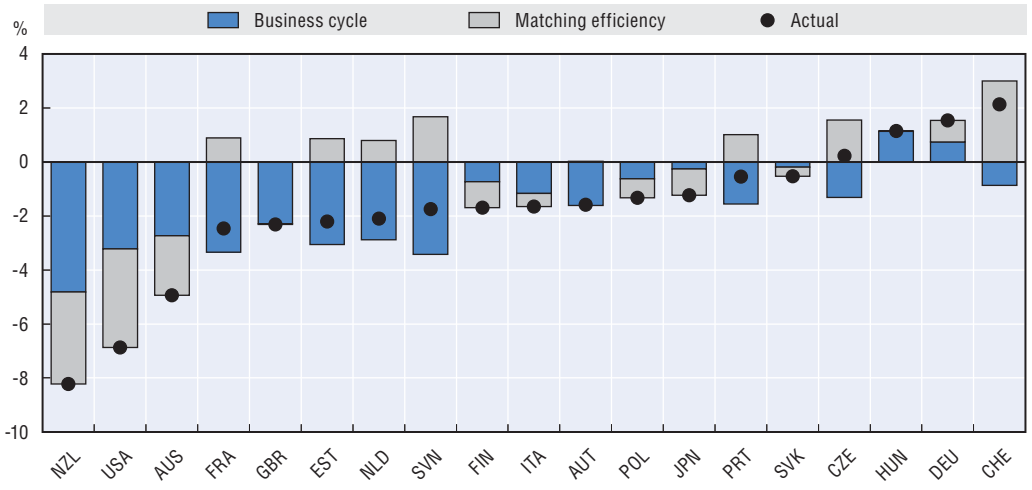
Nevertheless, cyclical factors continue to account for half or more of the decline in the job-finding prospects among the unemployed

The "matching function" relates the job-finding rate of the unemployed to the degree of labour market tightness, defined as the ratio of job vacancies to the unemployed. The change in the job-finding rate for the unemployed between Q4 2007 and Q4 2013 is shown in Figure 1.7. The overall change is separated into a component that is the result of cyclical factors and a component that is the result of a change in matching efficiency. The component representing cyclical changes is measured by applying the estimated impact of labour market tightness on the job-finding rate, using data from before the crisis,[12] to the observed change in labour market tightness since the crisis. The component representing the change in matching efficiency is captured by the difference between the actual change in the job-finding rate and the predicted cyclical component.

In the majority of countries, the job-finding rate was still significantly lower at the end of 2013 than at the onset of the crisis. The shortfall in the job-finding rate was largest in New Zealand, the United States, and Australia, while the job-finding rate in Germany, Hungary

Figure 1.7. **Weak employment prospects reflect weak aggregate demand and reduced matching efficiency**

Actual and predicted percentage-point change in the job-finding rate, Q4 2007 and Q4 2013[a]



a) The job-finding rate is measured using the probability that an unemployed person leaves unemployment in a given quarter. The change in the job-finding rate is decomposed into the change due to the business cycle and the change reflecting a shift in job matching efficiency. The cyclical component is estimated by applying the estimated impact of labour market tightness on the job-finding rate, using data from before the crisis, to the observed change in labour market tightness since the crisis. The difference between the actual and the cyclical change in the job-finding rate is interpreted as the change in matching efficiency.

Source: OECD estimates based on *OECD Short-Term Labour Market Statistics* (database), *http://dx.doi.org/10.1787/data-00046-en* and national estimates of job vacancies.

StatLink *http://dx.doi.org/10.1787/888933131956*

and Switzerland was higher than at the start of the crisis. In countries where the job-finding rate was still significantly below its pre-crisis level, half or more of the decline can be attributed to cyclical factors, leaving half or less of the decline attributable to a deterioration in matching efficiency. This suggests that aggregate demand continues to be the main reason behind the weak job prospects of the unemployed in many OECD countries. However, it also suggests that the decline in job matching efficiency has been important in a number of countries, particularly those where the job-finding rate was significantly lower than at the start of the crisis, such as New Zealand and the United States. By contrast, in countries, such as Germany and Switzerland, matching efficiency appears to have increased over the course of the crisis. This may be related to the gradual reduction in the incidence of long-term unemployment in those countries. These results are broadly consistent with the analysis above of Beveridge curves.

As emphasised by Diamond (2013), whether or not these estimated reductions in matching efficiency will persist once equilibrium in the labour market has been restored depends on the factors driving the reduction in matching efficiency. The discussion in Box 1.2 suggests that sectoral mismatch increased sharply in the immediate aftermath of the global financial crisis, but has since largely receded in countries where the labour market started to recover in the course of 2010. In countries where the labour market has only started to recover more recently, it is more difficult to tell whether the increase in sectoral mismatch reflects a temporary misalignment between job vacancies and unemployed jobseekers across sectors or will instead persist into the recovery.

Box 1.2. **Sectoral mismatch**

Changes in job matching efficiency may either reflect changes in the composition of unemployment by duration or changes in the overall degree of mismatch. Mismatch refers to the misallocation of job vacancies and jobseekers across heterogeneous segments of the labour market. These segments may refer to industries (sectors), occupations, regions or skills. In this box, the potential role of sectoral mismatch for labour market efficiency is examined.

Following Jackman and Roper (1987) and Lazear and Spletzer (2012), sectoral mismatch *M* is measured as half the sum of the absolute deviations in unemployment and vacancy shares for each sector *i*:

$$M_s = \frac{1}{2}\sum_{i=1}^{N}\left|\frac{U_i}{U} - \frac{V_i}{V}\right|$$

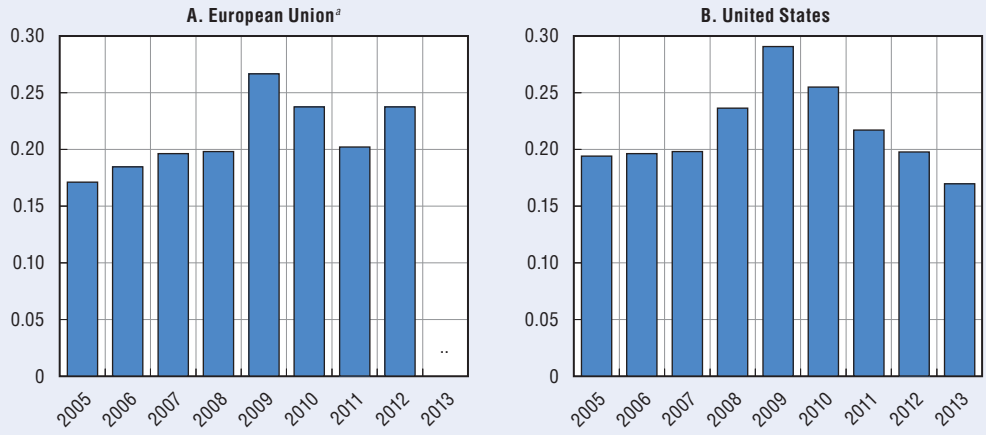
The index of sectoral mismatch ranges from 0 to 1. When the index equals zero, there is no mismatch at all and the ratio of job vacancies to unemployed persons in each sector equals that at the country level. When the index equals one, half of the sectors have zero vacancies and positive unemployment while the other half has zero unemployment and positive vacancies. The index is divided by two to normalise the index to take values between 0 and 1. Proportional changes in unemployment and vacancies that are common across sectors do not affect the index of mismatch.

Box 1.2. **Sectoral mismatch** *(cont.)*

The index of sectoral mismatch is calculated using annual data from Eurostat on unemployment and job vacancies across five broad economic sectors for 11 European countries and using data from JOLTS across 17 industries for the United States. The figure below compares the evolution in sectoral mismatch on average for the 11 European Union countries with the corresponding evolution in the United States since 2005. In both cases, sectoral mismatch increased sharply in the aftermath of the global financial crisis, reaching a peak in 2009, but then gradually declined to its pre-crisis level. However, in Europe sectoral mismatch increased again in 2012, as a result of increasing mismatch in a few countries such as Greece and Portugal, while it continued to decline in the United States.

Sectoral mismatch follows a cyclical pattern

Index of sectoral mismatch, 2005-13



.. Not available.

a) Unweighted average of 11 European countries: the Czech Republic, Estonia, Finland, Germany, Greece, Hungary, the Netherlands, Portugal, the Slovak Republic, Slovenia and the United Kingdom.

Source: OECD estimates based on the *Job Vacancy Database* from Eurostat and the European Union Labour Force Survey (EU-LFS) for the European Union and the Job Openings and Labor Turnover Survey (JOLTS) and the Current Population Survey (CPS) for the United States.

StatLink *http://dx.doi.org/10.1787/888933131975*

The strong cyclical nature of sectoral mismatch is consistent with previous studies for the United States that make use of a more finely grained industry classification (e.g. Lazear and Spletzer, 2012; and Sahin et al., 2014). It largely reflects differences in the sensitivity of unemployment and vacancies to the business cycle across industries. In general, there is little indication so far that structural changes in the industry mix have given rise to a persistent misalignment of job vacancies and unemployed jobseekers across sectors and that this has induced a substantial increase in structural unemployment. However, it is too early to tell whether sectoral mismatch will also recede swiftly in countries whether the labour market situation has only started to stabilise more recently.

Conclusions

While economic recovery is gradually strengthening and becoming more widespread, labour markets have picked up only modestly. To a large extent, economic recovery has remained too weak to generate a significant improvement in employment. GDP is still well below potential in most countries and the number of job vacancies relative to the number of unemployed jobseekers remains depressed. Promoting aggregate demand remains therefore a key policy priority in many OECD countries.

However, in a number of OECD countries, there is also increasing evidence that some of the cyclical increase in unemployment has become structural which will be more difficult to reverse even when economic recovery gathers pace. A particular worry is that matching efficiency – i.e. the ease with which jobseekers find work and fill vacancies – may have started to deteriorate. This is notably the case in countries, such as New Zealand and the United States, which have been hit hard by the global financial crisis and where the incidence of long-term unemployment has increased significantly. Weaker matching efficiency may reflect the growing impact of skills, sectoral and regional mismatches on unemployment. However, it could also stem from the fact some of the long-term unemployed may have become discouraged and are no longer looking for work so hard. Moreover, employers may be discriminating against them when seeking to fill their vacancies because they perceive long-term joblessness as a sign of poor employability. While there is likely to be a strong relationship between any observed deterioration in matching efficiency and the incidence of long-term unemployment, its remains unclear which is the cause and which is the effect.

Long-term unemployment's strong effect on matching efficiency and the additional risk that the long-term jobless leave the labour force altogether suggest that countries should make policies targeted at the long-term unemployed a particular priority. Such policies may involve more intensive, personalised approaches to case management – e.g. regular face-to-face interviews and the development of individual action plans – and remedial schemes based on the acquisition of skills and work experience. Examples of such remedial programmes targeted at the long-term unemployed are the Work Programme in the United Kingdom and Australia's Work Experience Phase. For a more detailed discussion of policies targeted at the long-term unemployed, see OECD (2013).

Notes

1. Thus it captures the contribution of the population-weighted change in the employment rate of each group to the change in the overall employment rate rather than the actual change in the employment rate within each group.
2. A similar decomposition by gender is less interesting as the population shares by gender are almost constant over time. Consequently, the composition effect is negligible. The decline in the overall employment rate is largely driven by men because of their larger share in employment and they have fared worse during the crisis. See Table 1.A2.1 of OECD (2014b) for details.
3. If anything, the recovery looks slightly more vigorous in terms of unemployment than in employment, reflecting the slight decline in labour force participation.
4. Data on job vacancies are publicly available for 24 OECD countries, but are not entirely comparable across countries as they are based on different data collection methodologies and concepts. However, they are suitable for Beveridge curve type of analyses that are essentially exploring country-specific relationships between unemployment and job vacancy rates over time. Data on job vacancies, defined as unfilled job positions, are reported by employers to public labour offices in the case of ten countries and are therefore unlikely to represent a comprehensive coverage of all

job vacancies. Data for 13 countries are based on employer surveys (Australia, Switzerland and the United States and ten countries of the European Union). Job-vacancy data for New Zealand are derived from a "Help-Wanted" online index which is based on job ads posted on Internet job boards. A detailed description of job vacancy statistics used in this chapter can be found in the web Annex Table 1.A3.1 (see OECD, 2014b).

5. Hobijn and Sahin (2013) find evidence for an outward shift in the Beveridge curve in four out of fourteen OECD countries. These are Portugal, Spain, the United Kingdom and the United States.

6. The idea is to net out any vertical shifts in the Beveridge curve due to changes in the unemployment inflow rate. This can be done by first noting that in the steady-state the change in the vacancy rate v as a result of a change in the unemployment-inflow rate λ for a given level of unemployment can be represented by $1/(1-\alpha)$ where α represents the elasticity of the matching function with respect to unemployment. Keeping the unemployment-inflow rate constant at its initial level, one can construct an adjusted vacancies series that nets out the impact of changes in the unemployment-inflow rate on the vacancy rate using: $\tilde{v}_t = v_t(\lambda_t / \lambda_0)^{-1/(1-\alpha)}$ while assuming a value of one half for the matching elasticity, consistent with the survey of the literature by Petrongolo and Pissarides (2001).

7. This is consistent with the evidence presented by Elsby et al. (2014) for the United States.

8. This is consistent with evidence by Ghayad and Dickens (2012), Elsby et al. (2014) and Krueger et al. (2014) for the United States. In fact, these studies suggest that the duration-composition of unemployment accounts for the *entire* outward shift of the Beveridge curve.

9. The increased incidence of long-term unemployment and the corresponding decline in the estimated degree of matching efficiency in the United Kingdom may to some extent reflect the abolition of the New Deal for Adults in 2009-10.

10. The role of income-support measures in this context is not clear. While, on the one hand, long-duration income-support policies have a tendency to worsen matching efficiency by reducing the intensity with which the long-term unemployed search for jobs, they also can help to keep the long-term unemployed in touch with the labour market, particularly if income-support policies are linked to job-search requirements, job-search assistance and policies that enhance the employability of the unemployed.

11. Unfortunately, this could not be done for Greece and Spain due to concerns over the quality of the job vacancy data for the former and breaks in the vacancy series post-2007 for the latter.

12. This involves regressing the log of the job-finding rate on a constant and the log of labour market tightness using quarterly data from before the crisis on a country-by-country basis. The coefficient on the log of labour market tightness gives an indication of the matching elasticity while the constant provides a measure of matching efficiency. This specification imposes constant returns to scale on the matching function in line with the evidence in Petrongolo and Pissarides (2001).

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ANNEX 1.A1

Supplementary material

Table 1.A1.1. **Recent and projected macroeconomic developments**

	A. Real GDP growth									B. Output gap of the total economy								
	2007	2008	2009	2010	2011	2012	2013	*2014*	*2015*	2007	2008	2009	2010	2011	2012	2013	*2014*	*2015*
OECD	**2.7**	**0.2**	**-3.5**	**3.0**	**2.0**	**1.5**	**1.3**	***2.2***	***2.8***	**3.1**	**1.3**	**-3.8**	**-2.4**	**-2.0**	**-2.2**	**-2.5**	***-2.2***	***-1.6***
Euro area[a]	**3.0**	**0.2**	**-4.4**	**1.9**	**1.6**	**-0.6**	**-0.4**	***1.2***	***1.7***	**3.5**	**2.3**	**-3.0**	**-1.9**	**-1.1**	**-2.3**	**-3.4**	***-3.1***	***-2.6***
Australia	4.7	2.5	1.6	2.3	2.6	3.6	2.4	*2.6*	*2.9*	2.1	1.1	-0.4	-1.1	-1.4	-1.0	-1.6	*-2.1*	*-2.3*
Austria	3.7	0.9	-3.5	1.9	2.9	0.7	0.4	*1.5*	*2.1*	4.2	3.2	-2.0	-1.8	-0.6	-1.7	-2.9	*-3.2*	*-2.8*
Belgium	2.9	1.0	-2.8	2.3	1.8	-0.1	0.2	*1.5*	*1.9*	2.8	2.4	-1.6	-0.3	0.4	-0.9	-1.9	*-1.7*	*-1.3*
Canada	2.0	1.2	-2.7	3.4	2.5	1.7	2.0	*2.5*	*2.7*	2.0	1.2	-3.0	-1.4	-0.7	-0.9	-0.8	*-0.4*	*0.2*
Chile	5.2	3.2	-0.9	5.7	5.7	5.4	4.2	*3.6*	*4.2*	3.7	2.1	-2.9	-1.2	0.4	1.4	1.1	*0.2*	*-0.1*
Czech Republic	5.7	2.9	-4.4	2.3	1.8	-0.9	-0.9	*1.2*	*2.4*	6.2	6.1	-0.6	0.0	0.2	-2.1	-4.4	*-4.8*	*-4.5*
Denmark	1.6	-0.8	-5.7	1.4	1.1	-0.4	0.4	*1.4*	*1.8*	4.9	2.9	-3.6	-2.7	-2.2	-3.0	-3.2	*-2.6*	*-1.8*
Estonia	7.5	-4.2	-14.1	2.6	9.6	3.9	0.8	*1.2*	*3.1*	13.7	5.4	-10.7	-9.2	-1.9	-0.2	-1.9	*-3.6*	*-3.7*
Finland	5.3	0.3	-8.5	3.4	2.8	-1.0	-1.4	*0.2*	*1.1*	6.4	5.2	-4.4	-1.5	0.7	-1.1	-3.1	*-3.8*	*-3.8*
France	2.2	-0.2	-3.1	1.6	2.0	0.0	0.3	*0.9*	*1.5*	3.6	1.8	-2.2	-1.6	-0.8	-2.0	-2.9	*-3.4*	*-3.4*
Germany	3.4	0.8	-5.1	3.9	3.4	0.9	0.5	*1.9*	*2.1*	2.2	1.7	-4.5	-1.8	0.3	0.1	-0.6	*0.1*	*0.9*
Greece	3.5	-0.2	-3.1	-4.9	-7.1	-7.0	-3.9	*-0.3*	*1.9*	7.9	6.2	2.4	-2.1	-7.6	-12.3	-13.3	*-12.8*	*-11.7*
Hungary	0.1	0.8	-6.7	1.0	1.6	-1.7	1.2	*2.0*	*1.6*	3.9	3.6	-3.6	-2.9	-1.5	-3.3	-2.6	*-1.5*	*-1.0*
Iceland	6.0	1.2	-6.6	-4.1	2.7	1.5	3.3	*2.7*	*3.2*	8.1	6.2	-2.4	-7.2	-5.6	-5.3	-3.2	*-1.6*	*0.3*
Ireland	5.0	-2.2	-6.4	-1.1	2.2	0.2	-0.3	*1.9*	*2.2*	9.5	3.2	-5.2	-7.6	-6.7	-7.6	-8.7	*-7.8*	*-6.8*
Israel	6.9	5.0	0.9	5.5	4.6	3.3	3.4	*3.2*	*3.5*	2.0	2.9	0.2	1.9	2.4	1.8	1.4	*0.8*	*0.8*
Italy	1.5	-1.2	-5.5	1.7	0.6	-2.4	-1.8	*0.5*	*1.1*	3.2	1.5	-4.3	-2.8	-2.3	-4.3	-5.6	*-5.1*	*-4.3*
Japan	2.2	-1.0	-5.5	4.7	-0.5	1.4	1.5	*1.2*	*1.2*	3.0	1.3	-4.6	-0.6	-1.5	-0.7	0.2	*0.5*	*1.0*
Korea	5.5	2.8	0.7	6.5	3.7	2.3	3.0	*4.0*	*4.2*	2.5	1.4	-1.4	1.2	1.1	-0.2	-0.8	*-0.5*	*0.1*
Luxembourg	6.6	-0.7	-5.6	3.1	1.9	-0.2	2.1	*2.8*	*2.5*	..	..	..	..	..	..	..	..	..
Mexico	3.1	1.2	-4.5	5.1	4.0	3.7	1.3	*3.4*	*4.1*	3.2	1.9	-4.7	-2.0	-0.5	0.5	-1.0	*-0.6*	*0.3*
Netherlands	3.9	1.8	-3.7	1.5	1.0	-1.3	-0.8	*1.0*	*1.3*	3.5	3.7	-1.2	-0.6	-0.5	-2.6	-4.3	*-4.4*	*-4.5*
New Zealand	3.4	-0.7	0.6	1.8	1.2	2.9	2.5	*3.5*	*3.3*	2.2	-0.7	-1.5	-1.1	-1.7	-0.6	-0.3	*0.7*	*1.3*
Norway	2.7	0.1	-1.6	0.5	1.3	2.9	0.6	*2.0*	*2.4*	4.2	2.8	-1.3	-1.8	-1.5	-0.3	-0.7	*-0.9*	*-0.6*
Poland	6.8	5.1	1.6	3.9	4.5	1.9	1.6	*3.0*	*3.4*	1.1	1.5	-0.5	0.4	1.8	0.7	-0.7	*-0.7*	*-0.2*
Portugal	2.4	0.0	-2.9	1.9	-1.3	-3.2	-1.4	*1.1*	*1.4*	1.3	0.3	-3.1	-1.7	-3.4	-6.4	-7.2	*-6.5*	*-5.8*
Slovak Republic	10.5	5.8	-4.9	4.4	3.0	1.8	0.9	*2.0*	*2.9*	6.0	7.3	-1.2	0.7	0.6	-0.7	-2.5	*-3.2*	*-3.2*
Slovenia	7.0	3.4	-7.9	1.3	0.7	-2.5	-1.1	*0.3*	*1.2*	7.3	8.3	-1.7	-1.2	-0.9	-3.7	-4.9	*-5.2*	*-5.0*
Spain	3.5	0.9	-3.8	-0.2	0.1	-1.6	-1.2	*1.0*	*1.5*	4.0	3.2	-1.4	-1.8	-2.0	-3.8	-5.3	*-5.0*	*-4.5*
Sweden	3.4	-0.8	-5.0	6.3	3.0	1.3	1.5	*2.8*	*3.1*	4.8	1.7	-5.2	-1.1	-0.2	-1.2	-1.9	*-1.5*	*-0.8*
Switzerland	3.8	2.2	-1.9	3.0	1.8	1.0	2.0	*2.0*	*2.5*	2.4	2.5	-1.2	-0.1	-0.1	-0.8	-0.8	*-0.8*	*-0.4*
Turkey	4.7	0.7	-4.8	9.2	8.8	2.1	4.0	*2.8*	*4.0*	6.6	2.2	-6.8	-2.7	0.7	-2.2	-3.1	*-5.1*	*-5.9*
United Kingdom	3.4	-0.8	-5.2	1.7	1.1	0.3	1.7	*3.2*	*2.7*	4.9	2.6	-3.4	-2.5	-2.1	-2.8	-2.4	*-1.0*	*-0.4*
United States	1.8	-0.3	-2.8	2.5	1.8	2.8	1.9	*2.6*	*3.5*	2.4	-0.2	-4.8	-4.2	-4.2	-3.4	-3.5	*-3.1*	*-2.0*

.. Not available.

a) Aggregate of 15 OECD countries of the euro area.

Source: OECD calculations based on *OECD Economic Outlook* (database), *http://dx.doi.org/10.1787/data-00688-en*.

StatLink *http://dx.doi.org/10.1787/888933133077*

Table 1.A1.2. **Recent and projected labour market developments**

	A. Employment rate Percentage of population aged 15 and over									B. Unemployment rate Percentage of total labour force								
	Q4 2007	Q4 2008	Q4 2009	Q4 2010	Q4 2011	Q4 2012	Q4 2013	*Q4 2014*	*Q4 2015*	Q4 2007	Q4 2008	Q4 2009	Q4 2010	Q4 2011	Q4 2012	Q4 2013	*Q4 2014*	*Q4 2015*
OECD	**56.0**	**55.3**	**53.9**	**53.8**	**54.1**	**54.1**	**54.2**	***54.4***	***54.7***	**5.6**	**6.6**	**8.4**	**8.2**	**8.0**	**8.0**	**7.7**	***7.4***	***7.1***
Euro area[a]	**52.2**	**51.9**	**50.6**	**50.5**	**50.3**	**49.7**	**49.4**	***49.4***	***49.6***	**7.3**	**7.9**	**9.8**	**9.9**	**10.4**	**11.7**	**11.8**	***11.7***	***11.2***
Australia	61.2	61.2	60.4	61.1	60.7	60.7	60.4	*60.3*	*60.8*	4.4	4.5	5.6	5.1	5.2	5.3	5.8	*6.1*	*5.9*
Austria	57.8	58.1	57.4	57.7	57.9	58.0	57.8	*58.2*	*58.9*	4.1	4.1	4.9	4.2	4.4	4.5	5.1	*4.9*	*4.4*
Belgium	51.0	51.1	50.5	50.7	50.9	50.5	50.1	*50.2*	*50.4*	7.2	6.9	8.0	7.9	7.2	8.2	8.4	*8.3*	*8.1*
Canada	61.7	61.3	59.6	59.9	60.0	60.3	60.2	*60.3*	*60.5*	6.0	6.5	8.4	7.7	7.4	7.2	7.0	*6.8*	*6.5*
Chile[b]	50.7	51.3	50.1	53.4	55.3	55.5	56.0	*56.0*	*55.8*	7.2	7.8	9.7	8.2	7.1	6.4	5.9	*6.2*	*6.3*
Czech Republic	56.0	56.1	54.5	54.4	54.0	54.3	54.7	*54.7*	*54.9*	4.9	4.4	7.3	7.0	6.5	7.3	6.8	*6.9*	*6.6*
Denmark	63.1	63.9	60.1	59.4	59.0	58.6	58.2	*58.2*	*58.3*	3.6	4.0	7.0	7.6	7.7	7.3	7.0	*6.8*	*6.5*
Estonia	57.1	57.1	50.7	52.0	54.3	55.2	54.7	*55.1*	*55.6*	4.3	7.9	16.1	14.0	11.7	9.6	9.0	*8.8*	*8.2*
Finland	57.3	57.4	54.8	54.9	55.2	54.7	53.9	*53.8*	*53.7*	6.6	6.5	8.9	8.1	7.5	7.7	8.5	*8.4*	*8.4*
France	50.0	49.7	48.6	49.0	48.4	48.2	47.8	*48.0*	*48.0*	7.1	7.4	9.2	8.8	9.0	9.8	9.8	*9.9*	*9.8*
Germany	53.9	54.5	54.4	54.9	56.3	56.7	57.2	*57.5*	*57.8*	8.3	7.2	7.7	6.7	5.6	5.4	5.1	*5.0*	*4.7*
Greece[b]	47.6	48.1	47.5	46.2	43.1	39.6	38.1	*37.8*	*38.3*	8.3	7.7	9.5	12.5	17.7	24.2	27.3	*27.1*	*26.7*
Hungary	45.6	45.3	44.1	44.4	44.9	45.6	46.9	*47.4*	*47.5*	7.9	8.1	10.7	11.1	10.9	11.0	9.4	*8.8*	*8.9*
Iceland	73.7	72.4	68.0	66.0	65.4	65.9	67.8	*67.2*	*68.3*	2.5	4.6	7.4	8.1	6.8	5.5	5.4	*4.0*	*4.4*
Ireland	61.7	58.3	54.6	52.8	52.6	52.4	54.0	*54.5*	*55.3*	4.7	7.7	12.9	14.7	14.9	14.1	12.0	*11.1*	*9.9*
Israel	57.9	58.0	57.9	59.0	59.5	60.8	62.0	*62.6*	*63.8*	8.4	8.1	9.0	8.1	6.8	7.0	5.8	*6.0*	*5.7*
Italy	45.9	45.4	44.4	44.1	43.9	43.3	42.3	*42.0*	*42.1*	6.3	6.9	8.2	8.3	9.2	11.4	12.6	*12.9*	*12.2*
Japan	58.5	58.1	57.0	57.0	57.0	56.8	57.4	*57.2*	*57.1*	3.9	4.0	5.1	5.0	4.5	4.2	3.9	*3.7*	*3.7*
Korea	60.0	59.3	58.6	58.7	59.3	59.4	60.1	*60.3*	*60.9*	3.2	3.3	3.6	3.5	3.2	3.0	3.0	*3.1*	*2.9*
Luxembourg	53.5	54.0	52.9	52.7	53.4	53.7	53.9	*54.4*	*54.8*	4.1	4.4	5.8	5.9	5.7	6.3	7.1	*7.1*	*7.1*
Mexico	58.1	56.2	56.7	55.0	56.8	56.2	56.6	*56.9*	*57.2*	3.7	4.5	5.5	5.6	5.1	5.1	4.8	*4.5*	*4.4*
Netherlands	63.8	63.9	62.7	62.3	62.2	61.4	60.3	*59.8*	*60.0*	3.2	3.0	4.1	4.3	4.8	5.6	7.0	*7.8*	*7.5*
New Zealand	65.3	65.1	62.6	62.7	63.1	62.5	63.6	*63.5*	*63.8*	3.4	4.5	6.9	6.7	6.4	6.8	6.0	*5.8*	*5.6*
Norway	65.2	65.2	63.7	63.3	63.6	63.5	63.5	*63.4*	*63.5*	2.4	2.8	3.2	3.5	3.3	3.4	3.5	*3.6*	*3.5*
Poland	46.8	48.0	47.6	48.0	48.0	48.0	48.1	*48.3*	*48.5*	8.6	6.8	8.7	9.5	9.9	10.3	9.9	*9.7*	*9.3*
Portugal	57.8	57.5	55.7	54.8	52.4	50.0	50.2	*50.5*	*50.9*	7.8	7.8	10.1	11.1	13.8	16.9	15.4	*15.0*	*14.7*
Slovak Republic	52.6	53.7	50.6	50.8	50.1	49.9	50.1	*50.2*	*50.5*	10.4	8.8	14.0	13.9	14.0	14.3	14.1	*13.7*	*13.0*
Slovenia[b]	56.9	57.6	56.1	54.9	52.9	52.0	50.7	*50.2*	*50.0*	4.8	4.4	5.9	7.2	8.2	8.8	10.1	*10.2*	*10.2*
Spain	53.5	51.1	47.7	47.0	45.4	43.2	42.5	*42.6*	*42.9*	8.7	14.0	18.9	20.4	23.0	26.1	26.1	*25.0*	*23.9*
Sweden	60.2	59.7	57.9	58.3	58.9	58.9	59.3	*59.6*	*60.0*	6.1	6.7	8.8	8.1	7.8	8.2	8.0	*7.8*	*7.2*
Switzerland	67.6	67.9	66.4	66.1	66.9	66.6	66.9	*67.1*	*67.7*	3.4	3.3	4.8	4.1	4.0	4.3	4.0	*3.7*	*3.0*
Turkey[b]	42.3	42.5	41.9	43.7	45.7	46.3	46.7	*46.8*	*47.1*	10.1	10.7	13.7	11.7	9.6	9.0	9.5	*9.8*	*9.6*
United Kingdom	58.6	58.0	56.7	56.7	56.4	57.2	57.5	*58.0*	*58.3*	5.2	6.4	7.8	7.8	8.4	7.8	7.2	*6.7*	*6.5*
United States	60.2	58.6	55.7	55.4	55.5	56.0	55.8	*56.5*	*56.9*	4.8	6.9	9.9	9.5	8.7	7.8	7.0	*6.3*	*5.9*

a) Aggregate of 15 OECD countries of the euro area.
b) Annual values.
Source: OECD calculations based on *OECD Economic Outlook* (database), *http://dx.doi.org/10.1787/data-00688-en*.

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Chapter 2

Sharing the pain equally? Wage adjustments during the crisis and recovery

This chapter documents how wages have evolved during the global financial and economic crisis and recovery in OECD countries. It contributes to a better understanding of the role of wage adjustment for the strength of the labour market recovery and the way the social costs of the crisis have been shared across the labour force. A persistent increase in unemployment in many OECD countries has exerted considerable downward pressure on real wage growth, including among low-wage workers. Significant wage moderation has already contributed to curb unit labour costs and thus promote external competitiveness in a number of countries, particularly in the euro area. In a context of low inflation, where further wage adjustments would require difficult and painful cuts in nominal wages, other policy measures are needed to address persistently high unemployment rates. In addition to the role of macroeconomic policies, this includes better assistance in developing skills necessary for displaced workers to shift to new areas of employment, and more effective product market competition. While wage adjustment costs have been shared quite evenly across workforce groups, declines in real earnings are likely to hurt the low-paid more and may require appropriately designed measures such as in-work benefits and statutory minimum wages to tackle in-work poverty.

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

Much attention has been paid to the effects of the crisis on employment and unemployment. However, many of those who have retained their jobs have also been affected, as they have seen their wages grow more slowly, or even fall. This chapter shows that half of all workers saw the real value of their earnings fall in 2010 on average across a range of OECD countries. In half of these cases, the cause was earnings going up more slowly than inflation, but in the other half it was because nominal earnings actually fell, either as a result of wage cuts or, more likely, reduced hours of overtime and lower bonuses.

Wage adjustments have a key role to play in helping the labour market weather cyclical downturns and in promoting stronger employment growth during the recovery. However, wages also provide the dominant source of income for households and stagnant or falling real wages tend to be associated with economic hardship, especially for the most disadvantaged. Reductions in earnings also reduce consumer spending and dampen aggregate demand. This chapter documents how wages have evolved since the start of the global financial and economic crisis. The analysis sheds light on the role of wage adjustment for the persistence of unemployment and the strength of the labour market recovery. In doing so, it also provides evidence on the extent to which wage adjustment has helped to share the social costs of the crisis more equally between the employed and the unemployed. The chapter further examines how the wages of individual workers have been affected and how wage adjustments have been distributed across the workforce.

For the OECD as a whole, real wage growth has been essentially flat during the period 2010-13, and in a number of countries, including Greece, Ireland, Portugal and Spain, real wages have fallen by between 2% and 5% a year on average. A more detailed analysis of wage developments based on microdata from 2010 for 19 OECD countries shows that:

- One in two workers experienced real cuts in wage compensation. This proportion was lowest in Finland at just one third of the population, but approached two-thirds of the workforce in Estonia, Portugal and the United Kingdom.
- Over two-thirds of those who experienced such cuts saw their nominal wage compensation fall. This does not necessarily mean that wage *rates* fell; nominal adjustments in basic pay are very uncommon in certain countries, and much of the fall was almost certainly due to reduced hours of overtime and lower bonuses.

Wages and earnings respond to the labour market environment – higher unemployment is associated with lower growth in earnings. There is evidence, however, that the relationship between hourly wage growth and unemployment – the Phillips curve – was stronger in euro area countries during the crisis than before. Real wages have fallen by more than would have been predicted given the rise in unemployment.

However, as the crisis has persisted in some countries and recovery in others has been slow, there is some evidence that the downwards adjustment in earnings may not continue

at the same pace as before 2010. In particular, at the aggregate level, wage growth appears to have become somewhat less responsive to changes in unemployment in the more recent period. This is the case in the OECD as a whole, the euro area and the United States, but not in Japan. There are two reasons for this:

- An increasing portion of unemployed people are no longer effectively competing for jobs. Long-term unemployment can lead to loss of skills, self-confidence and motivation, and can lead to increased social and health problems which reduce people's ability to work and efforts to find jobs.
- Inflation is so low in some countries that the only way for reductions in real wages to occur is when nominal wages are cut. Both workers and employers are generally reluctant to countenance such reductions, leading to "nominal downward wage rigidity". Nominal downward wage rigidity has become more binding since the start of the crisis in countries such as Estonia, Greece, the Netherlands, Spain and the United Kingdom. Administrative data for Spain and the United Kingdom suggest that while at the onset of the crisis in 2008 cuts in nominal wages would have been about 10% more prevalent were it not for this reluctance by employers and workers, this ratio increased to over one in four in the United Kingdom and one in two in Spain by 2012. For low-wage workers in Spain, the incidence of nominal downward wage rigidity is particularly important, affecting over two-thirds of the low-wage workforce.

The evidence presented in this chapter, based on selected OECD countries, also suggests that part of the widespread wage moderation that has occurred since the start of the crisis is the result of the greater responsiveness of the wages of new hires to economic conditions than those of incumbent workers. In the absence of a minimum wage, it is estimated that the earnings of new hires fall by nearly 3% for every percentage point increase in the regional unemployment rate, whereas the earnings of those who stay in the same job fall by just over 0.5%.

Greater wage moderation has resulted in the cost of labour falling relative to productivity. Consequently, on average in the OECD area, growth in unit labour costs has tended to slow since the start of the global financial crisis. The adjustment has been most pronounced in the euro area countries hardest hit by the crisis (e.g. Greece, Ireland, Portugal, and Spain).

Thus, while cuts in earnings have contributed to hardship and social distress in a number of countries, they have also played an important role in restoring external competitiveness, rebalancing current accounts and promoting external demand (even if potentially at the cost of curbing domestic demand). While the gap in unit labour costs accumulated in countries such as Greece, Portugal, Ireland and Spain with respect to Germany since the introduction of the euro in 1999 has been partially closed during the crisis, further adjustments based on wage cuts may be difficult to achieve. Instead, policy attention needs to focus elsewhere. Macroeconomic policies have an important role to play but need to be supported by structural policy reforms, including:

- *Enhancing competition in product markets.* One of the difficulties of further wage adjustment is that its potential effects do not automatically translate into more jobs for workers because some of the reduction in wage costs is effectively used to restore the profitability of troubled firms. While *some* of this may be necessary, this may also reflect the lack of effective competition in product markets.
- *Promoting labour market policies that facilitate transitions between sectors.* New jobs being created as a result of enhanced cost competitiveness may be in different firms and

sectors and involve different skills than the jobs which have been lost. Programmes facilitating labour mobility and providing training and work-experience are essential to allow countries with persistently large labour market slack to foster job creation while also not unduly depressing domestic demand and contributing to further widening in income inequality and risks of poverty.

However, policy must address not only the *level* of wage adjustment, but also its *distribution*. Low-skilled workers have been the most likely to lose their jobs during the crisis. Consequently, real wage growth has been even weaker for workers remaining in their jobs than indicated by the aggregate figures. Moreover, low-paid workers who kept their jobs experienced a slowdown in real earnings growth following the crisis as did higher paid workers, and in some countries they experienced a fall in their real earnings. Comparing 2007-12 with 2000-07, real wage growth of full-time employees declined by 1.0 percentage points per year on average across OECD countries at the bottom decile of the earnings distribution. The decline was somewhat greater at 1.1 and 1.5 percentage points, respectively, at the median and the last decile of the distribution. The slowdown in real earnings growth for low-paid workers was particularly large in the Czech Republic, Hungary, Korea, Spain and the United Kingdom. This reflected the importance of widespread wage moderation rather than the importance of reductions among low-paid workers in particular. Nevertheless, slower real wage growth, and cuts in real wages in some cases, may result in severe hardship for low-paid workers.

There are a number of policy instruments available to limit the impact of economic adjustment on low-wage workers:

- *Minimum wages can prevent nominal wages at the lower end of the distribution from bearing the brunt of the adjustment.* The empirical evidence suggests that if set at an appropriate level, the adverse employment effects of minimum wages tend to be small. Sensible minimum-wage design includes taking account of regional differences in economic conditions and differences by age in experience and productivity, ensuring that the level is determined by independent advice, and adjusting employer social security contributions to lower non-wage labour costs at the minimum wage.
- *In-work benefits for low-paid workers living in low-income households can also help prevent the risk of rising levels of in-work poverty.* These types of benefits or tax credits exist in several OECD countries and together with minimum wages can provide an effective guarantee of a minimum income.

Introduction

Wage adjustments have a key role to play in helping the labour market weather cyclical downturns and thus promote labour market resilience (OECD, 2012a). Consequently, the extent of wage adjustment may have played an important role in shaping the initial increase in unemployment as a result of the decline in aggregate demand that was triggered by the global financial crisis, but also in determining the persistence of unemployment during the ongoing economic recovery. However, wages also provide an important source of income for households. Stagnant or falling real wages not only can lead to severe economic hardship for households but also reduce consumer spending and lower aggregate demand if not offset by rising employment.

This chapter documents how wages have responded to the rise in unemployment since the start of the crisis. More specifically, the chapter examines how flexible wage adjustments

have been since the start of the global financial crisis and what sort of wage flexibility is most relevant for mitigating cyclical fluctuations in unemployment. This analysis also provides an indication of the extent to which wage adjustment has helped to reduce the impact of the crisis on job losses and thus share the social costs between the employed and the unemployed. The chapter further examines how the wages of individual workers have been affected and how wage adjustments have been distributed across the workforce.[1]

The chapter is structured in two parts. In Section 1, the degree of wage flexibility as well as its role for the persistence of cyclical unemployment is analysed using a variety of different methods. Section 2 analyses how the burden of wage adjustment as a result of the global financial crisis has been distributed across the workforce.

1. Wage adjustment during the crisis and recovery

This section sheds new light on the role of wage adjustment for *cyclical* unemployment by documenting how wages have evolved in the aftermath of the global financial crisis and analysing how they have responded to changes in unemployment. Wage adjustment may affect the extent and persistence of cyclical unemployment through various channels. First, real wage adjustments can help to clear the labour market in response to shocks, thereby mitigating cyclical fluctuations in unemployment and spreading the social costs of the shortfall in aggregate demand more evenly across the labour force ("internal rebalancing").[2] Importantly, by mitigating cyclical fluctuations, wage adjustments also reduce the risk that the increase in cyclical unemployment becomes structural (see Chapter 1 for a detailed discussion). Second, wage flexibility may affect aggregate demand, although this will depend on each country's circumstances. In countries characterised by sizeable current-account deficits but without flexible exchange rates, such as in some countries of the euro area, downward wage adjustments have the potential to promote aggregate demand by enhancing external competitiveness ("external rebalancing"). However, there is also a risk, particularly in low-inflation environments, that downward wage adjustment induces price deflation, which may depress private spending, and, hence, aggregate demand (Gali, 2013; Gali and Monacelli, 2013).[3] While wage flexibility is also important for understanding *structural* unemployment through its impact on allocative efficiency, this has been discussed in some detail in previous OECD work (see OECD, 2006, for an overview).

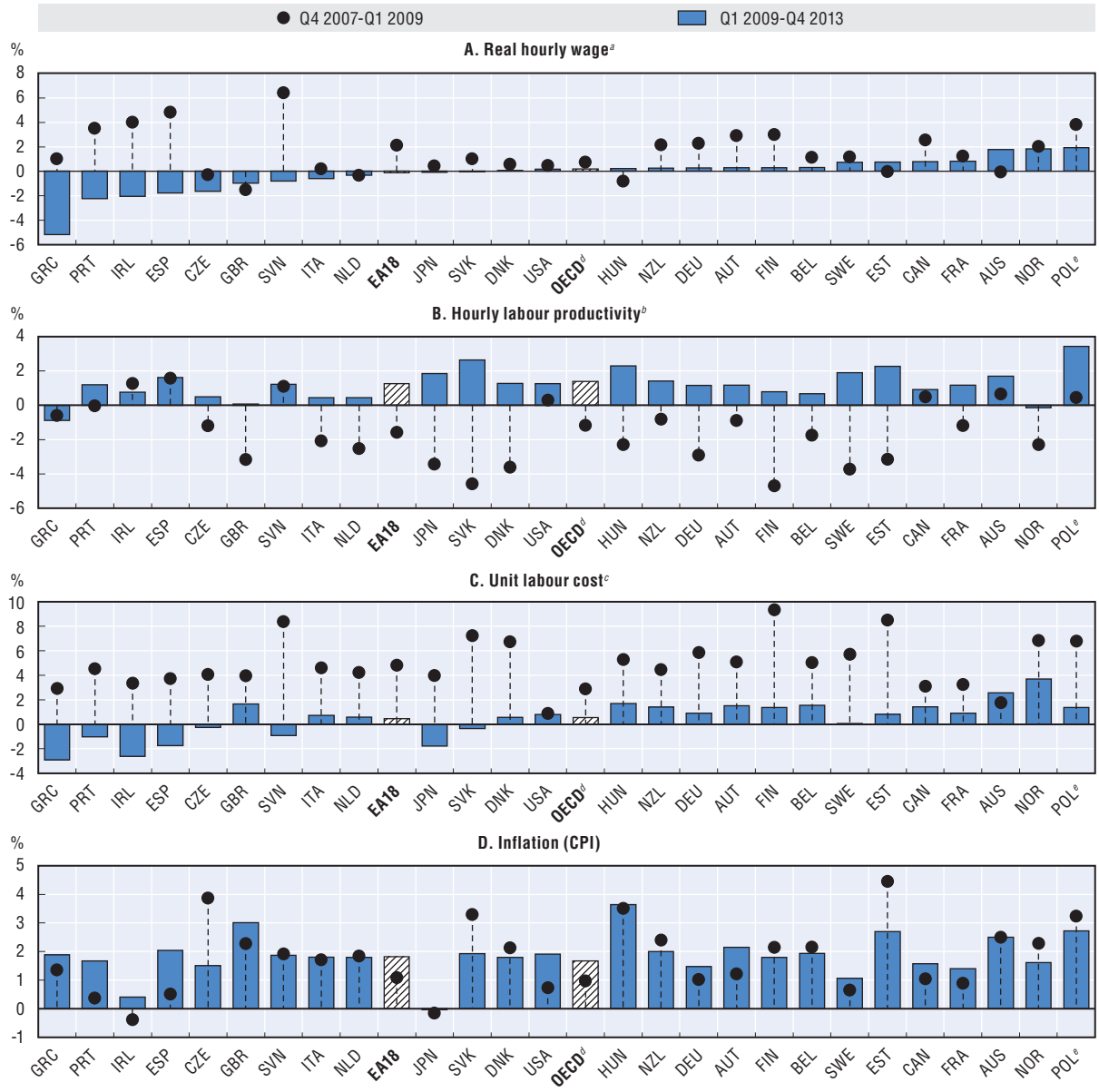
The persistence of labour market slack has exerted considerable downward pressure on aggregate wage growth

Figure 2.1 documents average annualised, real wage growth during the period immediately after the start of the crisis (Q4 2007 to Q1 2009) and subsequently (Q1 2009 to Q4 2013). In order to understand better the evolution of real hourly wage growth, information for both periods is also provided on: growth in labour productivity, growth in unit labour costs and price inflation. More detailed information on the evolution of each of these variables in each year since the start of the global financial crisis can be found in Annex Table 2.A1.1 at the end of this chapter:

- Real wage growth (Panel A), a measure of the growth in the purchasing power of wages, has come to a virtual standstill. Average real wage growth in the OECD area slowed from 0.7% during the initial crisis period period following the onset of the crisis to 0.2% during the subsequent period. The slowdown in real wage growth was particularly pronounced in the euro area where it declined from an average growth rate of 2.1% to -0.1%. However, similar trends are also observed in the United States (0.5% to 0.2%) and

Figure 2.1. **Real wage growth has fallen**

Average annualised percentage growth rate



Note: Countries are ordered by ascending order of the average annualised growth rate in real hourly wages since the first quarter of 2009.

a) Total compensation of employees (total wages for New Zealand) divided by total hours worked of employees in real terms (deflated using the consumer price index).

b) Real GDP divided by total hours worked.

c) Total compensation of employees divided by real GDP.

d) OECD is the weighted average of the 26 OECD countries shown.

e) Q1 2009 to Q3 2013 for Poland.

Source: OECD calculations based on quarterly national accounts.

StatLink http://dx.doi.org/10.1787/888933131994

Japan (0.4% to -0.1%). Since the first quarter of 2009, average real wage growth has been negative in 11 OECD countries. The largest falls in real wages occurred in Greece, where they declined by more than 5% per year on average, and in Ireland, Portugal and Spain, where they declined by roughly 2% on average per year. Real wage cuts of this magnitude

could cause considerable financial hardship among workers and their families. This is analysed in detail in OECD (2013d).

- Labour productivity growth has started to recover (Panel B). While it had initially turned negative in the large majority of OECD countries, it has since turned positive due to the gradual recovery in aggregate demand. In the large majority of OECD countries, average labour productivity growth exceeds average real wage growth, implying that real unit labour costs have declined. This has resulted in higher profits for firms and a lower share of overall income going to workers. This is a typical pattern observed in economic recoveries and reflects the gradual return to pre-crisis conditions after a period of intense labour hoarding in the context of a recession. More recently, growth in labour productivity has tended to slow somewhat as employment has started to recover.
- The decline in real wage growth has been associated with a decline in the growth of nominal unit labour costs, which measures nominal wage growth relative to productivity, from 2.9% per annum on average at the start of crisis to 0.6% subsequently (Panel C). In large part, this reflects the mechanical relationship between labour productivity and unit labour costs: when nominal wages are constant, an increase in labour productivity implies a reduction in nominal unit labour costs. However, in countries, such as Greece, Ireland, Portugal, Slovenia and Spain, it also reflects declining nominal wage growth. The decline in the growth of nominal unit labour costs has played an important role in helping these countries restore competitiveness and their often large current account deficits. This has helped the rebalancing process in the euro area as is discussed in more detail in Box 2.1.
- Falling wage inflation has only had a limited impact on slowing down price inflation (Panel D). The absence of an obvious relationship between wage and price inflation in the short-term may, in part, reflect the role of well-anchored inflation expectations in countries that are not part of a monetary union nor maintain a fixed exchange rate (IMF, 2013). In countries where nominal wage growth has tended to fall short of inflation, this has resulted in lower real wages and may have helped to limit the persistence of unemployment. However, the relationship between wage growth and price inflation has also been weak in individual euro area countries without an independent monetary policy, particularly in countries where nominal wage adjustments have been large. While the resulting reduction in real wages may help internal rebalancing, adjustment in prices is also needed to restore competiveness and spur structural adjustment (see Box 2.1). The weak relationship between wage growth and price inflation in the euro area periphery reflects, in part, the greater need for internal financing of firms as credit has dried up, but also points to the weakness of product market competition and, in turn, the importance of further pro-competitive product market reforms.[4]

There is also some indication that the responsiveness of wage growth has slowed…

One way of analysing the degree of wage flexibility is by means of short-term Phillips curves which relate nominal wage growth to the unemployment gap, defined as the change in unemployment since the start of the global financial crisis.[5] Nominal wage growth and the unemployment gap are expected to be negatively related since higher unemployment increases the competition for jobs among jobseekers and, as a result, has a tendency to drive wages down. The strength of the negative relationship gives a first indication of the degree of wage flexibility, but should be interpreted with caution since the aggregate relationship between nominal wage growth and the unemployment gap is not necessarily causal and may be subject to important composition effects (see Box 2.5).

Box 2.1. **Rebalancing in the euro area and the role of labour market policies**

In the period since the introduction of the euro in 1999 and the start of the global financial crisis, a number of euro area economies accumulated significant losses in international competitiveness, as illustrated by widening current account deficits, substantial increases in nominal unit labour costs and growing levels of external debt. These include Greece, Ireland, Portugal, Slovenia, Spain, and to a lesser extent, Italy. As a result of the global financial crisis, external credit to these countries suddenly dried up, triggering large reductions in aggregate demand and large increases in unemployment. In the absence of monetary union, the optimal response would probably have been to devalue the exchange rate to regain competitiveness. However, external devaluations are not feasible in the context of a monetary union. In this case, rebalancing needs to come from either higher productivity growth and/or lower nominal wage growth. While the former is clearly preferable, fostering productivity growth requires in-depth structural reforms and thus takes time. In the short-run, the adjustment has largely taken place via a reduction in nominal wage growth, even in countries which have undertaken important pro-competitive reforms (Blanchard et al., 2013).

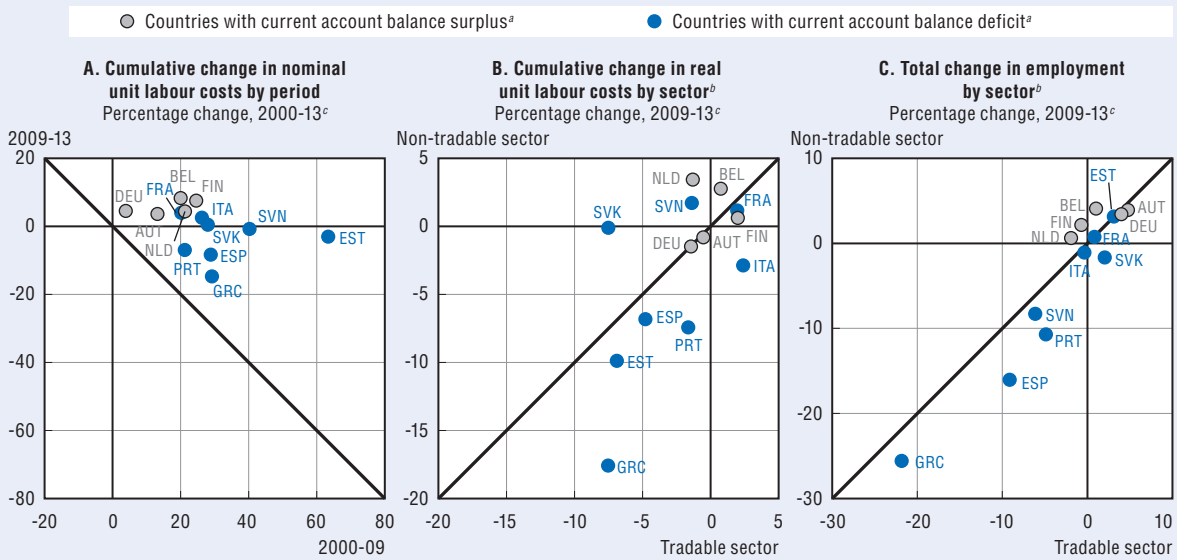
The extent to which internal devaluations are successful in reducing unemployment and restoring competiveness hinges crucially on the way labour, product and financial markets operate:

- Nominal wages have to be sufficiently responsive to changes in cyclical conditions, and in particular, to rises in unemployment. Fiscally balanced reductions in the tax wedge that reduce labour costs, but increase consumer taxes, may also have a role to play (Blanchard, 2007). Panel A of the figure below compares the cumulative change in nominal unit labour costs over the period 2000 to 2009 with the cumulative change during the period 2009 to 2013. It shows that nominal unit labour costs have tended to increase more rapidly in the euro area periphery than in the euro area core during the pre-crisis period, resulting in a loss of cost competitiveness and growing current account deficits in the former group of countries. However, since the start of the crisis, nominal unit labour costs have risen more slowly in the deficit countries than in the surplus countries, and declined significantly in absolute terms in Greece, Portugal and Spain. As a result of the decline in nominal unit labour costs in these three countries, cost competitiveness, measured in terms of unit labour costs, is now broadly in line with that of several surplus countries, although still considerably higher than in Germany.
- Output prices have to adjust in response to changes in nominal unit labour costs so as to trigger an internal devaluation, i.e. a reduction in the price of the non-tradable sector relative to that of the tradable sector. Panel B compares the cumulative change since 2009 to 2013 in real unit labour costs in the tradable sector with that in the non-tradable sector (the change in nominal unit labour costs to output prices). It shows that in the surplus countries real unit labour costs have been relatively stable in both sectors. By contrast, in the deficit countries real unit labour costs have tended to decline, and this decline tended to be largely concentrated in the non-tradable sector. This suggests that nominal reductions in wage growth, and particularly those in the non-tradable sector, were not fully passed onto lower prices, reducing the labour share in overall income. In part, this is likely to reflect the effect of the credit crunch on the scope for external financing and the greater need for internal saving. However, it is also likely to reflect limited product market competition in the non-tradable sector.
- Successful rebalancing also requires that workers are mobile across sectors and, particularly, between the non-tradable and the tradable sectors. Panel C compares the evolution of employment since 2009 in the tradable and non-tradable sectors. It shows that in most periphery countries employment has fallen in both sectors, albeit somewhat more strongly in the non-tradable sector. There is little indication yet that the tradable sector has started to absorb the increase in labour market slack and that export capacity has substantially increased. The slow pace of labour reallocation across sectors may to some extent reflect the role of differences in skill requirements and the inability of workers to take up new jobs due to skill mismatch. This suggests that policies that encourage wage adjustment need to be complemented with active labour market policies that help workers that were previously employed in the non-tradable sector to move into newly created jobs in the tradable sectors. Such policies can focus on training, work-experience programmes and targeted hiring subsidies on the unemployed (OECD, 2013b). Policies to foster greater geographic mobility would also help.

Box 2.1. **Rebalancing in the euro area and the role of labour market policies** *(cont.)*

In sum, successful rebalancing through an internal devaluation not only requires wages to adjust, but also adjustments in prices and the reallocation of resources across sectors. While nominal unit labour costs have already adjusted substantially in the countries that have been most affected by the crisis, the adjustment of output prices and the reallocation of resources to the tradable sector have been comparatively slow, implying that the effect of wage adjustment in terms of reducing unemployment may take a long time to materialise. Both labour and product market policies are crucially important for ensuring that the substantial degree of wage adjustment that has taken place so far promotes the effective reallocation of resources and translates into the creation of new jobs.

Adjustments in nominal unit labour costs, real unit labour costs and employment in the euro area



a) Countries are classified according to their structural current account balance at the onset of the global financial crisis in 2007.
b) "Tradable sector" refers to manufacturing; trade sector; transport and communication; financial and business activities; and real estate activities. "Non-tradable sector" refers to construction; accommodation and food services; education; personal services; and public administration.
c) 2012 for Austria, Estonia, France, Italy, Portugal and the Slovak Republic.
Source: OECD calculations based on annual national accounts.

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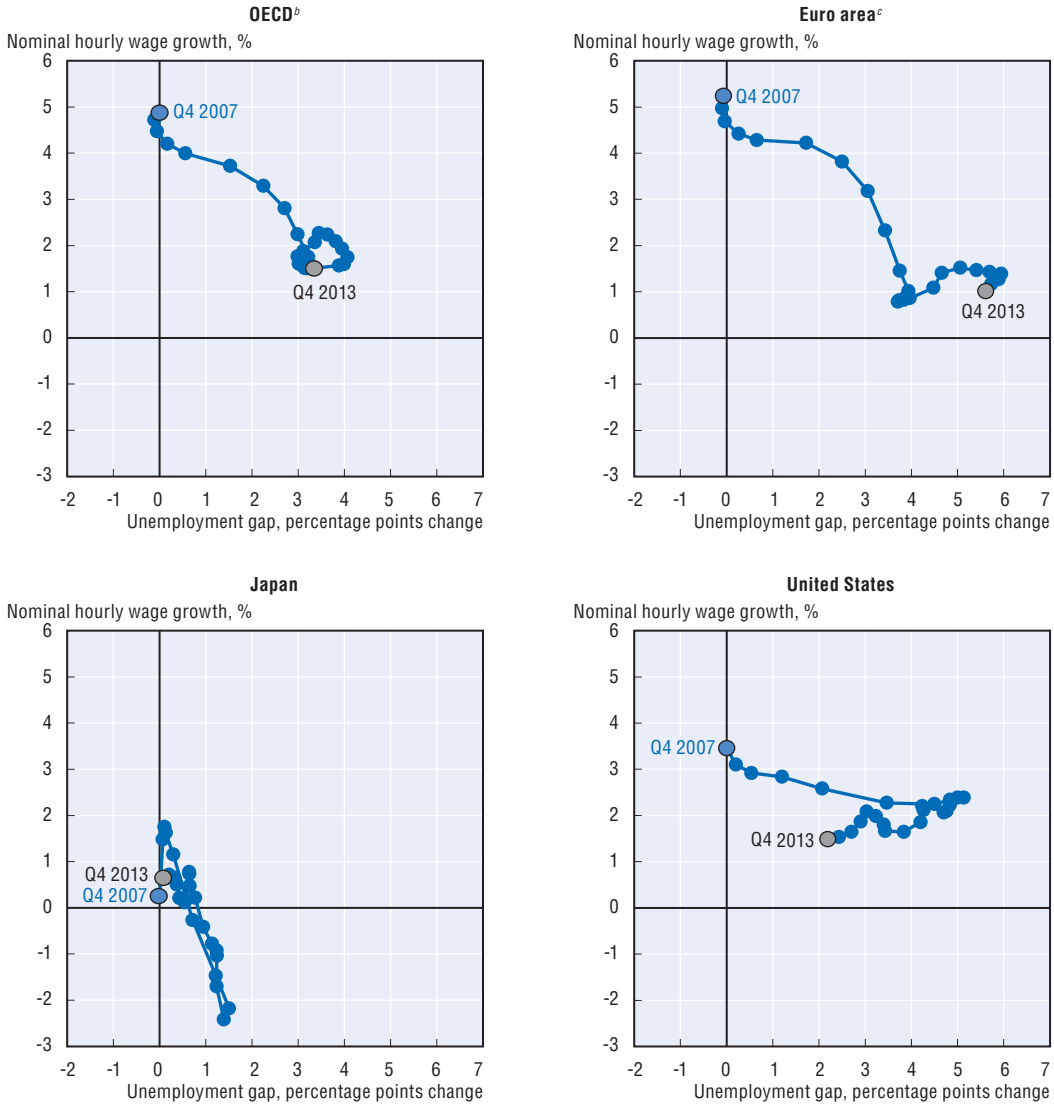
Figure 2.2 traces out the short-term relationship between nominal wage growth and the change in the unemployment rate since the start of the crisis to Q4 2013 for the OECD as a whole as well as for the euro area, Japan and the United States, while Box 2.2 reports regression-based estimates of wage-Phillips curves that control for the role of price inflation and labour productivity using data for the period Q1 1985 to Q4 2013. Both Figure 2.2 and the regression-based estimates confirm the existence of a negative relationship between nominal wage growth and the unemployment gap in the short-term. On average across OECD countries and time, a one percentage-point increase in the unemployment gap is associated with a -0.1 percentage-point reduction in aggregate wage growth. However, the average relationship across the OECD hides considerable heterogeneity across countries: the responsiveness of nominal wages to the unemployment gap appears to be considerably stronger in Japan (-0.4) than in the euro area and the United States where in both cases it is close to the OECD average. The relatively high degree of wage flexibility in Japan is consistent

Figure 2.2. **Nominal wage growth has tended to become less responsive to unemployment**

Wage-Phillips curves: the relationship between nominal wage growth and the change in the unemployment rate since the start of the crisis Q4 2007-Q4 2013[a]



a) Nominal wage growth: year-on-year percentage change in nominal hourly wage (defined as total compensation divided by hours worked of employees); unemployment gap: percentage-points change in the unemployment rate since the start of the crisis in Q4 2007.

b) Unweighted average of 26 OECD countries (excluding Chile, Iceland, Israel, Korea, Luxembourg, Mexico, Switzerland and Turkey).

c) Unweighted average of 14 euro area countries (including Austria, Belgium, Estonia, France, Finland, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, the Slovak Republic, Slovenia and Spain).

Source: OECD calculations based on quarterly national accounts and the *OECD Short-Term Labour Market Statistics* (database), *http://dx.doi.org/10.1787/data-00046-en*.

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with country studies that suggest that downward nominal wage rigidity has essentially disappeared since the late nineties (Kuroda and Yamamoto, 2013). The regression-based estimates of the Philips curve further suggest that the degree of wage flexibility in the euro area was higher during the global financial crisis than in the period before, whereas that in in the United States and Japan has remained unchanged.

Box 2.2. **Estimating wage-Phillips curves**

In order to assess the sensitivity of wages to unemployment more formally, Philips curves are estimated using the following dynamic wage model:

$$\Delta lnw_{it} = \alpha_i + \beta_0 \Delta lnw_{it-1} + \beta_1 u_{it} + \beta_2 \Delta ln\pi_{it} + \beta_3 \Delta lnx_{it} + \varepsilon_{it} \quad (1)$$

where Δlnw refers to the quarterly growth rate in nominal hourly wages, u to the unemployment gap defined as the difference between the unemployment rate and the country mean over the sample period, $\Delta ln\pi$ to the quarterly inflation rate and Δlnx to the quarterly growth rate in hourly labour productivity. Subscript i and t refer to country and time respectively. The model is similar to that used by ECB (2012). Allowing for additional lags does not change the qualitative results. The table below presents the regression results of the specification presented in equation (1) above (Model 1 in the table) which is estimated using quarterly data for 26 OECD countries for the period Q1 1985 to Q4 2013. In an extension (Model 2), a dummy that equals one from the start of the global financial crisis onwards and an interaction of the crisis dummy and the unemployment gap are added to the baseline model to test for a change in the relationship between nominal wage growth and the unemployment gap since the start of the crisis. In another extension (Model 3), a dummy for a positive unemployment gap along with an interaction term of the dummy with the unemployment gap are added to the baseline model to test whether the responsiveness of nominal wage growth depends on the unemployment gap being positive or negative. The table below reports the estimates for β_1 which captures the responsiveness of nominal wage growth to the unemployment gap as well as the interaction terms of the crisis and gap dummies with the unemployment gap.

Regression estimates of wage-Phillips curves

	Total	Euro area	Japan	United States
Model 1				
Average effect of unemployment	-0.146***	-0.146***	-0.411***	-0.138***
	(0.015)	(0.019)	(0.085)	(0.048)
Model 2				
Effect of unemployment before the crisis	-0.107***	-0.084***	-0.430***	-0.120
	(0.020)	(0.031)	(0.092)	(0.093)
Additional effect since the start of the crisis	-0.047**	-0.069**	0.146	0.029
	(0.019)	(0.028)	(0.197)	(0.125)
Model 3				
Effect of unemployment when unemployment gap is negative	-0.250***	-0.294***	-0.781***	-0.268*
	(0.036)	(0.048)	(0.262)	(0.144)
Additional effect when the unemployment gap is positive	0.100***	0.147***	0.509	0.144
	(0.025)	(0.035)	(0.311)	(0.174)
Number of countries	**26**	**14**	**1**	**1**
Observations	**1 631**	**756**	**94**	**94**

Standard errors in brackets. *, **, *** indicate statistically significance at 10%, 5% and 1% levels, respectively.
See notes below Figure 2.2 for details on country coverage and variable definitions.
Source: OECD calculations based on quarterly national accounts and the *OECD Short-Term Labour Market Statistics* (database), *http://dx.doi.org/10.1787/data-00046-en*.

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... possibly due to the increasing importance of downward wage rigidities or rising structural unemployment

There is some indication that the slope of the Phillips curve has flattened during the course of the global financial crisis as nominal wage growth has slowed. This appears to be the case in the OECD as a whole, the euro area and the United States, but not in Japan. Furthermore, regression-based estimates of Phillips curves indicate that the responsiveness of nominal wage growth to the unemployment gap tends to be considerably larger in good times than in bad times.[6] The degree of asymmetry in wage adjustment over the cycle is similar in the euro area and the United States, but considerably stronger in Japan. However, even in bad times, wages remain relatively flexible in Japan. The flattening of the Phillips curve and the asymmetry of wage adjustment over the cycle may reflect workers' resistance to nominal wage cuts or that of employers to make use of them (Bewley, 1999) or the possibility that an increasing portion of the unemployed is no longer effectively competing for jobs. These factors are likely to become more important the longer unemployment remains high since, in such an environment, inflation tends to be low and it becomes increasingly difficult to lower real wages without reducing nominal wages and the risk that the cyclical increase in unemployment becomes structural increases (see the discussion in Chapter 1). The remainder of this section focuses on the role of nominal downward wage rigidities and the process of wage adjustment more generally.

Before the global financial crisis, downward adjustments in both real and nominal wages were limited

The aggregate analysis already provided a first indication that downward wage rigidities (DWR) play a potentially important role in shaping dynamics of wage growth and unemployment during the global financial crisis and subsequent recovery. This sub-section documents the nature of downward real and nominal wage rigidity in more detail using microdata in OECD countries. In order to do so, it focuses on full-time workers who remain in the same firm for one year to the next. The sensitivity of wages among new hires is analysed separately below.

Nominal DWR refers to the reluctance of employees to accept nominal wage cuts or that of employers to make use of nominal wage cuts.[7] Real DWR refers to the difficulty of reducing wages in real terms, that is, to set nominal wage increases that fall short of the rate of inflation.[8] The presence of nominal and real DWR tends to be associated with wage freezes, reflected by a spike in the nominal/real wage-change distribution around zero and a missing mass just below zero.[9] A simple way of characterising the degree of DWR is to focus on the share of notional wage cuts – the number of desired wage cuts that would have occurred in the absence of DWR – that have been prevented by DWR. A useful approximation of this can be obtained by calculating the share of wage freezes over the sum of actual wage cuts and wage freezes. This involves implicitly assuming that no wage freezes would occur in the absence of wage rigidity. Both nominal and real DWR can have important implications for the adjustment of real wages and, hence, the evolution of unemployment over the business cycle.[10] However, the underlying mechanisms are rather different with potentially important implications for policies. Nominal DWR is more of an issue in the context of low inflation, and, hence, sometimes has been used as an argument for adopting higher inflation targets for the conduct of monetary policy (Schmitt-Grohé and Uribe, 2013). Real DWR is more likely to reflect the role of wage-setting institutions, such as collective wage bargaining, automatic wage indexation and minimum wage floors.

Empirical evidence on DWR is largely confined to the period before the global financial crisis. Using microdata for 16 OECD countries from before the global financial crisis, Dickens et al. (2007) show that both nominal and real DWR are potentially important. They estimate that, on average across countries, the shares of notional wage reductions prevented by, respectively, nominal and real DWR to be somewhat below 30%. However, they also report large differences in the incidence of DWR across countries which are difficult to interpret.[11] Using a semi-aggregate approach based on industry-level for 19 OECD countries for the period 1971-2006, Holden and Wulfsberg (2008, 2009, 2014) confirm the importance of nominal DWR, while the evidence for real DWR is more limited. Since they use industry-level data, their wage measures not only relate to job stayers, but also capture potentially important composition effects as workers enter or leave employment in an industry. To the extent that downward wage rigidities survive at the industry level and, thus, are not fully offset by increased flexibility at the margin, the presence of DWR is likely to have important implications for the cyclicality of employment and unemployment (see also the discussion below on the sensitivity of wages for new hires to the business cycle). Interestingly, they find that nominal DWR has significantly declined since the 1970s. The most likely explanation for this is the gradual reduction in inflation and the corresponding shift of the nominal wage-change distribution to the left. This increases the typical size of notional wage cuts and reduces the likelihood that such cuts are prevented by nominal DWR. This does not mean, however, that nominal DWR has become less important for aggregate employment fluctuations. While notional wage cuts may be less likely to be prevented by nominal DWR, the share of the workforce exposed to such wage cuts is likely to have increased.[12]

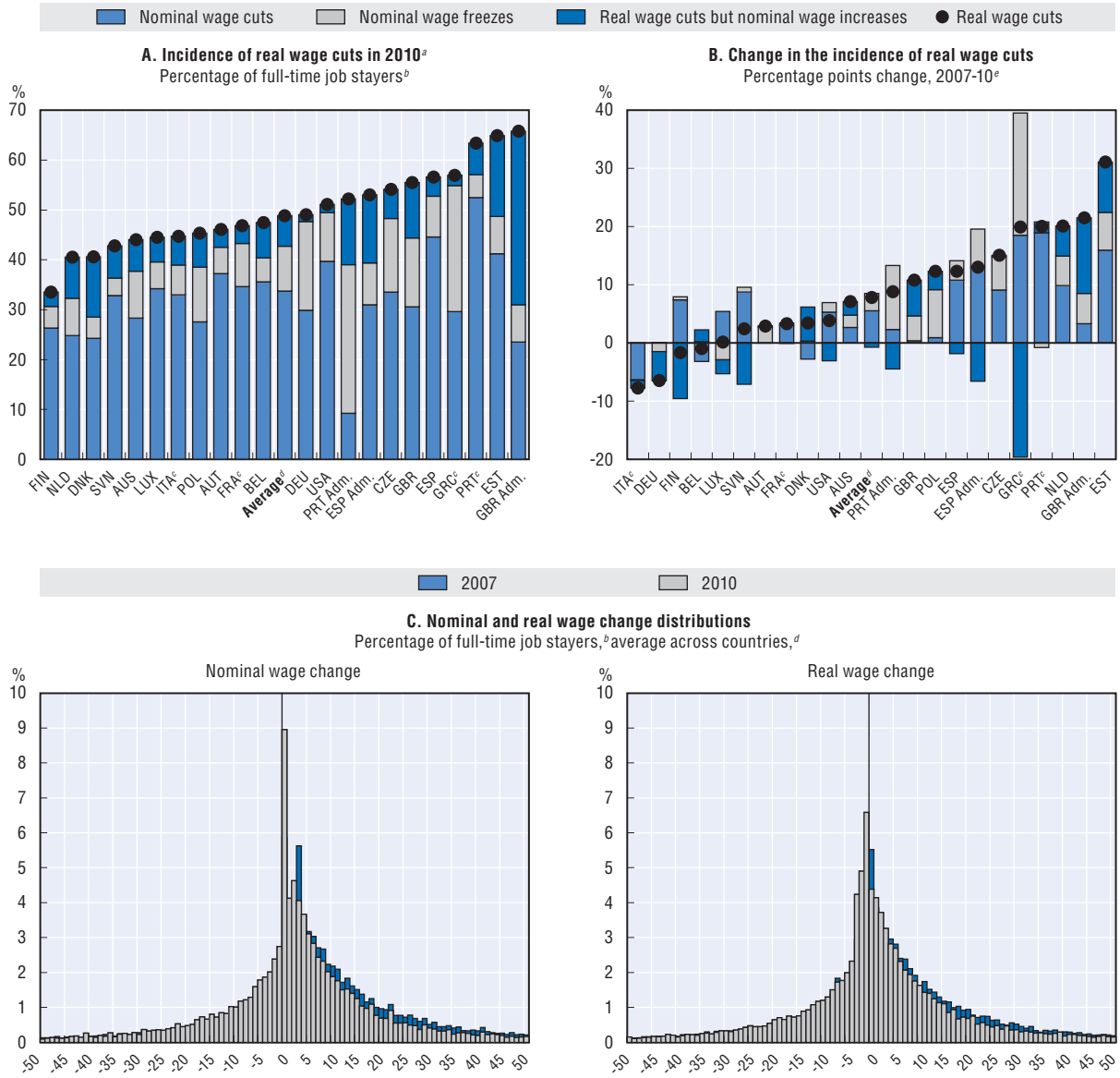
Since the crisis, downward adjustments in real wages have become more frequent while nominal wage floors have tended to become more binding

Comprehensive cross-country evidence on how the incidence of downward wage rigidities has evolved since the start of the global financial crisis is lacking. This is unfortunate since the number of persons potentially exposed to DWR may have increased as inflation and real wage growth have slowed. Up-to-date information on the exposure and incidence of DWR, therefore, would be very useful for understanding the evolution of unemployment since the start of the global financial crisis as well as its persistence. Daly et al. (2013) show, using labour force survey data for the United States, that the incidence of nominal wage freezes has increased markedly since the start of the global financial crisis and suggest that this may explain why aggregate wage growth has become less responsive to labour market slack, and thereby slowed down the labour market recovery.[13] Elsby et al. (2013) use administrative data for the United Kingdom to analyse how nominal DWR has evolved since the late 1970s up to 2011. In contrast to the US results, they find that a much larger number of workers appear to have accepted nominal wage cuts in the period following the global financial crisis than was generally expected and conclude that nominal DWR did not play a major role in shaping the evolution of unemployment since the start of the crisis in the United Kingdom.[14] Doris et al. (2013) use recent data from administrative records and household data to analyse nominal DWR in Ireland. Similar to the evidence for the United Kingdom, they find substantial evidence of wage flexibility, with nominal wage cuts being much more common than nominal wage freezes, but also that both increased substantially since the start of the crisis.

Figure 2.3 presents a number of new stylised facts on downward wage rigidity based on comprehensive household or labour force surveys for 19 OECD countries. Panel A provides information by country on the incidence of nominal earnings cuts, the incidence of nominal earnings freezes[15] and the incidence of real earnings cuts in conjunction with nominal earnings rises using data for 2010. Panel B displays how each of these categories has changed since the start of the global financial crisis in each country. Finally, Panel C shows the entire distribution of nominal and real earnings changes in 2007 and 2010 on average across countries. The analysis in the figures is based on monthly earnings for full-time workers who stay in the same job from one year to the next. Portugal, Spain and the United Kingdom are included twice in Panels A and B, once using the household data from EU SILC and once using administrative data. The results from the two sources may differ because of the greater importance of measurement error in household data, differences in the concept of earnings (base pay in the administrative data for Portugal and the United Kingdom or all forms of wage compensation otherwise) and dissimilarities in sample coverage (the private sector in the administrative data for Portugal and Spain and the entire economy otherwise). The averages in Figure 2.3 only take account of the household data. The following insights emerge:

- *Panel A*. Real cuts in earnings were widespread. On average across countries, 49% of workers experienced a reduction in real earnings in 2010. The lowest incidence of real earnings cuts was observed in Finland where it amounted to one third of the workforce, while the highest incidences were observed in Estonia, Portugal and the United Kingdom (using administrative data) where it affected almost two-thirds of the workforce. On average across countries, two-thirds of these cuts in real earnings took the form of nominal earnings reductions (69%). This corresponds to about one in three workers (34%). The high incidence of nominal earnings reductions is likely to reflect the role of flexible forms of pay such as overtime and bonuses, but may also capture temporary reductions in actual working time related to the decline in business activity.[16] The incidence of nominal earnings freezes tended to be comparatively small, affecting about 9% of workers.[17] Given the incidence of nominal earnings cuts and earnings freezes, this suggests that, on average across countries, about one in five notional earnings cuts were prevented as a result of DWR (21%). Countries with very high levels of DWR are Greece and Portugal (using administrative data) where it is estimated that, respectively, one half and three quarters of notional wage cuts were prevented by nominal DWR in 2010.[18] Comparing the two sets of results for Portugal, Spain and the United Kingdom based on household and administrative data suggests that the incidence of real wage cuts tends be broadly similar, but that the incidence of nominal wage cuts tends to be substantially less pronounced in the administrative data.[19] To an important extent, this reflects the more narrow focus on hourly base pay when using administrative data. Adjustments in real hourly base pay appear to disproportionately take place through inflation, particularly in Portugal, while nominal wage cuts become more important when taking account of more flexible forms of pay.[20]
- *Panel B*. Between 2007 and 2010, the incidence of real earnings reductions increased by 8 percentage points as the earnings growth distribution shifted to the left. The largest increases in the incidence of real earnings reductions occurred in Estonia, Greece, the Netherlands, Portugal and the United Kingdom (using administrative data). On average across the countries shown in Figure 2.3, an increase of 6 percentage points in the incidence of nominal earnings cuts accounted for the bulk of higher incidence of

Figure 2.3. **Nominal downward wage rigidities have tended to become more binding since the start of the crisis**



Adm.: Administrative data.

a) 2009 for Greece.

b) The sample refers to full-time wage and salary workers (aged 15-64) who have been with the same employer for at least one year.

c) Net earnings.

d) Unweighted average (excluding results from administrative data).

e) 2006-10 for the United States, 2008-10 for Spain (administrative data) and 2007-09 for Greece.

Source: OECD calculations for household or labour force data: the European Union Statistics on Income and Living Conditions (EU-SILC) for European countries, Household, Income and Labour Dynamics (HILDA) for Australia, German Socio-Economic Panel (GSOEP) for Germany, and national labour force surveys for France, the United Kingdom and the United States; calculations using administrative data: for Portugal provided by Pedro Portugal based on the *Quadros de Pessoal* (2003-09) and *Inquérito Único* (2010-12), for Spain provided by Marcel Jansen, Sergi Jimenez and Jose Ignacio Garcia Pérez based on the *Muestra Continua de Vidas Laborales*, and for the United Kingdom provided by Michael Elsby, Donggyun Shin and Gary Solon (2013) based on the New Earnings Survey.

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reductions in real earnings. The incidence of nominal earnings freezes has increased modestly in absolute terms by almost 3 percentage points, but over 50% in proportional terms. The increase in the incidence of nominal earnings freezes appears to be particularly large in Greece, where it increased by 26 percentage points and in Portugal where it increased by 11 percentage points (using administrative data). In most countries, the degree of nominal DWR has been relatively stable except in Estonia, Greece, the Netherlands, Poland, Spain (administrative data) and the United Kingdom (administrative data), where it increased considerably.[21] The incidence of employees experiencing real earnings cuts despite receiving higher nominal earnings generally declined as the earnings-growth distribution shifted to the left. Comparing the two sets of results based on household or labour force surveys, on the one hand, and administrative data, on the other, for Portugal, Spain and the United Kingdom suggests that the proportional increase in nominal wage freezes is considerably stronger in the administrative data than in the household data. As a result, the increase in the estimated share of notional wage cuts that is prevented by nominal DWR also tends to be much stronger in the administrative data.

- *Panel C.* Before the crisis in 2007, both nominal and real DWR played a role, although real DWR appears to have been somewhat more important on average across countries. This is indicated by the higher spike at zero in the distribution of real earnings changes (right panel) than in the distribution of nominal earnings changes (left panel) in both absolute terms and relative to the frequency of either small increases or declines in earnings. However, by 2010 the picture had changed dramatically. The importance of nominal DWR appears to have risen substantially, with the incidence of nominal wage freezes increasing substantially both in absolute and relative terms. This is consistent with the flattening of the Philips curve documented in Figure 2.2. By contrast, there is no longer evidence of a spike at zero in the distribution of real earnings changes, suggesting that real DWR has effectively disappeared. The importance of both sources of DWR before the start of the crisis and the increase in the relative importance of nominal DWR during the crisis is consistent with evidence presented in Box 2.3 using administrative data for Spain for the period 2007 to 2012.[22] Moreover, these data also show that nominal DWR has increased substantially in Spain since 2010, with approximately one in two notional wage cuts being prevented by nominal DWR in 2012. For low-wage workers, the incidence of nominal DWR is even more important, affecting over two-thirds of the workforce. This may well have contributed to the importance of job losses among low-wage workers.

Wage-setting institutions play an important role in shaping wage adjustments

The role of policies and institutions for nominal DWR may have become increasingly important since the start of the crisis. Whereas before the crisis, nominal wage freezes may have largely reflected concerns by employers about the adverse effects of nominal wage cuts on motivation and productivity, such concerns may have been overridden by the scale of the crisis. Not only may nominal wage cuts in bad times be less easy to avoid as the survival of the firm may be at stake, but concerns about the potential adverse productivity effects of nominal wage cuts may also become less relevant. For example, Smith (2013) shows, using data for the United Kingdom, that job satisfaction declines sharply following nominal wage cuts, but that this effect disappears if they are widely shared across peers.[23] Consequently, it is plausible that the increase in the importance of nominal DWR since the start of the crisis reflects the reluctance of workers to accept nominal wage cuts and the role of wage-setting institutions.

Box 2.3. **Analysing downward wage rigidity: An application using administrative data for Spain***

This box analyses downward nominal and real wage rigidity using administrative data for Spain from the start of the global financial crisis in 2007 to 2012. Spain is of particular interest since unemployment has increased to over 25% as a result of the global financial crisis, while the incidence of long-term unemployment more than doubled. The high quality nature of the administrative data not only help to draw reliable inferences about the debate on wage rigidity for Spain, but can also be used to test the robustness of results based on household data for Spain. The latter is done in the main text.

In order to analyse downward wage rigidity, the main challenge is to construct a notional distribution of wage changes that is not affected by downward wage rigidity. Notional distributions have been identified in the literature either by assuming that the wage-change distribution is symmetric and the right-hand side of the wage-growth distribution is not affected by wage rigidity (Card and Hyslop, 1997) or by assuming that in specific episodes characterised by high nominal and real wage growth downward wage rigidities are not binding and the resulting notional wage-change distribution is time invariant (Kahn, 1997). Unfortunately, neither of these approaches works in the present context as the data do not contain any episodes with very high wage growth and neither is it reasonable to assume that the wage-change distribution from the median to the right is unaffected by downward wage rigidities (as will become clear below). The present analysis, therefore, does not attempt to identify notional wage-change distributions, but instead proceeds descriptively.

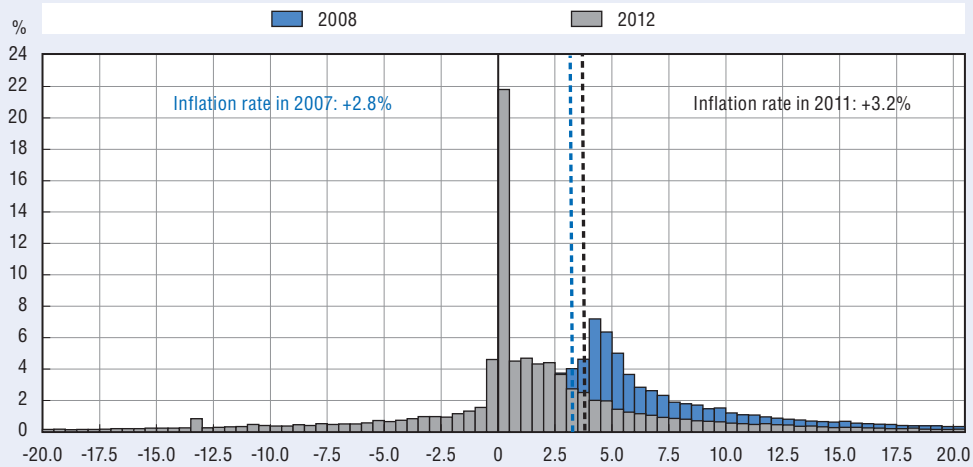
The figure below assesses how the wage-growth distribution since the start of the global financial crisis has evolved by comparing the wage-change distribution in 2008 with that in 2012. To this end, the wage-growth distribution is divided into bins of 0.5% each. The vertical axis measures the fraction of the workforce in each bin. In order to give an indication of the extent of real wage rigidity, the expected rate of inflation is also represented in each year (measured by the inflation rate one year hence):

- In 2008, there is only modest evidence of downward wage rigidity and real DWR appears to be more important than nominal DWR. The share of workers in the bin that contains zero is about 1.7 percentage points higher than the shares in the adjacent bins. Given the observed number of nominal wage cuts and wage freezes, this means that about one in ten notional wage cuts were prevented by nominal DWR. Real DWR seems more important, with a considerable spike around the level of inflation and significant heaping in the bins immediately to the right, although without estimating a notional wage change distribution, it is difficult to establish how important real DWR precisely is. The relative importance of real wage rigidities may reflect the role of automatic indexation clauses in collective bargaining agreements (OECD, 2013c).
- Between 2008 and 2012, the importance of downward wage rigidity appears to have increased substantially as the wage change distribution has shifted to the left. However, in contrast to the situation in 2008, DWR largely takes the form of nominal DWR, while there is little evidence of real DWR. While nominal wage cuts and wage freezes have both become more common, the incidence of nominal wage cuts increased from 13% to 24%, while the incidence of wage freezes increased from about 3% to 22%. Consequently, it appears that the number of notional wage cuts prevented by nominal DWR increased from one in six in 2008 to almost one in two in 2012.

Box 2.3. **Analysing downward wage rigidity: An application using administrative data for Spain*** *(cont.)*

The incidence of nominal downward wage rigidity has increased dramatically in Spain since the start of the global financial crisis

Percentage of full-time job stayers (aged 15-64) in the workforce, 2008 and 2012[a, b]



a) Gross monthly earnings measured by contribution bases (censored at 90th percentile).
b) Excluding firms with less than three employees in non-agricultural market sector, temporary-agency workers, interns and apprentices.

Source: Calculations by Marcel Jansen, Sergi Jimenez and Jose Ignacio Garcia Pérez based on *Muestra Continua de Vidas Laborales*.

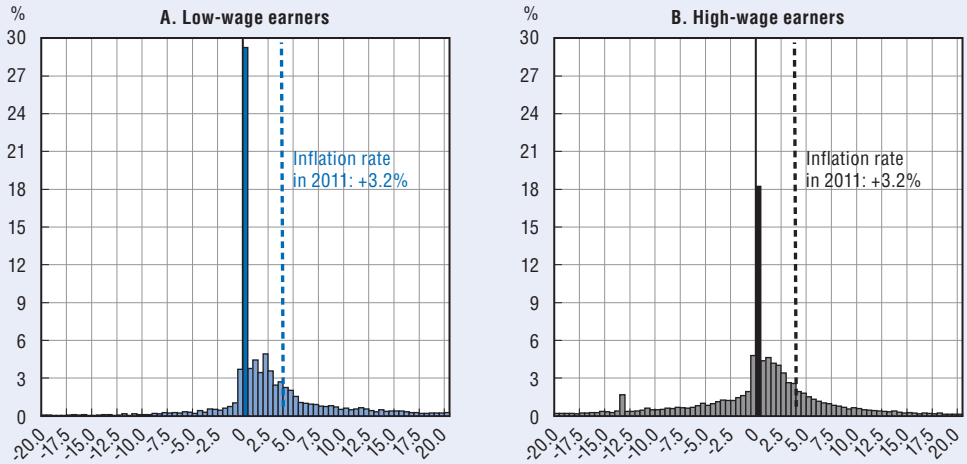
StatLink *http://dx.doi.org/10.1787/888933132070*

The figure below presents similar information for low and high-wage workers. Low-wage workers are defined as those in the bottom tercile of the wage distribution (in levels) in the base year, while high-wage workers are those in the top tercile. The figure shows a qualitatively similar pattern for the two earnings groups. For both groups real DWR was more important in 2008 (not reported), while nominal DWR was much more important in 2012. However, the overall importance of downward wage rigidities in both years is much more important for low-wage workers than for high-wage workers. In 2012, the incidence of nominal wage freezes is considerably larger than the share of nominal wage cuts among low-wage earners. As many as two-thirds of notional nominal wage cuts may have been prevented by nominal DWR. In contrast, for high-wage workers, the incidence of nominal freezes is significantly smaller than the incidence of nominal wage cuts. Only about a third of notional nominal wage cuts among high-wage workers may have been prevented by nominal DWR. The results, thus, suggest that wages are considerably more flexible downwards for high-wage workers than for low-wage workers. This may imply that, to a relatively large extent, the adjustment to the crisis took the form of wage losses for high-wage workers, while for low-wage workers job losses were relatively more important. The relative flexibility of high wages may reflect the greater role of bonus and other non-pay benefits for high-wage workers (Babecky et al., 2012), but also the greater importance of *de facto* wage floors for low-wage workers.

Box 2.3. **Analysing downward wage rigidity: An application using administrative data for Spain*** *(cont.)*

The incidence of nominal downward wage rigidity is concentrated among low-wage workers

Percentage of full-time job stayers (aged 15-64) in the corresponding earnings tercile, 2012[a, b]



a) Gross monthly earnings measured by contribution bases (censored at 90th percentile).
b) Excluding firms with less than three employees in non-agricultural market sector; temporary-agency workers, interns and apprentices.
Source: Calculations by Marcel Jansen, Sergi Jimenez and Jose Ignacio Garcia Pérez based on *Muestra Continua de Vidas Laborales*.

StatLink http://dx.doi.org/10.1787/888933132089

The stylised facts on the increased incidence of nominal DWR and the reduced incidence of real DWR documented here are unlikely to be related to the major labour market reform that was implemented in 2012 given the likely lag involved before the effects of this reform would be felt. Instead, they are likely to reflect a shift in the objectives of wage-setting institutions, such as minimum wages and collective bargaining agreements, from preserving earnings in real terms to preserving earnings in nominal terms. For example, the minimum wage has been effectively frozen in nominal terms since 2009/10 (increasing less than 2% since the middle of 2009 to the beginning of 2014). Nevertheless, the labour market reform may have important effects on the process of wage adjustment in the near future. Indeed, the OECD's recent evaluation of the labour market reform suggests this is already starting to have effects on wage moderation and job creation (OECD, 2013c).

* This box was prepared in collaboration with Marcel Jansen, Sergi Jimenez and Jose Ignacio Garcia-Pérez. Research assistance by Alfonso Arellano, from FEDEA, is gratefully acknowledged.

While evidence by Holden and Wulfsberg (2014) suggests an important role for policies and institutions for nominal DWR already before the crisis,[24] their role may have increased further as the objective of various wage-setting institutions has effectively shifted from preserving earnings in real terms towards preserving earnings in nominal terms. For example, given the current economic situation, trade unions may not have enough bargaining power to maintain real wages, but may still be able to maintain nominal wages. Moreover, in several countries, including in Ireland, Portugal and Spain, the statutory minimum wage has been virtually constant in nominal terms during most of the crisis period.

The wages of new hires tend to be much more responsive to the cycle than those of incumbent workers…

While there is ample evidence of downward wage rigidity among job stayers, whether or not downward wage rigidities have an impact on the amplitude and persistence of unemployment fluctuations is subject to considerable debate. Indeed, the view that wage rigidities account for an important part of the volatility and persistence of unemployment over the business cycle has recently been challenged by a number of influential studies which argue that what matters for unemployment fluctuations is not the wage-setting process in existing job matches, but the way wages are determined in new job matches (Pissarides, 2009; Haefke et al., 2013). Consequently, a number of recent empirical studies analyse the cyclicality of wages separately for job stayers, job movers and new hires from non-employment. Most of these studies suggest that the wages of job movers and new hires are much more sensitive to the business cycle than those of job stayers and may even be as pro-cyclical as productivity (Devereux, 2001; and Haefke et al., 2013, for the United States; Devereux and Hart, 2006, for the United Kingdom; Martins et al., 2012; and Carneiro et al., 2012 for Portugal). The presence of systematic differences between job stayers and job starters points to the importance of long-term implicit contracts between employers and employees, and can give rise to persistent cohort effects that reflect the labour market situation at entry (Beaudry and DiNardo, 1991).

While starting wages appear to be more sensitive to the business cycle than wages in ongoing job spells, little is known about the wage-setting process in new job matches. In principle, one would expect wage-setting institutions, such as minimum wages and collective wage bargaining, to have an impact on the cyclicality of wages among both incumbent workers and new hires. Moreover, it seems plausible that the fairness considerations that explain the reluctance of employers to engage in nominal wage cuts of incumbent workers also apply, at least to some extent, to the way wages are set for new recruits. However, evidence on the role of wage-setting institutions or internal pay structures for the determination of wages for new hires is scarce. A notable exception is Galuscak et al. (2012). Using a firm-level survey for 15 European countries, they find that the internal pay structure is more important for determining hiring wages than external labour market conditions. They also suggest that the role of external labour market conditions tends to be less important for workers who are covered by a collective wage agreement.

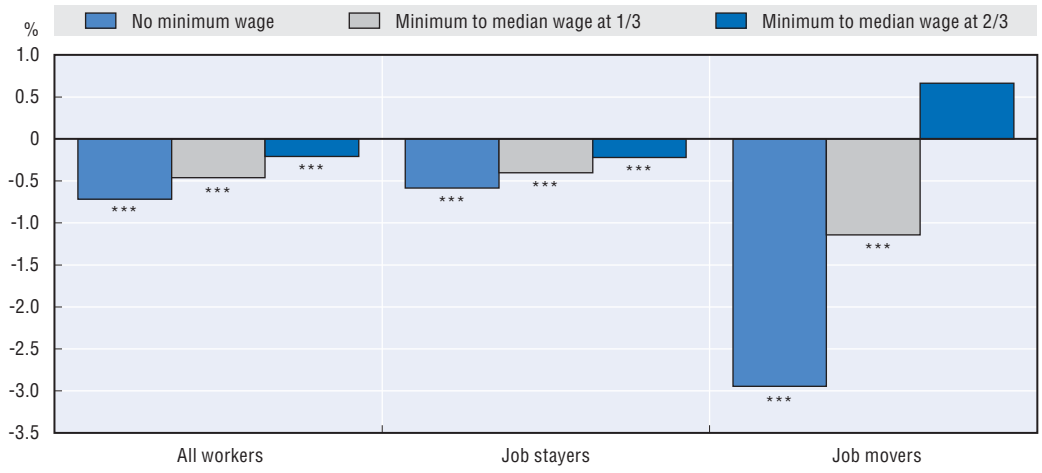
… but also depend on the nature of wage-setting institutions

In order to complement the existing evidence of the cyclicality of wages for job stayers and job starters, Figure 2.4 provides some new evidence using worker-level panel data for selected European countries during the period 2005-10. More specifically, the figure represents estimates of the elasticities of hourly wages with respect to the regional unemployment rate for all workers, job stayers and job starters. The baseline estimates of the wage elasticities control for composition effects through the inclusion of worker-fixed effects as well as for the possible role of the national statutory minimum wage.[25] The effect of the minimum wage is analysed by allowing the elasticity of wages to vary with respect to the regional unemployment rate according to the minimum wage by including an interaction term between the unemployment rate and the minimum wage relative to the median wage in the region. The results provide two important insights:

- The wages of job starters are considerably more sensitive to fluctuations in unemployment over time than the wages of job stayers. The results suggest that a one percentage-point increase in the regional unemployment rate reduces wages in new

Figure 2.4. **Wages are more cyclical for new hires than incumbent workers**

Percentage change in real hourly wage in response to a one percentage-point increase in the regional unemployment rate for all workers, job stayers and job movers[a]



***, **, *: statistically significant at 1%, 5% and 10% levels, respectively.

a) Estimates control for person fixed effects.

Source: OECD estimates based on the European Union Statistics on Income and Living Conditions (EU-SILC) and national labour force surveys for France and the United Kingdom.

StatLink http://dx.doi.org/10.1787/888933132108

matches by 2.9% in the absence of a national minimum wage compared with 0.6% for wages in ongoing spells. The cyclicality of wages in new matches in the absence of a minimum wage is similar to the ballpark figure of 3% that is cited in Pissarides (2009). While the 3% figure is considered to be broadly consistent, in principle, with one-to-one movements between wages and productivity under flexible wages, Haefke et al. (2013) note that small frictions in wage setting on the hiring margin can have potentially large implications for the evolution of unemployment over the business cycle.

- The sensitivity of wages appears to be significantly affected by the presence of a national minimum wage, as identified by the interaction term between the regional unemployment rate and the ratio of the national minimum wage to the median wage in the region. More specifically, the estimates suggest that an increase in the ratio of minimum wage to the median wage of 10 percentage points reduces the wage elasticity of job stayers by about 0.1 and that of job starters by 0.3 percentage points. Evaluating the wage elasticities using 0.33 and 0.67 for the ratio of the minimum wage to the median, which corresponds to approximately the minimum and the maximum value across OECD countries (Box 2.4), yields wage elasticities that are considerably smaller than those obtained in the absence of minimum wages.

While these results seem plausible in the light of recent studies that have found that the wages of job starters are much more sensitive to the cycle than the wages of job movers, they should be interpreted with considerable caution. Even though the analysis controls for composition effects that result from movements in and out of the workforce through the inclusion of person-fixed effects, it does not control for changes in the composition of newly created jobs over the business cycle. A number of recent studies by Gertler and Trigari (2009), Hagedorn and Manovski (2013), Gertler et al. (2013) argue that estimates of the wage elasticity among job starters are biased downward (larger in absolute value) because the jobs created in bad times tend to be of lower quality than those that are created in good times,

even after controlling for person-fixed effects, due to cyclical changes in the composition of job characteristics, firm characteristics or match quality. Using different approaches, they provide evidence using data for the United States that most or even all of the observed difference in wage elasticities between job stayers and job starters disappears when controlling for job characteristics or differences in match quality.[26] These studies, therefore, not only suggest that downward wage rigidities among job stayers are likely to have important implications for the persistence of unemployment in a recovery, they also suggest that the new jobs that are being created are of lower quality (e.g. in European countries new jobs are more likely to take the form of temporary contracts).

While the recent debate on the cyclicality of wages at the margin questions somewhat the relevance of downward wage rigidities among job stayers for understanding cyclical variations in unemployment, this does not imply that the nature of wage-setting among job stayers does not matter. There are at least three reasons for this. First, wage dynamics for job stayers and job starters are unlikely to be completely independent. Indeed, the results in Figure 2.4 suggest that minimum wages affect wage dynamics among both groups of workers. Second, the evolution of wages after hiring also matters (Kudlyak, 2011). If wages were to be fully flexible at the margin and wage differences related to business conditions at the time of hiring fully persistent, job-creation incentives should remain broadly constant over the cycle.[27] By contrast, if differences in wages related to market conditions at the time of hiring dissipate over the course of the employer-employee relationship, job creation should be more strongly pro-cyclical. Third, even if wage rigidities among job stayers would not affect employment dynamics over the business cycle, the wage dynamics of job stayers remain crucially important for determining the rate of inflation, the growth in unit labour costs and external competitiveness.

2. How is the burden of wage adjustment shared over the workforce?

As already mentioned, the interpretation of aggregate wage dynamics over the course of the business cycle is complicated due to the confounding role of changes in workforce composition which tend to be particularly pronounced in deep recessions. Moreover, only average wage developments are captured and not the way wage adjustments are distributed over the workforce.[28] To shed light on these issues, this section documents how wage growth has adjusted since the start of the crisis for different segments of the workforce. It also discusses the relative importance of pure wage effects and composition effects.

The slowdown in real earnings growth was widely spread across the earnings distribution…

In order to analyse how real earnings adjustments varied among workers according to their level of earnings, the difference in the average annual growth rate of real earnings between the period since the start of the crisis (2007-12) and the period before the crisis (2000-07) is documented for workers at the 1st (bottom), 5th (median) and 9th (top) deciles of the earnings distribution (Figure 2.5). The analysis is based on the *OECD Earnings Distribution Database* which provides information on the distribution of earnings among full-time employees across 26 OECD countries. The following results emerge:

- The slowdown in the growth rate of earnings was fairly evenly spread across the earnings distribution (Figure 2.5). The change in the annual average growth rate of real earnings amounted to -1.0 percentage points at the bottom decile, -1.1 percentage points

at the median and -1.5 percentage points at the top decile. The somewhat smaller slowdown in earnings growth at the bottom of the distribution is consistent with the analysis for Spain in Section 1 which suggested that nominal downward wage rigidities tend to be more pronounced among low-paid workers. The relatively small slowdown at the bottom of the distribution may also reflect the role of minimum wages and collective bargaining agreements in OECD countries where they are binding. While these factors are likely to have mitigated the social consequences of downward wage adjustments, even modest declines in earnings or earnings growth can lead to economic hardship among workers in precarious jobs and living conditions.

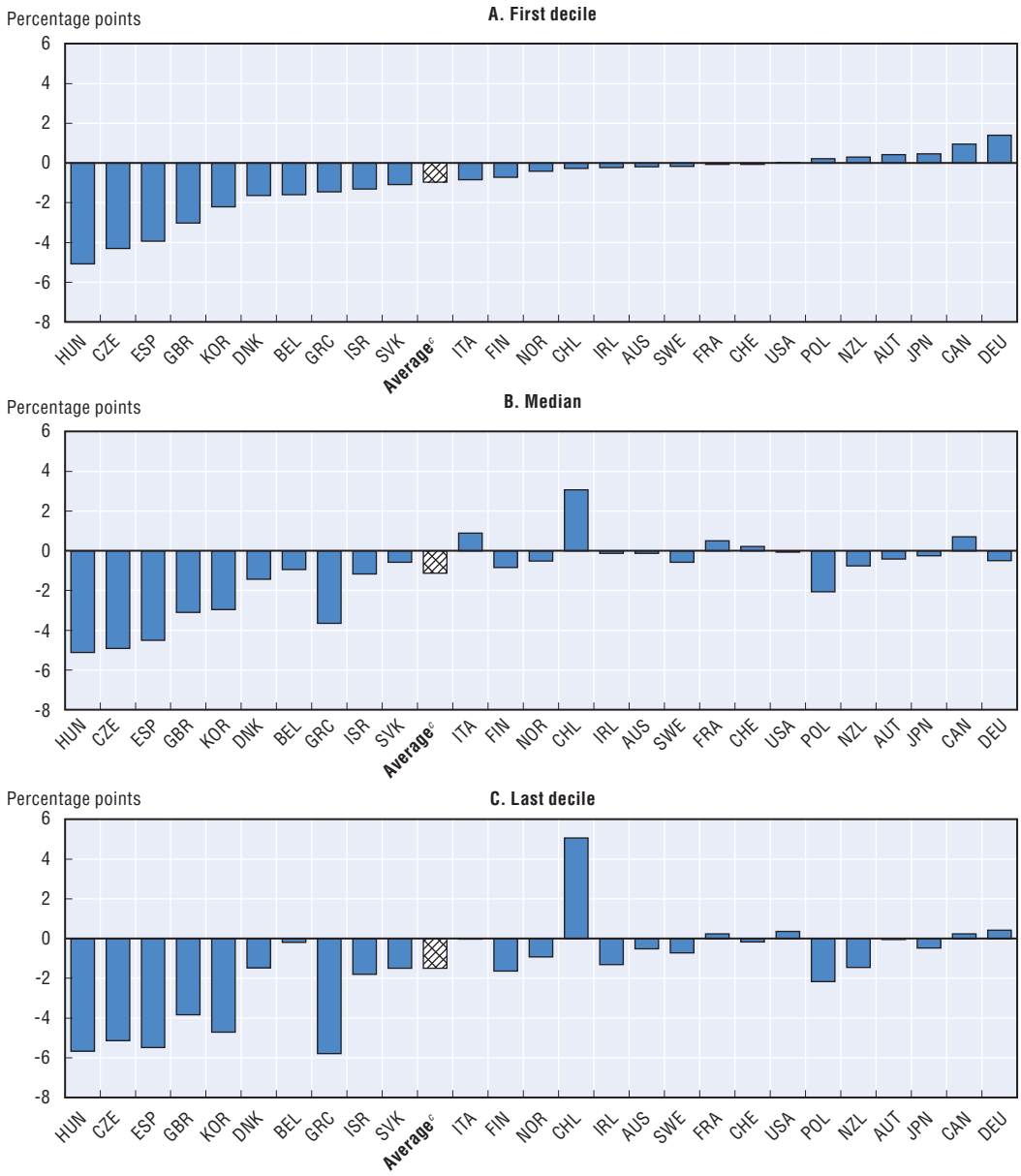
- The evolution of the distribution of earnings growth differs, however, importantly across countries.
  - The slowdown in earnings growth at the bottom of the distribution was most pronounced in the Czech Republic, Hungary, Korea, Spain and the United Kingdom (between 2 and 5 percentage points).[29] While earnings growth at the bottom of the distribution in Germany and the United States increased or remained stable, these countries experienced substantial absolute declines in real earnings in the seven years before the crisis, of 8% and 2% respectively. The continuous decline in real earnings growth at the bottom of the earnings distribution in the United States since the start of the 2000s has reinforced policy concerns about the rising incidence of low-wage employment and has led to calls for raising the federal minimum wage. The Obama administration has proposed to raise the federal minimum wage to USD 10.10 in 2016 (see Box 2.4).[30]
  - The slowdown in the growth rate of the median real earnings was most pronounced in the Czech Republic, Hungary and Spain (about 5 percentage points) and in Greece, Korea, Poland and the United Kingdom (more than 2 percentage points). However, there was a sizeable pick-up in growth by about 3 percentage points in Chile.
  - Earnings growth at of the top decile declined by over 5 percentage points relative to the pre-crisis period in the Czech Republic, Greece, Hungary and Spain and by over 3 percentage points in Korea and the United Kingdom, while it increased by about 5 percentage points in Chile.

... leaving earnings inequality largely unchanged in most countries

As a result of real wage adjustments across all segments of the workforce, overall earnings inequality (D9/D1) has remained unchanged during the crisis on average across countries and in more than two-thirds of countries (Figure 2.6). The decile ratio D9/D1 of earnings over the period 2007-12 decreased by 0.4 point or more in Greece, Hungary and Spain. In contrast, overall earnings dispersion increased during the crisis by 0.2 points in Australia and Denmark, and 0.4 points in the United States. The relatively large increase in the United States is driven by rising earnings dispersion in the top half of the earnings distribution.

Figure 2.5. **The slowdown in real wage growth was widely spread**

Difference in the average annual growth rate of real earnings between 2000-07[a] and 2007-12[b] at different deciles of the earnings distribution



Note: Estimates are based on gross earnings of full-time wage and salary workers. However, this definition may 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*. Countries are shown by ascending order of the difference in average annual real earnings growth for the first decile.

a) 2000-08 for Switzerland; 2000-09 for Chile; 2001-07 for Israel; 2001-08 for Poland; 2002-07 for the Slovak Republic; and 2004-07 for Greece, Italy and Spain.

b) 2007-10 for France; 2007-11 for Israel; 2008-10 for Switzerland; 2008-12 for Poland; and 2009-11 for Chile.

c) Unweighted average of countries shown.

Source: OECD calculations based on the *OECD Earnings Distribution* (database), *http://dx.doi.org/10.1787/data-00302-en*.

StatLink *http://dx.doi.org/10.1787/888933132127*

Box 2.4. **The role of minimum wages in reducing low pay**

While much policy concern has focused on the large numbers of persons out of work, low-paid employment is also of concern (see the discussion of job quality in Chapter 3), particularly when it is associated with in-work poverty or reflects situations where workers are unable to find jobs that make full use of their skills. These concerns are also relevant in countries such as Germany, where unemployment has declined sharply throughout the crisis, and the United States, where unemployment has fallen considerably from its peak in 2009. In both countries, the proportion of low-wage earners, earning less than two thirds of median earnings, is above the OECD average and respectively concerns approximately one-fifth of employees in Germany and one-quarter in the United States. The national government in both countries has proposed measures to address problems associated with low-wage employment by either introducing a national legal minimum wage in the case of Germany or substantially raising the existing minimum wage in the case of the United States. Apart from improving equity by raising wages of low-wage earners, adequately set minimum wages can also help to encourage inactive people on the margin of the labour market, in particular those with low skills, to actively search for a job.

In setting the level of the minimum wage, a careful balancing act is required since too high a level may reduce employment opportunities for low-skill workers, while too low a level may fail to address in-work poverty and could undermine work incentives. OECD countries have drawn this balance very differently. From the point of view of workers, what matters is the minimum wage in *net* terms, i.e. their take-home pay after they pay taxes and social security contributions, and including any in-work benefits for low-income workers. By contrast, employers are more concerned about the minimum wage in *gross* terms, i.e. the cost of employing a minimum-wage worker once payroll taxes and employers contributions are added, and whether the resulting cost places them at a competitive disadvantage. The figure below provides information on the net and the gross minimum wage for the 25 of the 34 OECD member countries that have a statutory minimum wage in place. As a central benchmark, it also reports the minimum wage without taking account of employer social-security contributions. To enhance cross-country comparability, the three different measures of the minimum wage are shown as a proportion of the corresponding median wage of full-time workers in each country. The information refers to 2012.

In terms of the central benchmark, there are broad variations in the level of the minimum wage relative to the median wage across countries. While many countries set the minimum wage at about one-half of the median wage, the minimum wage ranges from only a little more than one-third of the median wage in the Czech Republic, Estonia, Japan and the United States to two-thirds of the median wage or more in Chile and Turkey.[a] When converted into a 2012 equivalent value, the German proposal to introduce a legal hourly minimum wage of EUR 8.50 in 2017 implies a minimum wage set at about one-half the median wage, which is also the level implied by the Obama Administration's proposal to raise the US hourly minimum wage to USD 10.10 in 2016.[b], [c] These reforms would thus situate both countries close to the OECD average.

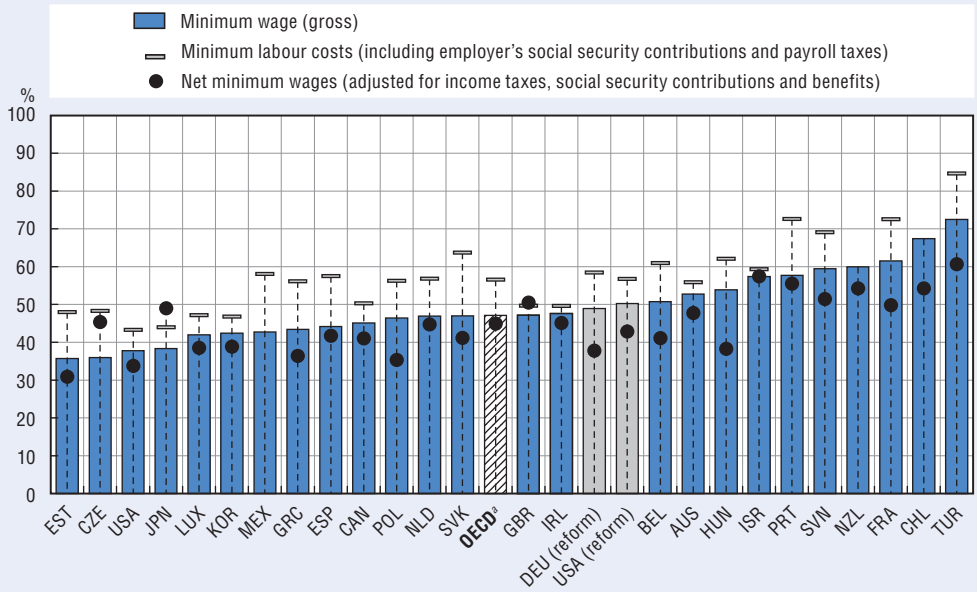
OECD countries also differ significantly in terms of both the take-home pay of minimum wage workers and the gross costs employers face in employing them. The difference between the gross and the net minimum wage provides an indication of the tax wedge at the minimum wage. On average, the tax wedge at the minimum wage corresponds to 20%. In general, take-home pay rises more steeply with the level of the minimum wage than gross labour costs, because the tax and benefit systems typically seek to reinforce the impact of the minimum wage in raising living standards of effected workers while minimising any possible disemployment effects by cushioning the cost impact for firms. There are large country variations across the OECD. Employers are not subject to social security contributions and other taxes at the minimum wage in Chile and New Zealand and receive substantial reductions in Belgium and France. In others, non-wage costs relative to gross minimum wages are lower than 10% in Australia, Israel, Ireland and the United Kingdom, and amount to 30% or more in the Czech Republic, Mexico, the Slovak Republic and Spain. There is a large empirical literature on the possible employment effects of minimum wages (see, for example, CBO, 2014, for a survey). While the conclusions from this literature are not unanimous, the

Box 2.4. **The role of minimum wages in reducing low pay** *(cont.)*

majority of studies suggest that the adverse employment effects of minimum wages tend to be small overall, but can be non-negligible for specific groups such as youth. There are a number of ways minimum wages can be set to minimise any adverse employment effects (Martin and Immervoll, 2007). For example, minimum wages can be differentiated to allow for lower wages of young workers (e.g. in Australia, Belgium, Greece, Ireland, the Netherlands and the United Kingdom) or regional differences in economic conditions (Canada, Japan, Mexico and the United States). Adverse employment effects can further be mitigated by allowing for reduced employer social security contribution rates for workers at the minimum wage to lower non-wage labour costs (Belgium, France, Hungary, Ireland and the United Kingdom). Some countries have also set up independent bodies to set or advise on the appropriate level of the minimum wage (Australia, France, Ireland and the United Kingdom).

Some OECD countries set the legal minimum wage much higher relative to the median wage than others

Ratio of minimum to median wage of full-time employees



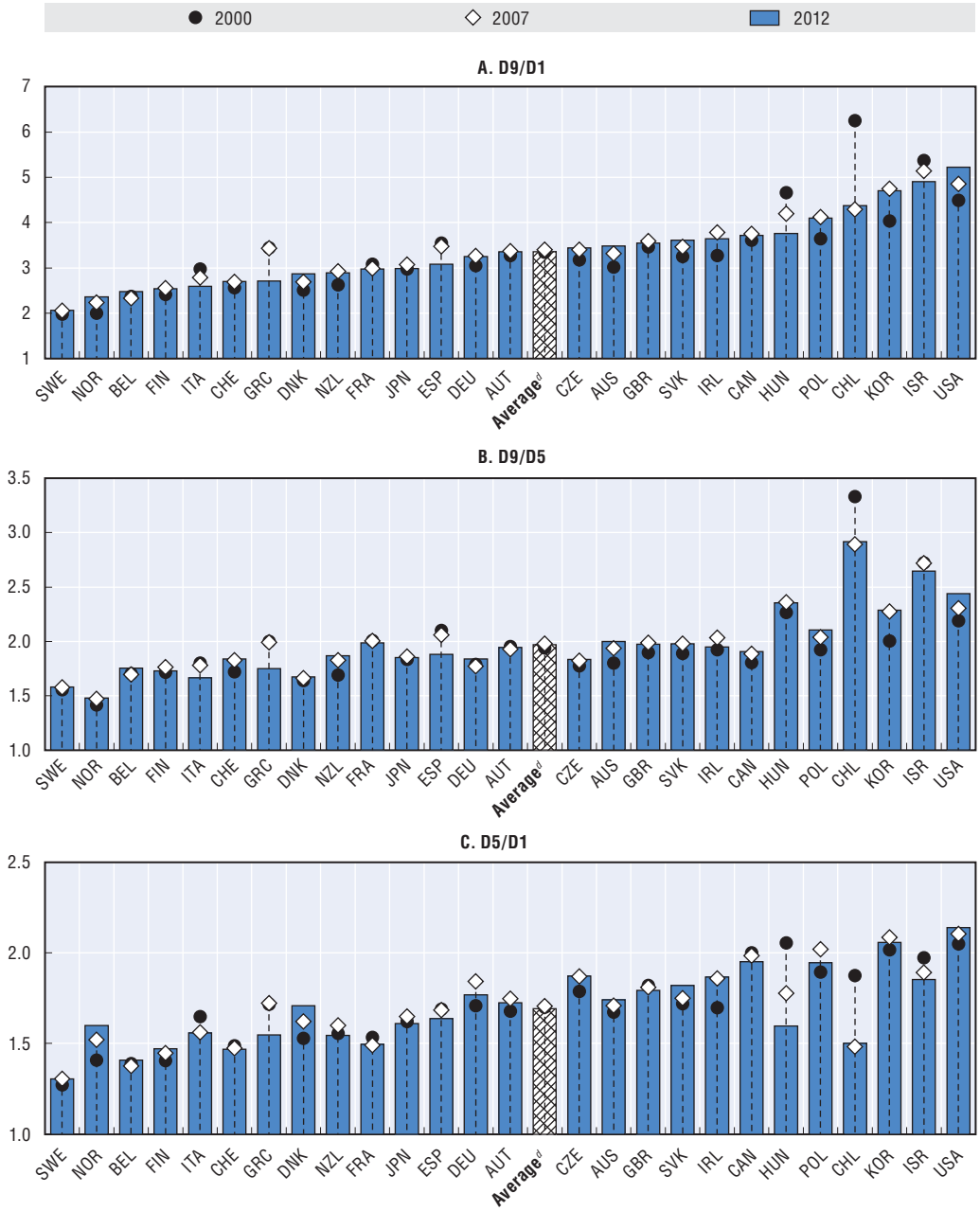
Note: Countries are ordered by ascending order of the minimum-to-median wage ratio.
a) Median ratio for the countries shown.
Source: OECD (2014), *OECD Minimum Wage* (database), *http://dx.doi.org/10.1787/data-00313-en*; and OECD (2014), *OECD Tax-Benefit Models*, *http://dx.doi.org/10.1787/data-00201-en*.

StatLink http://dx.doi.org/10.1787/888933132146

a) The reason why the estimates of the minimum wage are so high in Turkey and Chile is partly because they are calculated relative to the median wage of all workers and not just those in the formal sector. The ratio of the minimum wage to the median wage in the formal sector in Chile is 0.65, three percentage points lower than in the figure in the box, but still substantially above the OECD average.
b) The federal minimum wage would increase from its current level of USD 7.25 per hour to USD 10.10 in three steps each year from 2014 to be fully implemented in the second half of 2016 and then revised annually for inflation as measured by the consumer price index.
c) For Germany and the United States, the 2012 values retained in the figure of the box are estimated by deflating the respective 2017 and 2016 values of the minimum wage by the consumption price index.

Figure 2.6. **The crisis left wage inequality largely unchanged**

Earnings dispersion in 2000,[a] 2007[b] and 2012[c]



Note: Estimates based on gross earnings of full-time wage and salary workers. However, this definition may 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. Countries are shown by ascending order of the ratio D9/D1 in 2012.

a) 2001 for Israel and Poland; 2002 for the Slovak Republic; 2004 for Greece, Italy and Spain.

b) 2008 for Poland and Switzerland; and 2009 for Chile.

c) 2010 for France, and Switzerland; and 2011 for Chile and Israel.

d) Unweighted average of countries shown.

Source: OECD calculations based on the *OECD Earnings Distribution* (database), *http://dx.doi.org/10.1787/data-00302-en*.

StatLink *http://dx.doi.org/10.1787/888933132165*

Box 2.5. **Decomposing aggregate wage changes into composition and pure wage effects**

So far, the analysis of changes in average real earnings or at different points in the earnings distribution has not taken into account compositional effects. In order to analyse the role of these effects on the evolution of real hourly wage growth, various decompositions methods are employed in order to separate out pure wage effects from composition effects. The analysis focuses on real hourly wages using household or labour force survey data for 20 countries for the period 2004 to 2010. Composition effects are identified based on the following determinants of wages: worker characteristics (potential work experience measured in five-year intervals, education measured as either low secondary, upper secondary and tertiary, and gender) and job characteristics (part-time/full-time, temporary/permanent contract, occupation). In order to examine the impact of the crisis on wages, this box focuses on the change in the growth rate of wages relative to the pre-crisis trend. The growth rate during the crisis refers to the average annual growth rate during the three-year window 2007-10, while the pre-crisis trend is defined as the average annual growth rate during the three-year period 2004-07. For further details on the methodology and the results at different parts of the distribution, see the web annex of this chapter (OECD, 2014b).

The box figure below presents the decomposition results based on average real wages. It confirms that average real wage growth has tended to slow down relative to the pre-crisis trend, but also shows that in several countries some of the decline in aggregate average wage growth is obscured by composition effects that are driven by movements in and out the workforce. Once composition effects are netted out, the slowdown increases from 1.1 to 1.3 percentage points. Looking at the more detailed results by period in OECD (2014b) suggests that composition effects are substantial and positive in the period following the crisis compared with the degree of real wage growth since the start of the crisis. The rather modest impact of composition effects on the slowdown in average wage growth since the start of the crisis in the box figure therefore reflects the fact that composition effects are small relative to the considerable slowdown in average wage growth since the start of the crisis, but also that composition effects tended to be positive even before the crisis as a result of skill upgrading and population ageing (see Chapter 1 of this publication for a discussion of these trends). The tendency of composition effects to mask the extent of the decline in real wage growth could indicate that employment losses since the start of the crisis are biased towards workers with below-average wages, such as low-skilled workers and workers on temporary contracts.

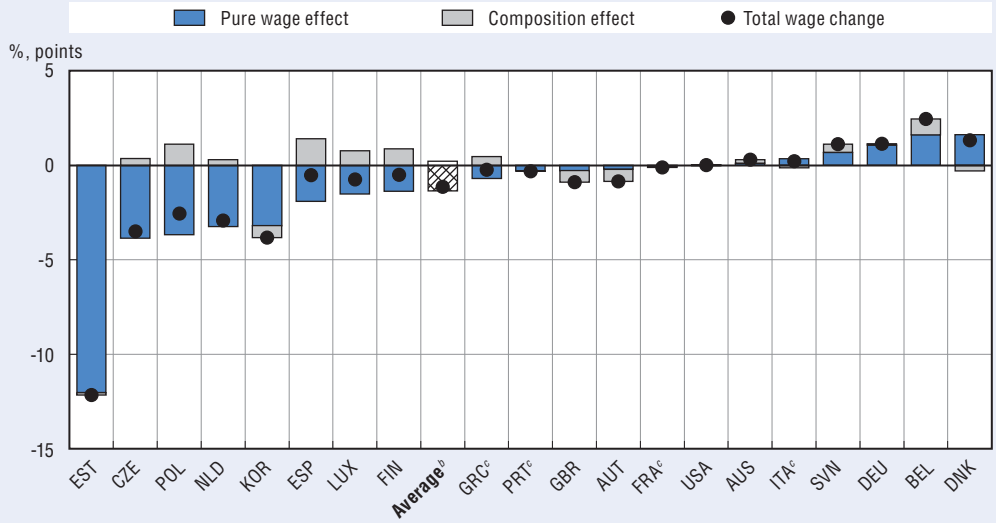
Similar patterns are observed when decomposing wage changes at different parts of the distribution (see the web annex in OECD, 2014b). Large and positive composition effects are observed during the crisis in the majority of countries considered and at all parts of the wage distribution. The largest composition effects are observed in the top half of the wage distribution in countries such as Greece, Portugal and Spain which all have seen massive reductions in employment during this period. Nevertheless, as in the case of average wages, composition effects have only a modest impact on the slowdown of wages at different parts of the distribution. On average across the countries considered, netting out composition effects changes the slowdown in real wage growth from 1.2 percentage points to 1.3 at the first wage decile, from 1.3 to 1.6 at the median wage and from 0.8 to 1.0 at the last wage decile.* Consequently, adjusting for composition effects has little impact on the conclusions in the main text that the slowdown in wages was widely spread across the workforce. There is no longer evidence that the slowdown was somewhat smaller among low-paid workers. However, this reflects differences in the country sample, data period and concept of earnings used and not the role of composition effects.

* The numbers cited here differ from those in the main text because of differences in country coverage, the period considered and data sources used.

Box 2.5. **Decomposing aggregate wage changes into composition and pure wage effects** *(cont.)*

Real average wage growth has tended to slow somewhat more strongly once composition effects are taken into account

Percentage-points change in the average annual growth rate of mean real hourly wages between 2004-07 and 2007-10[a]



Note: Countries are shown by ascending order of the pure wage effect.

a) 2005-07 for the Czech Republic, the Netherlands, Poland, Slovenia and the United Kingdom; 2007-09 for Greece and Korea.

b) Unweighted average of countries shown.

c) Net hourly earnings.

Source: OECD calculations based on the European Union Statistics on Income and Living Conditions (EU-SILC) for European countries, Household, Income and Labour Dynamics (HILDA) for Australia, German Socio-Economic Panel (GSOEP) for Germany, Korean Income and Labour Panel Study (KLIPS) for Korea, and national labour force surveys for France, the United Kingdom and the United States.

StatLink http://dx.doi.org/10.1787/888933132184

Conclusions

The increase in unemployment since the start of the crisis has put considerable downward pressure on real wages in many OECD countries and led to an increase in the number of nominal wage cuts and wage freezes. It a number of cases, further real wage adjustments would be difficult to undertake in the face of significant nominal downward wage rigidities. While the significant real and even nominal wage cuts have helped countries with large current account deficits accumulated prior to the crisis to restore competitiveness, further improvements should be sought on the basis of structural reforms that boost competition in the markets for goods and services.

Wage-setting institutions have a potentially important role for promoting the role of wage flexibility and, therefore, labour market resilience, but also should ensure that wage adjustments are not concentrated on the most vulnerable workers and their families. This may in certain cases lead to difficult policy trade-offs. For example, this chapter provides new evidence that minimum wages have a tendency to reduce the flexibility of wages for both incumbent workers and new hires. However, the chapter also suggests that minimum wages can help to limit the extent of wage adjustments among low-paid workers. In a

number of countries, such as Germany and the United States, concerns about rising wage inequality have given rise to ambitious proposals to introduce or increase the level of the minimum wage.

Wage flexibility and wage-setting institutions not only matter for labour market resilience over the course of the business cycle, but also play a crucial role for shaping structural outcomes. This is important in normal times, but may be especially relevant in the present context where the economic recovery increasingly requires structural adjustments across sectors and occupations. This is particularly the case in the euro area countries hard hit by the crisis where the economic recovery has to come from enhanced competiveness. Analysing the role of wage-setting institutions for structural adjustment remains an important area for further work.

Notes

1. As emphasized in Chapter 3 of this publication, this is important because overall well-being does not just depend on the average level of wages but also on the way they are distributed across the workforce.
2. In this case, the role of wage flexibility is largely distributional and this was essentially the argument for the claim in OECD (2012a) that wage-setting institutions that increase the flexibility of wages to aggregate shocks, such as co-ordination in collective wage bargaining, can help to promote labour market resilience.
3. This may be especially important in countries with policy interest rates close to zero or countries in the euro area without an independent monetary policy.
4. While nominal wage growth and consumer-price inflation were essentially uncorrelated across countries in each year during the period 2010 to 2012, the relationship appears to have become more pronounced in the course of 2013 as consumer prices have started to respond to the slowdown in nominal wage growth. Consumer-price inflation declined from close to 2% in 2012 in most countries to 1.3% in the OECD area as a whole, 0.5% in Ireland, 0.3% in Portugal, and -0.9% in Greece. The recent slowdown in inflation in the euro area periphery has not had a major impact on the speed of the decline in real wages so far.
5. *Nominal* wage rigidities cause cyclical unemployment according to Keynesian economic theory, defined here as rigidities in the responsiveness of nominal wages to prices. Structural unemployment is independent of the degree of nominal wage rigidities. If prices fall but nominal wages adjust with a lag, real wages go up and unemployment rises. As unemployment goes up more workers compete for jobs bidding offer wages down. *Real* wage rigidity, in this context, refers to the responsiveness of real wages to productivity and mark-ups. The structural rate of unemployment is a function of labour market frictions (mark-ups), real wage rigidities and productivity growth.
6. Similar patterns of asymmetric wage adjustment of the business cycle have also been documented in Abbritti and Fahr (2013) and ECB (2012).
7. In many OECD countries, basic pay can only be reduced in nominal terms by mutual consent (MacLeod and Malcomson, 1993; Holden, 1994).
8. The concepts of wage rigidity used here differ from those used in most macro models where nominal rigidities typically refer to the responsiveness of nominal wages to prices and real wage rigidities to the responsiveness of real wages to productivity.
9. Rather than using the actual level of inflation, the expected level of inflation may be more appropriate when analysing real wage rigidity since this is the relevant factor for salary negotiations. Since inflation expectations may differ across regions, sectors and workers, it tends to be difficult to precisely identify the degree of real DWR in the data.
10. So far little attention has been paid to the consequences of downward wage rigidities for employment and unemployment. It has implicitly been assumed that nominal DWR not only drives employment fluctuations but also is consistent with job stayers experiencing a wage freeze (Elsby et al., 2014).
11. These most likely reflect a combination of differences in data sources and data quality, policies and institutions and business cultures.

12. Moreover, nominal DWR may also reduce the size of nominal wage cuts in addition to their incidence (Holden and Wulfsberg, 2014).
13. Elsby et al. (2013), however, question the importance of nominal DWR in the United States as the evidence is based on household surveys and measurement error related to rounding in such data have a tendency to increase the estimated degree of nominal DWR.
14. Blundell et al. (2013) show that in the United Kingdom between 2010 and 2011 70% of employees incurred real wage cuts, 21% nominal cuts and 12% nominal freezes based on the New Earnings Survey.
15. Nominal wage freezes are defined as nominal wage changes between -0.5% and +0.5% when the household data is used as well as when using administrative data for Spain. The broad definition of nominal wage freezes used here implies that the importance of nominal DWR is likely to be overestimated. However, this is unlikely to have a major impact on the qualitative results. When using administrative data for Portugal and the United Kingdom, nominal wage freezes are defined as exact zero changes.
16. While the analysis is restricted to full-time workers, this refers to usual working hours and, therefore, does not exclude the possibility of temporary reductions in actual working hours that result in lower monthly earnings (e.g. short-time work).
17. Major exceptions are Greece and Portugal (using administrative data) where nominal wage freezes affected over a quarter of the workforce in 2010. In Portugal, the incidence of nominal wage freezes increased to 76% in 2012.
18. In Portugal, nominal DWR increased to 95% in 2012. However, before the crisis, it was also extremely high affecting between 73% and 94% of notional wage cuts.
19. The incidence of nominal wage cuts drops from 52% in the household data to 9% in the administrative data in Portugal, from 31% to 24% in the United Kingdom and from 45% to 31% in Spain.
20. Previous evidence for the United Kingdom suggests that rounding has a tendency to increase the reported incidence of zero wage changes in household data (Smith, 2000). This seems to be confirmed by the results for the United Kingdom. The importance of nominal wage freezes is considerably smaller in the administrative data than in the household data. However, the same pattern is not observed in Portugal or Spain. While in the incidence of nominal wage freezes is similar in the context of Spain, it is much larger in the administrative data than in the household data in the case of Portugal (30% versus 5%).
21. This may reflect the role of declining inflation in those countries.
22. In the United Kingdom, the importance of nominal DWR also continued to increase somewhat after 2010 (according to the administrative data). It increased from 10% in 2007 to 24% in 2010 and to 28% in 2012. This is the highest level since the start of the New Earnings Survey in 1976.
23. For a more in-depth discussion of the role of peer effects for subjective well-being, see Chapter 3 of this publication.
24. Holden and Wulfsberg (2014) find that strict employment protection, higher union density and more centralised wage setting are positively correlated with nominal DWR and co-ordination in collective bargaining negatively.
25. This also implies that only workers are taken into account who are employed in at least two years. Job movers include both workers who move directly from one job to another as well as those experiencing intermediate spells of non-employment.
26. Nevertheless, two studies for Portugal by Martins et al. (2012) and Carneiro et al. (2012) control for job and firm characteristics, but still find that starting wages are much more cyclical than wages in ongoing job matches.
27. This is effectively a restatement of the argument by Pissarides (2009).
28. Documenting how the process of wage adjustment is shared across the workforce is of interest in its own right but also provides an indication of the extent to which wage adjustment is concentrated on the most vulnerable and, therefore, the social costs associated with downward wage adjustments. It also provides an indication of the risk that downward wage adjustment reduces consumer spending and, hence, aggregate demand.
29. By contrast, substantial increases in the average annual growth rate of wages in the bottom decile were comparatively rare. Only in Belgium, Denmark and Greece did the average annual growth rate of wages increase by more than 2 percentage points relative to the pre-crisis period.

30. In Germany, the increase in the incidence of low-paid employment also represents a major policy concern. To an important extent, this reflects the significant decline in real wages at the first decile of the wage distribution, following the Hartz reforms (almost 41% a year during the period 2000-12).

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ANNEX 2.A1

Supplementary material

Table 2.A1.1. **Growth in real wages, labour productivity, unit labour costs and consumer prices in OECD countries**

Annual average growth rates, 2007-13[a]

	A. Real hourly wage[b]							B. Hourly labour productivity[c]						
	2007	2008	2009	2010	2011	2012	2013	2007	2008	2009	2010	2011	2012	2013
OECD[e]	**0.9**	**-0.3**	**1.8**	**0.3**	**-0.5**	**0.3**	**0.2**	**1.2**	**0.0**	**0.2**	**2.5**	**0.8**	**1.2**	**0.7**
Euro area (18)	**0.7**	**-0.1**	**3.2**	**-0.3**	**-0.7**	**0.1**	**0.6**	**1.8**	**0.0**	**-1.1**	**2.1**	**1.5**	**0.9**	**0.8**
Australia	4.5	-0.2	0.9	2.3	2.4	3.7	-0.2	1.6	-0.4	2.4	0.3	0.5	3.2	2.0
Austria	0.9	0.5	4.0	-0.1	-1.6	1.0	1.5	2.1	0.1	-0.1	1.8	1.0	0.5	1.1
Belgium	1.3	-0.6	2.8	-1.0	-0.8	0.9	1.3	0.9	-0.6	-0.9	1.5	-0.1	-0.1	0.8
Canada	1.2	0.7	2.8	-0.4	0.8	1.2	1.6	0.0	-0.1	0.9	1.5	1.0	0.0	1.0
Czech Republic	3.3	-2.2	-0.7	-0.5	0.1	-2.1	-2.6	4.3	0.2	-1.4	1.5	1.8	-0.9	-0.4
Denmark	3.2	0.5	2.2	1.8	-2.1	-0.8	0.7	0.6	-1.6	-2.2	4.5	0.4	0.2	0.4
Estonia	15.9	0.9	3.7	-2.8	-6.3	3.3	4.6	6.6	-2.9	2.2	5.3	0.2	3.1	0.1
Finland	1.1	1.2	2.9	0.3	0.0	0.5	0.9	3.2	-1.2	-5.3	3.1	1.5	-1.2	0.5
France	0.4	-0.3	2.7	0.7	0.4	0.6	1.0	0.3	-0.4	-0.6	1.7	1.5	0.7	0.7
Germany	-1.6	-0.3	3.2	-0.7	0.5	1.1	0.5	1.7	-0.2	-2.4	1.7	1.8	0.5	0.3
Greece	2.5	-2.3	5.4	-6.9	-8.8	-4.8	-5.5	2.9	3.1	-3.9	-3.5	-2.5	1.7	0.4
Hungary	-1.9	0.9	-5.0	-5.2	-1.3	0.1	3.2	-0.3	2.4	-3.6	0.5	0.4	2.7	1.0
Ireland	1.3	2.0	5.2	-2.3	-2.8	-1.5	-2.6	1.3	-0.5	3.3	3.7	4.0	0.5	-3.2
Italy	0.6	-0.2	1.2	0.8	-1.9	-1.7	0.2	0.5	-0.7	-2.2	2.4	0.1	-0.9	0.1
Japan	-0.7	0.4	-0.5	-0.3	0.6	0.4	0.3	2.1	0.4	-2.1	4.0	-0.4	1.6	1.2
Netherlands	1.6	0.2	1.6	0.3	-1.0	-0.6	-0.2	1.5	0.1	-2.4	2.0	0.2	-1.2	0.2
New Zealand	1.8	1.3	2.0	-0.9	-1.1	1.9	1.2	2.7	-0.5	3.0	0.4	-0.3	3.1	-0.1
Norway	4.8	1.9	2.8	-0.2	3.8	3.1	1.9	-1.8	-3.4	0.4	0.1	-0.1	0.4	-0.5
Poland	2.2	4.9	0.6	5.0	1.4	-0.6	2.3	2.2	1.7	2.1	6.6	4.2	2.2	1.3
Portugal	0.8	1.0	3.3	0.3	-3.9	-6.0	2.3	1.7	0.2	-0.2	3.6	1.3	0.5	1.0
Slovak Republic	5.2	2.1	2.0	2.1	-1.2	-0.6	0.4	7.0	2.3	-2.4	4.3	2.0	2.0	2.8
Slovenia	3.0	2.3	7.8	0.7	0.2	-2.9	-2.6	4.1	0.5	0.7	2.9	2.9	-1.4	0.4
Spain	2.7	2.3	4.0	-1.6	-2.5	-2.0	-1.1	1.3	0.7	2.4	1.9	1.6	3.4	1.9
Sweden	1.2	-1.6	2.5	0.4	-1.6	2.0	1.8	0.0	-1.4	-2.5	4.1	1.0	0.6	1.1
United Kingdom	2.1	-1.6	1.4	-0.4	-2.4	-1.9	-1.6	2.5	-1.2	-2.4	1.1	0.7	-1.7	-0.3
United States	1.3	-0.8	2.3	0.5	-1.1	0.2	-0.2	0.8	0.4	2.8	2.3	0.0	1.0	0.2

Table 2.A1.1. **Growth in real wages, labour productivity, unit labour costs and consumer prices in OECD countries** *(cont.)*

Annual average growth rates, 2007-13[a]

	C. Nominal unit labour cost[d]							D. Consumer price inflation						
	2007	2008	2009	2010	2011	2012	2013	2007	2008	2009	2010	2011	2012	2013
OECD[e]	**2.1**	**3.1**	**1.5**	**-0.7**	**1.5**	**1.3**	**0.9**	**2.1**	**3.2**	**0.0**	**1.4**	**2.6**	**1.9**	**1.3**
Euro area (18)	**1.3**	**3.8**	**4.2**	**-0.7**	**0.7**	**1.7**	**1.1**	**2.1**	**3.3**	**0.3**	**1.6**	**2.7**	**2.5**	**1.3**
Australia	5.2	4.4	0.2	4.9	5.1	2.3	0.2	2.3	4.3	1.8	2.9	3.3	1.7	2.4
Austria	1.5	4.1	4.5	0.3	0.9	3.2	2.6	2.1	3.2	0.5	1.8	3.2	2.5	2.0
Belgium	2.2	4.4	3.6	-0.3	2.8	3.8	1.7	1.8	4.4	-0.1	2.2	3.5	2.8	1.1
Canada	3.3	3.1	2.3	-0.1	2.7	2.7	1.6	2.1	2.3	0.3	1.8	2.9	1.5	0.9
Czech Republic	2.7	3.7	1.4	-0.9	0.4	2.8	0.6	2.9	6.1	1.0	1.5	1.9	3.2	1.4
Denmark	4.9	6.0	5.5	-0.5	0.1	1.5	1.2	1.7	3.3	1.3	2.3	2.7	2.4	0.8
Estonia	14.7	15.1	1.1	-5.3	-2.0	3.8	7.3	6.4	9.8	0.0	3.0	4.8	3.9	2.7
Finland	0.6	6.6	7.9	-1.6	2.0	4.3	2.3	2.5	4.0	0.0	1.2	3.4	2.8	1.5
France	1.7	3.0	3.2	0.4	0.9	1.6	1.1	1.5	2.8	0.1	1.5	2.1	1.9	0.9
Germany	-0.8	2.7	5.4	-0.9	0.9	3.0	2.1	2.3	2.6	0.3	1.1	2.1	2.0	1.5
Greece	4.5	4.7	5.0	0.5	-2.6	-5.7	-7.8	2.9	4.1	1.2	4.6	3.3	1.5	-0.9
Hungary	6.8	4.6	3.3	-0.3	2.0	2.9	4.0	7.6	5.9	4.1	4.8	3.8	5.5	1.7
Ireland	4.1	6.0	-2.7	-6.1	-3.4	0.0	-0.1	4.8	4.0	-4.6	-1.0	2.6	1.7	0.5
Italy	2.2	5.0	4.5	-0.5	1.1	2.3	1.4	1.8	3.3	0.8	1.5	2.7	3.0	1.2
Japan	-2.4	1.5	0.8	-4.5	1.0	-1.2	-0.7	0.1	1.4	-1.4	-0.7	-0.3	0.0	0.4
Netherlands	1.8	3.3	5.0	-0.8	0.9	2.2	1.2	1.6	2.4	1.2	1.3	2.3	2.4	2.5
New Zealand	2.5	6.3	0.2	0.8	3.4	1.7	2.1	2.4	3.9	2.1	2.3	4.0	1.1	1.1
Norway	7.8	9.3	4.7	2.2	5.4	3.6	4.6	0.7	3.7	2.1	2.4	1.3	0.7	2.1
Poland	3.8	8.0	2.5	1.2	1.3	1.1	2.0	2.4	4.1	3.7	2.6	4.2	3.5	0.9
Portugal	1.6	3.4	3.2	-0.8	-0.7	-3.8	2.3	2.4	2.6	-0.8	1.4	3.6	2.7	0.3
Slovak Republic	-0.1	3.2	4.2	-0.9	1.5	1.5	-0.7	2.7	4.5	1.6	1.0	3.8	3.5	1.4
Slovenia	2.6	6.6	8.0	-0.4	-1.4	0.3	-1.4	3.6	5.5	0.8	1.8	1.8	2.6	1.8
Spain	4.4	5.5	1.5	-1.7	-0.8	-4.1	-2.3	2.8	4.0	-0.3	1.8	3.1	2.4	1.4
Sweden	3.4	3.7	4.4	-2.6	0.7	2.5	0.9	2.2	3.4	-0.5	1.2	2.9	0.9	0.0
United Kingdom	1.8	3.2	5.7	1.1	1.2	2.4	1.3	2.3	3.5	2.2	3.2	4.4	2.8	2.5
United States	3.4	2.6	-0.9	-0.2	2.0	1.2	1.0	2.8	3.8	-0.4	1.6	3.1	2.0	1.5

a) 2013 is the average of the first three quarters for Poland.
b) Total compensation of employees (total wages for New Zealand) divided by total hours worked of employees deflated using the consumer price index.
c) Real GDP divided by total hours worked.
d) Total compensation of employees divided by real GDP.
e) OECD is the weighted average of the 26 OECD countries shown.
Source: OECD calculations based on quarterly national accounts.

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Chapter 3

How good is your job? Measuring and assessing job quality

This chapter provides a broad picture of job quality across OECD countries and socio-economic groups, along three broad dimensions that are essential for worker well-being: earnings quality, labour market security, and quality of the work environment. The chapter argues that labour market performance should be assessed in terms of the increase in both the number and the quality of job opportunities. It suggests that such an approach would indeed make a difference. While a number of countries display equally good (or bad) performance in both aspects, the picture is more mixed in some other countries, where a high (low) quantity of jobs is not necessarily accompanied by high (low) quality. In addition, the chapter provides new insights on labour market inequalities, by shedding further light on the nature and depth of the disadvantages faced by some population groups. In particular, youth, low skilled workers and those with temporary jobs appear to cumulate many disadvantages, while high skilled workers not only have access to more jobs, but also to the best quality jobs.

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 represents the first output of a broader ongoing OECD project on the relationship between job quality, labour market performance and well-being.[1] The overall aim of this project is to bring job quality to the forefront of the policy debate, by arguing that labour market performance should be assessed in terms of *both* the number and quality of job opportunities, i.e. policies should seek to promote more *and* better jobs. The chapter lays out the main features of a new conceptual and operational framework currently being developed to measure and assess job quality, and provides an overview of job quality across countries and socio-economic groups based on this framework.

Job quality refers to multiple aspects of employment that contribute to the well-being of workers and, hence, represents an inherently multi-dimensional construct. In particular, the chapter focuses on three key dimensions of job quality that have been shown to be particularly relevant for workers' well-being in the existing literature on economics, sociology and occupational health. These are:

- *Earnings quality,* which is characterised in terms of the level of earnings and its distribution. The need to take into account both aspects reflects their empirical importance for well-being. First, levels of earnings and subjective well-being, as measured by life satisfaction, are positively correlated across countries as well as between persons within countries. Second, for a given level of average earnings, overall well-being tends to be higher the more equal is its distribution. This reflects the evidence pointing to life satisfaction rising at a decreasing rate as earnings rise and that people tend to display an intrinsic dislike of high inequality in society (inequality aversion).
- *Labour market security,* which is defined in terms of unemployment risk and unemployment insurance. Unemployment risk encompasses both the probability of becoming unemployed and the average expected duration of unemployment spells. As such, it gives an indication of the expected amount of time an average person is likely to spend in unemployment in a given year. Insurance against the risk of unemployment is captured in terms of both unemployment benefit coverage and benefit generosity. New evidence suggests that both unemployment risk and insurance are important determinants of life satisfaction among the employed. Both the probability of becoming unemployed and the average expected duration of unemployment spells matter for life satisfaction, although the latter appears to dominate. Thus, workers are not just concerned about becoming unemployed but also, and possibly even more so, about not being able to find a new job when unemployed. Insurance mitigates the adverse effect of the risk of unemployment on life satisfaction of the employed by alleviating concerns about not being able to find a job once unemployed.
- *Quality of the working environment,* which relates to the nature and intensity of work performed, the organisation of work and the working atmosphere. The quality of the working environment is an important driver of individual well-being and depends crucially on whether workers have autonomy in their job, are given learning opportunities

and well-defined work objectives, and also receive constructive feedback. Good relationships with colleagues are also important. When jobs and workplaces combine these factors, people are more apt to manage work pressure and difficult tasks, and they also tend to be healthier, more satisfied with their job and more productive. For instance, in Europe, 50% of persons who face poor work organisation and workplace relationships report that work impairs their health, compared with only 20% among those with favourable working conditions. A poor work environment is also estimated to increase sickness absence by 40%.

This chapter provides a broad picture of job quality across OECD countries along the three dimensions described above and also makes a first attempt to document the relationship between the quality and the quantity of job opportunities. The following patterns emerge:

- Denmark, Finland, Germany, Luxembourg, the Netherlands, New Zealand, Norway, Sweden and Switzerland are among the best performers. These countries do relatively well along at least two of the three main dimensions of job quality, without any outcomes in the bottom-10 of the ranking across OECD countries.
- Australia, Austria, Belgium, Canada, the Czech Republic, France, Ireland, Israel, Italy, Japan, Korea, Mexico, Slovenia, the United Kingdom and the United States display average performance. Over the three main dimensions of job quality, these countries display no more than one outcome in the top-10 or the bottom-10 of the ranking across OECD countries, except for Ireland and Korea where the picture is more mixed.
- Estonia, Greece, Hungary, Poland, Portugal, the Slovak Republic, Spain and Turkey do relatively badly in two or all of the three main dimensions of job quality. In addition, none of these countries perform very well along at least one of these dimensions.
- Across countries it does not appear to be the case that better job quality is achieved at the cost of fewer jobs. Countries that perform well in terms of overall job quality also tend to perform well on job quantity (as measured by the employment rate), and vice versa. The pattern is more mixed among countries with intermediate performance in overall job quality. For example, Australia, Austria, Canada, Germany, Japan and the United Kingdom perform relatively well in terms of employment rates, while countries such as Ireland, Israel, Italy and Mexico perform relatively poorly.

Looking at job quality across socio-economic groups provides new insights into labour market inequalities by shedding further light on the nature and depth of the disadvantages faced by some population groups. Some socio-demographic groups appear to cumulate many disadvantages, while other groups show a good performance in all dimensions:

- The worst off are youth and low-skilled workers. They cumulate poor performance in terms of employment rates with poor outcomes along all three dimensions of job quality.
- By contrast, high skilled workers not only have access to more jobs, but also to the best quality jobs along all of the dimensions analysed.
- As for women, the picture is mixed. A gender gap exists in terms of earnings quality and employment, but there are no significant differences in labour market security and women tend to work in better quality work environments than men.

- Temporary employment contracts are associated with lower job quality in all three dimensions. As for part-time work, the picture is mixed. Overall earnings quality (in terms of hourly wages) is lower for part-time than for full-time workers, and labour market insecurity is considerably higher for part-timers. However, part-timers tend to benefit from a better quality work environment.

Introduction

The jobs people hold are one of the most powerful determinants of well-being, as most people spend a substantial part of their time at work and work for a significant part of their life. But what are the features of the job quality that affect well-being? Broadly speaking, job quality reflects a combination of aspects relating to labour earnings, work-related economic security and other aspects that affect the quality of life at work and beyond. Job quality not only affects individual well-being and that of the households in which they live, but also labour force participation, productivity and aggregate economic performance.

Despite the importance of job quality, the *OECD Re-assessed Jobs Strategy* (OECD, 2006) and the *Europe 2020 Employment Strategy* have largely focused their policy recommendations and indicators of progress on the *quantity* of jobs, i.e. job creation and access to jobs, with less attention paid to job *quality per se*. While these strategies underline the role of labour earnings and job security for labour market performance, the emphasis is placed on the role of policies and institutions to promote job creation, the stability of jobs and participation in the labour market, with less attention paid to their impact on workers' well-being. In other words, the assessment of labour market policies and institutions has mostly focused on their impact on the quantity of jobs, although many of these institutions were introduced with the aim of improving the quality of jobs. The overall aim of this chapter is to bring job quality to the forefront of the policy debate by making a first attempt at developing a conceptual framework to measure job quality across its principal dimensions that can be used to assess how job quality contributes to labour market performance and well-being.

A major obstacle to giving more prominence to job quality in the policy debate so far has been the difficulties of defining and measuring job quality in ways that are amenable to comparisons over time and especially across countries and socio-demographic groups. Indeed, job quality is a multi-dimensional concept that can be measured in many different ways and which does not have the same meaning for different individuals. Job quality has attracted increased interest in the academic community and by international organisations in recent years, and various frameworks have been developed over the last decade (e.g. ILO Manual on Concepts and Definitions of Decent Work Indicators, UNECE Framework for Measuring Quality of Employment). Taken together, these frameworks provide possible toolboxes for assessing job quality by drawing up a comprehensive list of indicators. While an important step forwards, further work is needed to develop the conceptual underpinnings of job quality and to build an operational framework, with a set of practical guidelines on how to use this framework for the analysis of job quality across socio-demographic groups, countries and over time. Building on the extensive work already done by other international organisations and on the OECD work on multi-dimensional well-being, this chapter focuses on those aspects of a job that have been shown to be particularly important for people's well-being. This represents the first step in a more ambitious project to also include a dynamic perspective on job quality in terms of the prospects for career advancement provided by jobs.

The remainder of this chapter is structured as follows. Section 1 sets out the main features of the OECD's operational framework to measure and assess job quality. The approach taken is explicitly multi-dimensional and is defined in terms of earnings quality, labour market security and the quality of work environment. Indicators for each of these three dimensions are put forward in Section 2 in the light of an in-depth discussion of the links with well-being based on the existing literature as well as new evidence. Using these indicators, Section 3 documents job quality across countries and socio-economic groups and provides a first attempt to assess labour market performance in terms of the quantity and quality of jobs.

1. An operational framework for measuring and assessing job quality

Today, there is a broad consensus that standard measures of economic performance, such as GDP growth or the unemployment rate, fail to give a complete account of people's living conditions. Although such indicators provide key benchmarks for policy-makers and continue to be widely used in public debates, "no single measure, or even a limited set of measures, can provide all the information required to assess and manage an economy" (Stiglitz et al., 2009a, p. 5). The topic is not new. The OECD has been presenting a panorama of social indicators since 1998 in its report *Society at a Glance*. In 2011, the *OECD Better Life Initiative* was launched with a set of well-being indicators presented in the biannual report *How's Life?* (OECD, 2013c). Over the past few years, the interest in broader and more inclusive measurement frameworks of socio-economic performance has also taken a leap forward, at both the national and international level. Likewise, a number of major initiatives to enhance the measurement of job quality have been taken recently at the international level to establish guidelines for producing internationally comparable indicators (e.g. the ILO Decent Work Initiative and the UNECE Framework for Measuring Quality of Employment).

Although the concept of job quality is intrinsically related to the concept of workers' well-being, measurement efforts on job quality and people's well-being have developed in parallel rather than in an integrated fashion. Building on these two streams of work, this section presents an initial attempt at putting them together in a consistent conceptual framework for defining and measuring job quality. This section also discusses how this framework could be operationalised through the development of indicators that can be used to: monitor job quality across countries, socio-economic groups and over time; and assess the role of policies and institutions.

Defining the main dimensions of job quality…

Job quality refers here to those aspects of employment that contribute to the well-being of workers. To identify the main dimensions of job quality, this chapter draws on existing well-being frameworks. There is a general consensus that well-being has to do with both economic resources and non-economic aspects of peoples' lives, and, hence, represents an inherently multi-dimensional construct. The influential report by the Commission on the Measurement of Economic Performance and Social Progress, and the OECD *How's Life?* framework that draws on the Commission's recommendations, identify a number of key aspects that are essential to well-being (see Box 3.1). Three of them are closely related to people's employment situation: "material living standards"; "insecurity of an economic as

Box 3.1. **Measuring well-being: The Stiglitz-Sen-Fitoussi report and the OECD Better Life Initiative**

Discussions about whether GDP is an accurate proxy of people's well-being have been going on for years. Many alternative approaches have been suggested, which extend the scope of measurement to include a broader range of well-being aspects, and place a greater emphasis on distribution (OECD, 2011c and 2013c). Major initiatives have been taken at the international level (e.g. the OECD Better Life Initiative, the EU "GDP and Beyond" initiative, the UNDP Human Development Index). In particular, the ground-breaking work by the Commission on the Measurement of Economic Performance and Social Progress, established in 2008 by French President Nicolas Sarkozy and headed by professors Stiglitz, Sen and Fitoussi, has been critical in giving impetus to the existing OECD measurement work on well-being and to a range of other similar initiatives around the world. The report by the Commission was written primarily for political leaders and policymakers who wish to implement and assess policies aimed at improving well-being and fostering social progress, but it also provides detailed guidelines and recommendations for the statistical community on how to improve measures of well-being and progress (Stiglitz et al., 2009b).

From a conceptual perspective, the report builds on the so-called "capabilities approach" proposed by Sen (1985). This approach conceives a person's life as a combination of activities and situations that he/she spontaneously recognises to be important. Its basic premise is that what really matters to people is the extent of their opportunity set and their freedom to choose from this set the life they value most. Therefore, to define well-being a multidimensional definition has to be used. The Commission identified eight key dimensions that should be taken into account when measuring economic performance and social progress (Stiglitz et al., 2009b, p. 14): i) material living standards (income, consumption and wealth); ii) health; iii) education; iv) personal activities including work; v) political voice and governance; vi) social connections and relationships; vii) environment (present and future conditions); and viii) insecurity, of an economic as well as a physical nature. The implications of the capability approach are not limited to the measurement of well-being but extend to the evaluation of policies, which should seek to expand the opportunities available to people.

Building on its work on measuring social progress and in line with many of the recommendations formulated by the Commission, the OECD Better Life initiative was launched in 2011.* This represented a first attempt at the international level to go beyond the conceptual stage and to present a set of comparable well-being indicators for OECD countries and other major economies (OECD, 2011c and 2013c). This set covers eleven domains of life and will, over the years, be improved by taking into account the outcomes of a number of methodological projects carried out at the OECD and elsewhere. This work is critically important, as it aims to respond to the needs of citizens for better information on well-being and constitutes the basis of a broader effort to define more effective policy options for governments to achieve the ultimate goal of improving the well-being of citizens (e.g. the OECD initiatives on Inclusive Growth and on New Approaches to Economic Challenges).

* The OECD framework for measuring well-being identifies "jobs and earnings" as one of the dimensions of "material conditions"; and "work-and-life balance" as a dimension of "quality of life". Work is currently ongoing to incorporate measures of "economic insecurity" in the framework.

well as a physical nature" and "personal activities including work". Drawing on this approach, this chapter considers three complementary aspects of job quality:

- *Earnings quality.* This measures the extent to which employment contributes to the material living standards of workers and their families, with a particular emphasis on the case of low-wage workers.
- *Labour market security.* This captures those aspects of economic security that are related to employment and refers to the risk of job loss and its consequences for workers and their families.

- *Quality of the working environment*. This captures non-economic aspects of job quality and includes factors that relate to the nature and content of work performed, working-time arrangements and workplace relationships.

These three dimensions jointly define job quality and should be considered simultaneously, together with the number of jobs that exist (i.e. job quantity), when assessing labour market performance and the role of policies and institutions. No attempt will be made in this chapter to aggregate them into a single indicator of job quality: they refer to three distinct aspects of workers' well-being, and linking them together is not conceptually straightforward. In particular, their relative importance is difficult to determine in an international context as individual preferences may vary across countries because of cultural factors. For instance, the extent to which people are willing to accept lower earnings in exchange of a better working environment is likely to vary across workers according to their individual characteristics and socio-cultural environment.

By defining job quality in relation to its contribution to people's well-being, the present framework explicitly puts the emphasis on workers as opposed to employers or investors. Therefore, it does not aim to take account of all aspects of employment. Productivity enters the picture indirectly, through its links with several aspects of job quality. Productivity is, for instance, a key determinant of wages, and as such, an important driver of job quality. Productivity can also be seen as an outcome of job quality. For example, to the extent that workers in safer, healthier but also more engaging and rewarding jobs feel more involved and motivated, they will be more productive. The latter may in turn translate into higher wages, thereby creating a positive relationship between the quality of the working environment and the levels of earnings.

... and translating them into indicators and evidence...

Going beyond this conceptual stage requires choosing indicators that adequately capture the three main dimensions of job quality: earnings quality, labour market security and the quality of the working environment. The approach followed in this chapter builds on the existing statistical work done in other international organisations, which provides a comprehensive list of indicators that can be used for measuring various aspects of job quality (see Box 3.2). The overall aim pursued here is to operationalise these statistical frameworks by focusing on a limited set of indicators that are readily interpretable, complement each other, and can be compared over time, across countries and socio-demographic groups. These indicators should also be relevant for policy making. This is essential in order to anchor job quality in the policy debate, and to assess policy synergies and trade-offs with respect to the number and the quality of job opportunities. The approach taken here:

- Concentrates on *outcomes* (e.g. job security) as opposed to drivers of job quality (e.g. employment protection regulations).[2] Outcomes are what ultimately matters to workers and policy makers, and drivers are not always perfectly correlated with outcomes.[3] Therefore, outcome measures provide a more accurate picture of job quality across countries and over time.
- Focuses on *individual workers* in the sense that all indicators are defined (and therefore are conceptually sound and relevant) at the level of individuals. This means that the distribution of job quality outcomes can be examined across the workforce. This is especially important as it can then be determined whether a group with a disadvantage in one aspect of job quality also experiences poor outcomes in another.

Box 3.2. **Recent international initiatives on measuring job quality**

Job quality has recently attracted increased interest in the international research and statistical community. Several major initiatives have been taken at international level to measure different aspects of job quality and for collecting indicators that would allow cross-country comparisons. The International Labour Organization recently released a manual on concepts and definitions for over 50 Decent Work Indicators that could be used for monitoring progress in implementing the ILO Decent Work Agenda (ILO, 2012). This manual also provides methodological and practical guidelines for producing these indicators. Likewise, the United Nations Economic Commission for Europe (UNECE), in collaboration with Eurostat and the ILO, is developing operational guidelines for measuring the various dimensions listed in its framework for Measuring Quality of Employment (UNECE, 2010). Covering more than 50 indicators, this framework provides a useful toolbox for compiling data and calculating internationally comparable indicators on quality of employment. These statistical frameworks do not place explicit value judgments about what should be considered good or bad job quality, and do not prioritise any particular indicators or provide guidance on how they should be used. They contain indicators that measure both job quality outcomes, such as earnings, and the drivers of job quality, such as the characteristics of industrial relations systems. The overall aim of these statistical frameworks is to provide international guidelines for producing a comprehensive set of job quality indicators that can fit various national circumstances and challenges, while normative choices are left to the users of the data. They constitute a major step towards the development of an internationally comparable database on job quality, but this remains an unfinished task as no such database currently exists.

Going beyond these statistical frameworks, the European Foundation for the Improvement of Living and Working Conditions has developed and implemented a conceptual framework for measuring job quality in 33 European countries over the period 1995-2010 (Eurofound, 2012a). By focusing on a limited set of indicators, this framework effectively makes choices about which aspects of job quality are of greatest importance to workers. The Eurofound framework identifies four main dimensions of job quality: earnings, prospects, intrinsic job quality and working-time quality. It focuses on those aspects of job quality that are driven by employee-employer relationships (including both contractual arrangements and working conditions). The approach developed in this chapter is somewhat broader in some aspects such as the role played by unemployment and social benefits in providing workers with a buffer against the financial consequences of job loss. In addition, while intrinsic job quality and working-time quality are important components of the quality of the working environment, the Eurofound framework does not account for their interactions at the level of individual workers. This aspect will be investigated in the present chapter. Despite these important differences in scope and methodological choices, the two approaches share several common features: they focus on workers, capture job quality outcomes and concentrate mainly on objective features of job quality.

- Favours *objective* features of job quality (i.e. job attributes that can be observed by a third party) in order to ensure better comparability across countries and over time. However, several important aspects of job quality, such as workplace relationships, can only be measured through individuals' self-assessment of their own situation. This kind of indicators necessarily captures a combination of objective aspects of work and workers' subjective judgment about their job.

… that allow reassessing the role of labour market policies for overall labour market performance

The broad outcome measures of job quality and their subcomponents are set out in Table 3.1, which also highlights various links between these indicators and key labour market and social policies. The earnings dimension is measured by a synthetic index that

Table 3.1. **Broad outcome measures of job quality and their subcomponents**

Dimensions	Aggregate outcome measure of job quality	Subcomponents (at the individual level)	Main labour market and social policies that affect job quality
Earnings quality	Earnings index taking into account both earnings level and its distribution (inequality).	*Level of earnings.*	Wage setting systems. In-work benefits schemes. Minimum wage.
Labour market security	Expected earnings loss associated with unemployment.	*Unemployment risk:* • Risk of becoming unemployed. • Expected duration of unemployment. *Insurance against unemployment risk:* • Eligibility to unemployment benefits. • Generosity of benefits (replacement rates).	Employment protection legislation. Tax and benefit systems. Active labour market policies.
Quality of the working environment	Proportion of workers experiencing job strain (i.e. imbalance between work stressors and workplace resources).	*Work-related stress factors:* • Time pressure at work. • Exposure to physical health risk factors. • Workplace intimidation. *Support and resources to accomplish job duties:* • Work autonomy and learning opportunities. • Good management practices. • Good workplace relationships.	Working-time regulations. Health-related labour laws. Sickness insurance schemes. Occupational health care services. Labour inspection bodies. Vocational training.

accounts for both the level and distribution of earnings. While the average level of earnings provides a key benchmark for assessing the extent to which having a job ensures good living conditions, a large body of empirical research has shown that earnings inequality also matters a great deal for life satisfaction. Particular attention is given to low-wage workers. Concerns about low pay are also reflected in the policy stance taken by many OECD countries, which have implemented minimum-wage legislations or in-work benefits schemes in order to support low-paid workers and reduce income inequality.

Regarding the outcome measure of labour market security, the framework follows the recommendations formulated by the Commission on the Measurement of Economic Performance and Social Progress, which point out that "economic insecurity due to unemployment" is not entirely caused by the loss of a job *per se*, but also, by the frequency and duration of consecutive unemployment spells and by their consequences in terms of earnings losses (Stiglitz et al., 2009b, p. 198). These considerations are in line with the Reassessed OECD Jobs Strategy, which underlines potential synergies between various policy tools aimed at reducing labour market insecurity (OECD, 2006): employment protection regulations, unemployment benefit systems that protect workers against large drops in income, and active labour market policies that help people to find a new job.

Turning to the measurement of the quality of the working environment (QWE), this chapter mainly focuses on the health-related aspects of well-being and draws on the occupational health literature. This literature provides strong evidence that workers' physical and mental health is a major outcome of QWE. In particular, job strain – characterised by a high level of work stressors combined with insufficient resources and support in the workplace to accomplish job duties – has been shown to constitute a major health risk factor for workers. In the present framework, the quality of the working environment is captured through the incidence of job strain, which provides an indicator of the proportion of jobs that are potentially detrimental to workers' health. While many determinants of job strain are primarily an issue for business, policies and institutions can provide employers with incentives and tools to improve QWE. These include adequate regulations on working-time

and safety at work, well-designed sickness schemes, together with effective implementation bodies (occupational health care services and labour inspection bodies) that provide guidelines to employers, run information campaigns and conduct preventive actions.[4]

2. Job quality outcomes and well-being

Earnings quality

To measure the earnings dimension of job quality, a choice needs to be made on how to measure *individual* earnings and how to combine information on the level and distribution of earnings to obtain the *aggregate* measure of earnings quality. Earnings can be measured in either gross or net terms (i.e. before or after deductions of employee taxes and social security contributions) and on an hourly, monthly or even annual basis. This chapter makes use of gross hourly wages. While net earnings determine labour supply decisions and the contribution of work to living standards and, therefore, are more relevant from a worker perspective than gross earnings, comparable information on net earnings across countries tends to be limited.[5] The focus on hourly wages as opposed to monthly or annual earnings reflects the choice to abstract from differences in working-time between workers that relate more to issues of job quantity than job quality.

The way of aggregating information on the level and distribution of earnings is more complicated. This can be carried out using a combination of indicators such as average or median earnings, the degree of earnings inequality and the incidence of low-pay. The use of several indicators reflects the idea that they contain complementary information for the assessment of overall well-being. To guide the choice of aggregation method, it is useful to first consider how the level and distribution of earnings relate to subjective well-being, drawing on the closely related literature on household income and subjective well-being. Building on this discussion, the aggregation method is then developed to measure overall earnings quality in terms of both average earnings and earnings inequality.

Both average earnings and its distribution matter for subjective well-being

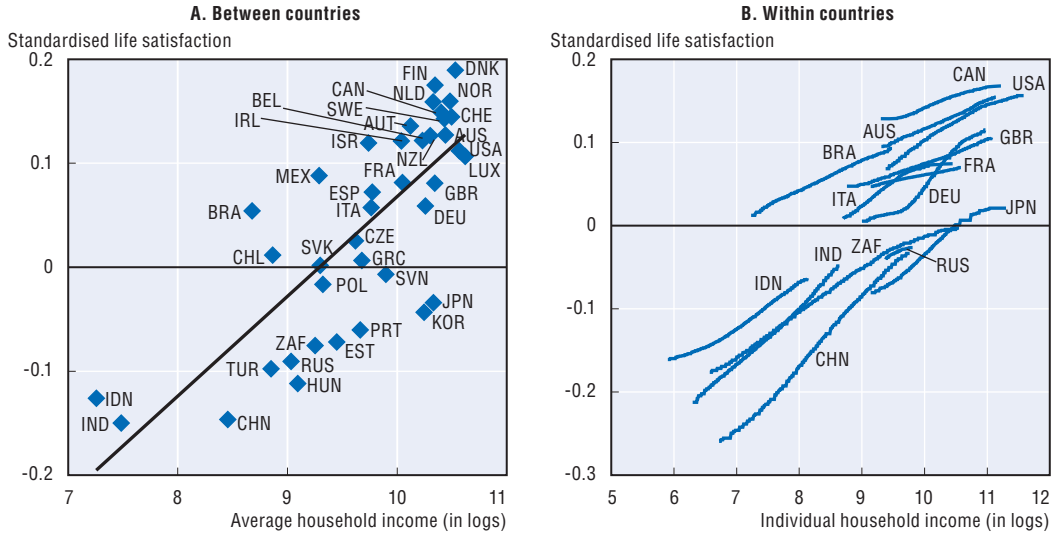
A large literature has concentrated on the relative importance of absolute and relative incomes for subjective well-being, without, however, providing a conclusive answer so far. In a seminal article, Easterlin (1974) posited that rising incomes do not, by themselves, increase the well-being of all, once basic needs have been met, and that beyond this threshold relative income is all that matters. The argument is based on the observation that changes in average incomes within countries are not significantly correlated with changes in average well-being in the long-term (Easterlin, 1974, for the United States; Easterlin, 1995, for Japan and nine European countries; Easterlin et al., 2010, for a sample of 53 countries from around the world), despite evidence that income is positively correlated with well-being in the cross-section. This has become known as the Easterlin paradox. If true, this would imply that economic growth does not necessarily contribute to overall welfare, at least not beyond a minimum threshold, and would warrant an important reorientation of public policy (Frank, 1985; Layard, 2005). For the measurement of earnings quality, this could imply focusing on a deprivation-type measure that takes account of the prevalence of low pay below a given threshold and the average pay gap for those below the threshold.[6]

However, the view that absolute income beyond a certain level does not matter for well-being has been challenged in a number of important recent contributions that suggest that there is a positive and continuous relationship between income and subjective

well-being (Deaton and Kahneman, 2010; Sacks et al., 2012; Stevenson and Wolfers, 2008 and 2013). Indeed, the evidence in these studies suggests that the relationship between income and subjective well-being is approximately log-linear. This implies that each doubling in average income is associated with a constant increase in subjective well-being, or put more formally, that there are declining marginal returns to income in terms of subjective well-being. Using individual-level data from Gallup World Poll for the period 2005-10 for a large number of OECD and key emerging economies, Figure 3.1 documents the relationship between log household income and life satisfaction on average across countries (Panel A) as well as across individuals within countries (Panel B). This confirms that this relationship is approximately log-linear.[7, 8] For the measurement of earnings quality, this implies that both the average level of earnings and its distribution within a country should be taken into account. Note that the argument for taking account of distribution for the measurement of earnings quality here is entirely driven by the relationship between a person's own earnings and well-being, i.e. the declining marginal utility of earnings, and does not depend on the earnings of others.

Figure 3.1. **The relationship between household income and life satisfaction**

Relationship between log household income and standardised life satisfaction between and within countries, 2005-10



Note: Panel B contains predictions from local linear regressions of life satisfaction on log household income for selected countries (G8 and Key Partner countries).
Source: OECD calculations based on the Gallup World Poll.

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A second possible reason for taking account of distribution in the measurement of earnings quality is that individual well-being not only depends on one's own earnings but also that of other persons (Clark et al., 2008) or the distribution of earnings in society more generally (Senik, 2009; Ferrer-i-Carbonell and Ramos, 2010; Clark and D'Ambrosio, 2014). A growing body of research suggests that the relationship between subjective well-being and income inequality is negative, even after controlling for the role of individual income. This suggests that people's preferences display a certain degree of aversion to inequality, i.e. an intrinsic dislike of high levels of inequality in society. Inequality aversion may derive from different sources. It may be the result from self-centred interests related to the role of

upward earnings comparisons for well-being. For example, Card et al. (2012) provide evidence based on a random experiment in California that upward earnings comparisons have a negative impact on job satisfaction, whereas downward comparisons have no impact. This most likely reflects an envy effect. Alternatively, inequality aversion may reflect purely altruistic motivations. While it is not straightforward to differentiate between these different explanations, the evidence on inequality aversion does provide a second argument for taking account of earnings inequality in the measurement of earnings quality.[9]

By separately discussing the role of average earnings and their distribution for subjective well-being, it is implicitly assumed that the two are independent. This assumption is questionable, as highlighted by the long-standing debate on the interconnectedness between the distribution of earnings and economic growth. The main insight from this literature is that the relationship can go in either direction and that its nature depends on both the determinants of economic growth and on the way inequality is measured (Cingano, 2014; OECD, 2012b). The main message in the present context is that average earnings and their distribution are likely to be interdependent in practice and that policies that seek to act on one of these dimensions can have implications for the other as well.

A synthetic measure of earnings quality should allow for at least some inequality aversion

In order to take into account both the level and distribution of earnings in the aggregate measure of earnings quality, the general means approach originally proposed by Atkinson (1970) is used as an aggregation tool. General means place greater weight on certain parts of the distribution and less on others, depending on the assumed degree of inequality aversion. By placing greater weight on low earnings, the resulting general mean will necessarily be lower than the simple average (or arithmetic mean) for the same distribution if there is at least some earnings inequality. It also implies that transfers from a higher-earning person to a lower-earning person will be associated with a higher general mean. General means are, therefore, well-suited to analyse the role of redistribution policies such as taxes and benefits. A further feature of general means is that they can be decomposed into the arithmetic mean and a component that captures the degree of inequality (known as the Atkinson inequality index). This is very useful in the present context for understanding what drives earnings quality (high average earnings versus low inequality). A more detailed discussion of the general means approach is presented in Box 3.3.[10]

Choosing how to weight different segments of the distribution, or equivalently, the degree of inequality aversion is not straightforward and is necessarily normative. However, by allowing for different levels of inequality aversion the approach is very flexible and encompasses a wide variety of aggregation methods. For example, choosing a parameter of inequality aversion equal to zero ("mild inequality aversion") would imply taking the geometric mean of earnings as the measure of earnings quality. An intermediate value of -1 ("moderate inequality aversion") would imply that earnings quality is measured by the harmonic mean. It places most of the weight on the bottom tercile of the distribution (two-thirds), a smaller but still significant weight on the second tercile (one quarter) and a relatively small weight on the top tercile (10%). This value will be used for the analysis in Section 3.

Box 3.3. **Analysing earnings, inequality and welfare using general means**

This chapter makes use of the general means approach originally proposed by Atkinson (1970) to measure the earnings dimension of job quality. General means are a family of normative earnings or income standards. The general mean (GM) of order α for a distribution of earnings y is defined as:

$$W_{GM}(y,\alpha)=\left[\frac{y_1^{\alpha}+y_2^{\alpha}+\ldots+y_N^{\alpha}}{N}\right]^{1/\alpha} \text{ if } \alpha \neq 0 \text{ and } W_{GM}(y,\alpha)=\left[y_1\times y_2\times\ldots\times y_N\right]^{1/N} \text{ if } \alpha = 0$$

The choice of α is intimately related to how the general mean is connected to different parts of the earnings distribution: as α approaches minus (plus) infinity, the general mean converges to the lowest (highest) observed earnings in society. The order α can thus be taken to represent the level of (in)equality aversion, with lower levels of α placing more emphasis on the lower half of the distribution. For $\alpha = 1$ the general mean corresponds to the arithmetic mean under the assumption of inequality-neutral preferences, while values of α smaller than one imply inequality aversion. When earnings are equally distributed across the workforce all general means equal the arithmetic mean (this is referred to as the "normalisation" property of general means). Throughout this chapter, α is set to -1 to place a stronger emphasis on the bottom part of the earnings distribution.

General means for $\alpha < 1$ are commonly interpreted as measures of social welfare. This interpretation is based on the observation by Atkinson (1970) that for each general mean there is an equally distributed level of earnings, which yields the same welfare level as that of the original distribution. Normalising the general mean, or its equally distributed equivalent, by the arithmetic mean provides a measure of the welfare loss due to inequality. This has become known as Atkinson's class of inequality measures. Formally, for $\alpha < 1$, this can be represented as follows:

$$I_A=\frac{W_A(y)-W_{GM}(y,\alpha)}{W_A(y)}=1-\frac{W_{GM}(y,\alpha)}{W_A(y)}$$

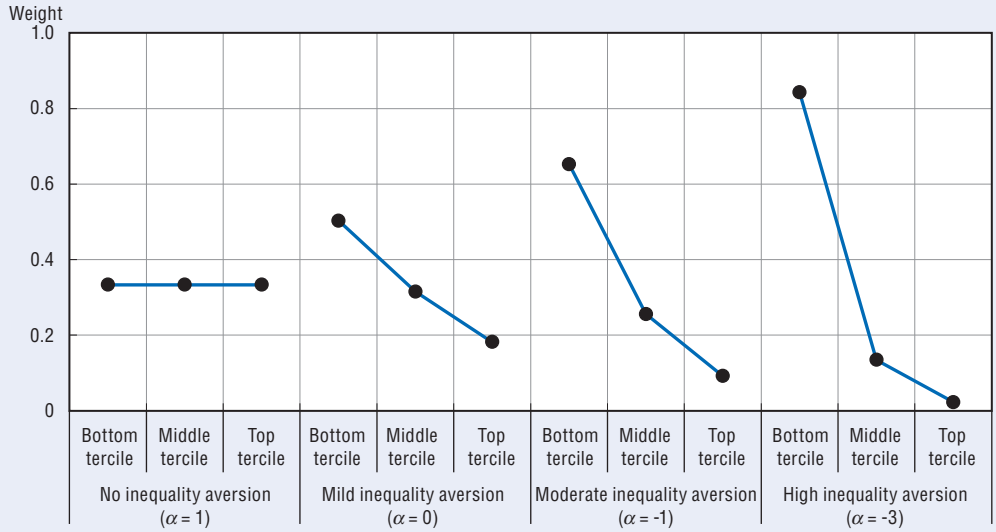
The Atkinson inequality index ranges from 0 (when earnings are equally distributed) to 1 (when all earnings are concentrated in the hands of a single person), and decreases with α. It measures the loss of welfare as a percentage of the arithmetic mean due to inequality in the distribution of earnings.

In order to provide some intuition behind the role of inequality aversion for the general mean of earnings, the figure below represents the implied weights for each tercile of the earnings distribution for a representative OECD country in the case of no inequality aversion, mild inequality aversion ($\alpha = 0$), moderate inequality aversion ($\alpha = -1$) and high inequality aversion ($\alpha = -3$). In the case of no inequality aversion, each tercile is given an equal weight of one third. In the case of mild inequality aversion, a weight of one half goes to the bottom tercile, of about one third to the middle tercile and the remainder to the top tercile. In the case of moderate inequality aversion, a weight of two-thirds is given to the bottom tercile, 25% to the second tercile and 10% to the top tercile. In the case of high inequality aversion, a weight of 85% is given to the bottom tercile, 13% to the middle tercile and 2% to the top tercile.

Box 3.3. **Analysing earnings, inequality and welfare using general means** *(cont.)*

The role of inequality aversion for earnings quality

Implied weights by tercile of the earnings distribution for different levels of inequality aversion



Note: The implied weight for each observation $i = 1,2,\ldots,N$ in the distribution is calculated by $\omega_i = \frac{y_i^{\alpha}}{y_i}$. The weights are then normalised, aggregated within terciles and averaged across countries.

Source: OECD calculations based on the Structure of Earnings Survey (SES) for European countries, national labour force surveys for Chile, Israel, Mexico and the United States, national household surveys for Australia, Canada, and Korea and the *OECD Earnings Distribution* (database), *http://dx.doi.org/10.1787/lfs-ear-data-en* for New Zealand and Japan.

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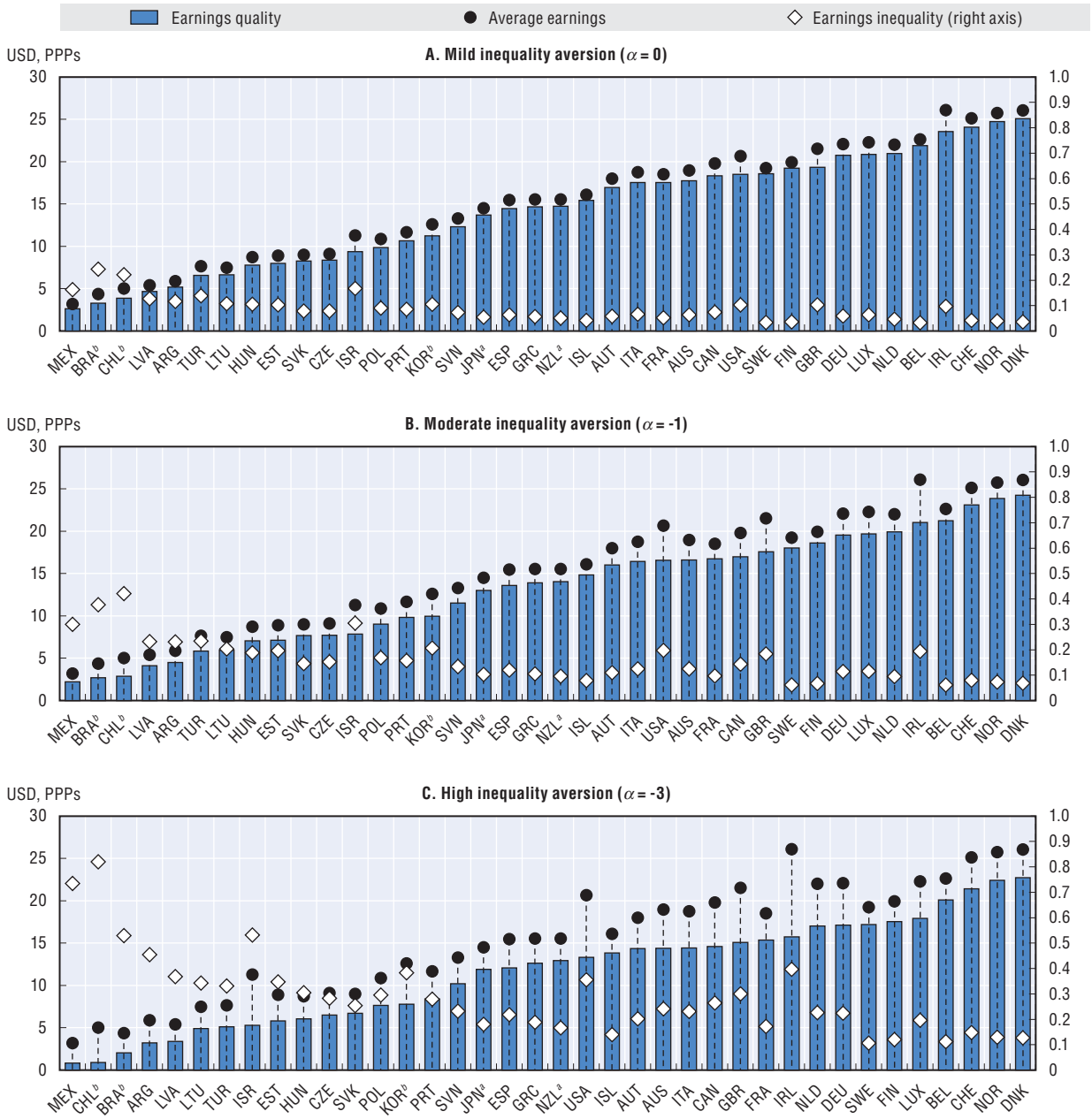
Figure 3.2 compares the cross-country ranking of earnings quality for, respectively, mild, moderate and high levels of inequality aversion.

- *Average earnings.* Average earnings above USD 25 per hour are observed in Norway, Denmark and Switzerland, while average earnings levels below USD 10 per hour are observed in several Central and Eastern European countries, Turkey and the Baltic States and around USD 5 an hour in the four Latin American countries included in the Figure 3.2.
- *Earnings inequality.* Latin American countries have the most unequal distribution of earnings, whereas the lowest levels of inequality are registered in Scandinavian countries and Belgium. Overall, countries with lower average earnings tend to have higher levels of earnings inequality.
- *Earnings quality.* The cross-country ranking in terms of overall earnings quality does not appear to be very sensitive to the chosen degree of inequality aversion. Denmark, Norway and Switzerland are consistently ranked as the countries with the highest levels of overall earnings quality, while Latin American countries, Central and Eastern European countries as well as Turkey are consistently ranked as having low overall earnings quality. However, the assumed degree of inequality aversion can have important implications for the ranking of countries with similar levels of average earnings. For example, Ireland is ranked 4th when inequality aversion is set at a mild level, but falls to 10th position when assuming high inequality aversion. Similarly, the

Figure 3.2. **Average earnings, earnings inequality and the overall quality of earnings by country**

PPP-adjusted gross hourly earnings in USD, 2010



a) Calculations based on *OECD Earnings Distribution* (database), *http://dx.doi.org/10.1787/lfs-ear-data-en* for full-time workers.
b) 2009 instead of 2010.
Source: OECD calculations based on the Structure of Earnings Survey (SES) for European countries, national labour force surveys for Argentina, Brazil, Chile, Israel, Mexico and the United States, national household surveys for Australia, Canada, and Korea and the *OECD Earnings Distribution* (database), *http://dx.doi.org/10.1787/lfs-ear-data-en* for New Zealand and Japan.

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United States moves from the 12th to 18th position in the cross-country ranking when moving from mild to high inequality aversion. Conversely, more equal countries move up in the cross-country ranking when assuming higher levels of inequality aversion. For example, when moving from mild to high inequality aversion, Finland moves up from the 10th to the 6th position and Sweden from 11th to 7th position.

Labour market security

The efficient reallocation of workers across firms and sectors is crucial for economic growth, and hence, average earnings and incomes. However, the continuous process of job reallocation also entails important adjustment costs to workers and may give rise to worker concerns over job security, with potentially detrimental effects for individual well-being as well as society at large. Indeed, job security appears to be a major determinant of individual well-being. When workers are asked to state their preferences with respect to different aspects of work, as is done, for example, in the European Social Survey (ESS) or the International Social Survey Programme (ISSP), the results rank job security consistently as the most important item in almost all countries for which data are available (Green, 2009; OECD, 2011a). The importance of labour market security for individual well-being also has been demonstrated in several studies that relate perceptions of job security to well-being outcomes such as life satisfaction and health (e.g. Green, 2011). However, the effects of job security may go well beyond the well-being of workers. Job insecurity may affect firm outcomes by reducing worker retention rates, investment in firm-specific skills and productivity as well as society at large by shaping people's political views, social unrest, consumer confidence and savings.

Labour market insecurity is defined in terms of unemployment risk and insurance…

The majority of job-quality frameworks measure job security in terms of the incidence of temporary work or the proportion of short-tenured workers in employment (OECD, 2013c). While both indicators focus on important and objectively measureable determinants of the probability of job loss, they do not allow for consistent comparisons across countries or over time. Comparisons across countries of job security in terms of the proportion of temporary contracts may be misleading since the rules governing temporary and open-ended contracts vary widely across countries. In fact, the incidence of temporary work is primarily a measure of labour market duality rather than of average job security (see Chapter 4 of this publication). The proportion of short-tenured workers reflects both voluntary quits and involuntary job losses and, hence, is primarily a measure of worker turnover. Comparisons over time using either indicator are problematic since they tend to suggest pro-cyclical patterns in job security whereas job security is usually considered to be counter-cyclical, with the risk of job loss increasing in recessions.[11] Eurofound (2012a) takes a more sophisticated approach by proposing a synthetic indicator of "prospects" based on the answers to questions related to, respectively, perceived job security, perceived career prospects, and contract quality. While the forward-looking nature of this indicator is appealing, it is not entirely straightforward to interpret what is captured by the questions related to job security and career advancement.[12]

The starting point for the approach to labour market security taken in this chapter is that concerns about job insecurity reflect not only the probability of job loss but also its expected costs. While the importance of expected costs has been emphasised in several previous studies (OECD, 1997; Anderson and Pontusson, 2007; de Cuyper et al., 2008; Green, 2011), it has so far not been taken up in frameworks for the measurement of job quality. More specifically, the expected cost of job loss is considered to be a function of the probability of becoming unemployed, the probability of staying unemployed or, equivalently, the expected duration of unemployment, and the degree to which insurance compensates for lost earnings during unemployment. Unemployment risk in this chapter is used to refer

to the expected cost of unemployment in the absence of unemployment insurance and is defined in terms of the objective probabilities of becoming and staying unemployed. The risk of unemployment gives an indication of the share of the year that an employed person is expected to spend in unemployment, or alternatively, under the assumption that the value of work only relates to the earnings it generates, of the average expected earnings loss due to the risk of unemployment as a share of previous earnings.[13] Overall labour market insecurity is defined in terms of the combination of unemployment risk and unemployment insurance. Since the concept of insecurity employed here goes beyond that associated with the current job by taking account of the security of workers in and outside work, this broader notion is referred to as labour market insecurity.[14]

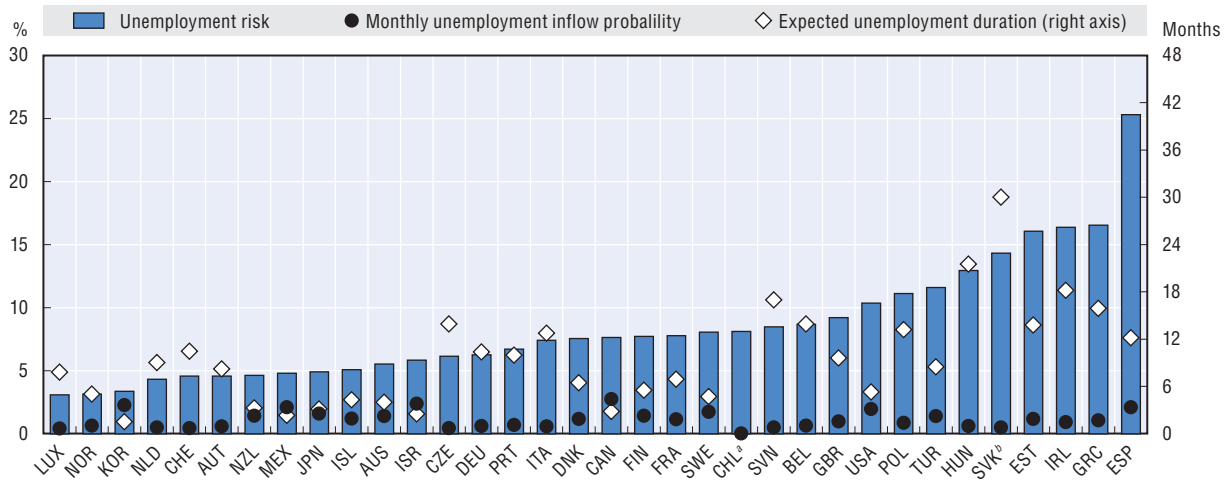
In order to document the degree of labour market insecurity across countries and groups, this chapter makes use of a mix of aggregate and individual-level sources. Aggregate sources are most suitable for the purposes of making cross-country comparisons with respect to unemployment risk and unemployment insurance since these have the widest coverage across countries and also benefit from high validity since they tend to be derived from official labour market statistics and indicators. Individual-level sources have the advantage that measures of unemployment risk and unemployment insurance can be constructed for different socio-economic groups and according to the status of the last job before becoming unemployed (e.g. temporary contract, part-time). They are also more suitable for analysing the determinants of unemployment risk and insurance and their consequences for subjective well-being. Aggregate sources, therefore, will be used to document unemployment risk and insurance across countries whereas individual-level sources are used to describe patterns across workforce groups as well as for analytical purposes.

… with unemployment risk measured in terms of the probability of becoming unemployed and the expected duration of unemployment…

Figure 3.3 documents the risk of unemployment across OECD countries by focusing on its objective components using data on flows in and out of unemployment from the *OECD Unemployment Duration Database* for 2010. This information can be used to obtain the monthly probability of becoming unemployed (a measure of job security), and the average expected duration of completed unemployment spells in months, which is the inverse of the probability of finding a job once unemployed (a measure of employability). The product of the probability of becoming unemployed and the expected duration of unemployment provides an indication of the overall risk of unemployment. The figure reveals considerable cross-country variation both in terms of the magnitude of the overall risk of unemployment as well as the relative importance of its underlying components. The overall risk of unemployment is highest in Estonia, Greece, Ireland, the Slovak Republic and Spain, mostly countries where unemployment has increased sharply as a result of the global financial crisis. The overall risk of unemployment is lowest in Korea, Luxembourg and Norway. The risk of becoming unemployed in a given month varies from less than five in every 1 000 employed persons in countries such as the Czech Republic, Luxembourg and Switzerland to around 25 in 1 000 in countries such as Canada, Israel and Korea. The average duration of completed unemployment spells ranges from less than three months in Canada, Israel, Korea and Mexico to 18 months or more in Hungary, Ireland and the Slovak Republic.

Figure 3.3. **Unemployment risk and its components in OECD countries**

Unemployment risk (% of time), probability of becoming unemployed (% of employed) and expected duration of unemployment (months) by country, 2010



Note: **Unemployment risk:** the monthly unemployment inflow probability times the expected average duration of unemployment spells. **Unemployment inflow probability:** the ratio of unemployed persons who have been unemployed for less than one month over the number of employed persons one month before. **Expected unemployment duration:** the inverse of the unemployment outflow probability where the latter is defined as one minus the ratio of unemployed persons who been unemployed for one month or more over the number of unemployed persons one month before. For further details, see the web annex of this chapter on *www.oecd.org/employment/outlook*.

a) No information on unemployment flows is available for Chile. The overall risk of unemployment is approximated by the actual unemployment rate.

b) The expected duration of unemployment in the Slovak Republic is censored at 30 months.

Source: OECD calculations based on the *OECD Labour Market Statistics* (database), *http://dx.doi.org/10.1787/data-0322-en*.

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While the *OECD Unemployment Duration Database* can be used to construct aggregate measures of unemployment risk for almost all OECD countries, it also has some limitations. First, to measure the probability of becoming unemployed and the average duration of unemployment spells, one needs to assume that all inflows into unemployment come from employment and all outflows from unemployment go to employment. Thus, any flows in and out of the labour force are ignored. Second, the cross-sectional nature of the data implies that one cannot follow individuals over time and, therefore, document the probability of becoming unemployed and the expected duration of unemployment spells conditional on job status in the last job before becoming unemployed. Thus, it is not possible to construct separate measures of the probability of becoming unemployed and the expected duration of unemployment spells, depending on whether the last job was part-time or full-time or whether it was temporary or open-ended. In order to address these two issues, individual panel data for European countries are used from the European Union Statistics on Income and Living Conditions survey (EU-SILC). The resulting measures of the probability of becoming unemployed, the expected duration of unemployment spells and unemployment risk at the country level are documented in the web annex to this chapter (OECD, 2014a *www.oecd.org/employment/outlook*) and provide a qualitatively similar picture for unemployment risk as those based on the *OECD Unemployment Duration Database*. The pairwise correlation across the countries for which it can be calculated using both sources is over 0.7. This also provides some reassurance that ignoring transitions in and out of the labour force is not a major issue for the purpose of cross-country comparisons of unemployment risk. The results by socio-economic group and last job status based on the microdata are discussed in Section 3.

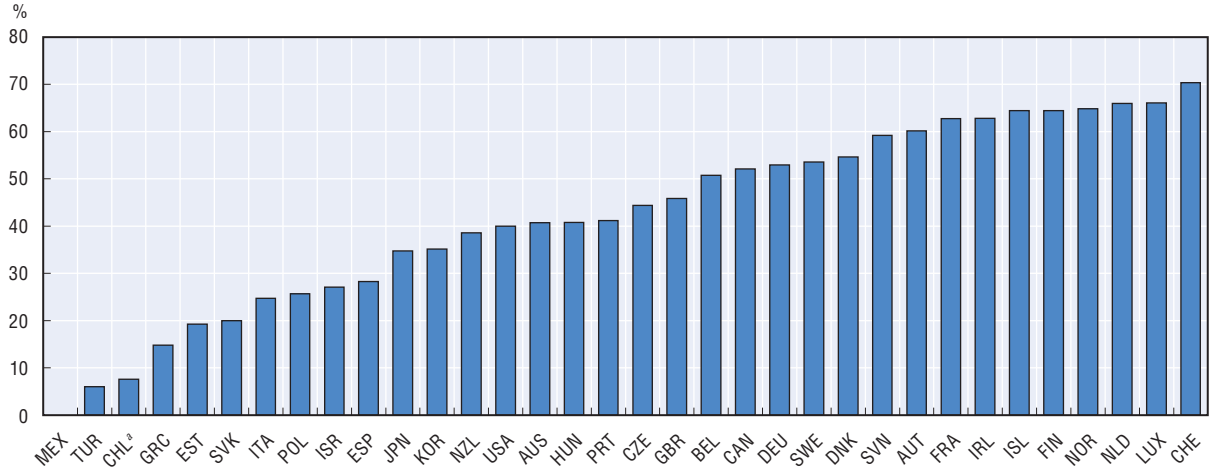
… and insurance in terms of the effective level of risk absorption through the tax-and-benefits system

Cross-country comparisons of unemployment insurance typically focus on the generosity of unemployment in terms of the replacement rate of previous earnings over a given reference period and set of household of types (OECD, 2007). While such comparisons are very useful for providing an indication of the generosity of benefit entitlements, they do not take account of cross-country differences in the risk and nature unemployment and, therefore, do not allow measuring the effectiveness of unemployment insurance in absorbing the risk of unemployment in a given country. In order to provide an indication of the effectiveness of insurance against the risk of unemployment in a given country, this chapter focuses on *effective* replacement rates based on the combination of benefit coverage and benefit generosity for unemployment insurance, unemployment assistance and social assistance.[15] Figure 3.4 documents the resulting measure of effective unemployment insurance across OECD countries using data for 2010. Effective insurance is highest in Finland, Iceland, Luxembourg, Norway, the Netherlands and Switzerland, reflecting a combination of relatively high coverage and replacement rates. It is lowest in Chile, Estonia, Greece, the Slovak Republic and Turkey, typically as a result of low coverage rates. In the majority of countries, unemployment insurance represents the bulk of income support against the risk of unemployment. Unemployment assistance is the only form of unemployment benefit in Australia and New Zealand and also relatively important in Germany, Hungary, Ireland and the United Kingdom. Mexico did not have a nation-wide system of unemployment benefits in 2010, but has recently proposed to establish one.

In order to measure effective insurance for different socio-economic groups and by last job status EU-SILC is used. The concept of insurance is similar in spirit to that used for the cross-country comparison in Figure 3.4. It seeks to take account of the accessibility of

Figure 3.4. **Effective unemployment insurance in OECD countries**

Percentage of previous net earnings averaged across household types, 2010



Note: **Effective unemployment insurance:** the coverage rate of unemployment insurance (UI) times its average net replacement rate among UI recipients plus the coverage rate of unemployment assistance (UA) times its net average replacement rate among UA recipients plus the share of those not covered by unemployment benefits [or the ratio of the number of social assistance (SA) recipients to the number of unemployed if this is lower] times the SA replacement rate. The average replacement rates for recipients of UI and UA take account of family benefits, housing benefits and social assistance if eligible.

a) Replacement rates for Chile represent 2011 figures.

Source: OECD calculations based on the *OECD Benefit Recipients Database*, the *OECD Labour Market Programmes* (database), *http://dx.doi.org/10.1787/data-00312-en* and the *OECD Taxes and Benefits* (database), *http://dx.doi.org/10.1787/data-00201-en*.

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unemployment benefits, their generosity in terms of replacement income and their maximum duration as well as the progressivity of the tax system. However, it differs in a number of important respects. First, it includes mandated severance pay as well as some other benefits in addition to unemployment benefits and social assistance.[16] Second, it is calculated before taking account of taxes and employee social security contributions. Third, the calculation of effective replacement rates takes account of coverage as in the aggregate case, but also the actual level of previous earnings and household composition. Despite these differences, the aggregate measure of effective insurance and the micro-based measure display a significant positive relationship across the countries for which they can be calculated, with a pairwise correlation of around 0.6. The resulting measures of effective unemployment insurance are discussed in more detail in the web annex to this chapter in OECD (2014a). The microdata can also be used to analyse the relationship between coverage rates and eligibility based on information on recent work experience in conjunction with country-specific contribution requirements. This is discussed in Box 3.4.

Box 3.4. **Using unemployment-benefit coverage rates as a proxy for eligibility to unemployment benefits**

Unemployment-benefit coverage rates are measured here by the share of ILO unemployed persons receiving unemployment benefits. Separate coverage rates are calculated for unemployment insurance and unemployment assistance. Calculating separate coverage rates by benefit type is important in countries such as Germany, Hungary and Ireland where both forms of benefits play a major role for effective insurance.

Unemployment-benefit coverage rates are often interpreted as eligibility rates, i.e. the share of the unemployed eligible to benefits, and indeed, this is also the interpretation attached to coverage rates in this chapter. Coverage rates provide an indication of *initial* eligibility when becoming unemployed as well as *continued* eligibility as the duration of unemployment lengthens and the probability increases that the maximum duration of benefit entitlements is exhausted. However, interpreting coverage rates as eligibility rates is not without problems, and particularly in the present case, when the interest is to provide an indication of entitlements to unemployment benefits among the employed in the event of unemployment. The main factors complicating the interpretation of coverage rates as *ex ante* eligibility rates are the following:

- Coverage rates not only capture eligibility to unemployment benefits among the unemployed but also the extent to which eligible unemployed persons claim benefits.
- The target group for the measurement of coverage rates is ILO unemployment, i.e. persons not working but available for work and actively searching for work, which may differ from the target group as defined by national authorities administering unemployment benefits.
- Coverage rates take account of all unemployed persons irrespective of the reason of separation from the last job. In many OECD countries, unemployment benefits are only available to job losers, thus excluding persons who have quit their job and subsequently have become unemployed.

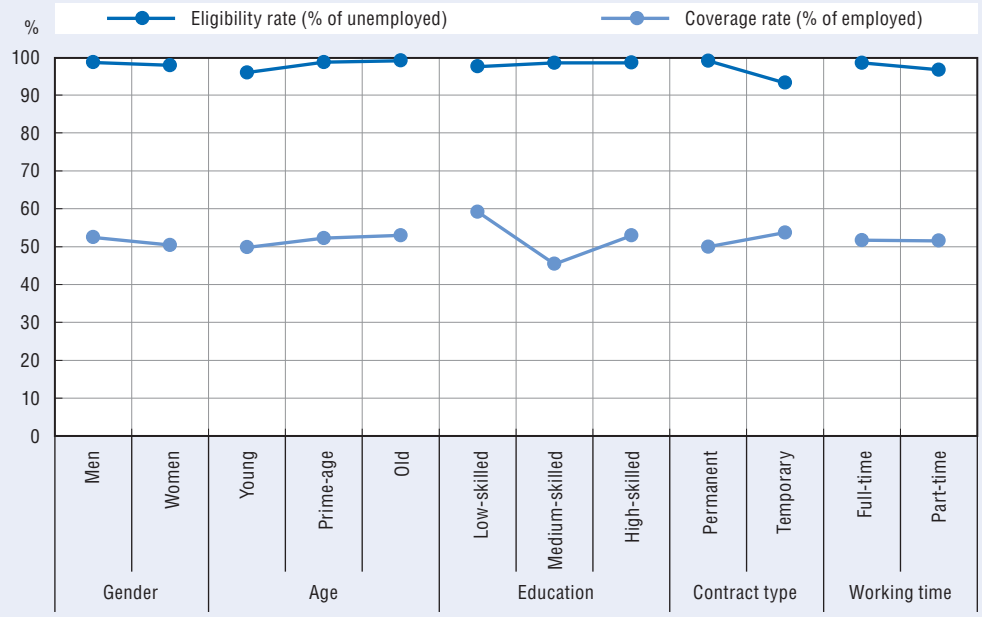
Unfortunately, direct information on eligibility rates is not available on a comparable basis for many countries. However, using individual panel data in the form of EU-SILC, one can construct measures of initial eligibility by taking account of individual employment histories and country-specific contribution requirements. More specifically, initial eligibility rates are defined as the proportion of employed persons at a given point in time who have worked the minimum number of months required for initial benefit eligibility during the respective qualification period. Given the relatively short panel dimension of EU-SILC, the reference period was limited to three years in countries with relatively long contribution or qualification periods (e.g. the Slovak Republic, Spain).

Box 3.4. **Using unemployment-benefit coverage rates as a proxy for eligibility to unemployment benefits** *(cont.)*

The figure below compares unemployment-benefit coverage and initial eligibility rates across different workforce groups on average across European countries. It shows that initial eligibility rates are much higher than coverage rates. While the magnitudes of these rates should be interpreted with some caution, this pattern is plausible. Coverage rates are likely to be lower because: they reflect claims rather than entitlements; they capture both initial and continued eligibility; and they include all unemployed persons irrespective of the reason for separation from the last job. The pattern across workforce groups is generally similar, but also reveals some notable differences. Men, older workers and full-time employed are more likely to receive benefits according to both measures. This is likely to reflect the role of labour market attachment for initial eligibility and benefit receipt. However, the two measures provide contrasting insights with respect to the role of skill and contract. Initial eligibility increases with skill levels and is higher for workers with permanent contracts, consistent with higher labour market attachment among those groups. Somewhat surprisingly, coverage rates appear to be higher for temporary workers and lower for workers with medium levels of skills. It is not entirely clear what drives these results. One possible explanation is that this is driven by systematic differences in the relative importance of voluntary quits and involuntary job loss. Since quits are less frequent in the case of temporary contracts, this could bias coverage rates in favour of temporary workers. Given these concerns when using coverage rates at the group level, eligibility rates will be used for the calculation of effective insurance by workforce group in Section 3.

Coverage and eligibility rates across workforce groups

Percentage of, respectively, employed and unemployed, average across European countries, 2010



Note: **Coverage rate:** the number of unemployment benefits recipients as a share of the number of ILO unemployed; **Eligibility rate:** the number of employed persons who have worked the minimum number of months required for initial benefit eligibility during the reference period as a share of the number of employed with complete employment histories for the entire qualification period. For further details, see the web annex of this chapter on *www.oecd.org/employment/outlook*.

Source: OECD calculations based on the European Union Statistics on Income and Living Conditions (EU-SILC).

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Unemployment risk and unemployment insurance are important determinants of well-being among the employed

There is considerable evidence that unemployment risk and insurance have important consequences for the subjective well-being among the employed. Most studies approximate the risk of unemployment using the actual rate of unemployment, without differentiating between its constituent determinants (i.e. the probability of becoming unemployed and the expected duration of unemployment). For example, using data for Canada, Helliwell and Huang (2011) find that a 1 percentage point increase in the unemployment rate has the equivalent effect on well-being among the employed as a 3% reduction in household income. They further show that, due to the much larger number of individuals concerned, the risk of unemployment among the employed on overall well-being even exceeds the direct effect of being unemployed. Boarini et al. (2014) and OECD (2014b) find somewhat similar results using data for 32 OECD countries from the Gallup World Poll. Most studies on the role of insurance have concentrated on the relative importance of insurance for the well-being between the employed and the unemployed (Di Tella et al., 2003; Sjöberg, 2010; Helliwell and Huang, 2011). Interestingly, these studies not only suggest that insurance is important for well-being, but also that its importance does not differ systematically between the employed and the unemployed.[17]

Box 3.5 presents new OECD evidence on the role of unemployment risk and insurance using the measures derived from the microdata discussed above. The analysis suggests that unemployment risk has a large and statistically significant effect on worker well-being. This reflects the role of both the probability of becoming unemployed and the likely duration of unemployment, although the effect of the latter appears to dominate. Moreover, unemployment insurance is found to substantially moderate the adverse impact of unemployment risk on well-being by reducing its expected costs. All in all, the results suggest that policies that reduce the expected costs of unemployment, either through the provision of effective insurance to the unemployed or by reducing the expected duration of unemployment through the use of active labour market policies, are important for the well-being of the employed.

Towards an overall measure of labour market insecurity

To sum up, labour market insecurity in this chapter is defined in terms of two major components: unemployment risk and unemployment insurance. Unemployment risk is defined as the probability of becoming unemployed times the average expected duration of unemployment, while unemployment insurance is defined in terms of the effective level of risk absorption through the tax-and-benefits system. Thus, labour market insecurity is defined as unemployment risk times risk absorption, i.e. one minus effective insurance.

Before discussing how overall labour market insecurity compares across countries, it is worth highlighting two important limitations. First, the indicator of labour market insecurity used in this chapter is confined to the financial costs of unemployment. This is not ideal since the well-being impact of unemployment risk goes beyond the loss of income as suggested indirectly by the analysis in Box 3.5 and more directly in other studies (e.g. Clark and Oswald, 1994; Winkelmann and Winkelmann, 1998; Clark, 2003). Taking account of the non-pecuniary cost of unemployment could, in theory, be achieved by assigning appropriate weights to the unemployment risk and insurance components when combining them into an overall measure of labour market insecurity but it is not obvious what these weights should be in practice.[18] However, it is worth noting that the risk of

Box 3.5. **The role of unemployment risk and insurance for subjective well-being**

This box summarises the results of new OECD work on the role of unemployment risk and insurance for life satisfaction. The analysis is based on a semi-aggregated dataset with information on unemployment flows from EU-SILC and information on life satisfaction from the European Social Survey by year (2006, 2008 and 2010), country (20 European countries) and socio-economic group (age, gender and education). The figure below summarises the results by focusing on the impact of a 10% increase in the unemployment inflow probability, a 10% reduction in the unemployment outflow probability and a 1% increase in unemployment risk on life satisfaction in the absence of effective unemployment insurance as well as when it replaces either 40% or 60% of the income loss associated with unemployment (which correspond to, respectively, the minimum and the maximum effective replacement rates across countries in the sample). For further details, see the web annex in OECD (2014a). Several patterns stand out:

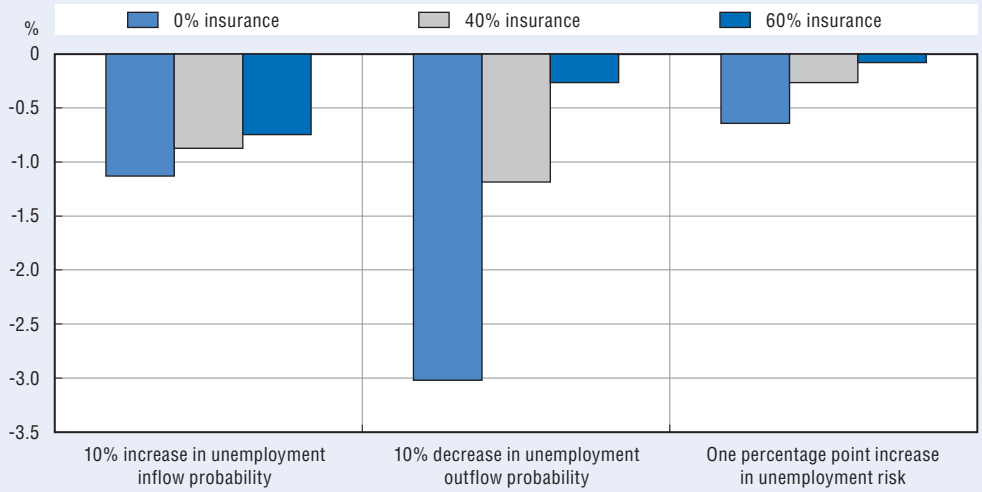
- *The overall risk of unemployment*. An increase in the risk of unemployment is associated with a large and statistically significant reduction in life satisfaction among employed persons. This effect is equivalent to the effect of a reduction in household income of more than 2%. This is considerably larger than the expected income effect associated with unemployment which corresponds to roughly a 1% reduction in household income. This may reflect that: i) the cost of unemployment is considerably larger than the corresponding loss of income (e.g. Clark and Oswald, 1994; Winkelmann and Winkelmann, 1998; Clark, 2003); ii) workers are risk averse; or iii) unemployment risk is correlated with other factors that affect well-being (e.g. crime).*
- *The probability of becoming unemployed and leaving unemployment*. Both the likelihood of entering and leaving unemployment matter for subjective well-being, although the effect of the outflow probability appears to dominate. This suggests that employed workers are concerned not just about becoming unemployed, but also, and possibly even more so, about not being able to find a new job when unemployed. It also suggests that employees tend to care about working in general rather than working in a specific job or for a specific firm. The larger estimated effect of the unemployment outflow probability on life satisfaction may also explain why previous studies have tended to find a negative association between the level of employment protection and well-being (Postel-Vinay and Saint-Martin, 2005; Wasmer, 2006; Clark and Postel-Vinay, 2009; Salvatori, 2010) despite the lack of consistent empirical evidence of a negative effect of employment protection on the level of unemployment. All in all, this suggests that priority should be given to policies that can reduce the duration of unemployment and improve access to good quality jobs, such as active labour market policies, rather than to measures which seek to contain the risk of job loss.
- *Effective unemployment insurance*. The adverse consequences of the risk of unemployment among those currently employed on life satisfaction are partially offset by effective insurance. However, the effect of insurance only moderates the well-being effect of the risk of remaining in unemployed and not that of becoming unemployed. All in all, the estimated insurance effects seem quite large. One reason for this may be that the estimations do not capture the cost of insurance. The estimated impact of insurance is, therefore, best interpreted as an upper bound.

* Lüchinger et al. (2010) present similar findings using data for the United States, Germany and several other European countries. They find that these effects are more important for workers in the private than in the public sector, suggesting that this does not reflect society-wide changes related to the risk of unemployment.

Box 3.5. **The role of unemployment risk and insurance for subjective well-being** *(cont.)*

Unemployment risk and insurance have important implications for well being

Estimated effects of the probability of becoming unemployed, the probability of leaving unemployment, the risk of unemployment on life satisfaction and the compensating effects of effective unemployment insurance



Note: The well-being effect is measured in terms of standard deviations of life satisfaction. For further details, see the web annex of this chapter on *www.oecd.org/employment/outlook*.
Source: OECD estimates based on the European Union Statistics on Income and Living Conditions (EU-SILC) and the European Social Survey (ESS).

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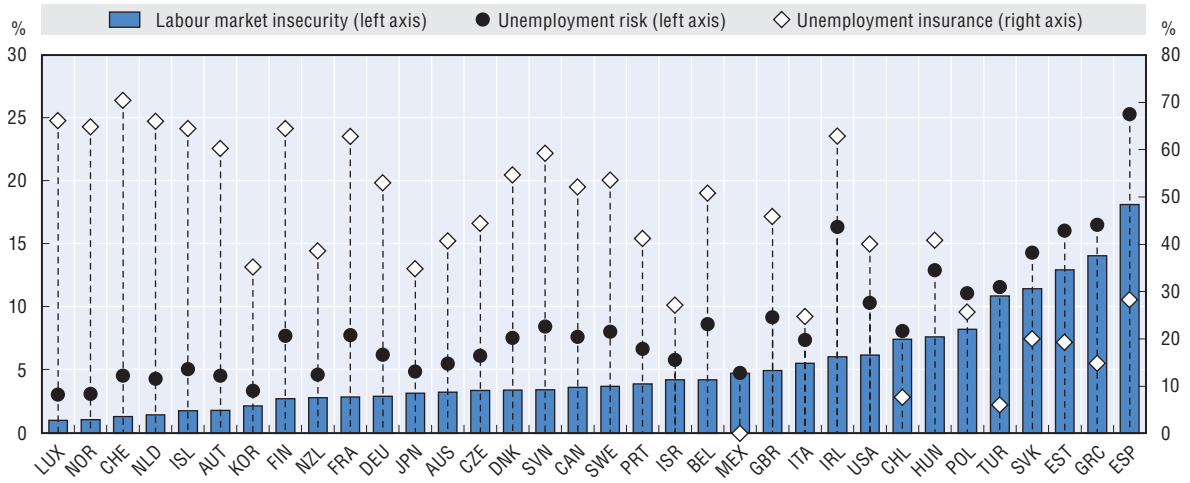
unemployment effectively provides an alternative measure of overall labour market insecurity in the extreme case when the cost of unemployment are largely non-pecuniary.[19] Thus, considering unemployment risk and labour market insecurity together provides an indication of the sensitivity of cross-country rankings to the importance of non-pecuniary costs associated with unemployment. Second, the measure of overall labour market insecurity used here does not take account of the relationship between the risk of unemployment and the degree of unemployment insurance across workforce groups. This can have potentially important implications for cross-country comparisons when there are important differences in risk and insurance between groups and the relationship between risk and insurance across groups differs across countries.[20]

Figure 3.5 presents the composite measure of labour market insecurity and its main components across OECD countries in 2010. It should be stressed that this composite measure of labour market insecurity is at least partly influenced by the specific labour market conditions as a result of the global financial crisis. Bearing this in mind, the highest levels of labour market insecurity are observed in Estonia, Greece, the Slovak Republic and Spain. Given the actual unemployment inflow and outflow probabilities, this implies an expected earnings loss on average across persons of one sixth or more of previous earnings as a result of unemployment. The lowest levels of labour market insecurity are observed in Luxembourg, the Netherlands, Norway and Switzerland. There is a weak negative correlation between unemployment risk and insurance across countries, suggesting that countries

Figure 3.5. **Labour market insecurity in OECD countries**

Share of previous earnings, 2010



Note: **Unemployment risk:** the probability of becoming unemployed times the expected duration of unemployment which may be interpreted as the average expected earnings loss associated with unemployment as a share of previous earnings. **Unemployment insurance:** the effective net individual replacement rate of unemployment and social assistance benefits in terms of previous earnings. **Labour market insecurity:** unemployment risk times one minus unemployment insurance which may be interpreted as the uninsured average expected earnings loss associated with unemployment as a share of previous earnings. For further details, see the web annex of this chapter on *www.oecd.org/employment/outlook*.

Source: OECD calculations based on the *OECD Labour Market Statistics* (database), *http://dx.doi.org/10.1787/data-00322-en* the *OECD Benefit Recipients* (database), the *OECD Labour Market Programmes* (database), *http://dx.doi.org/10.1787/data-00312-en* and the *OECD Taxes and Benefits* (database), *http://dx.doi.org/10.1787/data-00201-en*.

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with high unemployment risk tend to be associated with weak insurance. More generous unemployment insurance, therefore, is not necessarily associated with a higher risk of unemployment as a result of longer unemployment spells.

Quality of the working environment

Having a quality job does not just mean receiving good salaries or having good career prospects, it also means working in an environment that is conducive to personal accomplishment. Work provides people with a chance to fulfil their ambitions, to feel useful in society and to build self-esteem, as it often represents their main recognised contribution to the community where they live. But work may also impinge negatively upon an individual's personal life. In particular, a wealth of research in occupational health, epidemiology, management and sociology indicates that the quality of the working environment (QWE) has a profound impact of workers' mental and physical health.

Defining and measuring QWE is challenging as it requires looking at many different aspects of a job, as well as understanding their interrelations. No international framework for measuring job quality currently exists that provides a comprehensive picture of QWE. For instance, the ILO Decent Work Framework does not cover this dimension (ILO, 2012). While the UNECE framework for Measuring Quality of Employment and the Eurofound framework on Job Quality include a number of QWE aspects, they do not fully account for their interrelations (UNECE, 2010; Eurofound, 2012a). Building on the literature on occupational health, recent studies have investigated this important issue at the international level, establishing strong links between job quality and various health outcomes (Eurofound, 2012b; OECD, 2012a and 2013c). Following this approach, this section

develops a synthetic measure of QWE. From a well-being perspective, focusing on workers' health is somewhat restrictive, as a better working environment is likely to improve workers' life satisfaction even if it has no direct effects on their health. On the other hand, this approach provides some insights into the economic consequences that a poor working environment may have for employers, in terms of sickness absence and reduced productivity, and for society as a whole, entailing both a waste of human capital and an additional burden on public health systems.

Job strain and workers' well-being

Numerous studies on occupational health have investigated the mechanisms by which work organisation and workplace relationships can have an impact on employee well-being. Several models have been developed to identify the various components of QWE, i.e. the various attributes of a job that affect workers' physical and mental health.[21] These models postulate that in their daily work people face a variety of so-called "job demands", which require sustained physical, cognitive and emotional effort. Examples of such demands include dealing with heavy workload and time pressure, coping with conflicting demands, or performing physically demanding tasks. Workers also have a number of resources at their disposal, whether physical, organisational or social (e.g. work autonomy, opportunities to learn, and support from colleagues and managers). These so-called "job resources" help workers to cope with difficult demands, to achieve work goals, and stimulate learning and personal development. The basic premise of occupational health models is that job demands are not necessarily negative, but they can turn into job stressors when the employee does not have enough job resources to meet these demands. Excessive demands combined with insufficient resources, hence, create job strain, which is a crucial risk factor for workers' physical and mental well-being. According to these models, it would be misleading to focus on job demands or resources in isolation: a measure of job strain needs to be constructed that takes both factors into account.

There is a longstanding tradition of psychometric scales and indices that have been constructed in order to measure job strain, going back to the late 1960s (for a review, see Landsbergis et al., 2000). Detailed analyses of their measurement properties have been conducted in order to assess their reliability, content validity, diagnostic power and the extent to which they can be applied to workers in various occupations, sectors and countries. In medical research, these measurement tools were mostly used to investigate work risk factors of cardiovascular diseases, whereas in health care services they were used to analyse the determinants of sickness absence and burnout. As a result of this research, there is now abundant evidence that workers' physical and mental health status is a major outcome of job strain (see Box 3.6).

A summary measure of the incidence of job strain

The literature on occupational health helps to identify those aspects of QWE that are of greatest importance to workers and provides important insights to address the dimensionality problem raised by its measurement. What ultimately shapes the overall QWE is the interaction of its various components; hence, the latter have to be aggregated at the individual level into a few synthetic indices that account for both their cumulative and compensating effects on an individual's physical and mental well-being. Accordingly, this section presents three synthetic indices related to QWE, using data from the European Working Conditions Survey (EWCS): an additive measure of various job demands, an

Box 3.6. **When job strain impairs workers' health: a brief overview of recent empirical studies**

A wealth of research on occupational health indicates that there is a strong relationship between job quality and peoples' physical and mental health. Workers experiencing job strain, lacking the support they need to cope with difficult work demands, are more likely to suffer from job burnout and depression, to develop musculoskeletal disorders, hypertension, and cardiovascular disease (see Annex Table 3.A1.1 for a review of recent empirical studies).

In epidemiological research, a wide range of prospective studies have emerged over the last three decades, testing the job strain hypothesis in different countries and over a variety of worker samples. These studies measure work characteristics through a baseline questionnaire, and then follow the sample over a number of years. They link initial working conditions with subsequent health status, obtained through official health registers, clinic examination or self-reporting of employees. Most of these studies select participants who do not have the health condition in question at the baseline stage, and control for common risk factors such as lifestyle factors (e.g. tobacco smoking, alcohol intake and physical activity) and conventional coronary risk factors (e.g. cholesterol and diabetes status). They provide good evidence for a causal role of poor working environment, as they consistently find a strong adverse effect of job strain on a number of health outcomes, including cardiovascular and coronary heart diseases, high blood pressure and musculoskeletal diseases (e.g. Kivimäki et al., 2012; Slopen et al., 2012).

Links have also been established between job strain and mental health of workers, most often through cross-sectional analyses based on self-reported measures of both working conditions and health status (Bakker and Demerouti, 2007). Interestingly, these studies examine both negative (burnout) and positive (work engagement) aspects of psychological well-being.* They generally find a strong relationship between job demands and burnout, and between job resources and work engagement. A positive relationship between low job resources and burnout is also found, generally weaker than in case of job demands. However, these cross-sectional studies do not allow for inferences about causal links to be made. Workers facing poor working conditions are more likely to report mental health disorders because of high job strain, but individuals with mental health problems are also more likely to report high job strain because of their poor health conditions. To deal with potential reverse causality issues some studies incorporate work-unit aggregated scores of workplace conditions. An adverse health effect of job strain is still found, lending further support to the existence of a causal link from job strain to mental health status (e.g. Kolstad et al., 2010). Available longitudinal studies tend to confirm these findings (Stansfeld and Candy, 2006; Netterstrøm et al., 2008). In particular, the few prospective studies that account for the duration and intensity of exposure to job strain find relatively strong links between job strain and the development of mental health disorders (e.g. Stansfeld et al., 2012).

* Burnout is often characterised by a combination of low energy (exhaustion) and low identification with one's work (cynicism), whereas work engagement is characterised by a combination of high energy (vigour) and high identification (dedication).

additive measure of various job resources, and a synthetic index that accounts for the buffering effect of job resources on the relationship between job demands and well-being at work. The incidence of jobs that involve considerable job strain, i.e. which combine a high level of demands with few resources, is used as a summary measure of overall QWE.

The key features of the job strain indicator used in this chapter are sketched out in Table 3.2 (see Annex Table 3.A1.2 for further details). Demanding jobs are characterised by three main aspects. The first aspect refers to the overall time pressure that workers may experience to meet their job requirements. This includes factors that can affect an individual's ability to satisfactorily combine work, family commitments and personal life, such as very long working hours, lack of flexible working time arrangements or high pace of work. The second broad category of job demands refers to working conditions that can impair physical health, such as frequent and prolonged exposure to ergonomic risks (e.g. tiring and painful positions, carrying or moving heavy loads) or ambient risks (e.g. high noise or extreme temperatures). The third component of job demand refers to different forms of intimidation in the workplace, such as verbal abuse, threats or humiliating behaviours, which can be detrimental to an individual's mental health.

Table 3.2. **Job demands, job resources and job strain**

Job strain, as the result of…			
… too many job demands		… and too few job resources	
Time pressure	Work usually more than 50 hours per week. Difficult to take an hour or two off during working hours for personal or family matters. Work at very high speed and to tight deadlines.	Work autonomy and learning opportunities	Can choose or change the order of tasks. Can choose or change methods of work. Job involves learning new things. Employer provided training or on-the-job training.
Physical health risk factors	Tiring and painful positions. Carrying or moving heavy loads. Exposed to vibrations from hand tools, machinery. Exposure to high noise. Exposure to high or low temperature.	Good management practices	Well-defined work goals. Feedback from manager. Manager good at planning and organising work.
Workplace intimidation	Verbal abuse. Threats and humiliating behaviour. Bullying or harassment.	Good workplace relationships	Feel "at home" at work and have very good friends at work.

The summary index of job resources covers three broad aspects of the working environment, which are essential in helping workers to cope with difficult work demands. The first component of this index describes the extent to which employees have the ability to control their own work activities and develop their skills through formal or informal learning opportunities. The second broad category of job resources refers to good management practices and includes elements such as good organisation of work, well-defined work goals and appropriate feedbacks on the work performed. The last component relates to social relationships in the workplace, as described by an open and friendly work atmosphere.

Altogether, these various job demands and job resources cover many different aspects of the working environment. Criteria have to be established in order to characterise what is meant by excessive demands, insufficient resources, and ultimately, job strain. In what follows, "excessive demands" refers to a total number of two or three job demands, "insufficient resources" corresponds to one job resource or none, and "job strain" refers to any jobs with three demands (whatever the number of resources), or to jobs that combine two demands with only one resource or none. The choice of these various cut-off points has been guided by the analysis of the relationship between self-reported work-related health problems and the number of job demands and job resources (see Box 3.7). Broadly speaking, job strain is characterised here by the set of combinations of total job demands and total job resources that are most likely to impair workers' health.

On average for the 23 European countries for which data are available, 17% of employees experience job strain (Figure 3.6, Panel A), with considerable differences across countries. Less than 10% of employees experience job strain in Denmark and the Netherlands with this proportion rising to between one fourth and one third in the Czech Republic, France, Slovenia and Turkey. Overall, 27% of employees have to cope with excessive demands and almost half of all employees have very few workplace resources at their disposal (i.e. one job resource or none). Working under time pressure is the most common job stressor, with 45% of employees reporting that they have to cope with this type of constraint at work (Figure 3.6, Panel B). Physically demanding jobs are also relatively widespread, with more than one third of employees reporting that they are

Box 3.7. **Defining job strain**

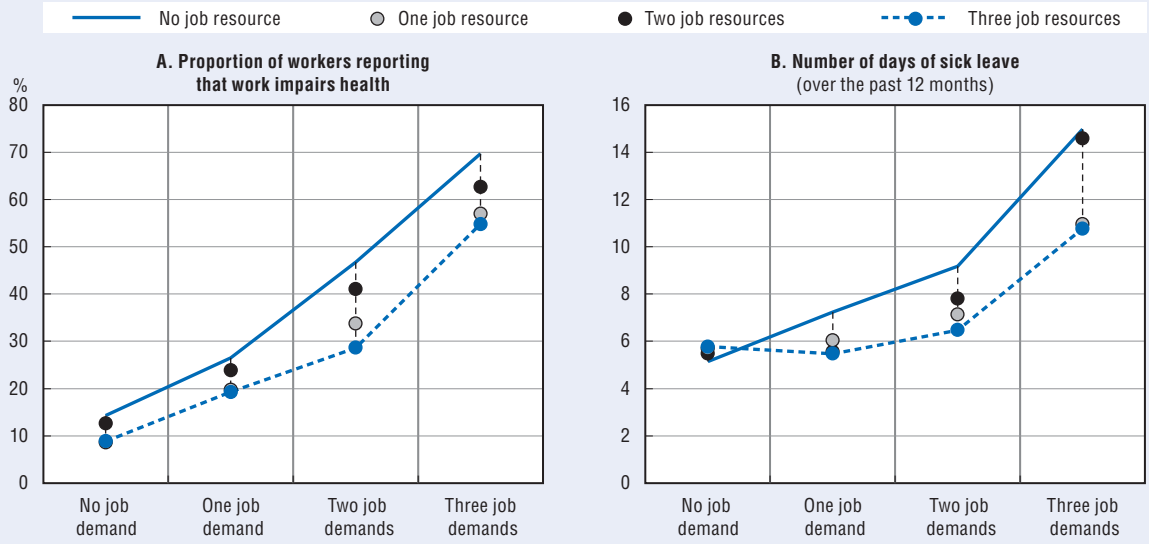
Job strain involves excessive job demands combined with insufficient job resources to meet work requirements. Therefore, constructing a cross-country comparable measure of job strain requires establishing criteria – common to all countries – that specify what excessive job demands and insufficient job resources are. The approach taken here builds on the occupational health literature, which consistently finds a strong adverse effect of job strain on worker's health (see Annex Table 3.A1.1). Based on these empirical findings, jobs involving job strain are identified here by following a two-step procedure, which involves: i) analysing the relationship between total job demands, total job resources and workers' health; and ii) characterising job strain by those combinations that are most likely to have a detrimental effect on workers' health. The EWCS lends itself rather well to this exercise as it contains several questions related to workers' health status. Two measures of health outcomes are used: i) the share of workers reporting that work impairs their health; and ii) the average number of sick leave days taken by employees over the last 12 months. These two indicators have their own advantages and drawbacks. While the first indicator explicitly links health problems to working conditions, it partly relies on workers' subjective judgement about both their job and their health status. The second indicator provides a more objective measure of health problems, but these are not necessarily due to a poor working environment. Yet, taken together, these two complementary measures of health outcomes can shed important light on the relationships between job demands, job resources and workers' health.

The figure below shows that, on average across the 23 countries for which data are available, the accumulation of job demands has a strong negative impact on workers' health, while the level of total job resources can play a significant role in mitigating the health impact of job demands. First, more than 50% of workers facing three job demands report that their work impairs their health, against 10% only among those workers with no job demands (Panel A). And, on average over the past 12 months, the latter were absent from work for less than six days due to health problems, while the former took between 11 and 15 days of sick leave (Panel B). Second, the buffering effect of job resources is substantial for workers facing two or three job demands. Those with no job resources are between 1.3 to 1.6 times more likely to report work-related health problems than their counterparts with three resources at their disposal. The lack of job resources also increases sickness absence by 40%.

These results are qualitatively consistent with the findings of more rigorous longitudinal studies, providing confidence that the various indicators retained to measure job demands and job resources are relevant. However, their estimated impacts on workers' health are likely to be overstated due to potential reverse causality issues and omitted variables bias. With these caveats in mind, these estimates will serve as criteria for defining job strain. More precisely, strained jobs will refer to any jobs with three demands (whatever the number of resources), or to jobs that combine two demands with only one resource or none. While this choice has a strong impact on the incidence of job strain in all countries, the country ranking is quite robust to different combinations of job demands and job resources for defining job strain (Annex Figure 3.A1.1).

Box 3.7. **Defining job strain** *(cont.)*

Relationships between job demands, job resources and workers' health, 2010



a) Pooled data for 23 countries (19 500 observations): Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Slovenia, the Slovak Republic, Spain, Sweden, Turkey and the United Kingdom.

b) Panels A and B show the estimated effects of various combinations of job demands and job resources on the probability of reporting that work impairs one's health (logistic regression, Panel A) and on sickness absence (OLS regression, Panel B). Explanatory variables: 16 dummy variables corresponding to the 16 possible combinations between the number of job demands and that of job resources (4 × 4). Additional control variables: age, sex, educational attainment and country dummies. Estimated effects shown are significant at the 10% level (at least).

Source: Eurofound (2012), *Fifth European Working Conditions Survey*, Publications Office of the European Union, Luxembourg.

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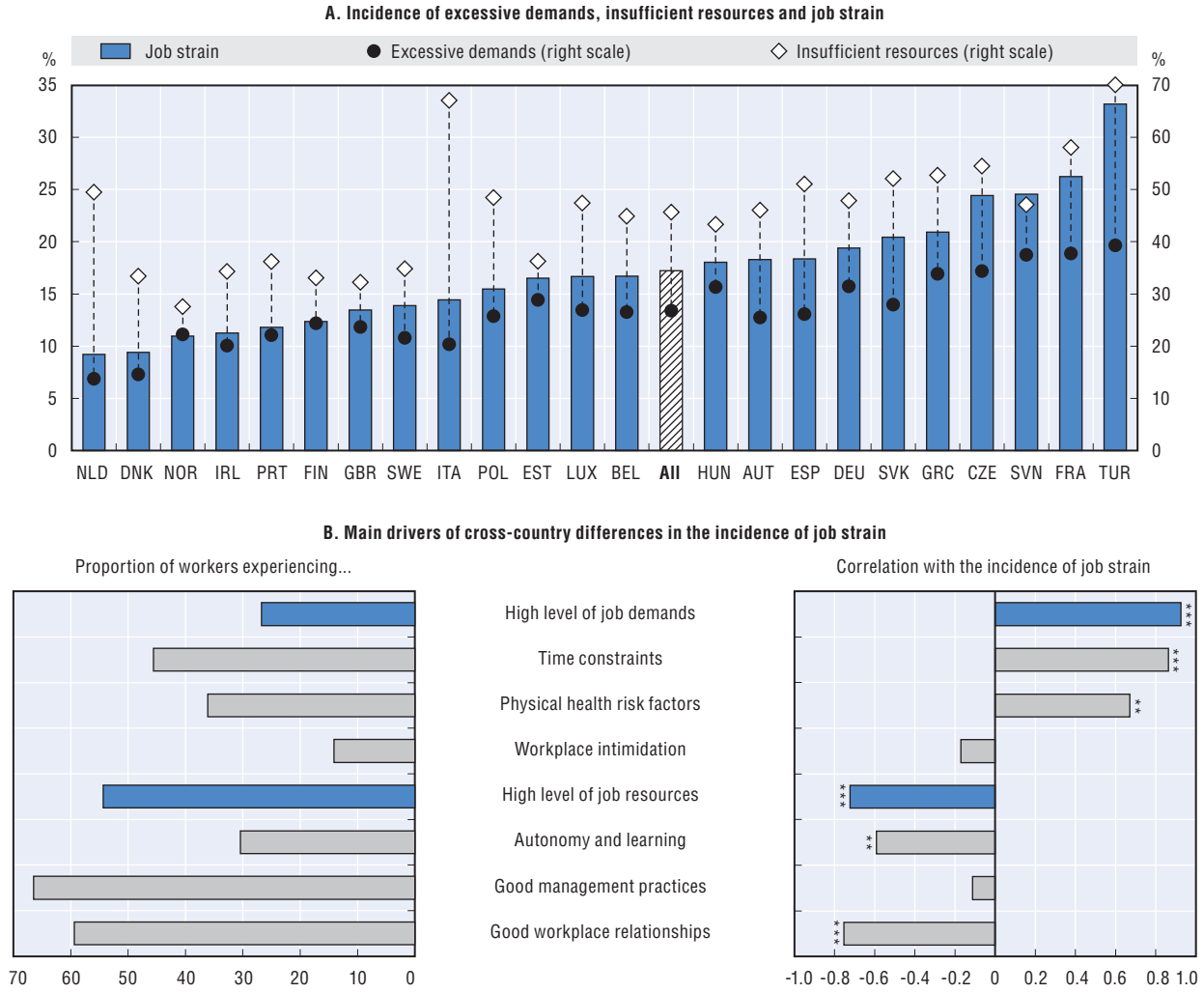
exposed to ergonomic or ambient risks at work. The proportion of workers reporting workplace intimidation is much lower, but still representing 14% of all employees. Turning to workplace resources, work autonomy and skill development appear to be the main area of concern. More than two thirds of employees report that they have limited autonomy in their job or are given few opportunities to learn new things and improve their skills. By contrast, the majority of workers report good management practices and workplace relationships at their workplace (66% and 60%, respectively).

Job demands are the main drivers of the cross-country variation in the incidence of job strain (Figure 3.6, Panel B). With a correlation coefficient of 0.93 across countries, the incidence of excessive demands and that of job strain are strongly linked, while the relationship is somewhat weaker regarding job resources and job strain (-0.72). Four sub-components of the QWE play a major role in explaining cross-country differences in the incidence of job strain: time pressure, workplace relationships, and to a lesser extent, physical health risk factors as well as work autonomy and learning opportunities. By contrast, the incidence of workplace intimidation and that of good management practices do not affect much cross-country comparisons in the proportion of employees experiencing job strain. Note that even though workplace intimidation and management practices do not explain much of the cross-country differences in the incidence of job strain, these dimensions are nevertheless strong determinants of work-related well-being at the individual level (OECD, 2013c, Chapter 5).

Figure 3.6. **Excessive demands, insufficient resources and job strain, 2010**



Note: Job strain: three job demands or two demands with only one job resource or none. Excessive demands (high level of job demands): two or three job demands. Insufficient resources (low level of job resources): one job resource or none.
***, **, *: statistically significant at 1%, 5% and 10% levels, respectively.
Source: Eurofound (2012), *Fifth European Working Conditions Survey*, Publications Office of the European Union, Luxembourg.

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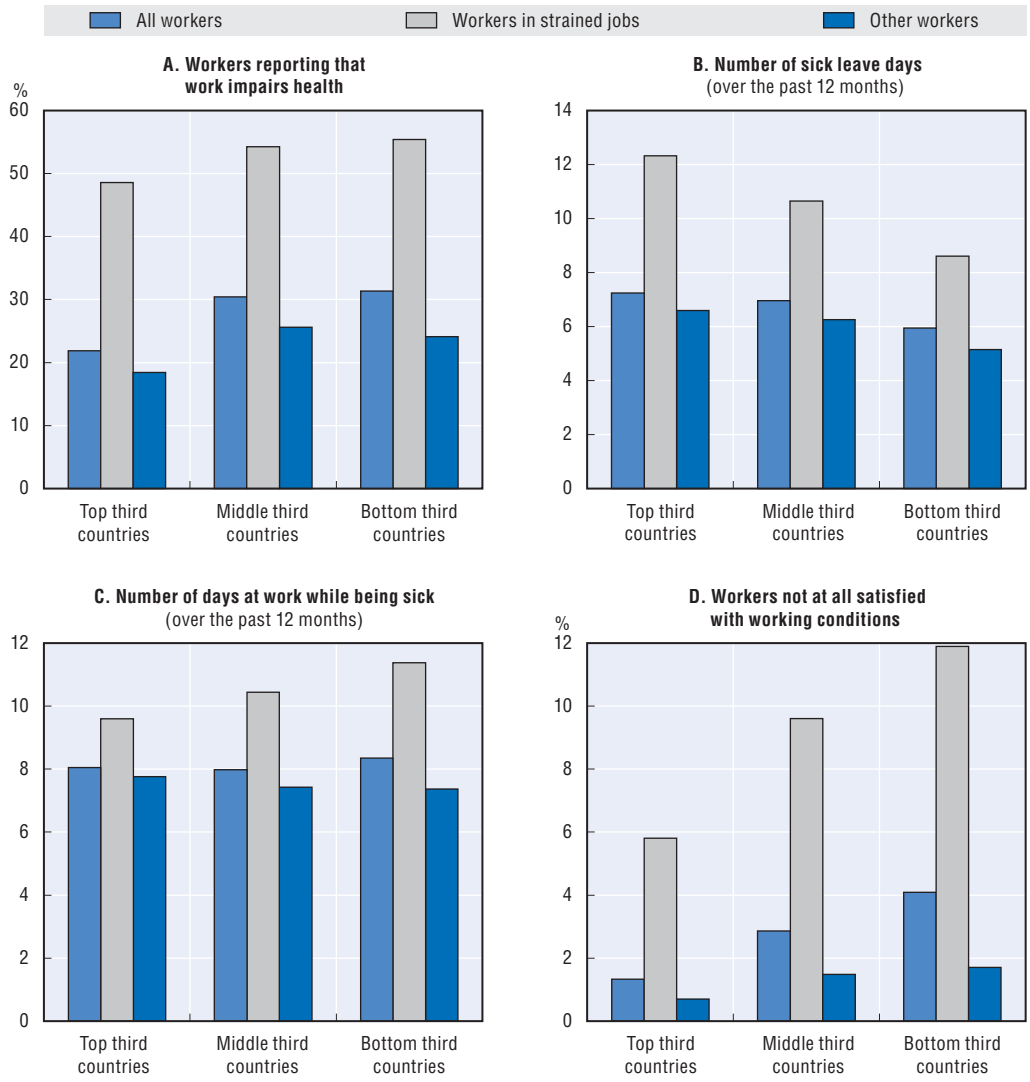
The quality of the working environment, as defined and measured here, has strong implications for the well-being of workers, going beyond the impact on health. Figure 3.7 reports various objective and subjective well-being outcomes in three country groups. Based on the incidence of job strain in each country, with a lower incidence implying better performance, these groups correspond to high, middle and low performance countries. Strikingly, workers experiencing job strain have significantly lower well-being outcomes, whatever the well-being indicators considered and in all the three groups of countries. There are also clear relationships between job strain and workers' well-being across countries. In the top-third group of countries, one fifth of employees report that work impairs their health, ten percentage points less than in countries where job strain is relatively widespread. There is also a strong link between job strain and job satisfaction, which can be seen as a broad measure of (subjective) well-being in the workplace. Just over 1% of workers are not at all satisfied with their working conditions in the top-third group of countries, against 4% in the

Figure 3.7. **Relationship between job strain, workers' health and job satisfaction, 2010**



Note: Unweighted average across the following groups of countries: Top third countries (low incidence of job strain): Denmark, Finland, Ireland, the Netherlands, Norway, Portugal, Sweden, the United Kingdom; Middle third countries: Austria, Belgium, Estonia, Hungary, Italy, Luxembourg, Poland; Bottom third countries (high incidence of job strain): the Czech Republic, France, Germany, Greece, the Slovak Republic, Slovenia, Spain, Turkey.

Source: Eurofound (2012), *Fifth European Working Conditions Survey*, Publications Office of the European Union, Luxembourg.

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bottom-third group. By contrast, there is no clear relationship across countries between job strain and sickness absence, nor between job strain and "presenteeism" (i.e. employees being at work while being sick). The absence of a relationship is probably because both absenteeism and presenteeism are shaped by national sickness schemes, whose eligibility conditions and generosity differ across countries. Nonetheless, job strain increases sickness absence in all the three groups of countries, by 50% in the top group, and by 40% in the two other groups. Interestingly, workers experiencing job strain take more sick leave days and are less likely to be at work while being sick in the top group of countries than in the bottom group. This suggests that sickness absence could be part of the coping mechanisms for workers facing with difficult work demands.

Beyond Europe: Extending the country coverage of job strain indices

Job strain models provide a useful guide – supported by strong empirical evidence – on how to aggregate the large number of indicators related to work organisation and workplace relationships into a few synthetic indices that describe the overall quality of the work environment. Nonetheless the implementation of such models in an international context is challenging since the underlying indicators partly rely on workers' subjective judgement about their job. Harmonised survey data, such as the data provided by the EWCS, are required for international comparability to be achieved since subjective judgements can be affected by the focus of the questionnaire, the order of questions, the question wording and the answer scales (OECD, 2013b). However, the EWCS only covers European countries. One possibility for extending the job strain approach to other countries is to use the results of the Work Orientations module of the International Social Survey Program (ISSP), which is the only international survey data which includes broadly the same aspects of workplace arrangements as those in the EWCS. It covers 26 of the OECD countries, 16 of which are European countries covered in the EWCS. This section investigates whether these two surveys can be combined so as to develop a job strain index for the 32 OECD countries that they cover together (leaving only Chile and Iceland not covered).

As the most recent ISSP Work Orientations module available was carried out in 2005, a comparison of job demands, job resources and job strain is made with the 2005 wave of the EWCS (the next wave of both surveys will be available in 2015). A detailed analysis of these two surveys, based on the 16 common countries, show that a comparable but reduced job strain index can be calculated for non-European members (see Box 3.8 for further details). Four components of job strain can be measured in both surveys: "Time pressure" and "Physical health risk factors" as job demands, and "Autonomy and learning opportunities" and "Good workplace relationships" as job resources (see Annex Table 3.A1.3 for further details). Job strain is defined as jobs where the worker faces one job demand with no job resources, or two demands with only one resource or none. With this definition, the two indices of job strain calculated with ISSP and EWCS data for the 16 common countries are strongly related, with a correlation coefficient of 0.89. This lends strong support to the idea that, taken together, the two surveys provide a comparable measure of job strain for the 32 OECD countries that they cover.

Box 3.8. **Constructing a reduced job strain indicator based on the results of two different international surveys**

While the European Working Conditions Survey (EWCS) and the Work Orientations module of the International Social Survey Program (ISSP) both cover some similar aspects of working environment, there are important differences between them. EWCS is specifically designed to evaluate and monitor the working conditions of the working population in Europe, whereas ISSP is a survey of the general population carried out routinely across a large number of countries around the world with different modules of questions, of which one is the Work Orientations module, in each wave of the survey. This difference in focus is reflected in the questionnaire format of each survey: the order of sections, number of questions measuring a concept, question wordings and answer scales, all of which can give rise to different responses across the two surveys.

Box 3.8. **Constructing a reduced job strain indicator based on the results of two different international surveys** *(cont.)*

Some areas are captured with negatively-worded questions in one survey and with positively or neutrally worded questions in the other. An example of this is the question on work-family life balance. The ISSP question on this reads "How often do you feel that the demands of your job interfere with your family life" with a 1 to 5 answer scale between always and never. The corresponding EWCS question is more neutral, asking employees if, in general, "working hours fit in with family or social commitments". The difference in style could introduce some bias in answers. As a matter of fact, these two questions appear to be weakly correlated across the common 16 countries, even though their subject matter is quite similar. The negative wording of the ISSP question could generate a bias towards incompatibility of work schedule and private life. Additionally, this question could be capturing not just family-unfriendly work hours but the emotional spillover of work demands on private life. On the contrary, the EWCS question is asked following a set of detailed question on patterns of working hours that may precondition respondents to concentrate on their working time schedule only.

Another difference is that the EWCS contains various questions on a specific aspect of the working environment while the ISSP usually measures these aspects with one or two general questions at most. The EWCS questions are usually in the form of concrete statements about detailed components of a particular aspect of the working environment. For example the EWCS contains a long battery of questions on how often the respondents are exposed to specific physical risk factors at work, such as handling heavy loads or being in skin contact with chemical products or substances. As opposed to these detailed self-reported evaluations of objective aspects of a job, ISSP questions are broader and rely more on self-evaluation, such as asking respondents directly whether they work in dangerous conditions. However, exposure to physical risk factors appears to be a relatively robust concept: the correlation coefficient across the 16 common countries between the two sources is very high, even when the question wordings differ remarkably between the ISSP and the EWCS.

These differences between the two surveys make the selection of comparable items from the two datasets a challenging task. The strategy followed in this chapter involves an in-depth exploratory analysis of the comparability of the two surveys, which is summarised in the table below:

Rank correlations between EWCS-based and ISSP-based indices across the 16 common countries

Job demands: Incidence of…	Job resources: Incidence of…
Time pressure: 0.75** without France and Portugal (0.55 otherwise)	Good workplace relationships: 0.67** without Ireland and Switzerland (0.59 otherwise)
Physical health risk factors: 0.79**	Work autonomy and learning opportunities: 0.87***
High job demands (two demands): 0.79***	Low job resources (0 resources): 0.77***
Incidence of job strain	
Reduced job strain indices based on EWCS and ISSP data (2005):	0.89*** (over the 16 common countries)
Reduced and full job strain index based on EWCS data (2010):	0.88*** (over the 23 EWCS countries)

***, **, *: statistically significant at 1%, 5% and 10% levels, respectively.
Source: Eurofound (2007), *Fourth European Working Conditions Survey*, Publications Office of the European Union, Luxembourg; and International Social Survey Programme Work Orientations Module (2005).

Box 3.8. **Constructing a reduced job strain indicator based on the results of two different international surveys** *(cont.)*

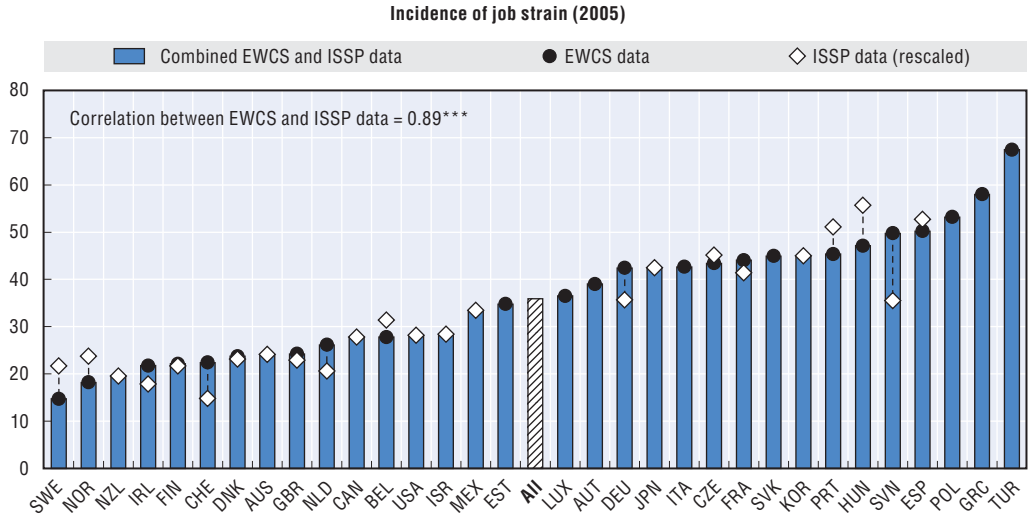
As a first step, aggregate level summary statistics were calculated for all relevant questions in the two surveys for the common 16 countries. This was followed by an analysis of pairwise correlations of each ISSP question with each EWCS question. The questions producing the largest coefficients were retained for further analysis. Second, these matching questions, or set of questions, were further analysed in order to identify the cut-off points and combinations which would produce the highest correlation coefficients across the 16 common countries. Differences in answer scales and the order of answers between the two surveys generated: i) two alternative cut-off points for high job demands and four alternative cut-off points for high job resources in the ISSP data; ii) four alternative cut-off points for job demands and two for job resources in the EWCS data. Combination of these various cut-off points resulted in eight alternative job strain indices for each survey. In each case, the definition of job strain involves the number of job demands exceeding the number of job resources. Therefore, the optimal definition of job strain was selected based on the analysis of the resulting 8x8 correlation matrix. Finally, the selected ISSP job strain index was rescaled in accordance with the EWCS index for continuity of the series.

This exercise has three implications for international comparisons of the quality of working environment. First and foremost, it shows that it is possible to construct indices of QWE using different data sources, as long as there is a sufficient number of countries common across the different sources to compare patterns. Second, certain concepts can be measured with very different types of questions in a comparable way (e.g. exposure to physical health risk factors). Third, seemingly similar questions do not necessarily correlate well across countries depending on how they were posed (e.g. work-family life balance), indicating the importance of question wording for international comparisons (see OECD, 2013b).

Figure 3.8 shows the percentage of employees in strained jobs in OECD countries in 2005. According to the reduced job strain index, 36% of employees in the OECD area worked in strained jobs. As in 2010, the Nordic counties, Ireland and the United Kingdom are among the best (top third) performers, with the lowest share of strained jobs ranging between 15% and 25%. New Zealand and Australia are also in this group, where respectively 20% of employees and 24% experience job strain. In middle-ranking countries, job strain is experienced by between 27% and 43% of all employees, and this group includes continental European countries, as well as Canada, the United States, Israel, Mexico and Japan. Among those displaying relatively low performance, the incidence of job strain varies from 44% to 67%, including Mediterranean and Eastern European countries, as well as Korea.

These 2005 figures are not strictly comparable with the 2010 figures based on the full job strain indices, although the two versions of the job strain index are strongly linked (with a correlation coefficient of 0.88). As seen before, while the country ranking is quite robust to different definitions of job strain, the incidence of job strain varies substantially according to the definition used. While the full index includes additional dimensions that are crucial aspects of jobs for the well-being of workers, such as whether employees face discrimination at the workplace or whether there are good management practices, the four dimensions retained in the reduced job strain index capture the most important drivers of

Figure 3.8. **A reduced job strain index for 32 OECD countries**



Correlation coefficients across countries

Between the incidence of job strain and that of:			
High level of job demands (two demands)	0.86***	High level of job resources (two resources)	-0.90***
Time pressure	0.73***	Work autonomy and learning opportunities	-0.88***
Physical health risk factors	0.80***	Good workplace relationships	-0.76***

Note: Job strain: one job demands with no job resources, or two demands with only one job resource or none. High level of job demands: two job demands. High level of job resources: two job resource.
***, **, *: statistically significant at 1%, 5% and 10% levels, respectively.
Source: Eurofound (2007), *Fourth European Working Conditions Survey*, Publications Office of the European Union, Luxembourg; and International Social Survey Programme Work Orientations Module (2005).

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cross-country differences in the incidence of job strain. As shown in Figure 3.9, each of them is highly associated with the incidence of job strain (with a coefficient correlation varying from 0.73 to 0.80 for job demands, and from -0.76 to -0.88 for job resources). Such strong associations were also found for the full job strain index in 2010.

3. A statistical portrait of job quality

As seen in the previous sections, job quality outcomes vary substantially across OECD countries for each of the three dimensions. In order to assess the overall quality of jobs across countries and socio-demographic groups, it is essential to examine how the different dimensions of job quality are interrelated, i.e. whether they tend to reinforce each other or, instead, give rise to potentially difficult trade-offs. This can be done by using either a composite index or a set of indicators (dashboard). Composite indices have the advantage of taking into account the joint distribution of job quality outcomes, by summarising into a single figure the relative strengths and weaknesses of a country or a population group in the various aspects of job quality. This, however, requires assigning weights to each of three main dimensions of job quality, which raises difficult questions in an international context. Individual preferences between earnings, labour market security and quality of the working environment may vary systematically within and across countries due to socio-cultural influences. In the absence of a consensual weighting scheme, this section follows a dashboard approach. It provides a broad picture of job quality across countries and socio-demographic groups, and also makes a first attempt to document the relationship between the quality and the quantity of job opportunities.

How do countries compare?

As the various job quality outcomes are expressed in different units (US dollars, months, percentage of workers), these values have to be normalised so as to enable comparisons both between countries and within them. This is done by ranking country performance along each of the three principal dimensions of job quality and their two main sub-components: overall earnings quality, average earnings, earnings inequality, labour market security, unemployment risk, unemployment insurance, job strain, excessive job demands and insufficient job resources. The nine country rankings are reported in Table 3.3, which provides a broad picture of comparative advantages and disadvantages of each country relative to its peers, for the 32 OECD countries for which the information is available.

While the dashboard approach has the advantage of presenting separate information for each job quality indicator, making it possible to assess which aspects drive the overall job quality performance of countries, it comes with some costs, namely a more complex picture to communicate and the absence of synthetic information on interrelations across job quality outcomes. To address some of these limitations, Figure 3.9 summarises the information by reporting the number of top-10 and bottom-10 scores over the three main dimensions of job quality, for the 32 OECD countries for which the information is available. The following results emerge:

- Denmark, Finland, Germany, Luxembourg, the Netherlands, New Zealand, Norway, Sweden and Switzerland are among the best performers. These countries do relatively well in at least two of the three main dimensions of job quality, without any outcomes in the bottom-10 of the cross-country rankings.
- Australia, Austria, Belgium, Canada, the Czech Republic, France, Ireland, Israel, Italy, Japan, Korea, Mexico, Slovenia, the United Kingdom and the United States display average performance. Over the three main dimensions of job quality, these countries display no more than one outcome in either the top-10 or the bottom-10 of the cross-country rankings, except for Ireland and Korea where the picture is more mixed.
- Estonia, Greece, Hungary, Poland, Portugal, the Slovak Republic, Spain and Turkey are among the countries with a relatively low performance. They do relatively badly in two or all of the three main dimensions of job quality. In addition, none of these countries perform well in at least one of these dimensions.

Drawing on this country grouping, Figure 3.10 looks at the relationship between earnings quality, labour market security and quality of the working environment in more detail, while also bringing employment performance into the picture. The latter is measured by ranking the employment rate from highest to lowest. Countries that perform well in terms of overall job quality also tend to perform well on job quantity. Likewise, countries that do relatively poorly with respect to job quality tend to have relatively low employment rates. The pattern is more mixed among countries with intermediate performance in overall job quality. For example, Australia, Austria, Canada, Japan and the United Kingdom do relatively well in terms of employment, while countries such as Ireland, Israel, Italy and Mexico show relatively low employment rates. There is, however, a relatively strong correlation between the country ranking with respect to the employment rate and their ranking with respect to each of the three dimensions of job quality. Therefore, at this very aggregate level, this suggests that there are no major trade-offs between the quantity and the quality of jobs, but rather, potential synergies.

Table 3.3. **A dashboard of job quality indicators in OECD countries**

Country rankings (1-32) from high to low performance on each main dimension and sub-dimension

	Good-quality earnings			High labour market security			Good working environment		
	Summary index	Average earnings	Inequality	Summary index	Unemployment risk	Insurance	Summary index	Jod demands	Job resources
	2010			*2010*			*Reduced form of the job strain index, 2005*		
Australia	14	14	17	12	10	19	8	5	9
Austria	17	17	12	5	6	8	18	27	16
Belgium	4	5	1	20	22	14	12	11	14
Canada	12	12	19	16	17	13	11	3	10
Czech Republic	27	27	21	13	12	16	22	15	25
Denmark	1	2	4	14	16	10	7	9	6
Estonia	29	29	27	30	29	29	16	22	15
Finland	9	11	3	7	18	5	5	12	8
France	13	16	9	9	19	7	23	18	31
Germany	8	7	13	10	13	12	19	19	23
Greece	19	18	11	31	31	30	31	31	29
Hungary	30	30	25	26	27	18	27	29	19
Ireland	5	1	26	24	30	6	4	4	7
Israel	26	25	32	19	11	25	14	16	11
Italy	16	15	16	23	15	27	21	14	30
Japan	21	21	10	11	9	23	20	13	24
Korea	23	23	29	6	3	22	25	26	17
Luxembourg	7	6	14	1	1	2	17	17	18
Mexico	32	32	31	21	8	32	15	21	12
Netherlands	6	8	7	4	4	3	10	1	21
New Zealand	18	19	8	8	7	21	3	7	3
Norway	2	3	5	2	2	4	2	2	4
Poland	25	26	23	27	25	26	30	28	27
Portugal	24	24	22	18	14	17	26	25	20
Slovak Republic	28	28	20	29	28	28	24	24	26
Slovenia	22	22	18	15	21	9	28	30	22
Spain	20	20	15	32	32	24	29	20	28
Sweden	10	13	2	17	20	11	1	8	1
Switzerland	3	4	6	3	5	1	6	6	13
Turkey	31	31	30	28	26	31	32	32	32
United Kingdom	11	9	24	22	23	15	9	10	5
United States	15	10	28	25	24	20	13	23	2

Top-10 performers.

Bottom-10 performers.

Source: **Earnings:** Structure of Earnings Survey (SES) for European countries, national labour force surveys for Israel, Mexico and the United States; national household surveys for Australia, Canada, and Korea; *OECD Earnings Distribution* (database), *http://dx.doi.org/10.1787/lfs-ear-data-en* for New Zealand and Japan. **Labour market security:** *OECD Labour Market Statistics* (database), *http://dx.doi.org/10.1787/data-00322-en*, *OECD Benefit Recipients Database*, *OECD Labour Market Programmes* (database), *http://dx.doi.org/10.1787/data-00312-en* and *OECD Taxes and Benefits* (database), *http://dx.doi.org/10.1787/data-00201-en*. **Quality of working environment:** Eurofound (2007), *Fourth European Working Conditions Survey*, Publications Office of the European Union, Luxembourg; and International Social Survey Programme Work Orientations Module (2005).

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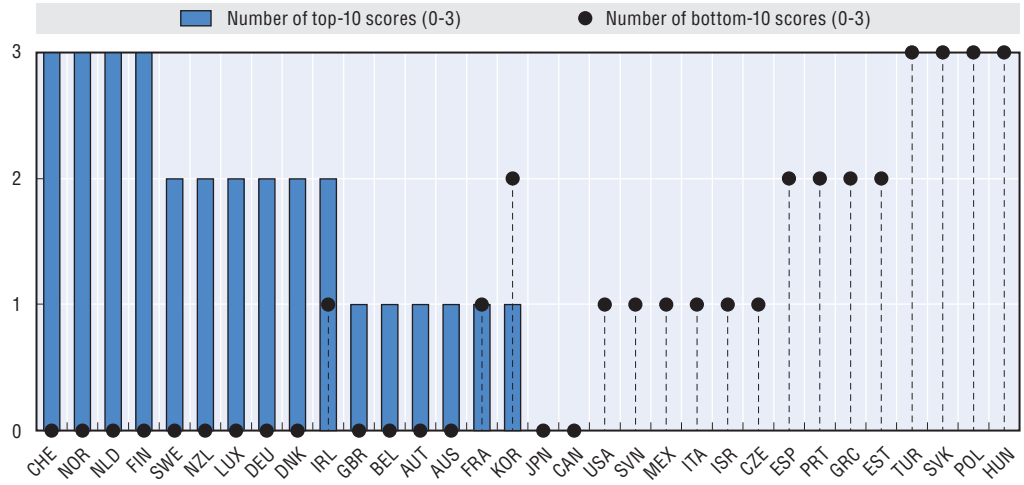
Figure 3.9. **A synthetic picture of country performance along the three main dimensions of job quality**



Note: Country performance has been ranked on each main dimension of job quality, based on the summary indicators of earnings quality, labour market security and quality of working environment. The above figure reports the number of top-10 ranks (high performance) and that of bottom-10 ranks (low performance) observed in the 32 countries for which the three summary indicators of job quality are available. Countries are ranked first by the number of top-10 scores (from high to low), and second, by the number of bottom-10 scores (from low to high).

Source: **Earnings:** Structure of Earnings Survey (SES) for European countries, national labour force surveys for Israel, Mexico and the United States; national household surveys for Australia, Canada, and Korea; *OECD Earnings Distribution* (database), *http://dx.doi.org/10.1787/lfs-ear-data-en* for New Zealand and Japan. **Labour market security:** *OECD Labour Market Statistics* (database), *http://dx.doi.org/10.1787/data-00322-en*, *OECD Benefit Recipients Database*, *OECD Labour Market Programmes* (database), *http://dx.doi.org/10.1787/data-00312-en* and *OECD Taxes and Benefits* (database), *http://dx.doi.org/10.1787/data-00201-en*. **Quality of working environment:** Eurofound (2007), *Fourth European Working Conditions Survey*, Publications Office of the European Union, Luxembourg; and International Social Survey Programme Work Orientations Module (2005).

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The three dimensions of job quality are positively correlated between each other, but the relationships are not very strong. This is mainly due to the countries in the middle of the distribution, which tend to perform rather differently along the various dimensions of job quality, despite having similar overall scores. For example, the United Kingdom and the United States do relatively well on earnings quality and quality of the working environment, while they do relatively poorly with respect to labour market security. Similarly, France and Korea do relatively well on labour market security, but their performance is very poor with respect to the quality of the working environment.

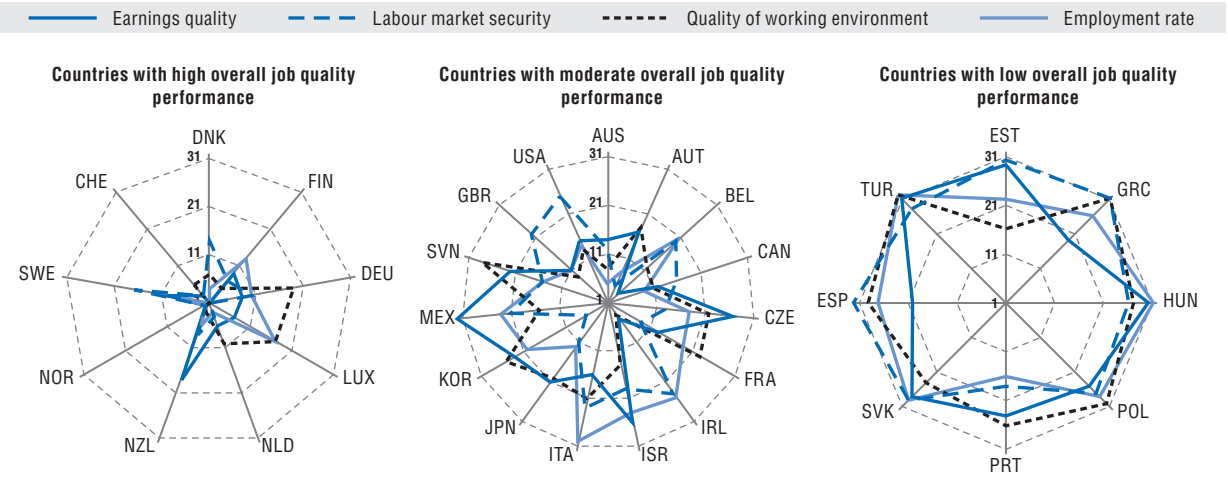
Which workers hold quality jobs?

Looking at the joint distribution of job quality outcomes across socio-economic groups can provide new insights on labour market inequalities, by shedding further light on the nature and depth of the disadvantages faced by some population groups. For example, low skilled workers, youth, older workers and women face reduced employment opportunities in virtually all OECD countries. But when they get a job, do they also face a job quality penalty? This section provides a first answer to this question, based on an analysis covering the 23 European countries for which the information is available at a group level, in 2010.

As expected, the overall degree of earnings quality varies substantially across socio-demographic groups (Figure 3.11, Panel A). It increases with age, which reflects the tendency of average earnings to increase with experience. Within-group earnings

Figure 3.10. **Relationship between job quality and job quantity**

Country rankings (1-32) from highest to lowest performance



Correlation coefficient across countries

	Earnings quality	Labour market security	Quality of the working environment
Labour market security	0.52		
Quality of the working environment	0.67	0.45	
Employment rate	0.65	0.74	0.70

Note: Countries with high (resp. low) overall job quality performance: countries that display top-10 (resp. bottom-10) performance in at least two of the three main dimensions of job quality.

Source: **Earnings:** Structure of Earnings Survey (SES) for European countries, national labour force surveys for Israel, Mexico and the United States; national household surveys for Australia, Canada, and Korea; *OECD Earnings Distribution* (database), *http://dx.doi.org/10.1787/lfs-ear-data-en* for New Zealand and Japan. **Labour market security:** *OECD Labour Market Statistics* (database), *http://dx.doi.org/10.1787/data-0322-en*, *OECD Benefit Recipients Database*, *OECD Labour Market Programmes* (database), *http://dx.doi.org/10.1787/data-00312-en* and *OECD Taxes and Benefits* (database), *http://dx.doi.org/10.1787/data-00201-en*. **Quality of working environment:** Eurofound (2007), *Fourth European Working Conditions Survey*, Publications Office of the European Union, Luxembourg; and International Social Survey Programme Work Orientations Module (2005).

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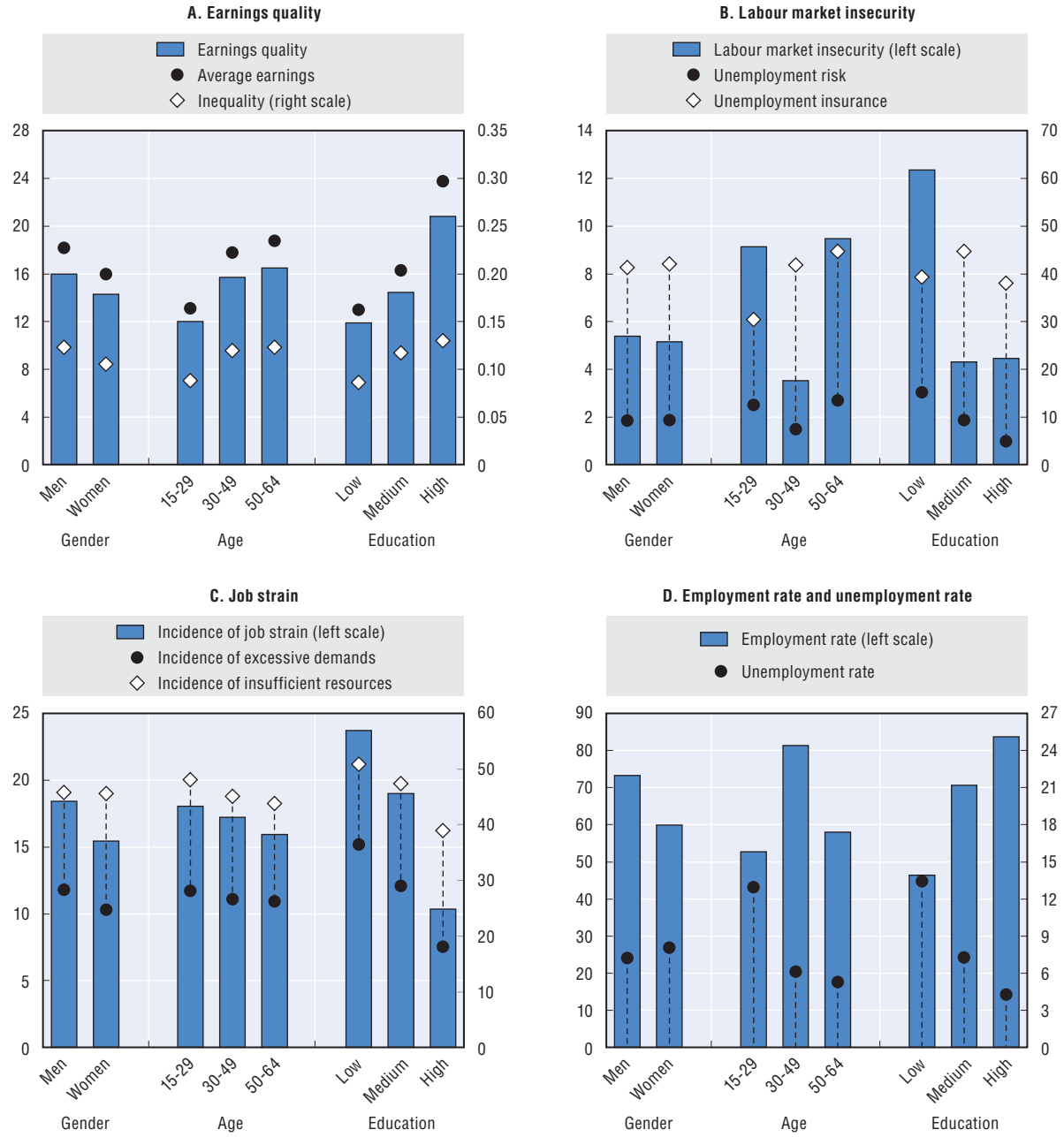
dispersion also increases with age and, therefore, tends to offset the positive welfare impact of average earnings growth over the life-cycle. There are also marked differences in average earnings between men and women, a result that confirms the well-documented gender gap in earnings. But within-group earnings dispersion is larger for men than for women, reducing the gender gap in terms of overall earnings quality. More education is associated with a higher quality of earnings. This relationship is largely driven by higher average earnings. Comparatively, within-group earnings dispersion plays a minor role.

The overall degree of labour market insecurity differs across age and education groups (Figure 3.11, Panel B). The relationship between age and labour market insecurity is non-linear. Younger workers (15-29) face significantly higher labour market insecurity than prime-age workers (30-49), and the same applies to older workers (50-64). The relatively low level of overall labour market security for youth reflects a combination of above-average unemployment risk and below-average unemployment insurance. Older workers face the highest level of unemployment risk, but also the highest level of effective unemployment insurance. The high level of unemployment risk among older workers reflects the higher risk of long-term unemployment (Annex Figure 3.A2.1). The level of overall labour market security is significantly lower for unskilled workers, while it is

Figure 3.11. **Job quality and job quantity outcomes by socio-demographic group**

Cross-country averages (2010)



Note: Country coverage: Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Slovenia, the Slovak Republic, Spain, Sweden, Turkey and the United Kingdom (24 countries, 23 countries excluding Iceland in Panel C).

Source: European Union Survey on Income and Living Conditions (EU-SILC); Eurofound (2012), *Fifth European Working Conditions Survey*, Publications Office of the European Union, Luxembourg. *OECD Labour Market Statistics* (database), *http://dx.doi.org/10.1787/data-00310-en.*

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similar for workers with intermediate and high educational attainment. For the low-skilled, above-average unemployment risk is combined with below-average unemployment insurance, due to their lower rate of benefit eligibility. High skilled workers face the lowest unemployment risk, but have below-average unemployment insurance. This reflects the fact that unemployment benefits are capped, implying that replacement rates decrease with previous earnings. Hence, replacement rates tend to be lower for the high-skilled since they receive higher earnings.

There is a strong negative relationship between education and the incidence of job strain (Figure 3.11, Panel C). Almost one quarter of low skilled workers experiences job strain, against 10% among their high skilled counterparts. This appears to be driven by both declining job demands and increasing resources with education, mainly because high skilled workers have more autonomy and learning opportunities at work and are less frequently exposed to physical health risk factors (Annex Figure 3.A2.2). Women are less likely to experience job strain than men. While youth are slightly more exposed to job strain than other workers, differences across age groups are rather small.

Taking into account both the quantity and quality of jobs available, some socio-demographic groups appear to cumulate many disadvantages, while other groups show a good performance on all dimensions:

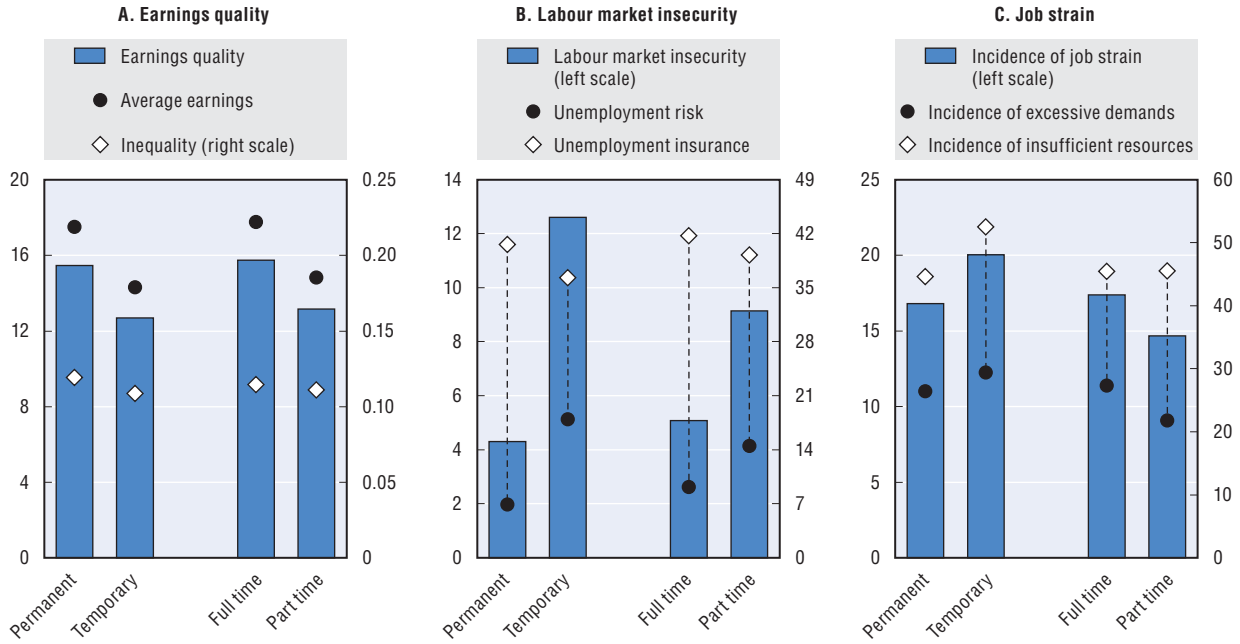
- *The worst off are youth and low skilled workers*. Young and unskilled workers face the highest unemployment rates. Hence, they cumulate the poorest performance in terms of job quantity with the worst outcomes with respect to job quality. This should further alert policy makers to the conditions of youth and unskilled workers in the labour market.[22]
- *By contrast, high-skilled workers perform well on all dimensions*. The unemployment rate decreases significantly with education. Such returns to skills in terms of job quantity cumulate with the significant positive effects of education on job quality, implying that educated workers have better access to good jobs in all dimensions.
- *For women, the picture is mixed*. While unemployment rates are broadly similar between men and women, employment rates are substantially lower for women (a well-documented fact that reflects lower participation rates) combined with a large gender gap in earnings quality. However, women's performance with respect to labour market security is not very different from men and they are less likely than men to experience job strain.

Another aspect of interest is the relationship between job quality and the type of employment defined as temporary versus regular contracts or part-time versus full-time work (Figure 3.12):

- *Temporary work is strongly associated with poor job quality in all three dimensions*. Temporary workers face lower earnings, higher levels of labour market insecurity and higher job strain. While the findings with respect to earnings and labour market insecurity are well known (OECD, 2014c), the role of temporary contracts for job strain has received somewhat less attention so far. The higher incidence of job strain among temporary workers tends to be driven both by higher job demands and lower job resources. In particular, those workers report higher exposure to physical health risk factors at work and workplace intimidation, while having less autonomy and learning opportunities and receiving lower support from their colleagues (Annex Figure 3.A2.2).
- *For part-time work, the picture is mixed*. Overall earnings quality (in terms of hourly wages) is lower for part-time than for full-time workers. Likewise, labour market insecurity is considerably higher for part-time than full-time workers. This reflects a combination of

Figure 3.12. **Job quality and job quantity outcomes by type of employment**

Cross-country averages (2010)



Note: Country coverage: Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Slovenia, the Slovak Republic, Spain, Sweden, Turkey and the United Kingdom (24 countries, 23 countries excluding Iceland in Panel C).

Source: European Union Survey on Income and Living Conditions (EU-SILC); Eurofound (2012), *Fifth European Working Conditions Survey*, Publications Office of the European Union, Luxembourg. *OECD Labour Market Statistics* (database), *http://dx.doi.org/10.1787/data-00310-en.*

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a higher risk of unemployment and a lower degree of effective insurance. The weak level of protection against the risk of unemployment for part-time workers represents an important policy concern. However, the incidence of job strain tends to be lower among workers on part-time contracts. This appears to be entirely driven by lower job demands. Not surprisingly, part-time workers face less time pressure at work than their full-time counterparts, but more interestingly, they are also less exposed to physical health risk factors (Annex Figure 3.A2.2).

These results may partly explain the poor outcomes of young and unskilled workers in terms of job quality, as these two categories of workers are more likely than other population groups to hold a temporary job. Likewise, job quality outcomes observed for women can be driven by the fact that they are more likely than men to work part-time. In order to better understand the role played by contract type and working time, it is useful to conduct a simple regression analysis of the different job-quality dimensions so as to isolate the relationship between job quality and worker characteristics, net of the potential confounding effects of temporary and part-time work. The results are reported in Annex Table 3.A2.1 and they strongly support the conclusions so far. Unskilled workers face substantially lower job-quality in all three dimensions, even after controlling for temporary and part-time work, while young workers have significantly lower earnings quality and face higher labour market insecurity, and women still face a lower risk of job strain. These results suggest that young and unskilled workers face multiple obstacles to obtaining a good quality job that go beyond the issue of temporary employment.

Conclusions

The main contribution of this chapter is to develop a new conceptual and operational framework to measure and assess job quality across countries and socio-economic groups. Job quality refers to those aspects of employment that contribute to the well-being of workers and, hence, represents an inherently multi-dimensional construct. The chapter identifies three key dimensions which are consistent with earlier OECD conceptual work on measuring well-being and have been shown to be particularly relevant for worker well-being in the empirical literature on economics, sociology and occupational health. These are: i) *earnings quality*, which consists of both the average level of earnings and its distribution across the workforce; ii) *labour market security*, which covers both the risk of unemployment and the degree of insurance against it; and iii) *the quality of the work environment*, which is defined in terms of the balance of job demands and job resources that is necessary for sustaining a healthy working life.

Each of the three dimensions of job quality identified here touches on important and long-standing policy debates. For example, overall earnings quality depends on the role of growth-promoting policies, the accessibility and quality of education, the nature of wage-setting institutions (e.g. minimum wages, collective bargaining) and the design of the tax and benefits systems. The overall degree of labour market security is determined by the interplay of employment protection, unemployment compensation systems (in the form of unemployment benefits and severance pay) and active labour market policies. By affecting workers' health, the quality of the work environment not only has an impact on the well-being of workers, but also has direct economic implications, in terms of both productivity for employers and public health expenditure. It is determined to an important extent by the nature of regulations with respect to occupational health and safety and the effectiveness of occupational health systems to prevent work-related health problems, but also by social dialogue and employers' social responsibility.

While the three dimensions of job quality (e.g. earnings quality, labour market security and quality of the work environment) are key elements of the new framework, their actual measurement is flexible and can be adapted according to the purpose for which they are being used, data availability and different choices for weighting together the different sub-components. For example, more or less weight could be given to earnings inequality in the measurement of earnings quality than is the done in the baseline measure adopted in this chapter. In order to ensure that indicators of job quality are conceptually sound and relevant for policy, the framework provides three guiding principles. These are to: i) focus on *outcomes* experienced by workers as opposed to drivers of job quality; ii) emphasize the *objective* features of job quality; and iii) derive indicators from data on *individuals* to allow going beyond average tendencies.

Much work remains to be done in order to give job quality the place it deserves in the policy debate on labour market performance. In particular, further work is needed to understand better how the various dimensions of job quality interact with each other as well as with job quantity and contribute to overall labour market performance. A further aspect is to move beyond the largely static perspective taken here towards a more dynamic perspective that places more emphasis on the prospects of work in terms of career advancement over the life cycle. A final aspect is to extend the analysis of job quality to emerging and developing economies where this is an even more pressing concern due to the high incidence of informality and poor working conditions.

Notes

1. This chapter has been produced with the financial and substantive assistance of the European Union as part of the OECD project "Defining, Measuring and Assessing Job Quality and its Links to Labour Market Performance and Well-Being" [VS/2013/0180 (SI2.666737)]. The contents of this chapter are the sole responsibility of the OECD and can in no way be taken to reflect the views of the European Union. It is a joint undertaking between the OECD Directorate for Employment, Labour and Social Affairs and the OECD Statistics Directorate running until September 2015.

2. While most indicators of policy settings refer to drivers rather than outcomes of job quality, the distinction between outcomes and drivers is not always clear-cut. This ambivalence applies to several elements of the tax and benefit system. For example, unemployment benefits can be seen as both an outcome and a driver of job quality: an outcome because they constitute an important source of income for those workers in precarious employment; and a driver because they have broader implications for job quality (e.g. through their impact on earnings by increasing worker bargaining power and/or match efficiency).

3. The relationship between outcomes and drivers can be affected by various factors depending on the national context. For example, the quality of a job associated with a temporary or open-ended contract depends on the nature of national rules and regulation in this context.

4. By boosting workers willingness and ability to work, and improving productivity, this will also benefit employers. As a matter of fact, a similar kind of consideration has motivated the introduction of health insurance schemes by employers in a number of OECD countries.

5. Gross earnings are the more relevant measure from an employer perspective as they constitute the key component of labour costs (along with employer social security contributions).

6. Easterlin's thesis has also been instrumental in promoting research on the role of relative earnings comparisons for well-being and there is now considerable evidence that such comparisons matter (Clark et al., 2008). Earnings comparisons can be made with respect to an individual's previous experience and, thus, reflect habituation or adaptation effects or with respect to a reference group and thus give rise to peer effects. Both adaptation and peer effects provide potential explanations for Easterlin's paradox.

7. Panel B of Figure 3.1 also suggests that the linear relationship between life satisfaction and log income is weaker in high-income countries. Indeed, across countries, the gradient of income – obtained from a linear model of log income on life satisfaction – displays a significant negative relationship with GDP per capita. This suggests that the relationship between income and subjective well-being is not exactly log-linear.

8. While the cross-sectional evidence is compelling, it does not directly assess Easterlin's thesis that money does not buy happiness since this focuses on the inter-temporal relationship between income and subjective well-being in the long-term. It is not obvious, however, why the long-term relationship should differ from that in the cross-section. Indeed, cross-sectional results, such as those presented in Figure 3.1 are often interpreted as emphasising the long-term relationship since these do not net out time-invariant fixed effects. While one might argue that permanent differences in income are correlated with many factors that affect life satisfaction, such as education, health and the quality of institutions, the same also applies for long-term changes in income within countries. Sacks et al. (2012) also provide evidence that the positive relationship between income and subjective well-being also holds over longer time horizons. Nevertheless, one should be cautious drawing strong conclusions about the long-run relationship between income and subjective well-being until better data become available.

9. To get a first indication of the relevance of these explanations for inequality aversion, it is useful to assess to what extent inequality aversion is associated with inequality between groups or within groups. To the extent that peer effects related to self-centred motivations are concentrated within groups, an aversion against within-group inequality is most likely to stem from self-centred motivations, whereas an aversion against between-group inequality is more likely to be associated with altruistic motivations. Unreported regression results confirm the negative relationship between income inequality and subjective well-being and further suggest that this is driven by an aversion against between-group inequality.

10. For a comprehensive introduction to general means, see Foster et al. (2013); for a recent application, see OECD (2014b).

11. Since temporary and short-tenured workers are typically the first to lose their job in a recession, their share in employment will tend to decline in recessions, resulting in a pro-cyclical pattern.

12. Job security perceptions are measured based on the question "I might lose my job in the next 6 months", while perceptions related to career advancement are measured based on: "My job offers good prospects for career advancement." Contract quality is measured by an index that equals 1 in the case of an open-ended contract, 0.5 in the case of a temporary contract and zero when there is no formal contract. Thus, it is assumed that contract type has an independent effect on prospects over and above that captured by perceptions of job security and career prospects.

13. It can also be shown that the risk of unemployment is approximately the same as the actual unemployment rate as well as the steady-state level of unemployment, i.e. the unemployment rate that would emerge when the unemployment inflow and outflow probabilities remain constant (Elsby et al., 2009; Shimer, 2012). This suggests that one may alternatively express the risk of unemployment as a share of the labour force.

14. The approach to labour market insecurity relies on two key assumptions. First, it assumes that wage losses due to job displacement can be ignored. While this represents a potentially important component of the costs of job displacement (Jacobson et al., 1993), the evidence suggests that unemployment accounts for the bulk of the cost of job displacement in most OECD countries (Kuhn, 2002; OECD, 2013c). Second, it is assumed that unemployment is involuntary.

15. More specifically, effective unemployment insurance is defined as the coverage rate of unemployment insurance (UI) times its average net replacement rate among UI recipients plus the coverage rate of unemployment assistance (UA) times its net average replacement rate among UA recipients plus the share of those not covered by unemployment benefits [or the ratio of the number of social assistance (SA) recipients to the number of unemployed if this is lower] times the SA replacement rate. The average replacement rates for recipients of UI and UA take account of family benefits, housing benefits and social assistance if eligible. It is assumed that coverage rates in the case of unemployment insurance and unemployment assistance capture eligibility (see Box 3.4 for a discussion).

16. Informal insurance through risk-sharing within the household and private insurance through individual savings are not taken into account. While these forms of insurance are likely to play an important role in mitigating the adverse effects of unemployment risk on well-being, they are not an intrinsic part of job quality since these forms of insurance do not depend on one's employment or employment history as does, for example, unemployment insurance.

17. Exploiting information on individual transitions between employment and unemployment for the United States, Young (2012) finds that insurance eligibility only has a minor effect on mitigating the adverse effect of unemployment on well-being. He suggests that the small effect reflects the fact that insurance cannot absorb the non-pecuniary cost of unemployment. However, it may also reflect the possibility that unemployment insurance has a similar impact on the employed and the unemployed as suggested by the studies discussed in the main text.

18. Osberg and Sharpe (2009) suggest using weights of 0.8 for unemployment risk and 0.2 for unemployment insurance.

19. In the limit, when the share of non-pecuniary costs in the total of costs of unemployment goes to unity the importance of insurance for overall labour market insecurity converges to zero.

20. The concentration of labour market insecurity and risk among specific workforce groups can be taken into account using micro-level data. The presence of risk aversion not only provides an important motivation for considering labour market insecurity as a separate dimension of job quality, it also implies that the distribution of labour market insecurity across sub-groups is likely to matter for aggregate welfare. This could provide a justification for assuming some level of inequality aversion when constructing an aggregate indicator of overall labour market security. It may also help relating the discussion on labour market insecurity with that of labour market segmentation (see Chapter 4 of this publication).

21. The two most influential are the demand-control model and the effort-reward imbalance model. The demand-control model argues that difficult work and factors increasing workload, such as high pressure and high pace at work, are detrimental to health when employees have no ability to control their own work activities and skill usage (Karasek, 1979; Johnson and Hall, 1988; Johnson et al., 1989). The effort-reward imbalance model emphasises the role of rewards rather than decision latitude (Siegrist, 1996). The main argument of this model is that effort at the workplace is exchanged with socially recognised occupational rewards such as adequate salary, esteem and job security. Job strain occurs when there is a lack of reciprocity between the level of effort put in and rewards received.

22. However, for some youth, both job prospects and job quality may improve as they gain more experience. Therefore, a more dynamic perspective on job quality over the life cycle will be adopted in the next phase of the OECD's project on job quality.

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ANNEX 3.A1

Defining and measuring job strain

The health impact of job strain

Table 3.A1.1. **Recent empirical studies on the health impact of job strain**

	Sample size country	Evaluation methods	Health outcomes	Job quality variables	Results
Backe et al. (2012)	Review of 26 longitudinal studies, based on 20 different cohorts (300-35 000 participants). Countries: Belgium, Germany, Denmark, Finland, France, the United Kingdom, Japan, Sweden and the United Sates.	Prospective cohort studies. Follow-up period varying from 3 to 25 years.	**Cardiovascular disease:** coronary heart disease, myocardial infarction, heart failure, angina pectoris, stroke and hypertension. *Source:* Mortality registers, questionnaires, clinical diagnoses based on ECG or enzyme measurement.	**Psychosocial risk factors,** mainly based on the demand-control model (17 studies) or effort-reward imbalance model (four studies).	Psychosocial risk factors increase the risk of cardiovascular disease in all studies. Results are statistically significant in 13 out of the 20 cohorts (7 out of 13 cohorts applying the demand-control model, all three cohorts using the effort-reward model).
Borritz et al. (2010)	1 734 participants employed within 82 work units in five different public organisations in the public human service sector. Country: Denmark.	Work unit-aggregated scores of job quality variables	**Sickness absence.** *Source:* national absence registers during the 18 months following the baseline questionnaire.	**Psychosocial work environment variables:** emotional demands, role conflict, role clarity, predictability and quality of leadership (Copenhagen Psychosocial Questionnaire). **Risk of burnout** (Copenhagen burnout inventory) Personal, work-related and client-related burnout.	All job quality variables, as well as the burnout variable are significant predictors of long-term sickness absence (more than two weeks).
Chandola et al. (2005)	3 697 London based civil servants (from the Whitehall II study). Country: the United Kingdom.	Prospective study, six phases, covering over a decade.	**Coronary heart disease.** *Source:* self-reported doctor diagnosed angina or the Rose Angina Questionnaire.	**Effort at work** (heavy work load, disturbances, interruptions, responsibility, pressure). **Reward** (esteem, job promotion prospects, job security). **Over-commitment.**	Increase in Effort-Reward Imbalance (ERI) over time are associated with an increased risk of incident angina (which is the most frequent manifestation of coronary heart disease (CHD).
Eaker et al. (2004)	3 039 persons (1 711 men and 1 328 women) from the Framingham Heart Study. Country: the United States.	Prospective longitudinal cohort study.	**Coronary heart disease.** *Source:* Clinic examinations.	**Job demand, Job control** (decision authority and skill utilisation).	High job strain is not associated with mortality or incidence of coronary heart disease (CHD) in either men or women over the follow-up period.
Hakanen and Shaufeli (2012)	Baseline: 3 255 participants (dentists); first follow up: 2 555 (three years later); second follow up: 1 964 (seven years after baseline). Country: Finland.	Longitudinal study covering a seven-year period. Structural Equation Modelling in order to test reverse and reciprocal causality.	**Depressive symptoms and life satisfaction.** *Source:* Self-reported.	**Burnout** assessed with two dimensions: emotional exhaustion and depersonalisation. **Engagement** (work-related well-being) assessed with three dimensions: Vigour, dedication and absorption.	Burnout and engagement predict depressive symptoms and life satisfaction over time.

Table 3.A1.1. **Recent empirical studies on the health impact of job strain** *(cont.)*

	Sample size country	Evaluation methods	Health outcomes	Job quality variables	Results
Hauke et al. (2011)	Review of 54 longitudinal studies published between 2000 and 2009. Countries: the Netherlands (11); Denmark (8); the United States (6); the United Kingdom (5); Finland (4); Canada, France, Norway, Belgium (2); Switzerland, Germany and Greece (1).	Meta-analysis.	**Musculoskeletal disorders (MSDs)** in neck/shoulder, upper extremities (including arm, forearm, elbow, hand, and wrist) and low back. *Source:* Mostly self-report questionnaires, others include company registers of sick absence, workers compensation insurers' database, medical bill, hospital registers and medical examination.	**Psychosocial work environment variables:** social support, job demands, job control, decision authority, skill discretion, job satisfaction, job strain, and psychosocial distress.	Psychosocial risk factors are significant predictors of onset of MSDs, in particular the low back. Adverse psychosocial working conditions increase the risk of MSDs by 15 to 59%.
Kivimäki et al. (2012)	197 473 participants from 13 independent cohort studies starting between 1985 and 2006. Countries: Belgium, Denmark, Finland, France, the United Kingdom, the Netherlands and Sweden.	Prospective cohort study. Mean follow-up period: 7.5 years. Job strain is measured only at the study baseline.	**Coronary heart disease:** first non-fatal myocardial infarction or coronary death. *Source:* National hospital admission and death registries.	**Job strain:** quantitative work demands and time pressure and conflicting demands (job demand items); decision authority and learning opportunities at work (job control items).	Job strain increases the risk of coronary heart disease by 25% on average. Few differences in the effect of job strain on coronary heart disease between studies from Nordic countries, continental Europe, and the United Kingdom.
Kivimäki et al. (2002)	812 factory workers (545 men and 267 women) who were all free from cardiovascular diseases at baseline. Country: Finland.	Prospective study. Baseline questionnaire and interview followed up by clinical examinations. Mean follow up period: 25.6 years.	**Cardiovascular death, cholesterol, BMI, high blood pressure.** *Source:* cardiovascular death obtained from the national mortality register.	**Job demand** (degree of responsibility, task difficulty, work load, pace, physical and mental load). **Job control** (task autonomy and skills discretion). **Rewards at work** (satisfaction with income, fairness of supervision, job security and promotion prospects).	Job strain and effort-reward imbalance are associated with a doubling of the risk of cardiovascular death. High job strain is associated with increased serum total cholesterol at the five-year follow up. ERI predicts increased body mass index at the ten-year follow up.
Kolstad et al. (2010)	4 291 participants employed within 378 work units in several public organisations. Country: Denmark.	Work unit-aggregated scores of demands and decision latitude, excluding workers reporting depressive symptoms.	**Depressive symptoms; diagnosis of depression.** *Source:* self-reported (Common Mental Disorder Questionnaire and International Classification of Diseases).	**Job strain:** quantitative work demands and decision latitude – measured by possibilities for development and influence at work (Copenhagen Psychosocial Questionnaire).	At the individual level, high level of demands and low level of decision latitude are associated with significantly higher risk of depression. Odds ratios are reduced by half (but remain significant) when demands and decision latitude are measured at the work unit level.
Kuper and Marmot (2003)	6 895 male and 3 413 female London based civil servants aged 35-55 in 20 civil service departments (sample from the Whitehall II study). Country: the United Kingdom.	Prospective cohort study. Follow up with a mean length of 11 years.	**Cardiovascular heart disease.** *Source:* death records of National Health Service Central Registry; self-report on chest-pain; recall of doctor's diagnosis and investigation; and treatment.	**Psychosocial risk factors** (various job demands, skill discretion, decision authority, social support at work).	High job demands, and, less consistently, low decision latitude, predict cardiovascular heart disease.
Netterstrøm et al. (2008)	Review of 14 longitudinal studies. Samples sizes: less than 1 000 (three); from 1 000 to 5 000 (eight); more than 5 000 (three). Countries: Canada, Denmark, Finland, France, Japan and the Netherlands.	Meta-analysis. Follow-up period: one to eight years.	**Depression.** *Source:* psychiatric diagnoses, scales with diagnostic classifications, or antidepressant prescription (seven studies); questionnaire (seven studies).	**Psychosocial work-related factors.** High demand, low control, lack of social support, effort/reward imbalance, or risk of violence.	High job demand increases the risk of depression (relative risk of about 2). Social support at work lowers the risk of depression (with relative risks of about 0.6).

Table 3.A1.1. **Recent empirical studies on the health impact of job strain** *(cont.)*

	Sample size country	Evaluation methods	Health outcomes	Job quality variables	Results
Schlotz et al. (2004)	219 participants. Country: Germany.	Weekend-weekday differences.	**Biological stress reaction:** level of cortisol (stress hormone). *Source:* by taking saliva samples few hours after awakening weekends and weekdays.	**Chronic quantitative work overload and worry** (trier inventory for the assessment of chronic stress).	Stress levels significantly higher over weekdays, as compared to weekends, due to chronic work overload and-worry.
Shaufeli et al. (2009)	201 telecom managers. Country: the Netherlands.	Longitudinal study with two waves one year apart. Structural Equation Modelling.	**Burnout, work engagement and sickness absence** (frequency and duration). *Source:* self-reported measures of burnout and engagement; company register data for sickness absence.	**Job demand** (overload, emotional demands, work-home interference). **Job resource** (social support, autonomy, opportunities to learn, performance feedback).	Increases in job demands and decreases in job resources predict increase in burnout. Increases in job resources predict increases in engagement. High job demands are related with sickness duration and low resources with sickness frequency
Slopen et al. (2012)	17 415 female health care professionals across 50 states. Country: the United States.	Prospective cohort study. Follow-up period: ten years (1998-2008). Job strain is measured only at the study baseline.	**Cardiovascular disease (CVD):** non-fatal myocardial infarction, non-fatal ischemic stroke, revascularisation procedure and CVD death. *Source:* self-reported for non-fatal CVDs (mail questionnaires, letters or telephone calls); medical records for fatal CVDs.	**High strain and active jobs** (Job Content Questionnaire). Job demand: pace, challenge and amount of work, time to complete work, and conflicting demands. Job control: decision authority and skill discretion.	High strain jobs (high demand, low control) and active jobs (high demand, high control) increase the risk of CVD by 80% and 50%, respectively, as compared to low strain jobs (low demand, low control).
Stansfeld et al. (2012)	7 732 civil servants. Country: the United Kingdom.	Longitudinal studies. Work characteristics and mental health status measured on three occasions over ten years.	**Major depressive disorders** (MDD). Measured with the Composite International Diagnostic Interview.	**Job strain** (high demands associated with low decision latitude). **Social support at work.** Work characteristics measured with an adapted version of the Job Content Questionnaire at phases 1, 2 and 3.	Repeated job strain is associated with increased risk of MDD (odds ratio = 2.19, high job strain on two of three occasions versus none). Repeated low work social support was associated with MDD (odds ratio = 1.61, low work social support on two of three occasions versus none). Repeated job strain remains associated with MDD after adjustment for earlier psychological distress.
Stansfeld and Candy (2006)	Review of 11 longitudinal studies. Countries: Canada, Belgium, Finland, France, the United Kingdom and the Netherlands.	Meta-analysis. Follow-up period: at least one year. Samples sizes: from 2 000 to more than 10 000 persons.	**Common mental health disorders.** Measured with validated scales. The study populations were free of common mental disorders at the start of the study.	**Psychosocial work-related factors.** Low decision authority, low decision latitude, high demands, job strain (high demands associated with low decision latitude, low social, effort-reward imbalance and job insecurity.	Psychosocial work-related factors increase the risk of common mental disorders: low decision authority (SOR = 1.21), low decision latitude (SOR = 1.23), high demands (SOR = 1.39), job strain (SOR = 1.82), low social support (SOR = 1.32), effort-reward imbalance (SOR = 1.84), job insecurity (SOR = 1.33). (SOR: summary odds ratio.)

Constructing synthetic indices of job demands and job resources

Based on the European Workings Condition Survey (EWCS)

Existing psychometric scales and indices of job strain provide critical guidance on the type of survey questions that can be used for measuring the various components of total job demands and that of total job resources. Yet, the precise set of questions to be selected among the many included in the EWCS inevitably relies on judgment and also depends on the purpose of the exercise. Since the approach followed in this chapter gives prominence to objective features of job quality, the questions chosen were those seeking objective and precise information (e.g. whether an individual can choose or change the order of tasks to be accomplished), as well as readily interpretable in terms of the quality of the working environment (QWE). Table 3.A1.2 reports: i) the set of qualitative variables (i.e. EWCS questions) retained to measure the various aspects of QWE; ii) the normalisation procedure used to compare these variables, initially measured on different scales; iii) the way these variables have been aggregated into a reduced number of components, which refer to broad categories of job demands or job resources.

Table 3.A1.2. **Definition of job-demand and job-resource variables**

A. Job demands			
	EWCS questions	EWCS coding	Final coding (scale 0-1)
1. Time pressure at work			
Long working hours (d1)	How many hours do you usually work per week in your main paid job? (Q18)	Number	1 if Q18 > 50; 0 otherwise.
No working time flexibility (d2)	Would you say that for you arranging to take an hour or two off during working hours to take care of personal or family matters is? (Q43)	Scale 1-4 (not difficult at all – very difficult)	1 if Q43 > 2; 0 otherwise.
High pace at work (d3)	Does your job involve working at very high speed? (Q45A) Does your job involve working to tight deadlines? (Q45B)	Scale 1-7 (all of the time – never)	1 if Q45A < 3 and Q45B < 3; 0 otherwise.
Time pressure = 1 if (d1 + d2 + d3) ≥ 1; 0 otherwise.			
2. Physical health risk factors			
Heavy loads (d4)	Does your job involve carrying or moving heavy loads? (Q24C)	Scale 1-7 (all of the time – never)	1 if Q24C < 4; 0 otherwise.
Painful positions (d5)	Does your job involve tiring or painful positions? (Q24A)	Scale 1-7 (all of the time – never)	1 if Q24A < 4; 0 otherwise.
Extreme temperatures (d6)	Are you exposed at work to low temperatures whether indoors or outdoors? (Q23D) Are you exposed at work to high temperatures which make you perspire even when not working? (Q23C)	Scale 1-7 (all of the time – never)	1 if Q23D < 4 or Q23C < 3; 0 otherwise.
High noise (d7)	Are you exposed at work to noise so loud that you would have to raise your voice to talk to people? (Q23B)	Scale 1-7 (all of the time – never)	1 if Q23B < 4; 0 otherwise.
Vibrations (d8)	Are you exposed at work to vibrations from hand tools, machinery, etc.? (Q23A)	Scale 1-7 (all of the time – never)	1 if Q23A < 4; 0 otherwise.
Physical health risk factors = 1 if (d4 + d5 + d6 + d7 + d8) ≥ 1; 0 otherwise.			
3. Workplace intimidation			
Bullying and harassment (d9)	And over the past 12 months, during the course of your work have you been subjected to bullying/harassment? (Q71B)	Yes/no	1 if Q71B = yes; 0 otherwise.
Threats and humiliating behaviours (d10)	Over the last month, during the course of your work have you been subjected to threats and humiliating behaviour? (Q70C)	Yes/no	1 if Q70C = yes; 0 otherwise.
Verbal abuse (d11)	Over the last month, during the course of your work have you been subjected to verbal abuse? (Q70A)	Yes/no	1 if Q70A = yes; 0 otherwise.
Workplace intimidation = 1 if (d9 + d10 + d11) ≥ 1; 0 otherwise.			

Table 3.A1.2. **Definition of job-demand and job-resource variables** *(cont.)*

B. Job resources			
	EWCS questions	EWCS coding	Final coding (scale 0-1)
1. Work autonomy and learning opportunities			
Order of tasks (r1)	Are you able to choose or change your order of tasks? (Q50A)	Yes/no	1 if Q50A = yes; 0 otherwise.
Methods of work (r2)	Are you able to choose or change your methods of work? (Q50B)	Yes/no	1 if Q50B = yes; 0 otherwise.
Learning opportunities (r3)	Generally, does your main paid job involve learning new things? (Q49F)	Yes/no	1 if Q49F = yes; 0 otherwise.
Training (r4)	Over the past 12 months, have undergone (…): training paid for or provided by your employer (Q61A); on the job training (Q61C)?	Yes/no	1 if Q61A = yes or Q61C = yes; 0 otherwise.
Work autonomy and learning opportunities = 1 if (r1 + r2 + r3 + r4) = 4; 0 otherwise.			
2. Management practices			
Well defined work tasks (r5)	You know what is expected of you at work. (Q51K)	Scale 1-5 (always – never)	1 if Q51K < 3; 0 otherwise.
Work organisation and planning (r6)	In general, your immediate manager/supervisor is good at planning and organising the work. (Q58D)	Yes/no	1 if Q58D = yes; 0 otherwise.
Feedbacks (r7)	In general, your immediate manager/supervisor provides you with feedback on your work. (Q58A)	Yes/no	1 if Q58A = yes; 0 otherwise.
Management practices = 1 if (r5 + r6 + r7) = 3; 0 otherwise.			
3. Workplace relationships			
Friendly work atmosphere (r8)	I have very good friends at work. (Q77E)	Scale 1-5 (always – never)	1 if Q77E < 3; 0 otherwise.
Inclusive work environment (r9)	I feel "at home" in this organisation. (Q77D)	Scale 1-5 (strongly agree – strongly disagree)	1 if Q77D > 3; 0 otherwise.
Support from managers and colleagues = 1 if (r8 + r9) = 2; 0 otherwise.			

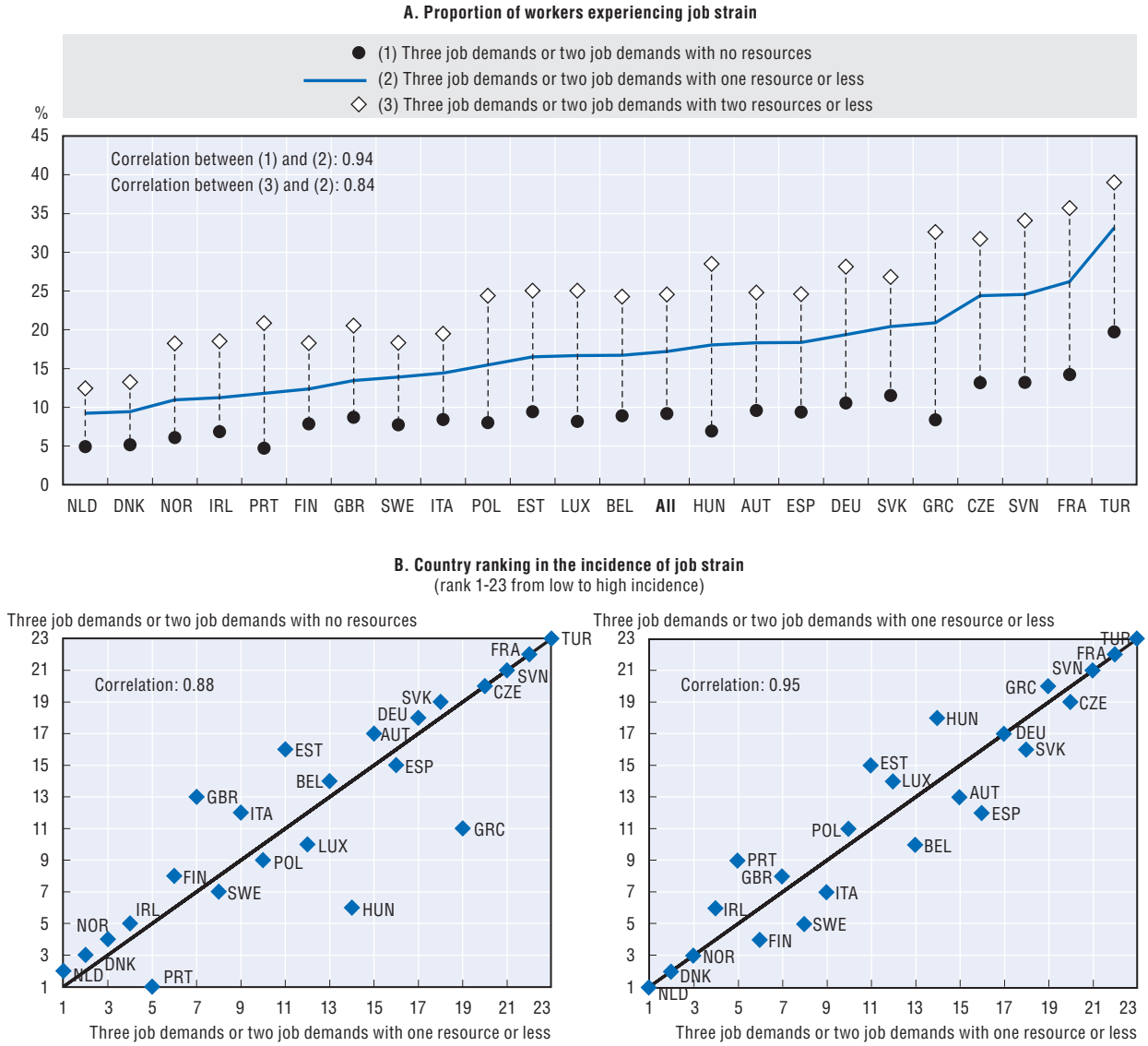
Based on both the European Workings Condition Survey (EWCS) and the International Social Survey programme (ISSP)

The Work Orientations module of the International Social Survey Program (ISSP), which covers a large number of European and non-European OECD countries, provides information on some aspects of the working environment included in the EWCS. However there are important differences between the two questionnaires, such as their focus, order of questions, question wording and answer scales. All of these differences can affect the cognitive evaluation of respondents to seemingly similar questions. For example, the EWCS questionnaire starts with the identification of the employment status, which is followed by a detailed set of questions on physical conditions and risk factors of the respondent's job, followed by arrangements of working schedule and working time, and then by intrinsic aspects of work tasks, skills and training, followed by organisational and management practices and concludes with work related and general well-being questions. The Work Orientations module of the ISSP questionnaire, on the other hand, starts with a section on preferences for employment, work orientations and attitudes towards self-employment/part-time work, which is followed by a set of questions on intrinsic aspects of the job, physical conditions and risk factors of the job, working schedule and working time arrangements, work-family balance, skill use and training opportunities, social relations at work, organisational commitment and need to work. These differences may cause different response styles across the two surveys. Table 3.A1.3 reports the set of questions that have been selected from the two surveys in order to measure job strain on the basis of a careful analysis of their comparability across the 16 countries covered in both surveys.

Table 3.A1.3. **Definition of job-demand and job-resource variables – EWCS and ISSP, 2005**

A. Job demands		
	EWCS 2005 question and coding	ISSP 2005 question and coding
1. Time pressure at work		
Long working hours (d1)	How many hours do you usually work per week in your main paid job? (Q48A) Number: 1 if Q48A > 50; 0 otherwise.	How many hours, on average, do you usually work for pay in a normal week? (WRKHRS) Number: 1 if WRKHRS > 52; 0 otherwise.
Work pressure (d2)	Does your job involve working at very high speed? (Q20A) (1 all of the time – 7 never); 1 if Q20A < 3; **and** Does your job involve working to tight deadlines? (Q20B) (1 all of the time – 7 never); 1 if Q20B < 3.	Do you come home from work exhausted? (V37) (1 always – 5 never); 1 if V37 < 3; **and** Do you find your work stressful? (V39) (1 always – 5 never); 1 if V39 < 3.
Working time inflexibility (d3)	You can take a break when you wish (Q25E) (1 always – 5 never); 1 if Q25E > 3.	How difficult would it be for you to take an hour or two off during working hours, to take care of personal or family matters? (V43) (1 not difficult at all – 4 very difficult); 1 if V43 > 2.
Time constrain = 1 if (d1 + d2 + d3) > = 1; 0 otherwise.		
2. Physical health risk factors		
Dangerous work (d4)	(d4a) Are you exposed at work to noise so loud that you would have to raise your voice to talk to people? (Q10A) (1 all of the time – 7 never); 1 if Q10A < 4; **or** (d4b) Are you exposed at work to vibrations from hand tools, machinery, etc.? (Q10B) (1 all of the time – 7 never); 1 if Q10A < 4; **or** (d4c) Are you exposed at work to high temperatures which make you perspire even when not working? (Q10C) (1 all of the time – 7 never); 1 if Q10A < 4; **or** (d4d) Are you exposed at work to low temperatures whether indoors or outdoors? (Q10D) (1 all of the time – 7 never); 1 if Q10A < 4.	Do you work in dangerous conditions? (V40) (1 always – 5 never); 1 if V40 < 3; 0 otherwise.
Hard physical work (d5)	(d5a) Does your job involve carrying or moving heavy loads? (Q11C) (1 all of the time – 7 never); 1 if Q11C < 4; **or** (d5b) Does your job involve tiring or painful positions? (Q11A) (1 all of the time – 7 never); 1 if Q11A < 4.	Do you have to do hard physical work? (V38) (1 always – 5 never); 1 if V38 < 3; 0 otherwise.
EWCS: Physical health risk factors = 1 if (d4a + d4b + d4c + d4d + d5a + d5b) ≥ 1; 0 otherwise. ISSP: Physical health risk factors = 1 if (d4 + d5) ≥ 1; 0 otherwise.		
B. Job resources		
	EWCS 2005 question and coding	ISSP 2005 question and coding
1. Work autonomy and learning opportunities		
Work autonomy (r1)	Are you able to choose or change your order of tasks? (Q24A) (Yes/no); 1 if Q24A = yes; **and** Are you able to choose or change your methods of work? (Q24B) (Yes/no); 1 if Q24B = yes.	Which of the following statements best describes how your working hours are decided? (V41) (1 cannot change – 3 entirely free to decide); 1 if V41 > = 2; **and** Which of the following statements best describes how your daily work is organised? (V42) (1 I am free to decide – 3 I am not free to decide); 1 if V42 < 3.
Learning opportunities (r2)	Generally, does your main paid job involve learning new things? (Q23F) (Yes/no); 1 if Q23F = yes; **and** Over the past 12 months, have undergone (…): training paid for or provided by your employer (Q28A); on the job training (Q28C)? (Yes/no); 1 if Q28A = 1 or Q28C = 1.	My job gives me a chance to improve my skills (V36) (1 Strongly agree – 5 Strongly disagree); 1 if V36 < 3; **and** Over the past 12 months, have you had any training to improve your job skills? (V48) (Yes/no); 1 if V48 = yes.
ISSP: Autonomy and learning opportunities = 1 if (r1 + r2) > = 1; 0 otherwise. EWCS: Autonomy and learning opportunities = 1 if (r1 + r2) > = 2; 0 otherwise.		
2. Workplace relationships		
(r3)	I feel "at home" in this organisation. (Q37D) (1 strongly disagree – 5 strongly agree); 1 if Q37D > 3; **and** I have very good friends at work (Q37F) (1 strongly disagree – 5 strongly agree); 1 if Q37F > 3.	In general, how would you describe relations at your workplace: Between workmates/colleagues? (V50) (1 very good – 5 very bad); 1 if V50 < 3.
EWCS: Social support = 1 if (r3) = 1; 0 otherwise. ISSP: Social support = 1 if (r3) = 1 (if V50 < 3); 0 otherwise.		

Figure 3.A1.1. **Incidence of job strain according to the definition used**



Source: Eurofound (2012), *Fifth European Working Conditions Survey*, Publications Office of the European Union, Luxembourg.

StatLink http://dx.doi.org/10.1787/888933132507

ANNEX 3.A2

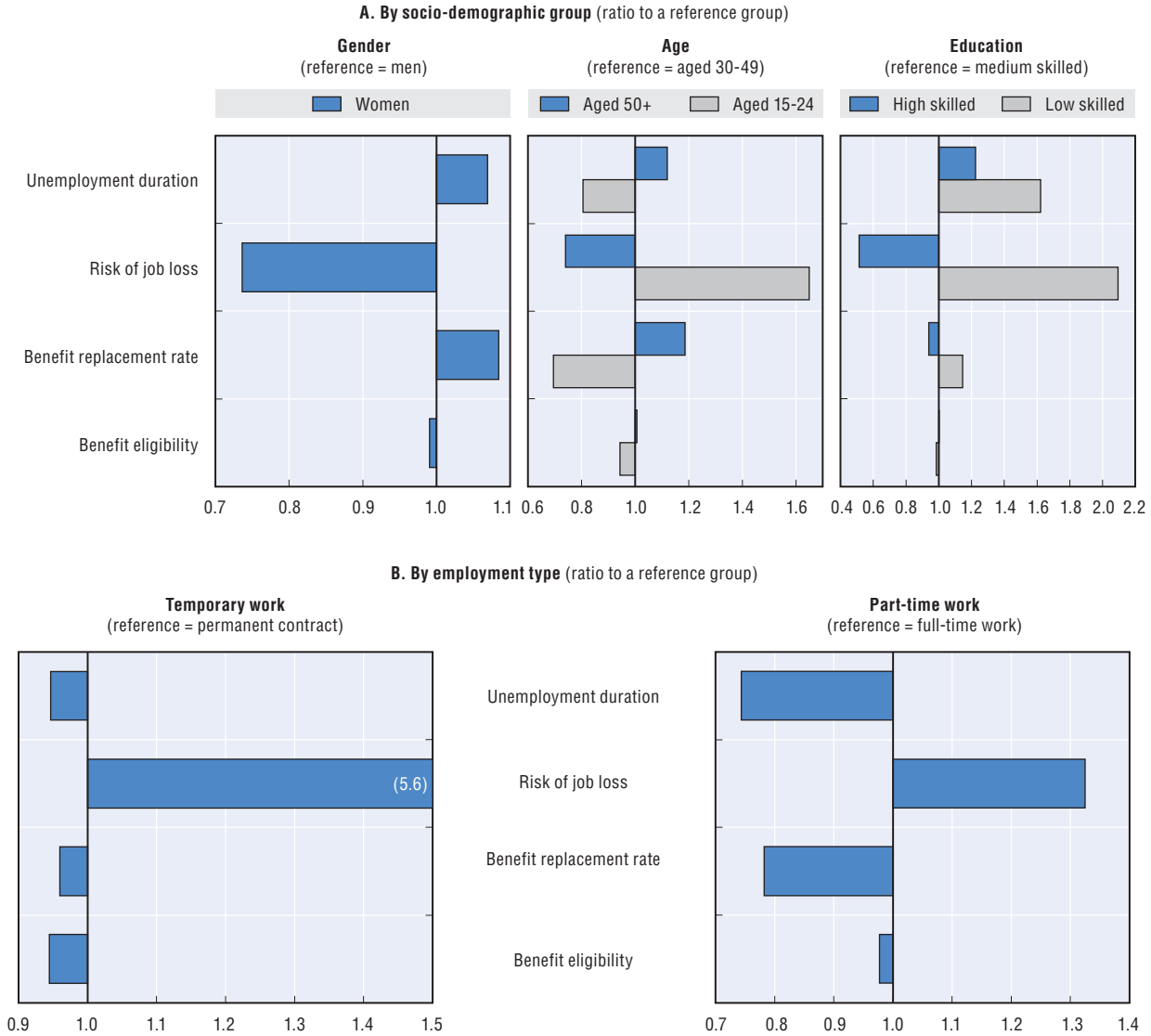
A statistical portrait of job quality

Table 3.A2.1. **Regression analysis of job quality measures**

	Earnings quality	Labour market insecurity	Job strain	
Female	-1.731***	0.00556	-0.154***	
Intermediate skill level	2.726***	-0.0333	-0.281***	
High skill level	9.134***	-0.0616**	-0.549***	
Aged 15-29	-3.337***	0.0658***	-0.096	
Aged 50-64	1.313***	0.0183	-0.030	
Temporary work	-1.468***	0.0893***	0.393***	0.388***
Part-time work	-0.136**	0.0358	-0.083	-0.151*
Country dummies	Yes	Yes	Yes	Yes
Number of observations	1 619	380	20 300	

Note: OLS regressions (earnings quality and labour market insecurity) and logistic regression (job strain).
***, **, *: statistically significant at 1%, 5% and 10% levels, respectively.
Source: European Union Survey on Income and Living Conditions (EU-SILC); and Eurofound (2012), *Fifth European Working Conditions Survey*, Publications Office of the European Union, Luxembourg.

Figure 3.A2.1. **The subcomponents of labour market security**



Note: Average across 23 countries: Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Slovenia, the Slovak Republic, Spain, Sweden, Turkey and the United Kingdom.

Source: Eurofound (2012), *Fifth European Working Conditions Survey*, Publications Office of the European Union, Luxembourg.

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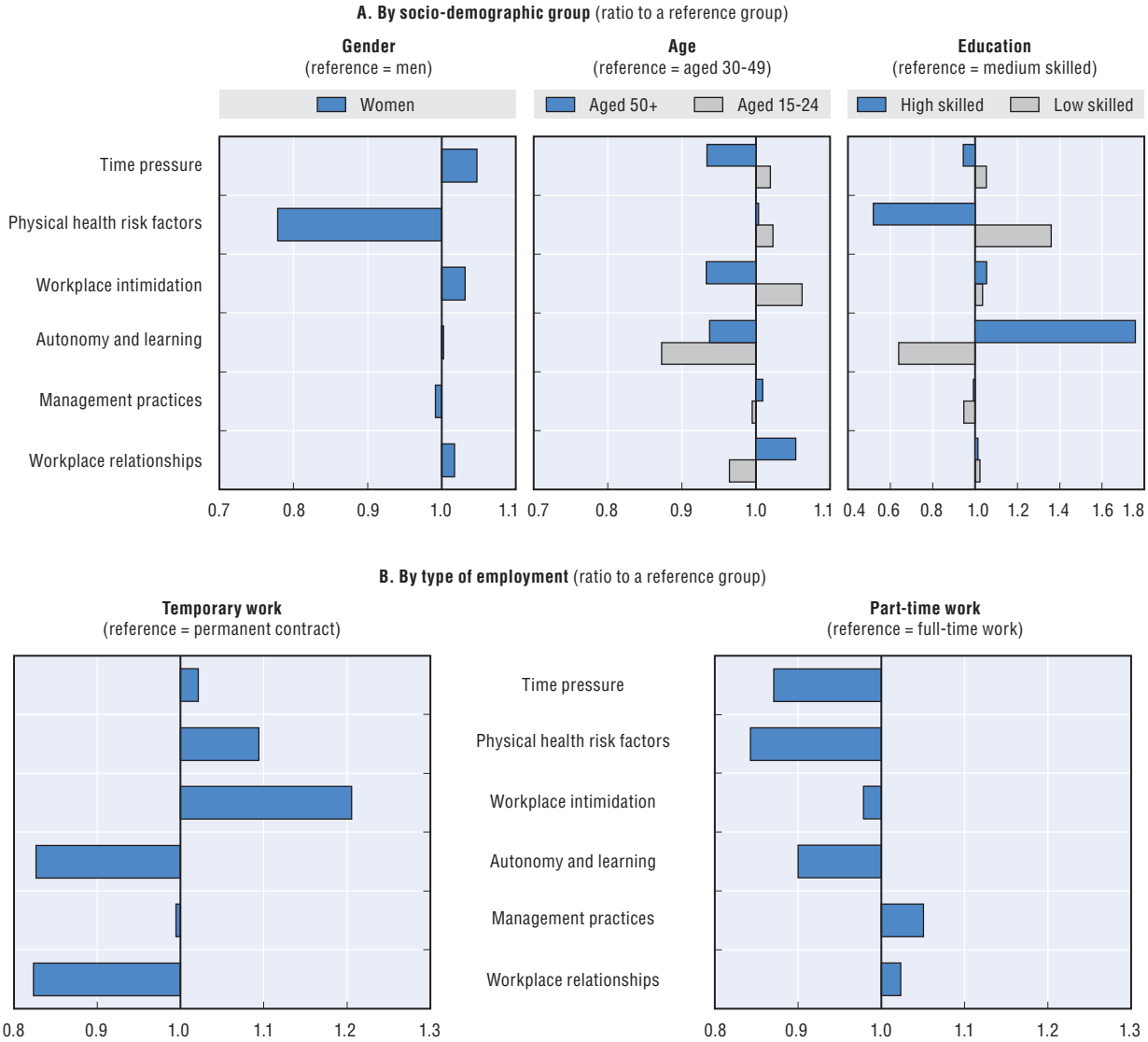
Figure 3.A2.2. **The subcomponents of job strain**



Note: Average across 23 countries: Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Slovenia, the Slovak Republic, Spain, Sweden, Turkey and the United Kingdom.

Source: Eurofound (2012), *Fifth European Working Conditions Survey*, Publications Office of the European Union, Luxembourg.

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Chapter 4

Non-regular employment, job security and the labour market divide

This chapter provides new evidence on the incidence of non-regular employment, defined as all types of employment that do not benefit from the same degree of protection against contract termination as permanent employees, and its impact on labour market duality and inequalities in job security across workers. In most OECD countries, regulations concerning termination of non-regular contracts are typically less costly for employers and less protective for workers than those applying to the dismissal of permanent employees. These differences in legislation are reflected in both actual and perceived job security. Moreover, there are growing concerns that large differences in regulations across contracts tend to concentrate any required labour market adjustments on non-regular workers, thereby increasing labour market segmentation. Policy options to reduce this labour market divide include making the use of temporary contracts more difficult and costly, relaxing regulations on dismissal of permanent workers or fostering convergence of termination costs across contracts, including by introducing a single or unified contract. Each of these options involves overcoming implementation difficulties and requires complementary reforms to be effective.

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

Non-regular employment – that is all forms of employment that do not benefit from the same degree of protection against contract termination as permanent employees – can provide a useful source of flexibility for firms to adjust their workforce needs in the light of changing economic circumstances. They can also be a voluntary choice for certain workers, who might prefer the flexibility associated with employment relationships characterised by softer commitments. However, excessive use of non-regular contracts can have an adverse impact on both equity and efficiency. Workers on these contracts often face a higher degree of job insecurity than employees on regular contracts. And firms may invest less in non-regular workers, which in turn may depress productivity growth. Providing flexibility to firms through a range of non-regular contracts, while minimising equity and efficiency costs arising from the use of these contracts is therefore a key challenge for policy-makers. Over the two decades prior to the global financial crisis, many countries sought to promote flexibility in the labour market largely by easing regulations on non-regular contracts, while leaving largely un-touched relatively stricter regulations on regular contracts. This led to an expansion of non-regular contracts in a number of OECD countries and greater labour market segmentation as characterised by large disparities in job quality across segments (e.g. contracts), as well as low rates of transition of workers from one segment to another.

This chapter provides new evidence on the scope and features of labour market segmentation as determined by disparities of job security across contract types. It considers all forms of contracts that do not benefit from the same degree of protection against contract termination as regular employees with an open-ended contract. These include fixed-term contracts, temporary-work-agency employment, casual contracts and contracts for services regulated by commercial law but entailing conditions of work that are similar to those of employees. The key findings of the chapter are as follows:

- Temporary employment, the dominant form of non-regular employment, is widely used in a number of OECD countries, even if permanent employment remains the most prevalent form of employment contract for wage and salary employees. Nevertheless, other forms of non-regular employment have increased, making it more difficult to characterise labour market duality. These other forms of non-regular employment include contracts for services regulated by commercial law, which tend to be used as alternative instruments of flexibility in particular in the context of restrictive employment protection for regular open-ended contracts. The multiplicity of contracts makes the profiles of non-regular workers difficult to define as a homogeneous group, but the portrait that emerges from available data suggests that non-regular jobs – and particularly fixed-term jobs – are still disproportionately held by younger, less-educated and lower-skilled workers, and are not a voluntary choice for most employees.

- Non-regular workers are generally less protected by employment termination rules than regular workers. Overall, two important aspects stand out from the comparative analysis of hiring and firing rules across countries. First, the existence in many OECD countries of restrictions on the number of renewals or successive temporary contracts under which a worker can be employed by the same firm without interruption appears to increase job insecurity as perceived by those temporary workers who have limited perspectives on conversion. Second, there are some cross-country differences in termination rules between regular and non-regular contracts. In a few countries, termination of fixed-term contracts before the end date is more difficult and costly than terminating contracts with indefinite duration, but in the majority of countries there are no significant differences. By contrast, in only a few countries are there any costs or restrictions in the case of termination at the end date, and when they are in place, they are usually much less burdensome than for dismissing employees with permanent contracts.
- The large statutory disparities in termination costs by type of contract trigger differences in job security and generate persistent divides between non-regular and regular workers. The comparison across contract types of different measures of subjective job security suggests that non-regular workers, notably fixed-term and temporary-work-agency workers, feel much more insecure than permanent employees as regard to the risk of job loss and the probability of re-employment after job loss – although some caution must be exerted in the comparison of subjective perceptions across countries and individuals. Moreover, there is no evidence that non-regular workers are compensated for their lower job security through higher wages. On the contrary, the majority of them experience worse conditions in terms of both job security and wages, even though the situation differs across countries and contracts.
- Non-regular contracts can be a stepping stone into stable employment for a number of workers, notably for young people, and a voluntary choice for a fraction of them. But the low transition rates from temporary to permanent jobs suggest that those inequalities tend to persist over time. Evidence for European countries shows that less than 50% of the workers that were on temporary contracts in a given year were employed with full time permanent contracts three years later. One reason behind these long-lasting effects is the reduced probability of receiving employer-sponsored training when in temporary positions: evidence based on the OECD Adult Skills Survey shows that on average being on temporary contracts reduces the probability of receiving employer-sponsored training by 14%.
- Policy makers have become increasingly aware of the risks that asymmetric liberalisation of non-regular contracts, while leaving in place fairly rigid regulations on regular ones, may have on increasing labour market segmentation and lowering overall economic performance. Therefore, various policy options have been recently explored in OECD countries to reduce the labour market divide. One strategy consists in limiting the use of fixed-term contracts by restricting their use and making them more costly. However, enforcement of such measures might prove particularly difficult. In addition, increasing restrictions on hiring regulations might induce perverse effects on temporary workers by reducing the duration of their employment spells and their re-employment prospects after job loss.

- Another approach adopted in a number of OECD countries, in particular during the recent economic crisis, has been to lessen dismissal restrictions for open-ended contracts. These reforms tend to be effective in reducing labour market dualism by increasing the incentive of employers to hire permanent workers. At the same time, however, these reforms may also involve greater dismissals of permanent workers and some of them may experience significant income losses. Therefore, these reforms should be coupled with the provision of adequate unemployment benefits, albeit made conditional on strictly enforced job-search requirements and integrated into well-designed activation packages.
- Another way to alleviate labour market dualism is to foster convergence towards a common level of termination costs between the different types of contracts by making regulation as homogeneous as possible across contractual relationships. In principle, the level of termination costs could be chosen in a way that matches each country's social and political preferences for worker protection, thus not necessarily implying convergence towards low degrees of employment protection. Full convergence could be achieved through the introduction of either a *single contract* – with termination costs increasing with job tenure and applied to all workers, while suppressing or limiting all fixed-term contracts – or a *unified contract* – with the same termination costs applying to all contracts, independently of whether they are permanent or temporary. However, their implementation would require in many countries addressing a number of difficult and contentious issues – such as extending the definition of fair dismissal and limiting the judicial review of the dismissal decision to discrimination, prohibited grounds and false reasons. Moreover, suppressing all fixed-term contracts would run the risk of reducing hiring and fostering the use of contracts for individual labour services regulated by commercial law – that is an even less protected form of employment.
- Given the difficulty of their implementation, it is perhaps not surprising that there are no country examples of the use of a *single contract* and only few examples in the case of a *unified contract*. Ireland, New Zealand and the United Kingdom have implemented a significant convergence of termination costs across contracts, while maintaining various forms of temporary contracts to provide firms with the necessary flexibility, especially to deal with truly temporary activities. However, these countries have all low degrees of employment protection and are characterised by limited judicial review of contract terminations.

Introduction

The surge in the use of temporary contracts in a number of OECD countries over the last twenty-five years has been well documented and analysed in cross-country and national studies (for example, OECD, 2002, 2010, 2013a; ILO, 2012). Temporary jobs provide a useful buffer of adjustment and flexibility for firms in the case of uncertain or fixed-term activity. In certain cases, they could be a genuine, voluntary choice of workers or might help those with limited labour market attachment and/or limited work experience getting a foothold in the labour market. However, employees with temporary contracts are also exposed to reduced protection in case of termination of the employment relationship, and their jobs tend to be of lower quality, with reduced access to fringe benefits, often lower pay and prospects of upward mobility, particularly if the perspectives of transition towards a regular job are limited (see Chapter 3).

While technological and organisational change is the main factor behind the increasing spread of temporary contracts, their expansion has also been driven in many OECD countries by partial labour market reforms during the 1990s, which facilitated the hiring on temporary contracts while maintaining stringent restrictions on regular contracts (see, for example, OECD, 2013a). In the face of a rapidly changing economic environment, firms have taken advantage of differences in termination costs between temporary and permanent jobs to reduce the constraints on their operation imposed by employment protection provisions. In countries with strict regulations on dismissal of regular workers, the burden of adjustment to shocks has therefore been shifted to those on fixed-term contracts (often youth and other workers with little work experience or fewer skills), leading to dual (or segmented) labour markets, where outsiders tend to move from one temporary contract to another while insiders enjoy high protection and greater job stability. Moreover, at a macroeconomic level, dual labour markets induce also large adjustments in employment levels during recessions, increasing the volatility of labour markets and public budgets (e.g. Cahuc and Zylberberg, 2008; OECD, 2012). The empirical evidence also suggests that countries that implemented partial reforms of employment protection legislation, whereby regulations on temporary contracts were weakened while maintaining stringent restrictions on regular contracts, have indeed experienced slower productivity growth (Boeri and Garibaldi, 2007; Bassanini et al., 2009; Dolado et al., 2012).

Even though the roots of labour market segmentation are complex and regulation is only partially responsible for its evolution, policy-makers are increasingly aware of the risks for efficiency and social cohesion of relying solely on temporary contracts for labour market adjustments. However, the increasing complexity of the institutional setting due to the multiplicity of contractual forms of employment calls for a broader and in depth analysis of all forms of dependent employment that are alternative to regular contracts.

This chapter provides an update of the main trends and features of temporary employment (see for example OECD, 2002, for previous OECD work on this topic). However, with respect to previous OECD studies, it analyses more broadly the surge in the use of all *non-regular* forms of employment. In order to better characterise labour market duality, this chapter goes beyond the traditional definition of temporary employment, as used in labour force statistics, to capture all forms of dependent employment that do not benefit from the same degree of protection against contract termination as regular employees with an open-ended contract. It also sheds more light on the costs of labour market segmentation by investigating the extent to which statutory differences in the employment termination process result in job insecurity and generate *persistent* divides between non-regular and regular workers in terms of working conditions. Of particular relevance for policy makers, the chapter discusses whether having a non-regular job facilitates or hinders labour market prospects. Finally, the chapter also discusses various policy proposals to alleviate labour market duality in the context of strict regulation on regular contracts, including the introduction of a single or unified labour contract.

The chapter is organised as follows: Section 1 defines the concept of non-regular employment, provides evidence on the size of the phenomenon and the characteristics of the workers holding these contracts. Section 2 presents and discusses differences in employment protection legislation across contract types, drawing on recently collected information. Section 3 considers how these disparities are reflected in patterns of job security and discusses the extent to which non-regular employment is a trap or a stepping stones into regular jobs. Finally, Section 4 discusses available policy options and concludes.

1. Scope and characterisation of non-regular employment

How important are non-regular employment contracts in modern OECD economies? This section provides an overview of the incidence of non-regular contracts by distinguishing between employment contracts and contracts for services (see Box 4.1).[1]

Box 4.1. **Defining non-regular employment**

In this chapter, **non-regular employment** is defined to cover all types of employment that do not benefit from standard statutory provisions in term of employment protection. Thus, in a sense, non-regular work is defined by what it is not: dependent employment with a contract of indefinite duration (open ended contract), or what are considered as "regular" forms of employment.[a] The chapter breaks down non-regular employment into three categories: i) temporary employment; and ii) casual employment and iii) dependent self-employed workers (DSEWs). Other forms of self-employment, which do not imply a relationship of subordination with an employer (see below), are out of the scope of this chapter.

Temporary employment takes different forms across countries, depending on the contractual forms available to employers and workers in the national legislation. It is usually understood as dependent employment of limited duration and defined as such by labour force statistics even if it may include certain forms of open-ended contracts provided by temporary work agencies or through on-call contracts. In line with OECD definitions, this chapter also refers to the notion of temporary employment to typically capture fixed-term contracts and temporary work agency (TWA hereafter) employment. **TWA employment** is defined here as the employment of workers with a contract under which the employer (i.e. the agency), within the framework of its business or professional practice, places the employee at the disposal of a third party (i.e. the user firm) in order to perform work (i.e. the assignment) under supervision and direction of that user firm by virtue of an agreement for the provision of services between the user firm and the agency. By contrast, a **fixed-term contract** is defined here as an employment relationship that is deemed to end at a pre-specified end date, or subject to a pre-specified condition (such as the end of a project), if the contract is not renewed. It includes standard fixed-term contracts (that is contracts with a precisely defined end date), seasonal work, on-call contracts of limited duration, project contracts, training contracts and TWA contracts between the worker and the agency if of limited duration.

In terms of available statistics, while the definitions of temporary employment are reasonably comparable across EU countries (Eurostat), this is not the case for other countries. For instance in Korea, workers in temporary jobs include fixed-term jobs of a limited duration, which is close to the so-called contingent workers, as well as TWA, individual contract workers, at-home workers, on-call workers, etc. In the case of Australia, a significant number of employees are employed under a **casual contract**, which implies an employment relationship on an hourly or daily basis and is not counted in the national labour force survey as temporary employment.[b]

Finally, **dependent self-employed workers** (DSEW) are own-account self-employed – i.e. independent contractors without employees who either autonomously produce and sell goods or engage with their clients in contracts for services, regulated by commercial law – whose conditions of work are nonetheless similar to those of employees, in the sense that they work mainly or exclusively for a specific client-firm – hereafter called employers for simplicity – with limited autonomy and often closely integrated into its organisational structure. Even though their degree of subordination is similar to that of an employee, they are usually not protected by employment protection rules because these rules do not apply to commercial contracts. In addition, they typically have the same fiscal and social protection regimes as for the other self-employed, which is typically less burdensome for their employers. As a consequence, this type of contracts represents another flexible and often low-cost alternative to regular, open-ended employment contracts.

a) For the purposes of this chapter, the terms *open-ended*, *permanent* and *regular employment* are used in an interchangeable way. The term *employee* is used to designate all workers who have, from a legal viewpoint, an employment relationship with their employer, while the term worker includes both employees and the dependent self-employed who are not strictly speaking employees.

b) In this sense a casual contract shares many similarities with certain types of open-ended on-call contracts. For example, in the United Kingdom zero-hours on-call contracts are possible in which the worker remains available for work but the employer does not guarantee any minimum amount of work in a given month. Casual employment is also important in New Zealand where it amounted to 4% of employment in the first quarter of 2008 according to the Survey of Working Life.

The incidence of non-regular employment

Fixed-term contracts and TWA employment

While permanent contracts remain the prevalent form of dependent employment in OECD countries, the use of the different types of contracts varies substantially across countries, reflecting differences in labour legislation, practices and the composition of the economy by sector: on average for 2011-12, the share of fixed-term contracts was above 15% in nine OECD countries, rising to a quarter of all employees or above in Chile, Poland, Spain, while in it was at 6% or below in Australia, Estonia, Latvia, Lithuania and the United Kingdom (Table 4.1). There are also considerable differences across countries in the incidence of TWA employment: forbidden in Turkey, it accounts for about 2-3% of all employees in Austria, Belgium, France, Germany, Latvia, the Netherlands, Portugal, the Slovak Republic, Spain and the United States, rising to 5.3% in Slovenia. In at least eight European countries, open-ended contracts between the agency and the worker were the dominant contractual form of TWA employment (for example in Austria, Germany and the Slovak Republic), while in others it was fixed-term contracts (e.g. in France, the Netherlands and Slovenia). Overall, fixed-term contracts are the prevalent forms of non-regular employment contracts in the OECD countries, with the exception of Australia where casual workers represented about 19% of all employees in 2012 (see Box 4.2).[2]

The distribution of employees across contracts remained rather stable for most OECD countries, during the Great Recession and subsequent recovery, with the notable exceptions of Spain and Ireland (for further details, see OECD, 2014b). The share of fixed-term contracts went down in Spain from 32.9% at the onset of the crisis to 24.5% on average for 2011-12 while it rose in Ireland from 7% to 10%. The significant decrease of the share of fixed-term contracts during the crisis in Spain was due to the extremely high rate of job destruction among workers on temporary contracts together with a deceleration of the rate of temporary job creation in a strongly segmented labour market (OECD, 2014c). In Ireland, the increase of the share of fixed-term contracts was rather driven by changes in the composition of hiring (the share of fixed-term contracts among new hires rose from 26.7% in 2006-07 to 48.4% in 2011-12). More generally, Figure 4.1 shows that fixed-term contracts have been increasingly used for new hires between the two periods in almost all countries despite large initial differences in their share of all contracts for new hires (e.g. from 23.1% in the United Kingdom to 75% and higher on average for 2011-12 in Poland,[3] Portugal, Slovenia, Spain and Sweden).

The distribution by contract duration varies significantly across countries depending on several factors such as the importance of a particular type of fixed-term contracts (for instance apprenticeship contracts in Germany, Austria and Switzerland which tend to be of longer duration, as reflected by the higher share of fixed-term contracts over one year in these countries). No specific patterns emerge however between the incidence of fixed-term contracts (extensive margin) and the share of short-duration contracts (intensive margin).[4] For instance while Spain, Poland and Portugal have all high shares of fixed-terms contracts, the proportion of short-term contracts differs significantly between the three countries: contracts with a duration of less than three months were the most frequent in Spain (57.6% on average in 2011-12), while the bulk of fixed-term contracts in Portugal had a duration between three months and one year (68.3% over the same period); in Poland, the share of contracts of between three months and one year was equally important as the share of those over one year at about 40% (Figure 4.2). Finally, the crisis does not seem to

Table 4.1. **Permanent and fixed-term contracts, of which with a temporary work agency**

Percentage of all employees, average 2011-12

	Permanent			Fixed-term			Temporary work agency
	All permanent contracts	Not with a temporary work agency	With a temporary work agency	All fixed-term contracts	Not with a temporary work agency	With a temporary work agency	
Australia	94.1	..	..	5.9	..	..	..
Austria	90.6	88.6	2.0	9.4	9.2	0.3	2.2
Belgium	91.5	91.5	0.0	8.5	6.7	1.8	1.8
Canada	86.5	..	..	13.5	..	..	..
Chile	69.5	..	..	30.5	..	..	..
Czech Republic	91.9	90.7	1.2	8.1	7.9	0.2	1.4
Denmark	91.3	90.5	0.8	8.7	8.4	0.3	1.1
Estonia	96.0	95.8	0.2	4.0	3.9	0.1	0.2
Finland	84.4	83.9	0.5	15.6	14.9	0.7	1.1
France	84.9	84.9	0.0	15.1	12.8	2.3	2.3
Germany	85.6	83.9	1.8	14.4	13.1	1.2	2.8
Greece	89.2	89.0	0.3	10.8	10.7	0.1	0.4
Hungary	90.8	90.2	0.7	9.2	8.8	0.4	1.0
Iceland	87.2	87.2	0.0	12.8	12.8	0.0	0.0
Ireland	89.8	89.3	0.6	10.2	9.8	0.4	0.9
Italy	86.4	86.4	0.1	13.6	13.0	0.6	0.6
Japan	87.0	..	..	13.0	..	..	1.7
Korea	77.9	77.9	0.0	22.1	21.0	1.1	1.1
Luxembourg	92.7	91.8	0.9	7.4	6.7	0.6	1.5
Netherlands	81.2	80.8	0.5	18.8	16.3	2.5	2.9
Norway	91.8	91.7	0.1	8.2	8.1	0.1	0.2
Poland	73.3	73.3	0.0	26.7	26.2	0.5	0.5
Portugal	78.6	78.0	0.6	21.5	20.1	1.4	1.9
Slovak Republic	93.4	91.9	1.5	6.6	6.1	0.5	2.1
Slovenia	82.5	81.9	0.7	17.5	12.8	4.6	5.3
Spain	75.5	74.0	1.5	24.5	23.4	1.2	2.7
Sweden	83.8	83.1	0.7	16.2	15.6	0.5	1.3
Switzerland	87.1	86.6	0.5	12.9	12.5	0.4	0.9
Turkey	87.9	87.9	0.0	12.1	12.1	0.0	0.0
United Kingdom	93.9	..	..	6.1	..	..	..
United States	..	..	..	..	..	..	1.8
Latvia	94.3	93.0	1.3	5.7	4.9	0.8	2.1
Lithuania	97.3	96.7	0.6	2.7	2.6	0.1	0.7

Note: For the United States, data refers to the share of temporary help services workers in total non-farm employees.
.. Not available.
Source: OECD calculations based on microdata from the European Union Labour Force Survey (EU-LFS), Korean Additional Survey on Economically Active Population (March 2012), Japanese Labour Force Statistics, US Current Employment Statistics and OECD (2013), "Labour Market Statistics. Employment by permanency of the job: incidence", *OECD Employment and Labour Market Statistics* (database), *http://dx.doi.org/10.1787/data-00297-en*.

StatLink *http://dx.doi.org/10.1787/888933133172*

have particularly changed the distribution of fixed-term employees by contract duration, even if a general shortening of the average contract duration can be observed. In Finland and the Baltic States, the share of contracts over one year dropped dramatically, often by one half.[5]

The diversity in the incidence of temporary jobs across countries may also partly reflect characteristics and preferences of the workforce. For instance, some individuals may prefer more flexible working patterns for a number of reasons, e.g. temporary jobs may involve less commitment to the employer or a better balance with other activities (e.g. education, see Section 3 below). The distribution of fixed-term contracts by reason

Box 4.2. **Casual employment* in Australia**

In Australia, almost a fifth of employees are employed on a casual contract with less protection against dismissal than regular workers or those with fixed-term contracts. Casual employees accounted for 19% of employees in 2012, and made up a much larger share of employment in some industries, notably hospitality (64%), agriculture, forestry and fishing (43%) and retail trade (38%). Around 55% of casual employees are women, and most casuals are employed in relatively low-skilled service occupations (ABS, 2013).

Casual employees can be dismissed without notice or severance pay, and generally have no legal right to regular or ongoing employment. They can also have their hours varied from week to week or day to day. In effect, casual employment is employment on an hourly or daily basis, although many casual employees work the same hours every week and may have long tenure in their jobs. Despite having no right to notice of termination, casual employees can make claims for unfair dismissal in the same way as regular workers. However, a period of service as a casual employee does not count towards the qualifying minimum employment period unless the casual worker was employed on a regular and systematic basis and had a reasonable expectation of continuing employment on that basis.

In some industries, including construction, hospitality and some manufacturing sectors, employers must convert casual contracts to part-time or full-time contracts upon request if the employee has worked for a certain period of time and fulfilled criteria such as a minimum number of hours worked per week over the period of engagement. Typically, if a casual worker has been working regular hours for six or 12 months and requests to have their contract converted to a permanent full-time or part-time contract, employers cannot unreasonably refuse to do so. In fact, according to a recent decision of the Federal Court "true casual" employment is characterised by informality, uncertainty and irregularity of work, which cannot follow a fixed, regular schedule for a whole year (see Williams v MacMahon Mining Services Pty Ltd [2010] FCA 1321).

Casual workers are typically not entitled to paid holiday or sick leave. However, they can access some forms of unpaid leave (e.g. up to two days per occasion to care for a sick family member or if a family member is gravely ill or dies). Casual employees who have worked at least 12 months for regular hours in the same job and who have a reasonable expectation of ongoing work can take up to 12 months of unpaid parental leave if they have or adopt a child.

In compensation for a lack of other entitlements, casual employees receive a loading of around 25% on top of their hourly pay. In other regards, they should receive the same pay as other employees for doing the same work, including additional payments for working at non-standard times or on public holidays. In some industries, employers must pay casual employees for a minimum amount of work each time they are called in (e.g. three hours in the retail industry and two hours in the hospitality industry). Casual employees are also eligible to receive contributions to superannuation (Australia's private pension scheme) in the same way as other workers.

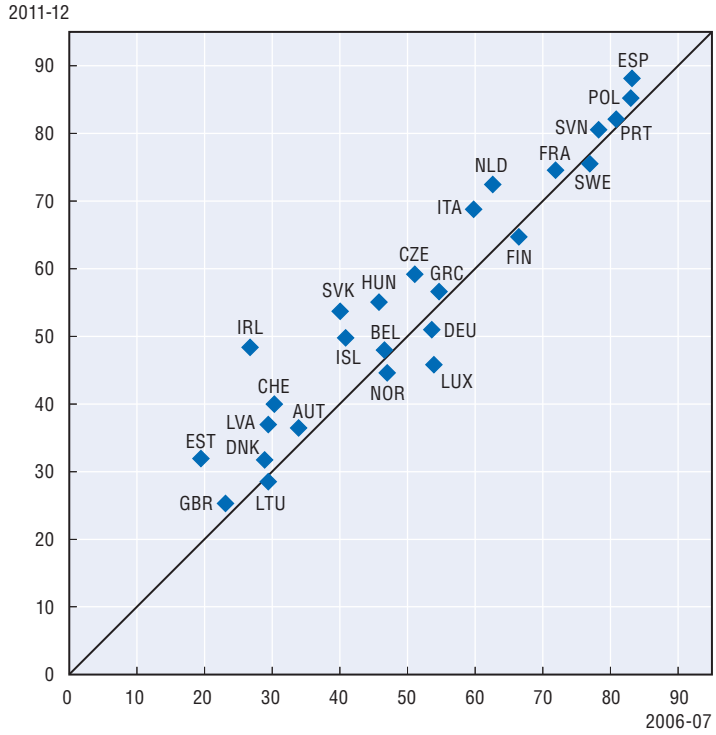
* ABS (2013) measures casual employment as the proportion of employees without paid leave entitlements. This measure corresponds closely to other measures of casual status, including employees receiving a casual loading or self-identified casual status.

Source: ABS (2013), *Forms of Employment, Australia*, Australian Bureau of Statistics, Canberra.

shows important differences across countries: in 2011-12, the share of involuntary temporary jobs (e.g. those employees who responded that the reason for having a fixed-term contract was that they *could* not find a permanent job) ranged from about 30-40% in Iceland and the Netherlands to 85% and higher in Belgium, the Czech Republic, Greece, Ireland, Italy, Portugal and the Slovak Republic, and was as large as 97% in Spain (Figure 4.3). In contrast, in Denmark, France, Sweden, Switzerland and the United Kingdom, about one fifth of fixed-term employees reported that they did not want a permanent job with this share rising to 30% in Norway and 50% in Iceland. Moreover, there is considerable country variation in the share of respondents who provided "in probationary period" as reason for being in fixed-term contracts. This category should

Figure 4.1. **Fixed-term contracts among new hires, 2006-07 and 2011-12**

Percentage of employees with no more than three months of tenure



Source: OECD calculations based on microdata from the European Union Labour Force Survey (EU-LFS).

StatLink http://dx.doi.org/10.1787/888933132564

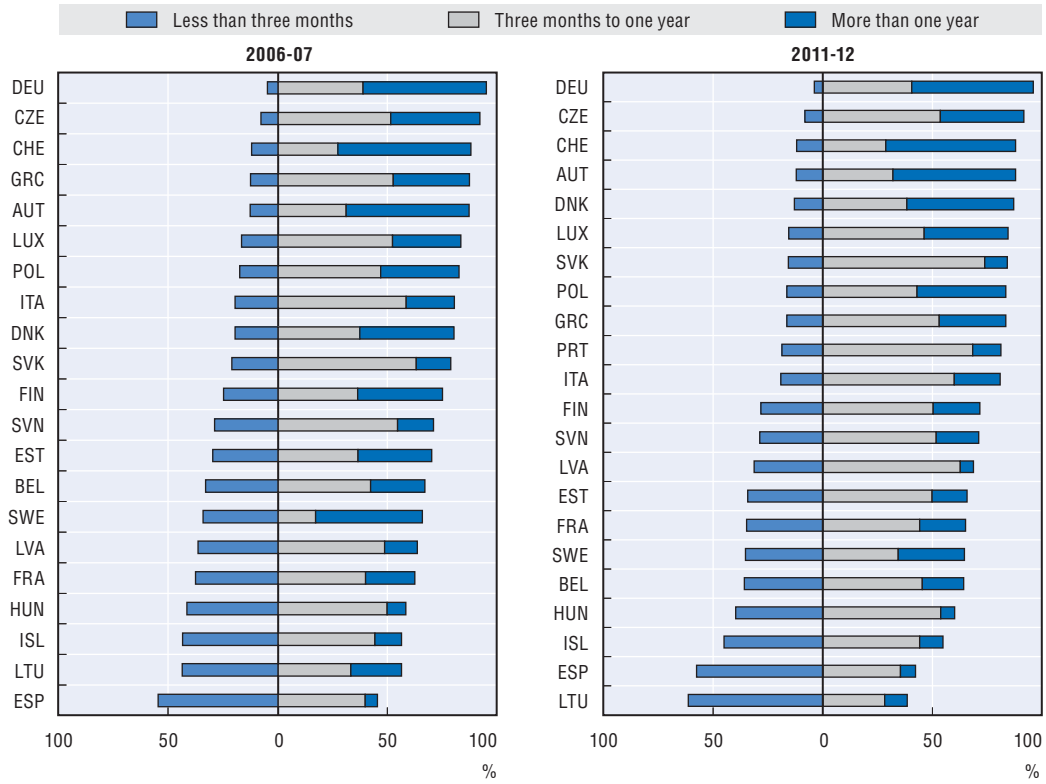
be interpreted with caution given that it could reflect differences across countries as regards individuals' assessments and expectations about main reason for why they are in a fixed-term job. For instance, the fact that in the Netherlands, 53.6% of employees reported they were on probation suggests that they responded first on their current status before gauging the voluntary or involuntary nature of their position. Conversely, in Spain, the extremely low percentage of employees identifying themselves as being on probation probably reflects the preoccupation of fixed-term employees with their poor labour market prospects. Bearing these caveats in mind, Figure 4.3 shows that in a large majority of countries, having a fixed-term contract is not a voluntary choice for most employees.

Dependent self-employed workers

According to ILO, an employment relationship is "the relationship between a person called an employee [...] and an employer for whom the employee performs work under certain conditions in return for remuneration" (ILO, 2006: 3). In general, this implies that workers who provide their labour services to an employer in return for a wage or salary are considered as employees. By contrast, own-account self-employed workers[6] are independent contractors who either autonomously produce and sell goods or engage with their clients in contracts for services, regulated by commercial law. However, in practice, the conditions of work of a number of these may be similar to those of employees, in the sense that they work mainly or exclusively for a specific client-firm – hereafter called the employer for simplicity – with limited autonomy and often closely integrated into its organisational structure (see Box 4.1). When these conditions are met, these contracts

Figure 4.2. **Duration of fixed-term contracts**

Percentage of all employees with a fixed-term contract, average 2011-12 and 2006-07

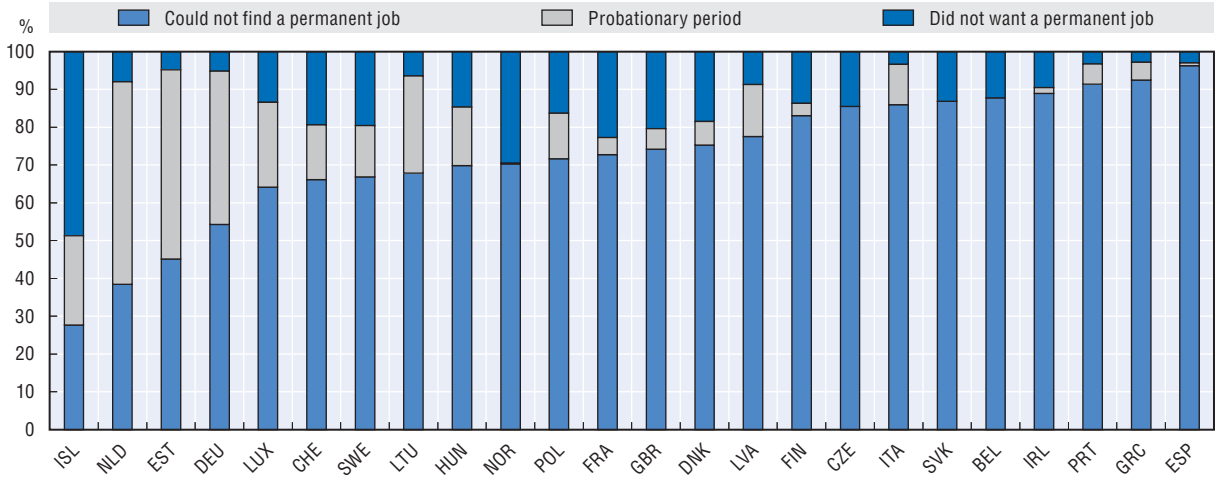


Source: OECD calculations based on microdata from the European Union Labour Force Survey (EU-LFS).

StatLink http://dx.doi.org/10.1787/888933132583

Figure 4.3. **Reason for having a contract of limited duration, 2011-12**

Percentage of employees with a fixed-term contract, excluding students and apprentices



Note: Students or apprentices in regular education are excluded.

Source: OECD calculations based on microdata from the European Union Labour Force Survey (EU-LFS).

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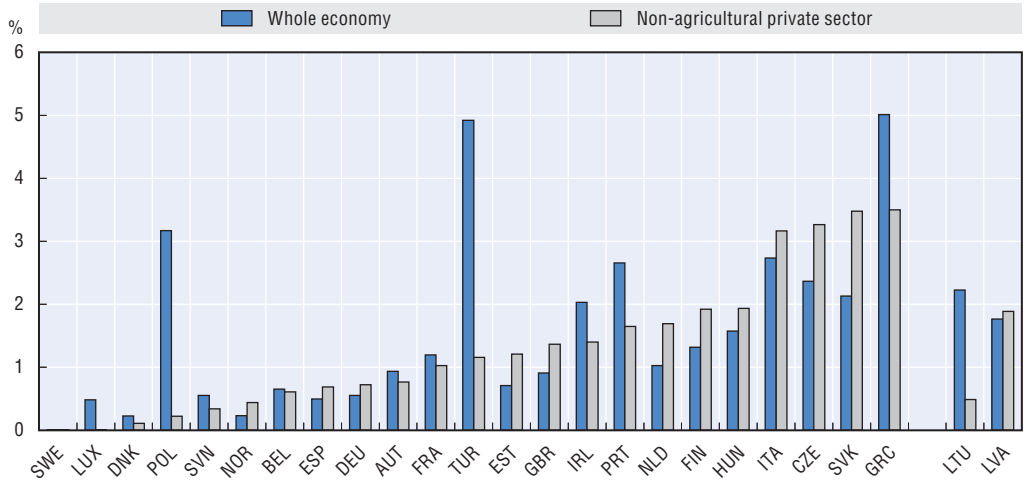
represent *de facto* another substitute for regular, open-ended employment relationships, typically entailing a lower burden of social security contributions, hiring and termination costs for the employer and different social protection rights for the worker (see e.g. EIRO, 2002a; Eichhorst et al., 2013; Kim, 2014). Nevertheless, when there is a high degree of worker subordination, the use of such contracts for services is, in principle, unlawful in many countries and key issue for policy is to identify and redress abuses (see Section 2 below). For all these reasons, therefore, it is important to measure the size of this group of workers – called dependent self-employed workers (DSEWs) hereafter – which are normally counted as self-employed in standard labour force statistics.

However, while for employees the employment contract usually defines their status, DSEWs represent a more elusive group, since dependence and/or subordination are difficult to establish in the absence of an employment contract. The typical strategy that has been adopted by specific surveys to identify DSEWs is to use responses to specific questions that closely mirror the legal tests developed by courts and legislation to distinguish self-employed, employees and other hybrid categories, when the latter are lawful. For example, according to the 1995 Institut fur Arbeitsmarkt-und Berufsforschung (IAB) survey on economically dependent workers (IAB-Scheinselbständigen-Studie), which uses the legal tests prevailing in rulings of the German Federal Labour Court, dependent self-employed (DSE) represented between 0.6% and 2.5% of the German working-age population, with the discrepancy between these two estimates depending on different classification measures (EIRO, 2002b). Burchell et al. (1999), using the UK Household Omnibus Survey for 1998, found that about 5% of employment was potentially in an ambiguous status under common-law tests for employment relationship. In Austria, around 1.1% of the labour force in 2001 worked under a contract for services for only one employer and were bound by the instructions of the client-firm – in terms of labour time and methods (Statistik Austria, 2002). In some countries, the existence of hybrid categories of own-account self-employed with contract for services regulated by labour laws (such as the Italian collaborators – cf. Section 2) allows an easier identification that, however, typically provide only a lower-bound estimate to the overall number of DSEWs. Along these lines, Berton et al. (2005), using affiliations to the special social security regime for Italian collaborators, estimate that this group represented about 2.5% of total employment of the country in the early 2000s (see Kim, 2014, for a more detailed survey of this literature).

In the same spirit of these studies, Figure 4.4 presents cross-country comparable estimates of the size of the group of DSEWs as a percentage of total dependent workers – including employees and DSEWs – using the 2010 European Working Conditions Survey (EWCS) and following the methodology suggested by Oostven et al. (2013). In practice, DSEWs are identified as an own-account self-employed for which at least two of the following conditions hold: i) they have just one employer/client; ii) they cannot hire their own employees even in the case of heavy workload; and iii) they cannot autonomously take the most important decisions in the running of their business. On average, DSEWs represent 1.6% of dependent workers in the OECD countries covered by the survey. However, in a number of countries these workers are particularly concentrated in agriculture where they represent a traditional form of employment. Limiting the attention to the non-agriculture private-sector, the share of DSEWs is somewhat lower (1.3%) but remains comparable with the share of employees covered by a TWA contracts (see Table 4.1 and below). Moreover, in some countries (the Czech Republic, Greece, Italy and the Slovak Republic), DSEWs represent at least 3% of dependent workers in the non-agricultural private sector, while they constitute

Figure 4.4. **Share of dependent self-employed as a percentage of dependent workers, 2010**



Note: Dependent self-employed workers are identified as own-account self-employed for which at least two of the following conditions hold: i) they have only one employer/client; ii) they cannot hire employees even in the case of heavy workload; and iii) cannot autonomously take the most important decisions to run their business. Dependent workers are the sum of employees and dependent self-employed. The private sector includes only private-for-profit businesses.
Source: Eurofound (2010), "5th European Working Conditions Survey (EWCS)", *www.eurofound.europa.eu/working/surveys/*.

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at least 15% of all non-regular contracts in about one-third of the OECD countries covered by the survey (see Figure 4.4 with Table 4.1). Interestingly, countries with high rates of DSEWs tend to have low rates of standard fixed-term contracts, suggesting some pattern of substitutability among different types of non-regular contracts.

Overall, these figures are likely to represent lower-bound estimates of the true aggregate size of the group of DSEWs insofar as the identification of this group is solely based on individual responses. For example, for workers who were initially hired as an employee by a given firm and then moved to the status of DSEW for the same company, they are unlikely to qualify themselves as self-employed in the survey.[7]

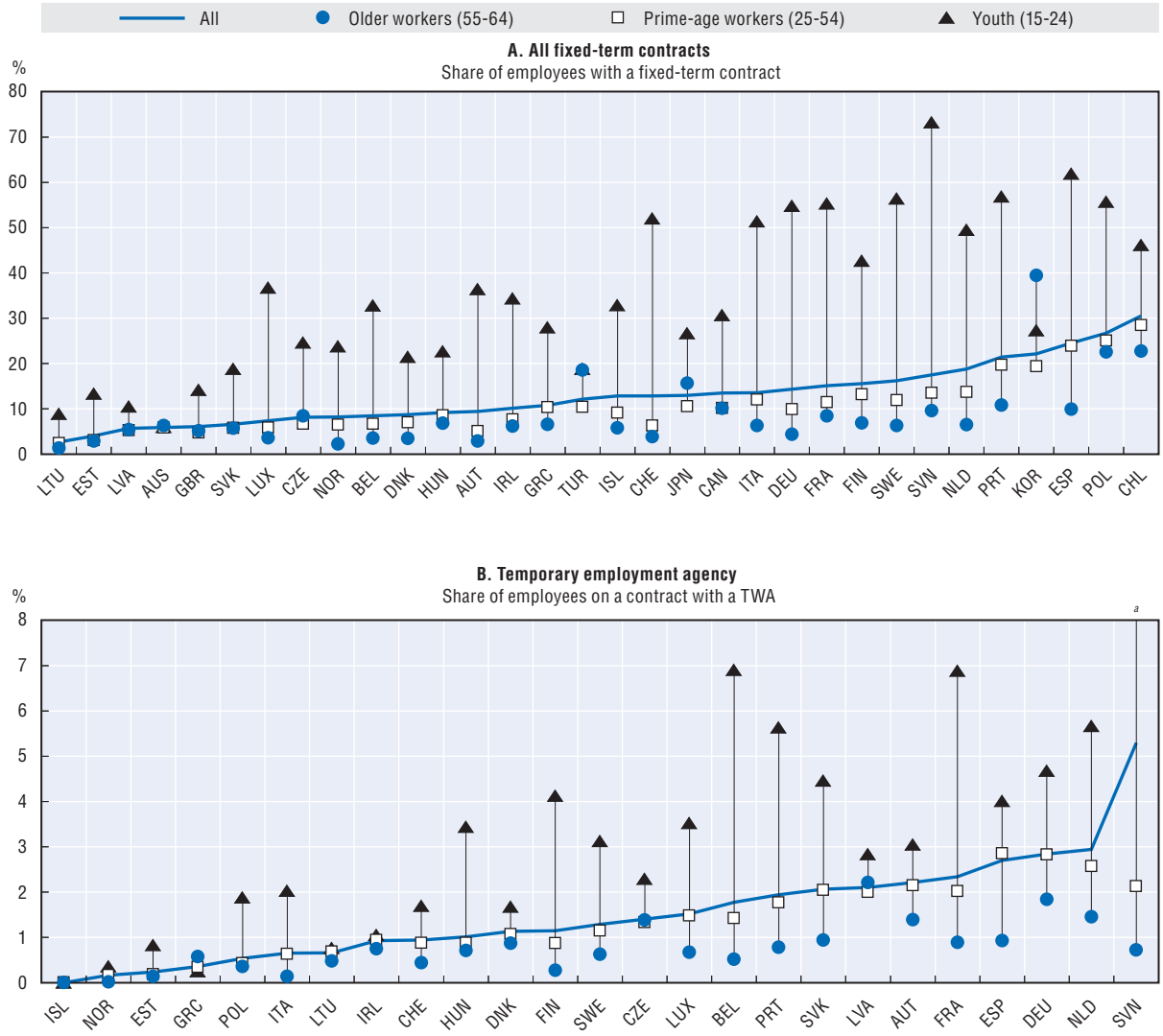
Who are temporary workers and where do they work?

This section provides additional insights into the nature and use of temporary employment[8] by looking at the profile of temporary workers by individual characteristics, such as age, gender, education, skills and occupation, as well as by the sector of the employing establishment.

Who are temporary workers?

The outstanding demographic pattern in the incidence of temporary employment is the disproportionate representation of younger workers in both fixed-term contracts and TWA employment (Figure 4.5). In almost all OECD countries, one quarter or more of employees aged between 15 and 24 years had a fixed-term contract on average in 2011-12, with this share rising to more than 50% in ten countries and up to 73% in Slovenia.[9] The only exceptions to this general pattern are Australia (no specific age profiles), Korea and Turkey (a U-shaped age pattern, with a relatively high share of older workers). However in these countries, temporary employment captures only part of the phenomenon omitting widespread forms of non-regular work such as casual work in Australia (see Box 4.2) and

Figure 4.5. **Temporary employment by age group, 2011-12**



TWA: Temporary work agency.

a) Slovenia: 23% of youth are employed with a temporary work agency.

Source: OECD calculations based on microdata from the European Union Labour Force Survey (EU-LFS); and OECD (2013), "Labour Market Statistics. Employment by permanency of the job: incidence", *OECD Employment and Labour Market Statistics* (database), *http://dx.doi.org/10.1787/data-00297-en* (accessed on 16 March 2014).

StatLink *http://dx.doi.org/10.1787/888933132640*

informal work (e.g. not affiliated to social security) in Turkey. In Estonia, Latvia, Lithuania and the United Kingdom, less than 15% of young workers held a fixed-term contract on average in 2011-12, reflecting the low overall incidence of temporary work relative to other countries.

The disproportionate share of young workers with fixed-term contracts suggests that these jobs represent the main entry into the world of work for young people. In order to abstract from this age effect, and further characterise temporary employment along other observable individual characteristics, the analysis concentrates on the prime-age group (i.e. workers aged 25-54 years) in the rest of the section. In most OECD countries, the share of women among fixed-term workers is above the share of men, but gender differences are not very pronounced (see OECD, 2014b). The only exceptions are Japan and Korea, where

women are much more likely than men to hold temporary jobs (e.g. around four times more likely in Japan). Conversely, men are more likely to work in TWA employment in the majority of OECD countries, but again gender differences are not very large, except for France and Germany, where the share of men in TWA work is twice as high as for women. Less-educated workers (e.g. who have not completed upper-secondary schooling) are also over-represented in temporary jobs (both fixed-term and TWA employment) in many OECD countries but to varying degrees. About a quarter of less-educated employees held a fixed-term contract in Hungary and Spain in 2011-12, with this share rising to 40% in Poland and the Slovak Republic (Figure 4.6). In other OECD countries, the most educated employees were as likely (and in some cases even more likely) to be working in temporary jobs than the other categories (e.g. Austria, Canada, Denmark, Iceland, Italy, Luxembourg, Norway, Portugal, the United Kingdom and Switzerland).

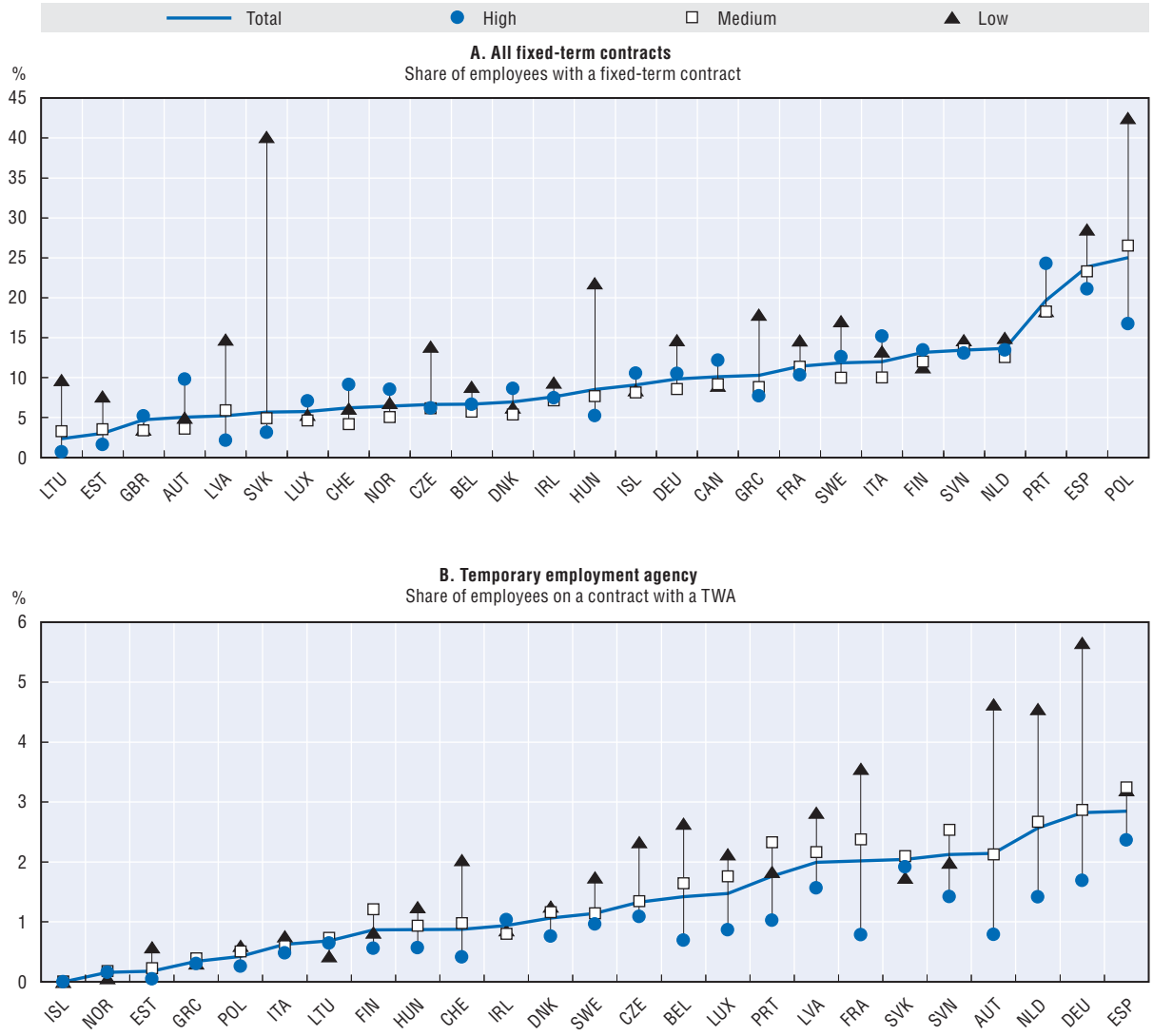
Educational attainment represents a coarse and imprecise measure of productive skills. Recent analysis has found, for instance, that while educational attainment was closely correlated with proficiency in cognitive skills, competences levels vary considerably among individuals with similar qualifications (OECD, 2013b). Based on the OECD Adult Skills Survey (Programme for the International Assessment of Adult Competencies – PIAAC), which assesses the proficiency of adults aged 16 to 65 in literacy, numeracy and problem solving in technology-rich environment,[10] the scores of temporary workers[11] in these information-processing skills can be compared to those of permanent workers, controlling for age[12] (Figure 4.7). The results for literacy and numeracy skills are clear-cut: they show that individuals employed in temporary contracts have lower proficiency across all participating countries, except for the United States and Australia.[13]

Temporary workers have on average literacy or numeracy scores that are around 3.5% to 4.5% lower than those of permanent workers in those countries which display statistically significant differences. Differences are less systematic for problem solving in technology-rich environment, notably for Denmark and Finland where temporary workers perform better than permanent ones (about 2% higher). There exists also some diversity across countries, with differences in scores more pronounced in France, Poland, the Slovak Republic, Spain, Sweden and the United Kingdom. Not surprisingly, those patterns do not fully match those characterising temporary workers by education and reveal interesting differences between educational and skills endowment notably in the United Kingdom.[14]

Where do temporary workers work?

The sector and occupational profiles of temporary jobs provide supplementary information to understand some of the differences in characteristics between regular and non-regular workers identified in the previous section. For instance, gender differences in temporary jobs are largely explained by the high concentration of temporary jobs in agriculture and construction, as well as elementary occupations, e.g. predominantly manual jobs that are typically held by men. In the majority of OECD countries, agriculture accounts for the largest share of temporary jobs, up to 58% in Italy or Spain for employees aged 25-54, followed by construction, up to 40% in Spain and Poland (see Annex Figure 4.A1.1). However, education and social services sectors, as well as public administration, are other sectors where temporary jobs are widespread, with shares of temporary workers above 15% (e.g. Finland, France, Germany, Italy, Portugal, Slovenia, Spain and Sweden). Many of the temporary jobs in these sectors are "pink-collar" jobs such as retail sales clerks and secretaries, but some are also in

Figure 4.6. **Temporary employment by level of education of people aged 25-54, 2011-12**



Note: Canada: "Low" corresponds to 0-8 years and some secondary education; "Medium" corresponds to grade 11 to 13, graduate and some post- secondary; "High" corresponds to post -secondary certificate diploma, bachelors' degree and graduate degree (university).
TWA: Temporary work agency.
Source: OECD calculations based on microdata from the European Union Labour Force Survey (EU-LFS) and national labour force surveys.

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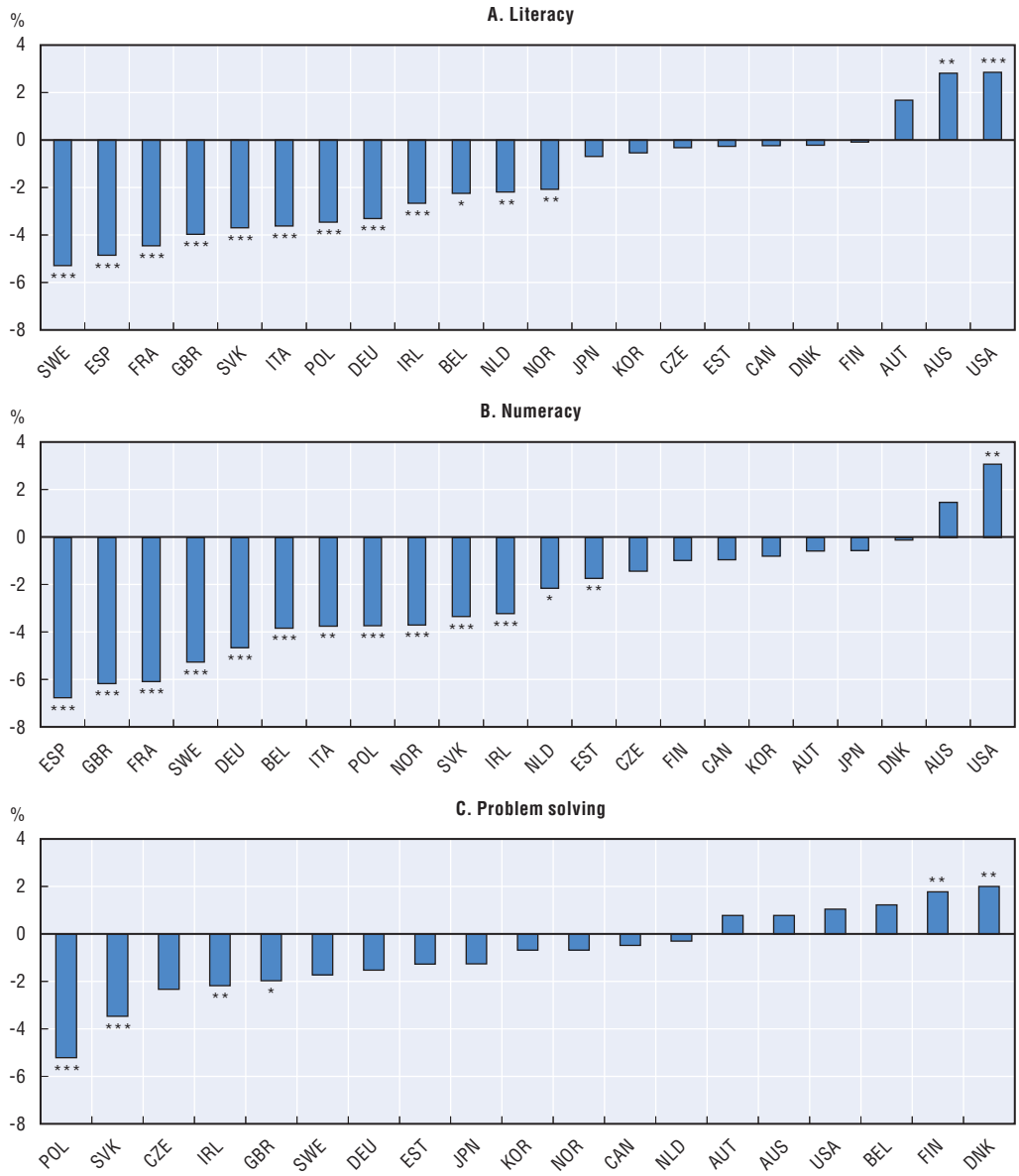
white-collar higher skilled positions, such as managerial and professional occupations. Nevertheless, the highest incidence of temporary jobs is found in elementary occupations in all countries except for Austria and Switzerland (Figure 4.8). The incidence of TWA employment also tends to be highest in elementary occupations as well as for skilled blue-collars in many countries. Slovenia, where the share of middle-skill white-collar employees holding a TWA contract is above 3%, represents an exception, probably reflecting the relatively high incidence of TWA employment among educated youth.

Figure 4.7. **Differences in information-processing skills: Temporary compared to regular workers**

Percentages



Note: The data are based on the results of the OECD Survey of Adult Skills (PIAAC) in which around 166 000 adults aged 16-65 were surveyed in 24 countries and sub-national regions. The survey included an assessment of literacy, numeracy and problem-solving skills in a technologically rich environment. The charts present differences in average measured scores between temporary and regular workers, as a percentage of average scores for regular workers. Temporary workers include those with fixed-term contracts and all forms of TWA contracts. Workers declaring "no contract" are excluded except in the United States, where a contract is not required for regular employment due to the dominance of the employment-at-will principle and more than 50% of the respondents declare having no contract. In this country the category "no contract" has been reclassified as "regular workers". The estimated differences control for 5-years age dummies and are expressed as percentage of the average score in literacy, numeracy and problem solving, respectively.

***, **, *: significant at the 1%, 5% and 10% level, respectively.

TWA: Temporary work agency.

Source: OECD Survey of Adult Skills (PIAAC) 2013, *http://dx.doi.org/10.1787/9789264204256-en*.

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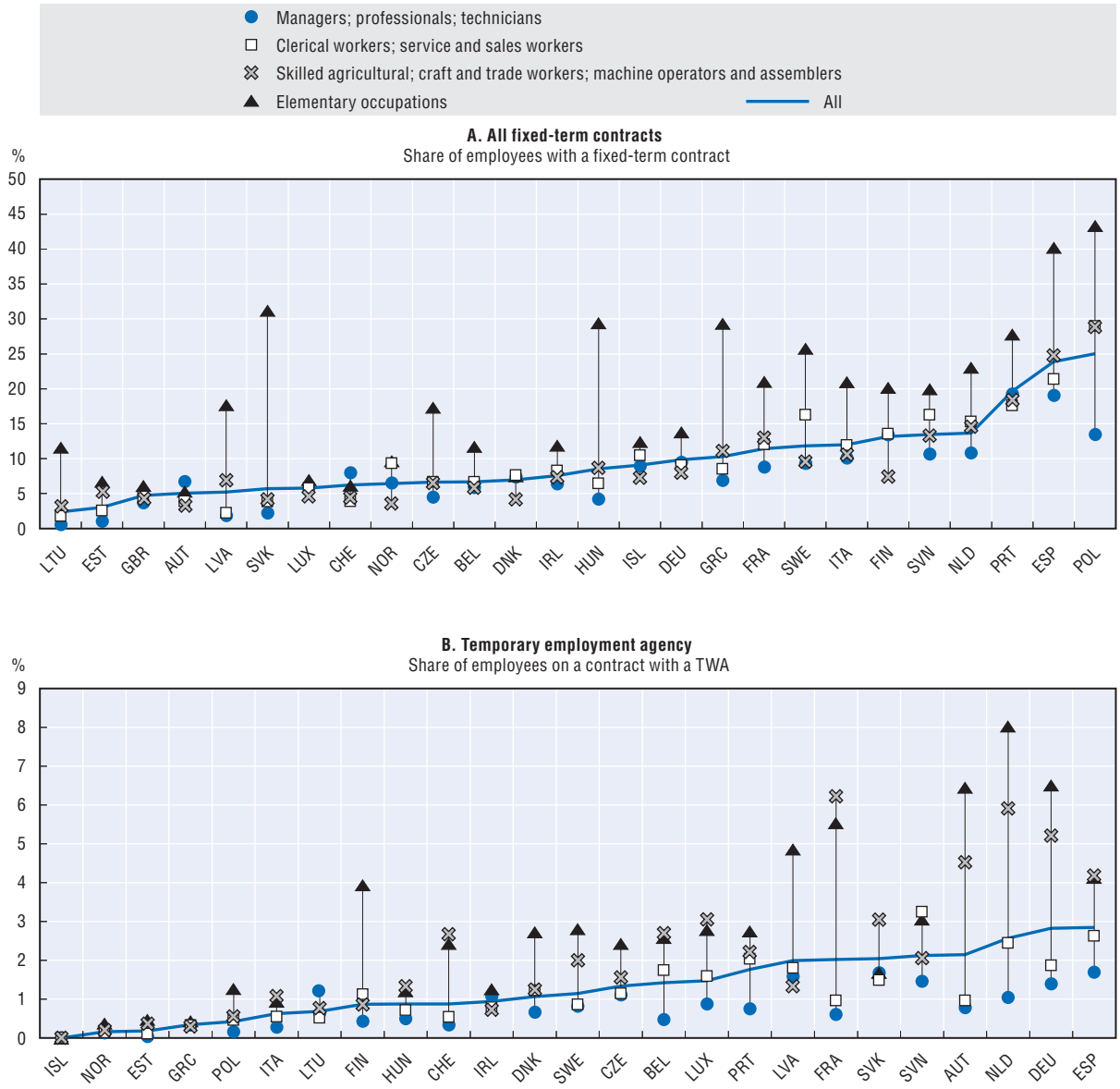
Figure 4.8. **Temporary employees aged 25 to 54 by occupation, 2011-12**



TWA: Temporary work agency.
Source: OECD calculations based on European Union Labour Force Survey (EU-LFS) microdata.

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2. Statutory employment protection of non-regular workers

In this section, the regulations governing the use of different temporary employment contracts in OECD countries are examined, exploiting new information collected by the 2013 OECD's questionnaire on employment protection legislation (EPL hereafter; see OECD, 2013a).[15] In particular, the discussion expands upon the 2013 update of OECD EPL indicators by providing more detailed information in three specific areas. First, information is presented about the ease of terminating fixed-term contracts, notably termination costs *at* and *before* end dates. Second, other forms of non-standard fixed-term contracts are considered, such as seasonal and project-work contracts. Third, the scope of information

on the regulation of TWA contracts is expanded to cover both the constraints and costs associated to the assignment and the contract itself from the perspective of both the TWA (as an employer) and for the user firm (where the TWA employee is placed).

This supplementary information serves to document further the way different statutory provisions effectively protect workers or provide incentives for employers to use different contract types. The inclusion of termination rules for temporary contracts is crucial for assessing the costs of labour market duality and discussing policy options (see Section 4 below). As pointed out in OECD (2013a), the OECD EPL summary indicator on the rules governing individual temporary contracts (EPT hereafter) is based on information concerning the conditions for use and maximum duration of contracts, therefore capturing mostly hiring rules and, hence, not allowing full comparability with dismissal regulations for permanent contracts.[16]

Expanding the information available on the regulation of non-regular contracts, allows carrying out a more nuanced analysis of the use of the different temporary contracts, and in particular of TWA employment, which typically relies on a triangular relationship and involves two sets of contractual arrangements. The first is the employment contract between the agency and the worker (referred to below as the "TWA contract") and is usually regulated in the same or similar way as other employer-employee relationships. The second is the contract for providing services between the agency and the user firm (referred to below as the "assignment") and is not usually subject to standard employment regulations. The regulations governing TWA contracts described in this section complement the information provided in OECD (2013c) on the regulations governing the operation of temporary work agencies, such as licencing or reporting requirements, as well as on equal treatment for TWA workers and other workers doing the same job at the user firm.

Regulation on temporary employment

Valid circumstances for using temporary contracts

Table 4.2 outlines the circumstances in which the different types of temporary contracts can be used. As regards standard fixed-term contracts (FTCs) – defined for the purpose of this chapter as a generic employment contract with a precisely specified end date (in the form of day, month and year at which the employment relationship is set to end, if the contract is not renewed) – there are *no or minimal restrictions* on the type of work or workers for which they are allowed in almost two-thirds of OECD countries, at least for the first contract. In those countries that require specific circumstances for using FTCs, the most common restriction is a justification on the basis of an "objective" or "material situation", such as the temporary nature of the task itself or the replacement of workers on leave. This is the case in Turkey and, with some possible derogations, in Estonia, France, Greece, Luxembourg and New Zealand, Norway, Portugal, Slovenia and Spain. In Finland, even though restrictions apply in principle, a fixed-term contract can always be concluded by mutual agreement. Finland, Luxembourg, Norway, Portugal, Slovenia and Spain further consider the hiring of particular types of workers, such as those undertaking training as a legitimate reason for the use of FTCs. Most OECD countries authorise however special types of fixed-term contracts when the duration of the work tasks to be performed is determined by seasonal factors or by the completion of a project. Some countries do however limit seasonal work to particular industries or occupations.

Table 4.2. **Valid cases for use of non-permanent employment contracts**

	Standard fixed-term contracts[a]	Seasonal contracts[b]	Project work contracts[b]	TWA contracts
Australia	1	1	1	1
Austria[c]	1	2	1	1
Belgium	1	1	1	2
Canada	1	1	1	1
Chile	1	2, 3	2, 3	2
Czech Republic[d]	1	5	5	1
Denmark	1	1	1	1
Estonia	2, 3	2	2	2
Finland[d]	1, 2, 4	1	2	1
France	2, 3	2, 3	2, 3	2
Germany	1	1	1	1
Greece	2	2	2	2
Hungary	1	2, 3	1	1
Ireland	1	1	1	1
Israel	1	1	1	1
Italy[e]	1	2, 3	5	2
Japan	1	1	1	1
Korea	1	1	1	2, 3
Luxembourg	2, 4	3	5	2, 3
Netherlands	1	1	1	1
New Zealand[f]	2	2	2	1
Norway	2, 3, 4	2	5	2, 3, 4
Poland	1	1	1	2
Portugal	2, 3, 4	2, 3	2	2
Slovak Republic	1	2	5	2
Slovenia[g]	2, 3, 4	2	2	1
Spain	2, 4	2	2	2, 3, 4
Sweden[h]	1	1	2, 3	1
Switzerland	1	1	1	1
Turkey	2, 3	2	2	..
United Kingdom	1	1	1	1
United States	1	1	1	1

1 = generally allowed with no or minimal restrictions;[a] 2 = allowed in some circumstances related to the nature of the work (e.g. for short-term tasks, replacement of workers on leave, etc.);[b] 3 = allowed in specified industries or occupations; 4 = allowed in some circumstances related to the characteristics of the worker (e.g. trainees, youth, older workers, etc.); 5 = allowed only outside an employment relationship.[b]

.. Not allowed.

a) Objective reasons are not required for the first FTC in Austria, Denmark and Hungary. However, restrictions apply for renewals or new contracts with the same employer. In certain countries minimal restrictions apply, such as the exclusion of specific industries from the use of TWA employment (e.g. construction industry in Germany; transport services, construction work, security services, medical-related work at hospital in Japan; and seamen in the Netherlands).

b) Seasonal and project work contracts are, by definition, of a short-term nature and justified by the characteristics of the activity. The distinction between categories 1 and 2 is therefore somewhat arbitrary and must be taken with caution. In a few countries, these contracts are only allowed as specific contracts for services outside an employment relationship. Workers with these contracts can be considered dependent self-employed.

c) In Austria, open-ended TWA contracts are generally allowed. However, fixed-term TWA contract are only allowed for objective reasons related to the nature of the work.

d) In Finland, at the request of the employee, the employment contract can always be concluded for a fixed term, and the contract is binding upon the employer and the employee. The scope of TWA work may be restricted in collective agreements.

e) In Italy, fixed-term contracts cannot exceed 20% of regular contracts, with only a few derogations, in particular for very small firms.

f) In New Zealand, the Employment Relations Act provides that, the employer must have a genuine reason based on reasonable grounds for specifying that the employment of the employee is to be fixed term. Excluding or limiting the rights of an employee or using FTCs as a substitute for probationary periods are not genuine reasons.

g) In Slovenia, the scope of TWA work may be restricted in collective agreements. TWA employment cannot exceed 25% of employment at the user firm, except if a collective agreement establishes otherwise.

h) In Sweden, user firms must consult with trade unions if they wish to use TWA workers. Trade unions can veto the use of TWA employment if there is a threat that laws or collective agreements may be violated. Project-work contracts without a specified end-date are allowed only in a few collective agreements.

Source: 2013 OECD EPL questionnaire; OECD (2013), "Detailed Description of Employment Protection Legislation, 2012-2013", *www.oecd.org/els/emp/oecdindicatorsofemploymentprotection.htm*.

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Seasonal and project work contracts are thus specific types of FTC rather than different employment contracts in their own right. In most OECD countries, employees can be engaged to undertake seasonal or project-based work, where the length of the contract is defined based on the completion of the season or project.[17]

TWA contracts are permitted for all types of work in about half of OECD countries. In all other countries, except Turkey, TWA contracts are allowed for specific types of work (e.g. for objective reasons) or in specific industries, or a mixture of the two. For example, in Korea, TWA contracts are allowed in 32 occupations, or in other occupations where there is a temporary or intermittent need for additional labour. Only in Turkey are TWA contracts not allowed for any type of work.

Renewals, prolongation and conversion rules of temporary contracts

In many countries there are restrictions on the number of renewals or successive FTCs under which a worker can be employed by the same firm without interruption.[18] Provisions may also require a minimum waiting period between two contracts. The existence of such a cooling-off period between contracts is an important element for firms' hiring decisions, but it has also important implications for workers: while such provisions are typically introduced to prevent abuses, they may actually generate the perverse effect of increasing job insecurity as perceived by the workers they originally intended to protect (see Section 3).

Table 4.3 outlines the regulations governing the duration and renewal of FTCs as well as the circumstances in which FTCs may be converted into an open-ended contract. Only three countries (Canada, Israel and the United States) have no regulation at all on the cumulative duration or renewals of FTCs. Even in those countries where there are no legal restrictions on the number of renewals and/or successive contracts (notably in Australia, Denmark, Finland, Japan, New Zealand and Switzerland), courts may consider the succession of contracts as sham FTCs hiding a permanent employment relationship.[19] The consequences in these cases could vary from paying damages to the employee concerned to ordering reclassification of the contract into an open-ended one. In Belgium, Ireland and the Netherlands there is no limit on the duration of the first FTC but restrictions apply to subsequent contracts.

In the majority of OECD countries, FTCs are limited in cumulated duration (typically to 2-4 years), although these limits may apply only to FTCs made without objective reasons, as in Belgium, the Czech Republic, Germany and Ireland. As pointed out above, a cooling-off period between contracts is required in many countries in order for two contracts not to be considered successive. These minimum breaks range from two months or less in Estonia, Greece and Poland to three years in the Czech Republic and Germany. In Italy, there is no cooling-off period, which means that the maximum cumulative duration of a sequence of fixed-term contracts, even with interruptions, cannot be longer than three years. In about one-third of OECD countries, however, the continuity of the employment relationship between two successive contracts is left to the courts to decide on a case-by-case basis.

Seasonal contracts where the end of the contract is specified as the end of a season or with respect to the seasonal closure of the company (rather than as a specific date) are allowed in most OECD countries (see Annex Table 4.A1.1). In Belgium and Finland, the contract must include a specific end date. In Austria, Chile, Greece, Hungary and Luxembourg, the use of seasonal contracts is limited to a few industries, most commonly

Table 4.3. **Duration, renewals and circumstances for conversion of standard fixed-term contracts (FTC) to permanent ones**

	Maximum number of successive contracts (including renewals)	Maximum cumulated duration of successive contracts (including renewals)	Cooling-off period between two FTCs not to be considered successive	Circumstances (rules violations) that entail conversion of a FTC into a permanent contract
Australia	Estimated 1.5	No limit	Case-by-case assessment of continuity by courts in case of complaint.	Courts may found continuous renewals of FTCs as a way to avoid termination laws.
Austria	Estimated 1.5	No limit	Case-by-case assessment of continuity by courts in case of complaint.	Lack of objective reasons for contract extension. Ongoing employment after end date.
Belgium	Four (six with approval of Labour Inspectorate).	No limit for the first contract, otherwise two years (three with approval of Labour Inspectorate).	Case-by-case assessment of continuity by courts in case of complaint.	Violation of limits on use, duration and renewal of FTCs. Lack of written contract (except when allowed by CA). Lack of written end date for FTC.
Canada	No limit	No limit	Not applicable	Usually, if employment continues beyond the end of the contract, statutory provisions on advance notice as for regular workers apply. In British Columbia, this occurs only if employment continues for at least three months beyond the end of contract.
Chile	Two	12 months (two years for managers or those with university degree).	Case-by-case assessment of continuity by courts in case of complaint.	Violation of limits on duration and renewal of FTCs. Too short cooling-off periods.
Czech Republic	Three	Three years for each contract (or renewal period).	Three years	Violation of limits on duration and renewal of FTCs.
Denmark	Estimated 2.5	Estimated 24 months	Case-by-case assessment of continuity by courts in case of complaint.	None
Estonia	Two	Five years for each contract (or renewal period).	Two months.	Violation of laws or CAs governing FTCs, including exceeding number and duration of contracts; ongoing employment after the end date.
Finland	Estimated 2.5	No limit	Case-by-case assessment of continuity by courts in case of complaint.	Contracts made for a fixed term on the employer's initiative without a justified reason are considered valid indefinitely.
France	Estimated two	9-24 months, typically 18 months.	If FTC < two weeks: 1/2 contract duration. If FTC > two weeks: 1/3 contract duration.	Violation of any of the regulations governing the use of FTC including use for non-objective reasons and exceeding duration or renewal limits or waiting period between contracts.
Germany	Four	2-4 years	Three years	Violation of limits on duration and renewal of FTCs.
Greece	Three	Three years	45 days	Use of the contract to cover permanent needs; violation of renewal limits without an objective reason.
Hungary	Estimated 2.5	Five years	Six months	None
Ireland	No limit	No limit for the first contract, otherwise four years.	Case-by-case assessment of continuity by courts in case of complaint.	Violation of duration limit or renewal without objective reasons.
Israel	No limit	No limit	Not applicable	None
Italy	Six	Three years	None	Employment extends 30-50 days beyond end date. Contract duration exceeds 36 months.
Japan	No limit	Three years for each contract (or renewal period)	Six months (half of the contract duration if FTC is less than one year)	After repeated renewals the employee becomes entitled to expect continuing renewal and the employer must have just cause to refuse it.
Korea	No limit	Two years	Case-by-case assessment of continuity by courts in case of complaint.	Contract extends beyond maximum duration. Repeated renewals could be considered by courts as evidence of an indefinite relationship.
Luxembourg	Three	Two years	1/3 contract duration.	Violations of rules governing use. Duration and renewal of FTCs.
Netherlands	Three	No limit for the first contract, otherwise three years.	Three months	Violation of limits on duration and renewal of FTCs.
New Zealand	Estimated four	No limit	Case-by-case assessment of continuity by courts in case of complaint.	Lack of genuine reason for FTC. Lack of written notice about how the employment will end. Courts may found continuous renewals of FTCs as a way to avoid termination laws.
Norway	No limit	Four years	Case-by-case assessment of continuity by courts in case of complaint.	Employment beyond maximum limit. Lack of objective reasons. Repeated renewals could be considered by courts as evidence of an indefinite relationship.
Poland	Two	No limit	One month	Third successive FTC without a break of at least one month.
Portugal	Four	2-3 years in most cases	1/3 contract duration	Violations of limits on duration or renewal of contracts. Employment extends 15 days after end date.

Table 4.3. **Duration, renewals and circumstances for conversion of standard fixed-term contracts (FTC) to permanent ones** *(cont.)*

	Maximum number of successive contracts (including renewals)	Maximum cumulated duration of successive contracts (including renewals)	Cooling-off period between two FTCs not to be considered successive	Circumstances (rules violations) that entail conversion of a FTC into a permanent contract
Slovak Republic	Three	Two years	Six months	Violations of renewal or duration limits. FTC without fixed end date. No written contract.
Slovenia	No limit	Two years	Three months	Violation of rules on use, duration and renewal of FTCs. Lack of a written contract
Spain	Estimated three	12-48 months	Varies	Violations of renewal or duration limits. Ongoing employment after maximum duration limit or once objective reason for use of FTC no longer exists.
Sweden	No limit	Two years within a five-year period	Not applicable	Violation of limits on use or duration of FTCs.
Switzerland	Estimated 1.5	No limit	Case-by-case assessment of continuity by courts in case of complaint.	Automatic renewal of FTC at its end date. Successive contracts imply the risk of a court declaring the fixed-term contract null and void.
Turkey	Estimated 1.5	No limit	Case-by-case assessment of continuity by courts in case of complaint.	Renewal without a serious objective reason.
United Kingdom	No limit	Four years	Case-by-case assessment of continuity by courts in case of complaint.	Employment beyond maximum duration.
United States	No limit	No limit	Not applicable	Not regulated.

Note: In the case in which the lawfulness of a sequence of contracts is assessed by courts on a case-by-case basis, the estimated maximum number of contracts represents an estimate of the average number of contracts admitted by courts.

Country notes:

Austria: After the first contract, renewals require objective reasons.

Belgium: No maximum number if these FTCs can be justified by an objective reason (e.g. nature of the work or other legitimate reasons). Minimum contract duration is three months (six months with Labour Inspector approval (*Inspection des lois sociales*).

Chile: A worker employed intermittently under more than two FTCs for 12 months out of a continuous period of 15 months is assumed to have a permanent contract. Exemptions apply to arts and show business employment and professional football players.

Czech Republic: exceptions are possible to the rules governing the renewals, duration and cooling-off period for serious operational reasons for having FTCs (nature of the work, or unreasonable requirement for open-ended contract). In these cases, written agreement is needed between the employer and union or employee representatives.

Denmark: Renewals must be based on objective reasons. A period of a couple of months is usually considered a reasonable cooling-off period. Courts may find that continuous renewals of FTCs has been used as a way to avoid termination laws, but compensations and fines are the only instruments for redress.

Finland: It is prohibited to use consecutive FTCs when the number or total duration of FTCs indicates permanent needs for labour.

France: FTCs can be extended once if provided for in the terms of the contract or in another agreement between the employer and the employee. Extensions are permitted for objective reasons only. Limitations on successive contracts do not apply to contracts concerning different positions and to occupations for which FTCs are the traditional form of employment.

Germany: FTCs made for objective reasons are not subjected to restrictions on duration or renewals. The maximum duration is four years for new businesses or five years for those aged 52 years and over.

Greece: Refutable presumption of indefinite employment relationship if the contract is renewed twice or the total duration exceeds three years without a justified reason.

Hungary: FTC renewal must be based on objective reasons that have no bearing on work organisation and must not infringe upon the employee's legitimate interest.

Ireland: Renewals of FTCs beyond four years allowed if justified by objective reasons. If a cooling-off period is considered as a period of temporary lay-off rather than termination, the service is deemed to be continuous under case law.

Italy: In the case of two separate contracts with the same firm, there must be an interruption of 10-20 days (depending on the duration of the contract), otherwise the contract is deemed to be open-ended. This rule does not apply to renewals of the same contract.

Japan: FTCs of up to three years duration are allowed without objective reasons (five years are allowed for highly skilled workers for those aged 60 and over). This limit applies to each contract and not to the cumulated duration of successive contracts, which can be longer. Any fraction less than one month between contracts is counted as one month as regards the cooling off period.

Luxembourg: Some categories of workers (teachers, artists, performers, athletes, coaches) are not subject to restrictions on renewals of fixed-term contracts.

Netherlands: The number of renewals and maximum duration can be altered by collective agreement.

New Zealand: The courts may find a FTC does not meet the requirements for a FTC if there is continuous renewal of the contract. The way the employment will end must be specified in writing at the start of the employment period.

Norway: Certain categories of workers are exempt from the four-year limit (e.g. trainees, ALMP participants, sportspeople).

Portugal: There are some exceptions to duration limits and the minimum cooling-off period, e.g. for workers searching for their first job.

Slovak Republic: Contract renewal beyond the maximum permitted duration limit must be based on objective reasons.

Slovenia: The two-year limit applies also to successive contracts with different workers but for the same position.

Spain: Duration and renewal limits vary depending on the reasons for FTCs. Usually, for an employment relationship of a cumulative duration of 24 months within a period of 30 months, the relationship will be considered of indefinite duration. Exceptions are training contracts and contracts for a specific task or service.

Sweden: The maximum duration limit applies separately to different types of FTCs, so it is possible to combine FTCs for more than two years if they are for different purposes. However, abusive use of FTC is not allowed. Deviations from these limits are allowed in collective agreements.

Source: 2013 OECD EPL questionnaire; OECD (2013), "Detailed Description of Employment Protection Legislation, 2012-2013", *www.oecd.org/els/emp/oecdindicatorsofemploymentprotection.htm*.

agriculture and tourism-related activities. Several countries impose limits on the maximum duration of seasonal work: ten months in Luxembourg and 60 days per year in Portugal for short-term seasonal work. In Hungary, seasonal work in agriculture and tourism is limited to 120 days per year and up to 90 days is allowed in other industries under "simplified employment" rules.[20] Regardless of whether seasonal work is performed under a FTC or a specific seasonal contract, termination rules are generally the same as for FTCs.

Like seasonal work, project-work contracts are another special type of FTC where the end date is defined by the completion of a particular project or task. In Finland and Sweden, a fixed end date must be specified (although variation from this rule is possible by collective agreement in Sweden). In several countries, the task (and the conditions which signify its completion) must be outlined in some detail in the employment contract or at the commencement of the work. Few other limitations apply to this type of work beyond those that apply to FTCs in general. Some notable exceptions are that project work-contracts must have a duration of between 18 to 36 months in France or a maximum duration of three years in Spain (with an additional 12 months allowed by collective agreement).

In the case of TWA employment, restrictions exist on the number of renewals and/or duration of TWA assignments with the user firm in about one half of OECD countries (Belgium, Chile, the Czech Republic, Estonia France, Germany, Greece, Hungary, Israel, Italy, Japan, Korea, Luxembourg, Norway, Poland, Portugal, Spain and Switzerland) (see Annex Table 4.A1.2). Where TWA contracts between the agency and its workers are fixed-term, they are typically subject to the general rules on the use of FTCs outlined in Table 4.2. In Sweden, however, the collective agreement for blue-collar TWA workers limits duration of fixed-term contracts between the agency and the worker to 12 months, which is more restrictive than for normal FTCs.

Open-ended TWA contracts are allowed in most countries, with the exception of Belgium, Luxembourg, and Poland (and Turkey where TWA contracts are prohibited in general). In Belgium assignments and contracts must also be synchronised (and therefore are temporary).[21] In Austria and Norway, TWA contracts must be open-ended unless there is an objective reason to use an FTC. In most countries, where TWA contracts are open-ended, workers have to be paid by the agency for the period between two consecutive assignments, although pay between assignments is at a lower rate than the normal wage in a few of them – notably in France, Greece, Italy, Japan, the Netherlands and Portugal, and for workers not covered by collective agreements in Germany. In Canada, Denmark, Finland, Israel, Norway, New Zealand, Spain, the United Kingdom and the United States there is no explicit mandatory requirement for paying wages or allowances for the period between two consecutive assignments even if the worker holds an open-ended contract with the agency.

Termination rules before and at the end date of the contract

Differences in termination rules governing respectively fixed-term and open-ended contracts have been singled out as an important driver of labour market duality (see OECD, 2013a, and below). In this respect, two types of costs should be considered depending on whether the termination takes place before the end date (in the case of FTCs) and on the "fairness" of the termination. As shown in Table 4.4, different rules apply for terminating FTCs *before* and *at* the end date of the contract. In most countries, termination of FTCs before the end date is at least as difficult and costly as terminating contracts with indefinite duration. In some countries, termination costs before the end date may actually

Table 4.4. **Costs and difficulty of dismissals of workers with standard fixed-term contracts as compared to regular contracts**

	Difficulty of dismissal[a]		Notice and severance pay		Procedural inconvenience[b]	
	Before end date	At end date	Before end date	At end date	Before end date	At end date
Australia	Same	None	None	None	Same	None
Austria[c]	Same, compensation for UNFD: remaining contract period.	None	Same	None	Same	Some CAs require notification of non-renewal.
Belgium	Same	None	Wages for remaining contract period must be paid up to maximum of double the severance pay due to a worker with a regular contract.	None	Same	None
Canada[d]	Usually same, compensation for UNFD may be for remaining contract period (e.g. Alberta).	None	Usually same	None	Usually same	None
Chile	Same, compensation for UNFD may be for remaining contract period.	None	Same	None	Same	Same
Czech Republic	Same	None	Same	None	Same	None
Denmark	Same, compensation for UNFD only paid to those with 12+ months' tenure.	None	Same	None	Same	None
Estonia	Same	None	Same, in case of layoff for economic reasons, wages for remaining contract period must be paid.	None	Same	None
Finland	Termination is allowed only if agreed in contract terms, if the contract is 5+ years long or on very limited other grounds. In these cases, the same rules apply as for regular contracts.	None	Same (if termination is allowed).	Advanced notice is required if the contract end date is not set in advance (e.g. based on completion of a set task).	Same (if termination is allowed).	Advanced notice is required if the contract end date is not set in advance (e.g. based on completion of a set task).
France[e]	Termination can only take place by agreement or on limited grounds, including *force majeure*, serious misconduct, ill-health or because the employee has found a permanent job. Compensation for UNFD is for remaining contract period.	None	Same (if termination is allowed).	Severance pay (*Prime de précarité*) equal to 10% of the total gross compensation since the beginning of the contract (6% in certain collective agreements).	Same (if termination is allowed).	None
Germany	Same	None	Same	None	Same	None
Greece	Termination is only allowed for significant reasons as judged by a court (e.g. employee suspected of criminal offence, breach of contractual obligations).	None	Wages for remaining contract period must be paid if termination is for other than significant reasons.	None	Notice of termination is required, but does not have to be written.	None

Table 4.4. **Costs and difficulty of dismissals of workers with standard fixed-term contracts as compared to regular contracts** *(cont.)*

	Difficulty of dismissal[a]		Notice and severance pay		Procedural inconvenience[b]	
	Before end date	At end date	Before end date	At end date	Before end date	At end date
Hungary	Same. Wages for remaining contract period (up to one year) must be paid for termination without reason.	None	Same	None	Same	None
Ireland	Same	Same, unless explicitly excluded in contract.	Same	Same, unless explicitly excluded in contract.	Same	Same, unless explicitly excluded in contract.
Israel	Same	None	Same	None	Same	None
Italy[f]	Termination is only allowed for just cause or for collective dismissals. The same procedures apply as for regular employees dismissed for these reasons.	None	Same (if termination is allowed).	Same layoff tax but no notice required.	Same (if termination is allowed).	None
Japan	Termination is only allowed for inevitable reasons.	None	Same	None	Same	None
Korea	Same	None	Same	None	Same	None
Luxembourg	Termination is only allowed for serious reasons such as the death or illness of the employer. In this case, the same procedures apply as for regular dismissals. Compensation for UNFD is for remaining contract period.	None	Same (if termination is allowed).	None	Same (if termination is allowed).[e]	None
Netherlands	Same	None	Same	None	Same	None
New Zealand	Same	Same	Same	Same	Same	Same
Norway	Termination allowed only if specified in the contract or collective agreement. In this case, same rules apply as for regular workers.	None	Same (if termination is allowed).	None	Same (if termination is allowed).	None
Poland	Termination with notice allowed if agreed in contract; termination without notice subject to same rules as for regular workers. Compensation for UNFD is for remaining contract period up to maximum of three months.	None	Two weeks' notice, regardless of tenure (for termination with notice).	None	No notification of trade union required.	None
Portugal	Same, compensation for UNFD is for remaining contract period	None	Severance pay: FTC < six months: three days' per month of service. FTC > six months: two days' per month of service.	15 days' notice required.	Same	15 days' notice required.
Slovak Republic	Same	None	Same	None	Same	None
Slovenia[g]	Same	None	Same	Same severance pay, with few exceptions.	Same	None

Table 4.4. **Costs and difficulty of dismissals of workers with standard fixed-term contracts as compared to regular contracts** *(cont.)*

	Difficulty of dismissal[a]		Notice and severance pay		Procedural inconvenience[b]	
	Before end date	At end date	Before end date	At end date	Before end date	At end date
Spain	Same	None	Same	Severance pay: 11 days per year of service (12 days in 2015).	Same	None
Sweden	Termination only allowed for gross misconduct by the employee (e.g. theft from the employer, violence in the workplace) unless termination is explicitly allowed in the employment contract.	None	Same as for gross misconduct in the case of a regular worker	One months' written notice required if FTC > 12 months' duration during three-year period.	Same as for gross misconduct for regular worker.	Written notification to the employee and trade union is required if FTC > 12 months' duration during three-year period.
Switzerland	Termination is allowed at any time for cause, during the trial period or if explicitly allowed in the employment contract.	None	Generally same (if termination is allowed) as for regular contracts; FTCs > ten years' duration can only be terminated with six months' notice.	None	Same (if termination is allowed).	None
Turkey	Same	None	Same	None	Same	None
United Kingdom	Same	Same	Same	Same redundancy pay.	Same	Same
United States[h]	Depends on the circumstance.	Depends on the circumstance.	Depends on the circumstance.	Depends on the circumstances.	Depends on the circumstance.	Depends on the circumstances.

Note: CA: collective agreement. FTC: standard fixed-term contract. UNFD: unfair dismissal.

a) Difficulty of dismissal includes definition of fair and unfair dismissal, compensation and the possibility of reinstatement following unfair dismissal, length of the trial period and the maximum time available after dismissal for an employee to make a claim of unfair dismissal.

b) Procedural inconvenience includes notification procedures (e.g. oral or written notice of dismissal) and the delay before the notice period can start.

c) In Austria, the employer and worker can contractually agree on circumstances and procedures for terminating FTCs before their end date.

d) In Canada, there is some variation in regulation across Provinces. The table reflects the situation most commonly found in the four biggest Provinces: Alberta, British Columbia, Ontario and Quebec.

e) In France, in the case of conversion of the contract into one of indefinite duration, the employer can receive a rebate for the social security contributions paid in excess of the rate for regular workers.

f) In Italy, if the worker is eligible for unemployment benefits, the employer must pay a contribution equal to 41% of the monthly unemployment benefit ceiling upon contract termination at its own initiative for each of the first three years of tenure (or fraction of it), no matter whether the contract is fixed-term or open-ended. In the case of conversion of the contract into one of indefinite duration, the employer can receive a rebate for the unemployment insurance contributions paid in excess of the rate for regular workers.

g) In Slovenia, the rate of employers' unemployment insurance contributions is higher for FTCs than for regular contracts. However, if a FTC is converted into an open-ended contract, then the employer is exempted from unemployment insurance contributions for up to two years.

h) In the United States, there are no regulations governing general contractual matters. If parties bargain for, and create, a contract for employment, the contract itself would state any conditions that would restrict termination at or before the end date. If a lawsuit is brought by the worker for breach of contract, the jurisdiction where the court is located may have its own body of case law that would serve as precedent for deciding the outcome of the case. Under certain circumstances an employer's oral or written assurances regarding job tenure can create an implied contract under which the employer cannot terminate employment without just cause. Only certain states in the United States recognise the "implied contract" exception to at-will employment and states follow their own case law. Court decisions with respect to wrongful termination of an implied relationship claims are made on a case-by-case basis.

Source: 2013 OECD EPL questionnaire; OECD (2013), "Detailed Description of Employment Protection Legislation, 2012-2013", *www.oecd.org/els/emp/oecdindicatorsofemploymentprotection.htm*.

be higher for FTCs, so that employees with such contracts are better protected than those with a permanent contract for the duration of the contract, which can be, nonetheless, short. This is the case in Belgium, Estonia, Finland, France, Greece, Italy, Japan, Luxembourg, Norway and Sweden, where the grounds on which a FTC can be terminated before the end date are limited – unless specified otherwise in the contract in Finland, Norway and Sweden – or wages due for the remaining contract period, had the contract not been terminated, must be paid regardless of whether the dismissal is fair or unfair (only in cases of economic dismissal in Estonia). Additional costs do exist in many countries to compensate for unfair termination of FTCs before the end date.[22] By contrast, in Australia, terminating a FTC before the end date may be in fact less costly than dismissing a regular worker, since the fixed-term employee has no right to redundancy pay or advance notice – although the fixed-term employee may be compensated should termination be found to be unfair. Reduced notification requirements apply also in Poland for termination of a FTC before the end date.

The termination process of FTCs *at* the end date is usually easier than terminating workers with permanent contracts and almost at zero cost (or quite small, depending on national legislation). In the majority of OECD countries, there are no legal requirements governing dismissal at the end of the contract period. In Chile, Finland and Portugal, advance notice of dismissal at the end of the contract period is required, likewise for workers with contracts of more than 12 months in Sweden. In Austria, advance notification may be required in collective agreements. In addition, fixed-term employees in this country are eligible for receiving severance payments from their income provision fund under the same conditions as regular employees.[23] In France, Slovenia and Spain, fixed-term employees are entitled to severance pay, although at a reduced rate in France and Spain. In Italy, employers must pay a layoff tax in the form of a contribution to the first month of the unemployment benefit if the employee is eligible for that benefit, no matter whether the employee had an open-ended or fixed-term contract.

Apart from the United States, where employment at will prevails, Ireland, New Zealand and the United Kingdom are the only other countries where some or all workers with FTCs are entitled to nearly the same statutory protection against termination at the end of the contract period as workers with regular contracts. In Ireland, workers with FTCs are eligible for standard severance payments where they have been continuously employed for at least two years and are terminated either before or at the end date of the contract. Moreover, unfair dismissal rules applicable to workers with permanent contracts also apply to termination of FTCs (before and at the end date) unless specifically excluded in writing in the employment contract. In New Zealand, the way the contract will end (on a specific date or upon completion of an event or task) must be specified in writing at the onset of the contract. Termination of a FTC either before or at the end date is then subject to the same requirements as for terminating a permanent contract. In the United Kingdom, all workers are covered by unfair dismissal rules if they have tenure of at least one year. This includes workers with FTCs for termination both before and at the end date of the contract.[24] Similarly, FTC employees have the same right to redundancy pay as regular employees. By contrast, they are not entitled to a notice period if their contract is terminated at the end date.

High termination costs may provide an incentive to convert a FTC into an open-ended contract, but conversions can also be encouraged by fiscal measures. For example, in a few countries, governments have recently opted for fiscal mechanisms combining disincentives to use fixed-term contracts and tax rebates in the case of conversion of FTCs

at the end date to open-ended contracts. In Italy, the 2012 labour market reform has stipulated that employers must pay a modest 1.4 percentage-point higher rate of unemployment insurance contributions for workers hired on FTCs.[25] However, in the case of a conversion into an open-ended contract, this contribution is reimbursed. Similar mechanisms have been subsequently introduced in France and Slovenia. In France, in the case of FTCs of duration shorter than three months, employers must pay an additional contribution of between 4.5% and 7% of the gross wage (depending on the contract). In Slovenia, employers' unemployment insurance contributions for FTCs have been raised to 3% of the gross wage by the 2013 labour market reform, from 0.06% on all contracts before the reform. However, if a FTC is converted into an open-ended contract, then the employer is exempted from normal unemployment insurance contributions for up to two years.[26] No evaluation of these measures has been made for the moment.

For TWA contracts, the general rules on termination of FTCs apply in most countries if the agency wants to terminate the TWA contract with the employee *before* its end date (see Annex Table 4.A1.2).[27] For example, in France, termination before the end date of a fixed-term TWA contract is only allowed for serious reasons. Therefore, if the assignment is terminated by the user firm, the TWA must redeploy the worker or pay them for the remainder of the contract period. In other countries, however, termination of the assignment by the user firm is considered a justified reason for termination of the TWA contract, under the same rules and procedures applying to FTCs, if the contract is fixed-term. For example, in Hungary, breach of contract by the user firm can be used as a reason for termination, thereby waiving the TWA from the duty to pay compensation for absence of reason (see Table 4.3).

By contrast, there are few regulations restricting termination of the assignment by the user firm. In most countries, this is regulated in the same way as any commercial contract. Thus, the acceptable reasons for terminating the contract between the user firm and the agency can be any that are outlined in the contract between the two contracting parties (the agency and the user firm). As a consequence, depending on the provisions in these contracts, terminating their relationship with TWA workers may be much easier for user firms than terminating the contract of their regular employees.

Dependent self-employed workers

As discussed in Section 1, DSEWs represent a non-trivial share of dependent employment. As DSEWs are not employees, the labour standards or other protection conferred by labour law are not normally applicable to them. To the extent that the conditions for terminating a commercial relationship are far less strict than the conditions concerning termination of an employment contract, this category of workers has *de facto* the lowest degree of job protection of all dependent workers. In addition, in countries where social security regimes – in terms of either financing or benefits or both – differ between employees and self-employed workers, employers of DSEWs typically pay no or lower social security contributions, while these workers are covered by a less generous level of benefits than employees. These two facts constitute a powerful incentive for companies to use these types of contract for at least part of the labour services they need, which can explain their significant share in a number of countries.

Given the special nature of DSEWs, some of the protection rights that are normally applicable to employees have been conferred on them in a few countries by creating hybrid statuses of employment. However, in most cases, these extensions of rights concern only

social protection, while termination of contracts remains strictly regulated by commercial law. The United Kingdom, Italy and the Czech Republic are among the few exceptions as regards labour law (see Kim, 2014). In particular, in the United Kingdom, the statutory category of "worker" defines any individual who works under a contract to provide a personal service, independently of whether he/she has a contract of employment. These "workers" are entitled to protection against discrimination under the Equality Act 2010 – implying also a right to equal treatment in basic working conditions. In addition, they are covered by selected labour regulations including those on working time and the minimum wage. However, protection against unfair dismissal and eligibility to redundancy pay, as stipulated in the Employment Rights Act 1996, does not cover DSEWs (see e.g. Eichhorst et al., 2013). In Italy, one important category of DSEWs are the "collaborators" – dependent workers employed for a specific project with contract for services by one employer who is bound to pay social security contributions – although at a reduced rate. Rules for termination of these contracts differ from those of commercial contracts and closely resemble those of employees holding a standard FTC (see above): except in the case of fault, *force majeure* or manifested lack of worker capacity, termination at the initiative of the employer is not possible before full completion of the project (see Box 4.3). In the Czech Republic, a worker and an employer can conclude an agreement to perform work that cannot last more than 300 hours in a single calendar year. The Czech labour code grants workers under these contracts specific rights (such as to maternity and parental leave) and, when a termination before the end date is possible, the right to a 15-day notice period, except in cases in which immediate termination is generally permitted also for employees (e.g. fault or *force majeure*).[28]

In practice, therefore, the greatest source of employment protection for DSEWs relies on the legal instruments that courts have to distinguish between *real* self-employment and *misuses* of such status masking relationships that imply worker subordination and, therefore, an employment relationship.[29] However, as discussed in Section 1, establishing subordination is difficult and a wide array of legal instruments has been developed by many OECD countries for the judicial review of contracts for services by courts. In civil-law countries,[30] the strongest type of instrument is a refutable legal presumption of an employment relationship in specific circumstances. In other words, if specific conditions are met, an employment contract is presumed, and the burden of proving that this is not the case is shifted to the employer. In certain countries, this legal presumption is essentially restricted to particular professions, such as sales representatives (e.g. Austria, Belgium and France). By contrast, in a few other countries, labour laws establish a refutable legal presumption of an employment relationship under very general conditions. For example, in Greece and the Netherlands, if the provision of labour services by a single individual occurs regularly for a sufficiently long period of time, then the worker is presumed to be an employee. In Mexico, an employment relationship is presumed between a person who provides a labour service and the person or organisation which commissions this service. In Estonia and Switzerland an employment relationship is presumed if the labour services provided by the worker could reasonably be expected only in exchange of a salary. In many other civil-law countries, labour laws list a number of conditions that, if they are met, establish a refutable presumption of *de facto* subordination requiring the contract for services to be requalified as an employment contract (e.g. Chile, the Czech Republic, Italy, Poland, Portugal, the Slovak Republic, Slovenia, Spain). In common-law countries and the Nordic countries – as well as a few other countries such as

Box 4.3. **Italian collaborators and the 2012 labour market reform**

The possibility of hiring workers for doing specific tasks under a contract for services has been explicitly allowed in the Italian Civil Code since 1942 (cf. Article 2222). In principle, however, the use of a contract for services requires the absence of subordination, even when the relationship between the independent contractor and the customer is characterised by continuity over time. Given the difficulty of identifying subordination within continuous relationships, the 1995 social security reform introduced, for an extended list of job profiles, the obligation for the customer/employer to pay part of the social security contributions due by the worker as self-employed when the relationship between the employer and the worker can be considered as a "continuous collaboration" (cf. Act 335/1995, Article 2, better-known as the "Dini reform").

In practice, the 1995 reform recognised the possibility of using contracts for services for relationships with some limited degree of subordination, thereby giving rise to a specific contract of continuous and co-ordinated collaboration with its own specific social security regime. As the reform set the rate of social security contributions at a very low level (10% of gross compensation, two-thirds of which to be paid by the employer), and the legal regime was clarified, these contracts flourished in the second half of the 1990s (see Berton et al., 2005). Initially, they were admitted only for non-manual jobs, but this limitation disappeared in 2001.

In 2003, a new reform (Legislative Decree No. 276/2003, better-known as the "Biagi reform") regulated these contracts further by imposing that they could not concern tasks that were normally undertaken by the firm's employees and that they had to be linked to a pre-specified project or parts of it. In practice, however, enforcement of these rules proved difficult since it allowed employers to define the "project" as their main branch of activity, with the employer and the collaborator as contributing to parts of it (Ministero del lavoro e delle politiche sociali, 2012). The 2012 labour market reform (Act 92/2012, better-known as the "Fornero reform") addressed these issues by clarifying that the project must be self-contained and cannot be simply reduced to a part of another, larger project. More important in terms of job protection, employers can now rescind these contracts before their end date *only* under the same conditions of other fixed-term contracts. In fact, while before the reform the parties could stipulate clauses allowing the employer to rescind the contract with no notice and no compensation (a possibility under the civil code), this is now forbidden. In addition, social security contributions have been increased on new contracts of collaboration, and they are scheduled to equalise those on employment contracts by 2018.

Overall, the 2012 labour market reform appears to have made it significantly less convenient for firms to use collaborators. This prediction seems largely confirmed by the early evidence, which suggests that hiring firms are less frequently resorting to this type of contract (Cappellini et al., 2014). Nonetheless, a rigorous evaluation has not been published yet.

Germany and Japan – there is no explicit legal presumption, but courts apply consistently a number of precise legal criteria[31] and often enforcement institutions publish public guidelines concerning these tests in order to prevent misclassification by simple mistake and discourage wilful abuses (e.g. in Australia, Ireland or many US states; see OECD, 2014b, for more details on the legislation of each country).[32]

As in most cases of labour law, avoiding concealment of an employment relationship mostly relies on the concerned worker lodging a complaint with the courts. Only in a few countries, does the labour authority have some power to enforce compliance with the labour law as regards the employment relationship. However such power is usually limited and does not include the possibility of ordering a civil remedy or taking a claim to court without the consent of the aggrieved worker. In Australia, Chile, Poland, Spain and the United States, however, the labour authority can seek for a civil remedy on behalf of the aggrieved workers even in the absence of consent, particularly in cases where an important public interest is concerned. More often, the tax and social security authorities can directly impose a rate of tax or social security contributions on the employer based upon their own assessment of the employer-worker relationship and impose fines or seek for criminal penalties in courts for fraud or grave abuses. However, this does not mean that the opinion of the tax or social security authority is necessarily binding for courts. In fact, the mere fact that a person is treated as a self-employed worker under tax codes and social security laws, for example because of enrolment in the business registry, does not prevent the possibility that he/she could be considered as an employee by a labour court. Nevertheless, certifications produced by the tax authority are often important pieces of evidence in courts, particularly when issued taking labour laws into account. For example, in Ireland, any person, business, or their representatives, may apply to the relevant section of the Department of Social Protection to have an employment relation investigated in order to make sure that the correct social insurance category is being applied to a worker and to decide whether the worker status is that of an employee or a self-employed. After investigating the nature of the employment and based on legal principles handed down in case law, the Department of Social and Family Affairs can issue a written decision that, albeit decisive only for social welfare purposes, is nonetheless indicative of the employment status. Similarly, in the Netherlands, the worker can request a Declaration of Independent Contractor Status from the Tax Authority, which is based on an assessment of whether the workers' activities must be considered as those of a self-employed or those of an employee in the sense of the Dutch civil code. In Denmark, the fact that a worker is determined as an employee by the tax or social security authority gives rise to a sort of refutable presumption of an employment relationship in civil litigation (see the OECD, 2014b; and Kim, 2014, for more details).

3. From protection to security: Exploring disparities in job security across contracts

The key finding of the previous section is that there are wide disparities in statutory rules for termination of employment between regular and non-regular workers. But are non-regular jobs effectively more precarious, as differences in regulations would suggest? And to what extent do non-regular contracts represent only a temporary phase in the career of a worker, such as the initial foothold in the labour market for first-time jobseekers? These questions will be analysed in this section.

Patterns of job security linked to contractual arrangements

One way to analyse differences in job security across contracts is to look at the risk of unemployment. In a recent OECD study (OECD, 2014a), the effect of contract type on the probability of one-year individual transitions from employment to unemployment was estimated for a sample of 17 OECD countries, using a dynamic probit model and controlling for a large number of co-variates and unobserved heterogeneity.[33] The results,

presented in Panel A of Figure 4.9, show that the probability of being in unemployment one year later is significantly higher for non-regular employees than for full-time permanent employees in about two-thirds of the countries for which comparable data are available. The estimated differences are often substantial: in about one half of the countries they exceed 2 percentage points, a figure that appears indeed very large if compared with average raw transition rates for all employees (independent of the contract type) that are in general quite low – ranging between 0.9% for the Netherlands and 6.6% in Spain. The same pattern is also found for transitions towards inactivity, estimated using the same methodology (Figure 4.9, Panel B). In about half of the countries for which comparable data are available, the probability of becoming inactive one year later is significantly greater for non-regular employees than for full-time regular workers.

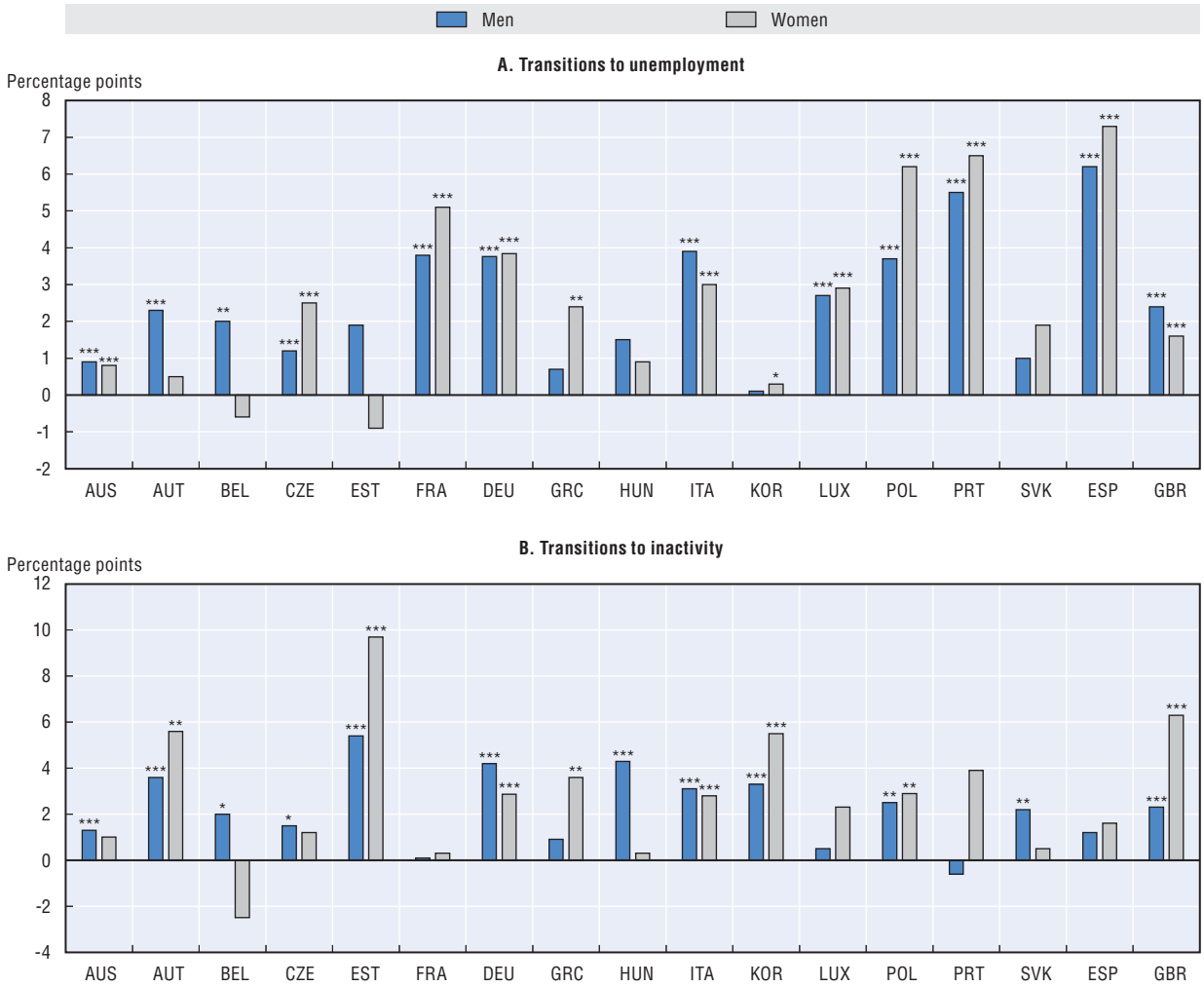
A more complete way to assess cross-contract differences in job security is to look not only at the risk of unemployment but also at the length of the unemployment spell following contract termination and the earning loss during that spell. This approach is followed in Chapter 3. The main results are broadly consistent with those presented in Figure 4.9 above and confirm that non-regular workers are usually in a more precarious position. Even if unemployment spells of workers who entered unemployment after termination of a temporary contract are often shorter than those of displaced permanent employees, the probability of job loss of temporary workers is much higher. As a consequence, the expected cumulated time in unemployment is much longer for temporary than for permanent employees.

Another way to investigate how job security varies across contractual arrangements is by looking at the perception of job security across workers by contract type. Obviously, caution is required in interpreting these data because perceptions are subjective assessments likely to be affected by cultural and personal traits, and do not necessarily reflect commensurate differences in effective situations. Moreover, workers might sort into contract according to their preferences, which might bias cross-contract comparisons. However, in this case, cross-contract differences in perceived job security are likely to be underestimated, since less risk-adverse individuals are likely to sort into precarious contracts. In any case, subjective assessments have typically been found to be a very good predictor of effective situations, which suggests the validity of the former as complementary evidence for the latter[34] (see e.g. Clark et al., 2005; Clark and Postel-Vinay, 2009; and Chapter 3 for further discussion). The key advantage is that differences in perceived job security across types of contracts can be examined by relying on the 2010 European Working Conditions Survey, which – as discussed above – allows for a distinction to be made between DSEWs, TWA workers and other employees with fixed-term contracts.

Figure 4.10 presents cross-contract comparison of three different measures of subjective job security: perceived risk of job loss; perceived re-employment probability subject to job loss; and perceived risk of costly job loss. Workers with a high perceived risk of job loss are defined as those who agree or strongly agree that they may lose their job in the six months following the interview; those with a low perceived re-employment probability are those who do not agree or strongly disagree that if they lose their job they can easily find another job with a similar salary; and those with a high perceived risk of costly job loss are those with high perceived risk of job loss and a low perceived re-employment probability. The comparison across contract types is performed controlling for country dummies and a wide range of observable characteristics that are likely to capture personal and cultural traits, thereby making the analysis of subjective assessments more informative.[35] On average, about 19% of

Figure 4.9. **Impact of contract type on one-year transition probabilities from employment to unemployment and inactivity**

Estimated difference between non-regular and permanent employees, percentage points



Note: Panel A reports the percentage-point difference in the probability of being unemployed one year later between non-regular and full-time permanent employees. Panel B reports the percentage-point difference in the probability of being inactive one year later between non-regular and full-time permanent employees. Estimates are obtained through a random-effect probit model controlling for six initial employment statuses (full-time permanent, part-time permanent, non-regular employees, unemployed, inactive and self-employed), household income, and dummies for three age classes, three education levels, married status, children below 13 years and bad health conditions as well as region and time dummies. Casual workers are classified as non-regular employees.

***, **, *: significant at the 1%, 5%, 10% level, respectively – based on robust standard errors.

Source: OECD (2014), *Job, Wages and Inequality*, OECD Publishing, Paris, forthcoming, based on the British Household Panel Survey (BHPS) 1992-2008 for the United Kingdom, the German Socio-Economic Panel (GSOEP) for Germany, the European Union Statistics on Income and Living Conditions (EU-SILC) 2004-09 for other European countries, the Household Income and Labour Dynamics (HILDA) 2001-09 for Australia and the Korean Labour and Income Panel (KLIPS) 1999-2008 for Korea.

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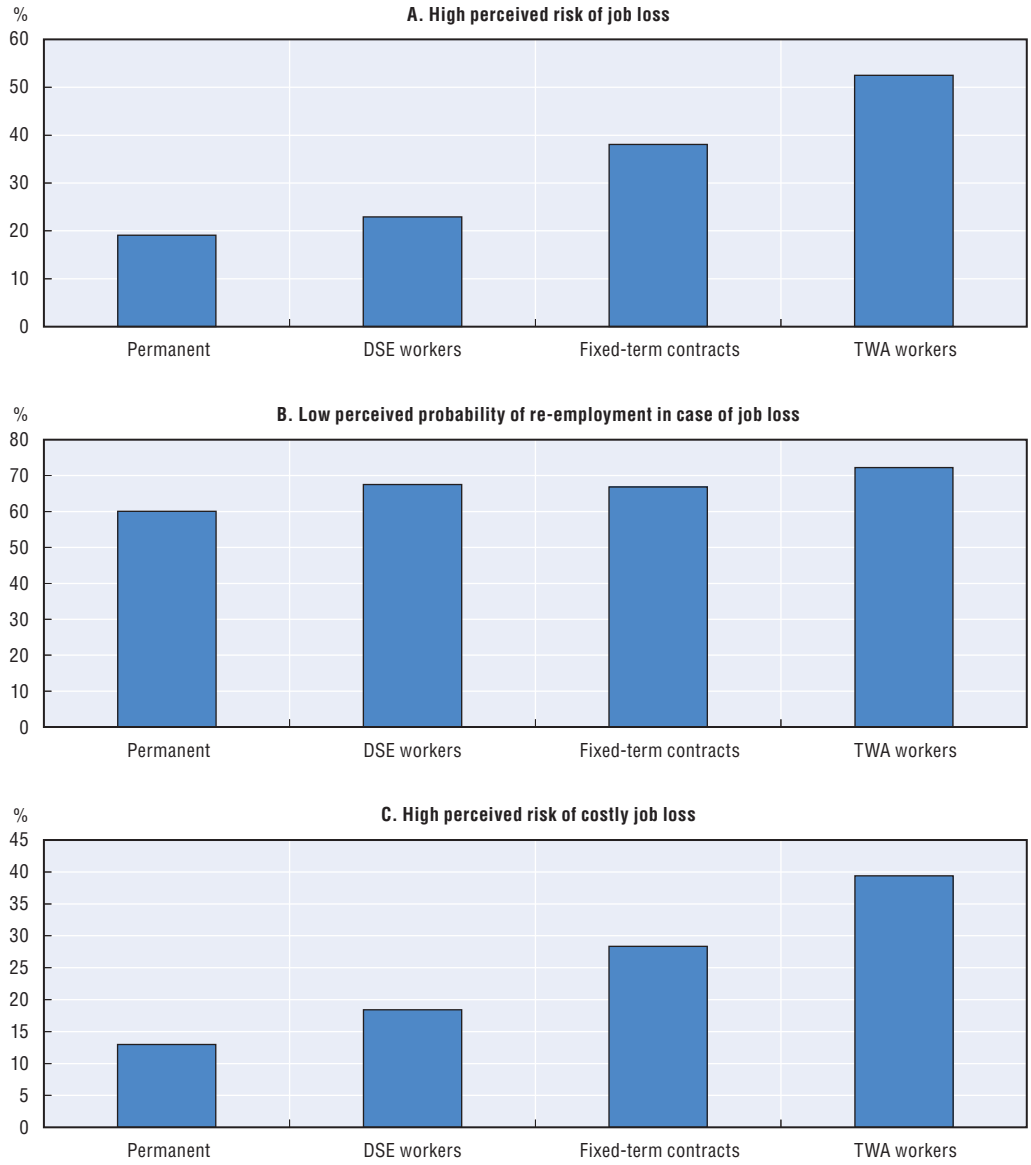
regular employees perceive they face a high risk of job loss (Figure 4.10, Panel A). Employees on standard fixed-term contracts or TWA employment are much more likely to feel insecure about their jobs – 38% and 52%, respectively. The high figure for TWA workers most likely reflects the typical short duration of TWA assignments. Perhaps surprisingly, only 23% of DSEWs agree that they may lose their job in the following six months. This suggests that circumventing EPL is unlikely to be the main reason why this contractual form is chosen but instead is more related to the lower tax wedge associated with these contracts.

Figure 4.10. **Perceptions of job insecurity by type of contract**

Percentage of workers in each category, 2010



Note: Panel A reports the estimated percentage of workers of each type of contract who agree or strongly agree that they may lose their job in the six months following their interview. Panel B reports the estimated percentage of those who do not agree or strongly agree that if they lose their job they can easily find another job with a similar salary. Panel C reports the estimated percentage of those who agree or strongly agree that they may lose their job in the next six months but do not agree or strongly agree that they can easily find another job with a similar salary. Reported rates for permanent workers are averages of the raw responses. For each other type of contracts, the difference with permanent contracts is estimated on the basis of a linear probability model with dummies for gender, country, nine age classes, three education levels, nine occupations, 21 industries, nine tenure classes, nine firm-size classes and an unemployment spell before the current job spell. The estimated difference is then added to the average for permanent workers. The sample excludes workers with more than eight years of job tenure.

DSE: Dependent self-employed; TWA: Temporary work agency.

Source: OECD estimates based on Eurofound (2010), "5th European Working Conditions Survey (EWCS)", *www.eurofound.europa.eu/working/surveys/*.

StatLink http://dx.doi.org/10.1787/888933132735

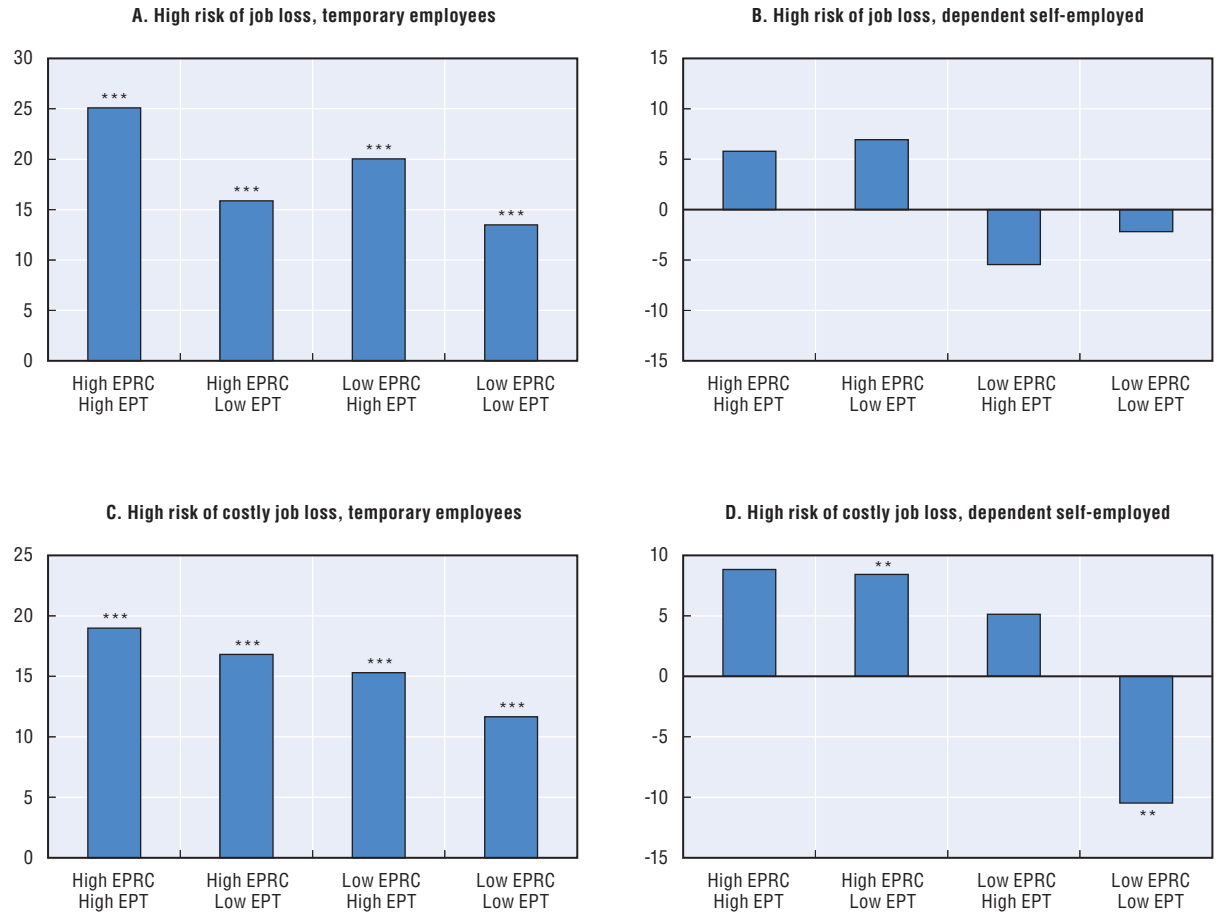
As discussed above (and in Chapter 3), the probability of job loss is just one of the multiple facets of job insecurity. The rate at which another job can be found and the likely conditions of the new job should also enter into the assessment of job security. Interestingly, workers' perceptions of the probability of finding an equivalent job are similar across contracts, with permanent employees only slightly better off (Figure 4.10, Panel B). Indeed about 60% of these workers disagree or strongly disagree that if they lose their job they can easily find another job with a similar salary, against 67-72% for FTC, TWA and DSE workers. Combining these two pieces of information together, one obtains a rough measure of the overall perception of job insecurity. Panel C of Figure 4.10 shows that only 13% of permanent employees perceive that they have a high risk of costly job loss, against 18% of DSEWs, 28% of fixed-term employees and 39% of TWA workers.

The empirical literature suggests that strict EPL for regular workers increases churning of temporary jobs (see below). It has been argued therefore, that stringent dismissal regulations also reduce job security of temporary workers because when staff adjustment is difficult among permanent workers, temporary contracts are used as a buffer against business fluctuations. As a result, job loss will be more frequent and jobless spells longer among temporary workers when firing rules are restrictive. By contrast, the role of hiring regulations has been much less investigated. The role of both types of regulations is examined in Figure 4.11. Countries are divided into four groups according to whether they are above or below the sample average of the OECD EPL indexes for individual and collective dismissal of regular workers (EPRC) and for scope and duration of temporary contracts (EPT). Then, for each country group, differences by contract type in the probability of perceiving high risk of job loss and that of perceiving high risk of costly job loss are estimated, using the same specification as for Figure 4.10, to control for cultural and personal traits as captured by the perceptions of regular workers in a given country and with given characteristics.[36]

As regards DSEWs, Figure 4.11 tends to confirm that the more rigid the regulations for permanent contracts, the greater the difference between the level of job security perceived by DSEWs and that perceived by permanent workers, in particular when the difficulty of re-employment is also considered – i.e. when the perceived risk of costly job loss is used as a measure of job insecurity.[37] Nevertheless, in all cases, DSEWs appears to perceive greater job security than temporary employees, no matter the EPL configuration. These findings suggest therefore that, in countries with restrictive dismissal regulations for regular contracts, firms may effectively use DSEWs as a buffer of adjustment, but probably less so than they use temporary employees for the same reason. In other words, circumventing EPL is likely to have some importance as a reason for using contracts for services only in countries where this legislation is restrictive, although other reasons remain important. Consistent with this view, the evidence for a pattern of substitution between temporary employees and DSEWs mentioned in Section 1 appears stronger when looking only at countries with above-average index of regulations for permanent workers (EPRC index). Indeed the cross-country correlation of the incidence in temporary workers and DSEWs (cf. Table 4.1 and Figure 4.4) is as high as -0.54 among these countries (conditional to the exclusion of Luxembourg). This suggests that in countries with restrictive EPL for regular workers, contracts for services and fixed-term employment contracts are used as alternative instruments of flexibility.

Figure 4.11. **Perceptions of job insecurity for non-regular workers in high and low EPL countries**

Estimated percentage-point effect of holding a non-regular contract on the probability of perceiving job insecurity, by country group, 2010



Note: Panel A reports the estimated percentage-point effect of holding a temporary contract on the probability of perceiving a high risk of job loss. Panel B reports the estimated percentage-point effect of being a dependent self-employed on the probability of perceiving a high risk of job loss. Panel C reports the estimated percentage-point effect of holding a temporary contract on the probability of perceiving a high risk of costly job loss. Panel D reports the estimated percentage-point effect of being a dependent self-employed on the probability of perceiving a high risk of job loss. In computing these effects, the probabilities for regular workers are taken as benchmark for comparison. Workers are defined as perceiving a high risk of job loss if they agree or strongly agree that they may lose their job in the six months following their interview. They are defined as perceiving a high risk of costly job loss if they agree or strongly agree that they may lose their job in the next six months but do not agree or strongly agree that they can easily find another job with a similar salary. For each type of contract, the difference with permanent contracts is estimated on the basis of a linear probability model controlling for dummies for gender, country, nine age classes, three education levels, nine occupations, 21 industries, nine tenure classes, nine firm-size classes and an unemployment spell before the current job spell. The estimated difference is then added to the average for permanent workers. High (low) EPRC indicates countries that are above (below) average for the indicator for strictness of regulation on dismissal for regular contracts in 2010. High (low) EPT indicates countries that are above (below) average for the indicator for strictness of regulation on scope and duration of temporary contracts in 2010. High EPRC/High EPT: Belgium, France, Greece, Italy, Luxembourg, Portugal, Slovenia and Spain; High EPRC/Low EPT: the Czech Republic, Germany, the Netherlands and the Slovak Republic; Low EPRC/High EPT: Estonia, Norway, Poland and Turkey; Low EPRC/Low EPT: Austria, Denmark, Finland, Ireland, Hungary, Sweden and the United Kingdom. The sample excludes workers with more than eight years of job tenure. Standard errors are adjusted by clustering on country by contract type.

***, **: significant at the 1%, and 5% level, respectively.

EPL: Employment protection legislation; EPRC: Strictness of employment protection for individual and collective dismissals (regular contracts); EPT: Strictness of employment protection for temporary contracts.

Source: OECD estimates based on Eurofound (2010), "5th European Working Conditions Survey (EWCS)", *www.eurofound.europa.eu/working/surveys/*.

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In the case of temporary employees, their degree of perceived job security not only depends on the stringency of EPL for regular contracts but even more on the strictness of regulation regarding scope and duration of temporary contracts.[38] More precisely, while the estimated probability of perceiving that they have a high risk of job loss is 13 percentage points higher for temporary employees than for regular workers in countries with both below-average EPRC and EPT indexes, it is only slightly higher (16 percentage points) in countries with above-average EPRC index but below-average EPT index. Conversely, this probability is 20 percentage points higher in countries with below-average EPRC index and above-average EPT index, and 25 percentage points higher in countries that are above average for both indicators. These estimated differences appear quite large if compared with the share of permanent workers who perceive that they have a high risk of job loss (see Figure 4.10).[39] These findings are confirmed by econometric estimates in which quantitative indicators of EPL are interacted with dummies for contract type[40] (see OECD, 2014b).[41]

By contrast, both types of regulation appear equally important for the perceived risk of costly job loss of temporary employees. In fact, the probability of perceiving that they have a high risk of costly job loss is 12 percentage points higher for temporary employees than for regular workers in countries with below-average EPRC and EPT indexes, 17 percentage points higher in countries with above-average EPRC and below-average EPT indexes, 15 percentage points higher in countries with below-average EPRC and above-average EPT indexes, and 19 percentage points higher in countries where both indexes are above the average.[42]

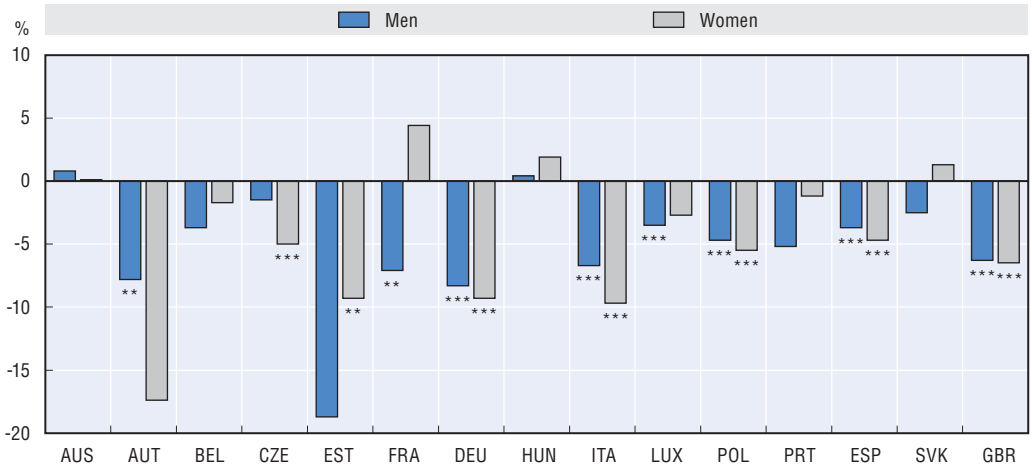
The fact that the legislation for regular contracts appears more important for job security when re-employment probabilities are taken into account is probably not surprising, since it reflects the fact that restrictive regulations depress any type of hiring. By contrast, the key role of regulations concerning temporary contracts as regards the perception of the risk of losing one's job within six months from the survey date might look more surprising. However, regulations limiting the duration of temporary contracts – by shortening their maximum duration and/or making renewals difficult – inevitably reduce the job spells of temporary workers whose contract is not converted into an open-ended one. Therefore, while attaining the objective of reducing the use of these contracts – and perhaps also of increasing conversion rates for some – these regulations might have the adverse consequence of increasing the degree of job insecurity for those temporary employees who have limited perspectives of conversion. This interpretation seems to be confirmed by econometric estimates in which quantitative indicators of EPL are interacted with dummies for contract type (see OECD, 2014b). Indeed, when two separate EPT indicators are constructed (one covering duration/renewal of contracts and another covering other aspects of regulation[43]), the only EPT indicator that is significant for the perception of the risk of job loss by fixed-term employees is the one concerning regulations on contract duration.

Obviously the lower level of job security of non-regular contracts could reflect differences in preferences, with less risk-averse individuals sorting into temporary jobs if the latter are better paid.[44] Indeed, there is evidence that workers are ready to trade off lower wages against greater job security. For example, Böckermann et al. (2011) show evidence that Finnish establishments with more churning also pay higher wages, and yet they find no unconditional effect of churning on job satisfaction.[45] Similarly, Bassanini et al. (2013) show that the wage gap between family and non-family firms in France can be entirely explained by the lower propensity of the former to dismiss their workers. In the case of temporary

workers, some studies find a small wage premium for holding a temporary contract in very specific jobs (such as nurses, IT programmers, and high-paid jobs in general; see e.g. Theodore and Peck, 2013; and Bosio, 2014) or for specific categories (young workers at the beginning of their career; see e.g. Böheim and Cardoso, 2009). More generally, however, the evidence suggests that there is a wage penalty for temporary workers or, at least, no evidence of a wage premium (see OECD, 2014a, for further references). In Figure 4.12, fixed-effect estimates of the wage gap between full-time regular and non-regular employees are presented. These estimates are consistent with the findings of this literature. In two-thirds of the 15 countries for which data are available, holding a non-regular contract is associated with a significant wage penalty for either full-time men or women or both. In only two countries (Australia and Hungary), the wages of both male and female non-regular employees appear to be no smaller, on average, than those of their peers with a regular contract. Overall, it would appear that there is no evidence that non-regular workers are compensated for their lower job security through higher wages.

Figure 4.12. **Wage penalty for non-regular employees**

Estimated wage difference between full-time non-regular and permanent employees



Note: The figure reports the estimated average difference in hourly wages between non-regular and permanent employees working full-time, expressed in percentage of the wage of the latter. Estimates are obtained through a fixed-effect linear model of log hourly wages controlling also for dummies for five age classes, three education levels, married status, children below 13 years and bad health conditions as well as region and time dummies. Casual workers are classified as non-regular employees.

***, **: significant at the 1% and 5% levels, respectively.

Source: OECD (2014), *Job, Wages and Inequality*, OECD Publishing, Paris, forthcoming, based on the British Household Panel Survey (BHPS) 1992-2008 for the United Kingdom, the German Socio-Economic Panel (GSOEP) for Germany, the European Union Statistics on Income and Living Conditions (EU-SILC) 2004-09 for other European countries, the Household Income and Labour Dynamics (HILDA) 2001-09 for Australia and the Korean Labour and Income Panel (KLIPS) 1999-2008 for Korea.

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Are temporary jobs "stepping-stones" or "traps"?

The disparities identified in the previous subsection suggest that, on average, non-regular jobs tend to display worse outcomes in terms of job security and wages, even though the situation differs across countries and across contracts. It is therefore important to investigate the dynamics of individual careers and examine whether such disadvantages are persistent (from a life-cycle perspective) and whether non-regular jobs have any scarring effects.

One prominent question in the literature looking at the dynamics of career trajectories transiting through non-regular contracts is whether temporary jobs are "stepping stones" into more stable employment. For unemployed workers, and in particular young inexperienced workers, does accepting a temporary job offer increases the chance of eventually finding a stable position? Or would it be better to stay unemployed and keep on searching directly for a permanent job? The dual of this question is: does accepting a temporary job offer lock individuals into non-regular forms of employment, thereby transforming temporary contracts into a "trap"? On the one hand, by leaving quickly unemployment through a temporary job, workers acquire labour market experience, access informal networks and improve their human capital – or at least avoid its deterioration. Moreover, as suggested by Cockx and Picchio (2012), by accepting a short-term job, a worker could also signal his/her motivation. In addition, repeated temporary contracts could give workers multiple experiences, thereby enhancing the probability of better and more stable matches in the future. On the other hand, accepting temporary job offers can crowd out efforts to search for more stable positions, thereby delaying entry into a permanent job. Accepting a short-term contract may also signal low ambition or less productive skills. Besides, given that temporary job spells are shorter, temporary workers might find it difficult to qualify for unemployment benefits at the end of their contract, thereby suffering from a more binding financial constraint when searching for the subsequent job. Therefore, as suggested by Berton and Garibaldi (2012), to the extent that finding another temporary position is easier, workers entering into unemployment after a temporary job might have a stronger incentive to take up the first, possibly temporary, offer they receive, thereby ending up chaining together multiple spells of non-regular jobs.[46] Moreover, temporary workers, by spending more time out of employment, are likely to accumulate less work experience, thereby falling behind permanent workers over time. Finally, the literature on training have often argued that a temporary worker tends to receive less employer-sponsored training because the expected duration of his/her job spell is shorter and therefore the employer has less time to recoup the cost of training (see e.g. Booth et al., 2002; Bassanini et al., 2007). Nonetheless theoretical predictions on the impact of the expected job spell on firm-sponsored training are ambiguous, since training might also be used as a screening device for temporary workers (Autor, 2001) and firms that have a reputation for providing good training opportunities might find it convenient to hire temporary workers and provide them with general training,[47] to the extent that they can attract better workers even if for a limited period of time (Moen and Rosen, 2004).

One way to look at these issues is to compare the estimated transitions from non-regular to permanent contracts with the estimated transitions from unemployment to regular contracts.[48] For example, controlling for individual heterogeneity, OECD (2014a) finds that, in all of the countries displayed in Figure 4.9 above except France, the probability of being in full-time permanent jobs in a given year is significantly greater for workers that one year before were on temporary jobs than for those that were unemployed.[49] However, this approach does not take into account the time unemployed workers have spent searching for a job before accepting a temporary job offer. Indeed, most of the recent studies on this question look at pools of unemployed at a given point in time and investigate the effect of having accepted temporary employment – rather than having remained unemployed and kept on searching for permanent jobs – on the probability of being in regular job several months or years later, with more nuanced results. In fact, while

Heinrich et al. (2005) find that Missouri and North Carolina welfare recipients participating in welfare-to-work programmes who were placed on TWA jobs earned much more and had a greater probability of not being on welfare than those who did not take up a job over the subsequent two years, other studies have reached less clear-cut conclusions. For example, using propensity-score matching estimators to control for observable heterogeneity, Hagen (2003) finds that, in Germany, entering into a fixed-term contract at a given date rather than continuing to search for a permanent job increases the probability of subsequently holding a permanent contract after two years but the effect disappears after four years. De Graaf-Zijl et al. (2011) estimate a multi-state duration model for unemployed Dutch workers and find no significant differences in the probability of moving into a regular job within 72 months after entering unemployment between those who, at some point in time, took up a temporary employment job and those who did not. However, they estimate that temporary employment has a positive effect for immigrants. Using a similar methodology, Kvasnicka (2009) and Jahn and Rosholm (2014) examine the effect of TWA employment on transition into regular employment in Germany and Denmark, respectively. The German study finds that accepting a TWA employment does not increase the subsequent chances of getting a permanent job for unemployed German workers up to two years following assignment. The Danish study finds that TWA employment helps workers finding a permanent job during the TWA assignment but its effect disappears in the post-assignment period – except in the case of immigrants (see also Jahn and Rosholm, 2013) – and even becomes even negative for women. Similarly, Casquel and Cunyat (2008) estimate a duration model for fixed-term employment using Spanish data and find that fixed-term contracts lead to permanent positions only in the case of the high educated but not for youth, women and low-educated workers.

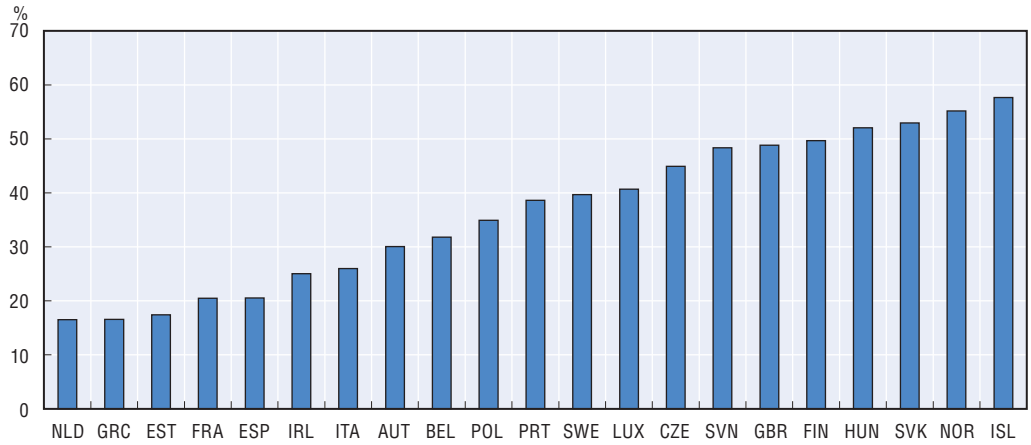
Overall, with few exceptions, the recent empirical literature seems to suggest that, at least for large groups of workers, accepting a temporary job offer does not reduce – and sometimes slightly increases – the chances of obtaining a permanent position later on. This is consistent with the fact that temporary contracts are far more prevalent among youth, while their incidence is much smaller for prime-age workers in most OECD countries (see Section 1 above), suggesting that a large number of young entrants in the labour markets experience an initial temporary contract but then manage to transit to more stable positions. As argued by Autor and Houseman (2010), however, the studies mentioned above are unable to control for all the sources of heterogeneity. In particular, the motivations pushing individuals to accept or not a temporary job offer are likely to be connected with individual characteristics that will eventually determine their labour market trajectories. Instrumental variables are required to control for this source of unobservable heterogeneity. Autor and Houseman (2010) exploit the random rotational assignment of welfare clients to nonprofit contractors in the Detroit's welfare-to-work programme, which allows them to use the different propensities of contractors to rely on temporary-help and direct-hire placements as an instrument for subsequent labour market performance. They find that in the first seven quarters following the programme, workers placed on TWA jobs performed significantly worse in terms of employment and earnings than those on direct-hire and those who took up no job. Interestingly, without using instrumental variables, the estimated results are similar to those of Heinrich et al. (2005), thereby strongly suggesting that the estimates reviewed above may be biased upwards – that is biased in favour of a positive effect of temporary jobs.

The literature on the stepping-stone hypothesis reviewed so far focuses on the narrow question of what is the best choice for the unemployed given the institutional environment. It would be erroneous, however, to derive policy implications as regards the desirability of regulations facilitating or impairing temporary jobs from the results of this literature. A different way to ask whether temporary contracts are effectively stepping stones into employment that is more relevant from a policy viewpoint is to ask whether a reform, which makes temporary contracts more attractive, facilitates a quicker integration of workers into employment and, particularly, into stable jobs. One of the few studies investigating this question is that of Garcia-Pérez et al. (2014), who exploit the quasi-natural experiment provided by the 1984 liberalisation of fixed-term contracts in Spain to examine, within a regression-discontinuity design, the differential labour marker performance of cohorts of high-school dropouts, who attained the minimum working age just before or just after the reform. They find that over the subsequent 20-year period, the cohorts that entered the labour market after the reform had both more employment and unemployment spells, on average, suggesting enhanced cycling between fixed-term contracts and unemployment. Overall, it is estimated that they worked about 300 days less due to the reform. In other words, this result suggests that facilitating labour market access through temporary contracts does not help, and in fact hampers, the labour market prospects of youth in Spain. Needless to say, these findings may be specific to the Spanish context and more research is needed on this issue before firm conclusions can be taken.[50]

A temporary job might be simultaneously a stepping-stone for some individuals and a trap for others, if certain workers find themselves cycling between temporary positions and unemployment for many years. For example, according to EU-SILC data, in almost all European countries for which data are available, less than 50% of the workers that were on temporary contracts at a given year are employed with full-time permanent contracts three years later (Figure 4.13).[51] Although these figures do not control for individual differences and must therefore be interpreted with caution,[52] they nonetheless suggest a high degree of persistence given that transitions from permanent to temporary jobs are typically very low.[53]

Figure 4.13. **Three-year transition rates from temporary to permanent contracts**

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



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

Source: OECD calculations based on the European Union Statistics on Income and Living Conditions (EU-SILC) 2005-11.

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A few papers have more rigorously estimated lock-in effects over a longer time horizon finding significant evidence of persistence in non-regular employment. For example, Esteban-Pretel et al. (2011) estimate a structural model to study post-graduation labour market trajectories of Japanese young graduates and find that up to 10-15 years later those who had started their careers in contingent jobs[54] within one month from graduation have a lower probability of being in regular jobs than those who started with unemployment, even though this effect disappears after 20 years. On the basis of social security data, Toharia and Cebrián (2007), report that between 21.4% of Spanish workers that had a temporary contract in a given year were still on temporary contracts five years later and had no experience of open-ended contracts in between. Even more striking, using more recent data from the same source, Conde-Ruiz et al. (2011) report that, while virtually all individuals that entered the labour market before the age of 21 started with a non-regular contract, about 40% of them were still on temporary contracts 20 years later. Berton et al. (2007), using Italian social security data, show that only 48% of young graduates who entered the labour market with a standard fixed-term contract were in a permanent job five years later, while 22% were still in non-regular employment and the remainder were unemployed or out of the labour force.[55] Finally Booth et al. (2002) look at permanent effects on wages. They find that having taken a temporary contract early in the career induces a permanent wage penalty for British men – albeit not for women.

A number of studies have also pointed out that, while one spell of temporary employment might be beneficial for obtaining a permanent job, this is not necessarily the case if spells of temporary jobs are repeated. Indeed, Gagliarducci (2005) finds for Italian graduates that, the longer the time spent in temporary jobs and the more numerous the previous job spells, the lower the probability of eventually ending up in a permanent job. This suggests that temporary jobs can be a port of entry in the labour market for unexperienced workers, and a stepping stone towards stable jobs, but only if workers manage to escape quickly from temporary jobs. Similar results are obtained by Garcia-Pérez and Muñoz-Bullón (2011) for Spain and Cockx and Picchio (2012) for Belgium. Finally, Rebollo-Sanz (2011) qualifies these statements for Spain by showing that repeated spells of temporary employment have a particularly negative effect on the probability of obtaining an open-ended contract if they occur within the same firm.

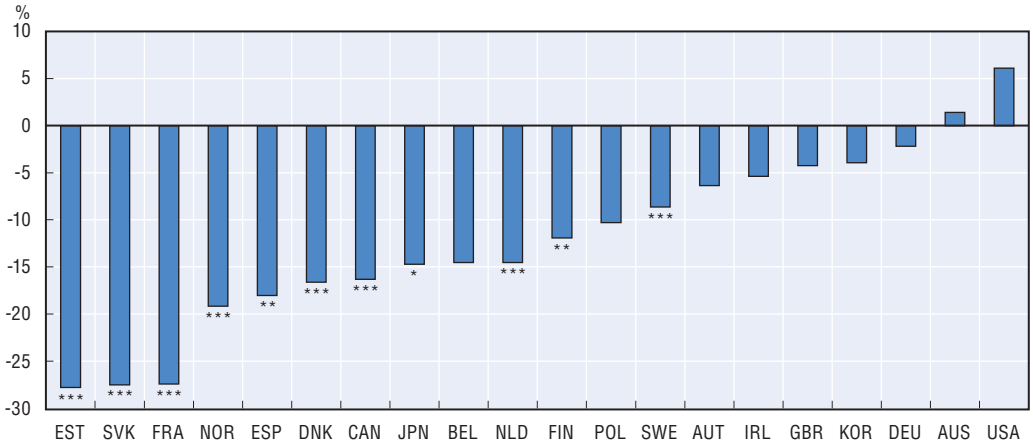
Overall the empirical literature seems to confirm that there are a significant number of non-regular workers who, while seeking a permanent job (see Figure 4.3 above), find it difficult to escape their precarious status and to transit towards open-ended, regular contracts. As discussed above, unequal access to employer-sponsored training could be one of the reasons behind this pattern. One key difficulty in estimating the impact of contract type on training is that, at any given point in time, workers endowed with less good productive abilities are less likely both to have a regular, open-ended contract and to receive employer-sponsored training conditional on the type of contract. To the extent that ability is not observable, one might incorrectly attribute an observed training pattern to contract type when, in fact, this is simply reflecting unobserved ability. One way to solve this identification problem is by finding a proxy variable that can capture unobserved ability while, at the same time, being unaffected by employer-sponsored training. Cognitive skill variables from the Survey of Adult Skills (PIAAC) can serve this purpose. Indeed, these skills are sufficiently general that they are likely to be acquired before entering the labour market and do not appear to be affected by employer-sponsored training (see OECD, 2014b).

Therefore, estimating the relationship between contract type and training by simultaneously controlling for individual literacy and numeracy skills allows interpreting the results in terms of causality.[56]

On average across the countries for which this analysis can be undertaken (see OECD, 2014b), being on a temporary contract reduces the probability of receiving employer-sponsored training by 14% (Figure 4.14). In half of these countries, contract type has a negative and significant impact on training. In Estonia, France, and the Slovak Republic, this penalty rises to 27%. Moreover, in a number of other countries, the point estimates exceed 5%, suggesting that the lack of significance in certain cases might be due only to the small sample size. In fact, a positive but statistically insignificant impact of temporary work status on training participation is found in only two countries (Australia and the United States).[57] Overall, these results suggest that temporary workers are on average less likely to receive employer-sponsored training than their counterparts on open-ended contracts. To the extent that training increases the productive skills of workers, this contribute over time to increase the skills gap between regular and non-regular workers (see Section 1), making the transition to regular jobs more difficult as workers age and progress in their professional career.

Figure 4.14. **Temporary workers and employer-sponsored training**

Estimated percentage effect of temporary contract status on the probability of receiving employer-sponsored training, 2012



Note: Estimated percentage difference between temporary and permanent workers in the probability of having received training paid for or organised by the employer in the year preceding the survey, obtained by controlling for literacy and numeracy scores and dummies for gender, being native, nine age classes, nine occupations, nine job tenure classes and five firm size classes. Data are based only on Flanders in the case of Belgium and England and Northern Ireland in the case of the United Kingdom.

***, **, *: significant at the 1%, 5%, 10% level, respectively – based on robust standard errors.

Source: OECD Survey of Adult Skills (PIAAC) 2013, *http://dx.doi.org/10.1787/9789264204256-en*.

StatLink *http://dx.doi.org/10.1787/888933132811*

4. Policy options to reduce labour market segmentation

The previous sections have shown that the legislative provisions governing termination of employment relationships vary widely across contracts in most countries. As suggested by economic theory and previous empirical evidence, in countries with stringent regulations on permanent contracts and low termination costs for non-regular contracts employers have strong incentives to use non-regular contracts as a buffer of workforce adjustment to fluctuations in demand (see Box 4.4). Moreover, as pointed out in

Box 4.4. **Employment protection legislation and labour market duality**

According to theoretical arguments, if the use of fixed-term contracts is liberalised while maintaining strict employment protection regulations for open-ended contracts, firms will react by substituting temporary for regular workers, with no long-run effect on employment, due to the smaller cost involved with the termination of the employment relationship at the end of a fixed-term contract (see e.g. Boeri and Garibaldi, 2007; Bentolila et al., 2008). In addition, a large asymmetry between the employment protection provisions (and, sometimes, tax wedge) applying to the two types of contracts will reduce the conversion rate of fixed-term contracts into permanent ones, thereby transforming fixed-term contracts into a trap rather than a stepping stone into more stable employment (Boeri, 2011). It has also been argued that in a setting where extensive employment protection for workers with open-ended contracts coexists with lighter regulation for fixed-term contracts, wage pressure and therefore unemployment may increase (Bentolila and Dolado, 1994). The argument behind this is that "insiders" on permanent contracts can raise their wage claims without much risk of losing their jobs as any resulting negative effects on employment will be borne mainly by the "outsiders" who work on fixed-term contracts (often youth and other workers with little work experience or fewer skills). More generally, these observations imply that the effect of employment protection regulations on fixed-term contracts cannot be seen in isolation, but is conditional on the degree of stringency of employment protection for regular contracts. In countries with highly protective regulations for permanent contracts, those under fixed-term contracts (often youths and other disadvantaged groups) will bear the main burden of employment adjustment (Saint Paul, 1996). Overall, this literature suggests that a large wedge between regulations for temporary and permanent contracts is likely to contribute to the emergence of a persistent *divide* across workers holding different types of contract in terms of both current working conditions and future prospects. This situation is often referred to as contractual *segmentation* or *duality*.

There is a vast empirical literature showing that the incidence of temporary contracts tends to be increased by the rigidity of regulations concerning dismissal for permanent contracts and reduced by legislation limiting hiring on, and renewal of, temporary contracts. For example, Lepage-Saucier et al. (2013) analysed hiring patterns in a cross-country regression setting and found that changes in OECD indicators for dismissal of permanent contracts and hiring of temporary contracts have opposite patterns of association with the share of temporary contracts in new hires. Kahn (2010) uses longitudinal microdata for nine European countries and finds that recent policy reforms making it easier to create fixed-term jobs raised the probability that a worker will be on a fixed-term contract. However, he finds no evidence that such reforms increased employment: instead they appear to have encouraged substitution of temporary for permanent work. In a similar vein, several studies focus on major Spanish reforms in the early 1980s that liberalised fixed-term contracts without changing dismissal costs for regular contracts and find, in general, that this led to a very large increase of fixed-term contracts and a reduction in employment on permanent contracts (see e.g. Bentolila et al., 2008; Aguirregabiria and Alonso-Borrego, 2009). Evidence from Spain also suggests that, when the regulatory gap between permanent and temporary employment is large, transition rates across these two states are low (e.g. Güell and Petrongolo, 2007), thereby confirming the "duality" theory: outsiders tend to move from one temporary contract to another while insiders enjoy high protection and employment stability. Finally, several papers find that the difference in the cost of adjusting the stock of workers on different types of contract explains both the share of workers on fixed-term contracts and their relative volatility of temporary jobs (see, for example, Goux et al., 2001). Overall, this evidence suggests that, all else equal, stringent regulation on regular contracts tends to encourage the use of temporary contracts (see e.g. Boeri, 2011; Boeri and Van Ours, 2013; OECD, 2013a). Indeed, rigid dismissal regulations have also been shown to reduce job and worker turnover in general (see OECD, 2010; and Bassanini and Garnero, 2013) but increase churning of temporary jobs (see Centeno and Novo, 2012; Hijzen et al., 2013).

the last section, while temporary jobs can be a stepping stone towards stable employment for a number of workers, other workers remain trapped into non-regular contracts with decreasing hope of escaping the precariousness of this condition.

These persistent disparities, however, are not only an issue from an equity viewpoint but they induce suboptimal outcomes from an efficiency viewpoint. Indeed, a highly dual labour market may result in an increase number of workers with lower work motivation, flexibility and willingness to take up new duties. Similarly, firms are likely to invest less in their workforce if they cannot count on a sufficient period of time to recoup investment costs, as exemplified by the lower access to employer-sponsored training for temporary employees (see Section 3). Consistently, evidence from several Spanish labour market reforms implemented in the past twenty years also suggests that the large gap between restrictions for open-ended and temporary contracts and the consequent widespread use of fixed-term contracts depress multi-factor productivity growth (Dolado et al., 2012). More generally, cross-country time-series evidence suggests that countries that implemented partial reforms of EPL, whereby regulations on temporary contracts were weakened while maintaining stringent restrictions on regular contracts, have indeed experienced slower productivity growth (OECD, 2007; Bassanini et al., 2009).

A large share of temporary workers is also typically negatively associated with labour market resilience due to large increases in the unemployment response to output shocks. In turn, this has been found to reinforce the cyclical increase in earnings inequality (OECD, 2012). For example, the dramatic upsurge in unemployment in Spain during the recent crisis was essentially due to the destruction of temporary jobs (OECD, 2014c). As suggested by economic theory, these types of fluctuations are by and large inefficient. In the presence of low or limited termination costs for non-regular contracts, firms are induced to excessive job destruction among these contracts, since they do not internalise the social costs engendered by their decisions in terms of both congestion of job searchers and loss of fiscal revenue and extra expenditures in unemployment as well as social benefits (Feldstein, 1976; Cahuc and Zylberberg, 2008).

For all these reasons, reducing the labour market divide between workers on different contracts is a key policy objective for those OECD countries where this divide is more important and persistent. Even though the reasons for segmentation in the labour market are complex and labour market regulations are only one of the factors behind it, reforms of employment protection legislation can nonetheless effectively contribute to lessen labour market duality (see Box 4.4). In practice, this goal can be achieved either by strengthening regulations of temporary contracts or by easing regulations for permanent contracts or both.

A strategy aimed at reducing dualism that has been recently followed by some countries with stringent dismissal regulations for permanent contracts is to make hiring on temporary contracts more difficult and costly, while leaving unchanged or simultaneously reducing dismissal costs for permanent workers (see OECD, 2013a). For example, among a number of provisions concerning both permanent and temporary contracts, the new Slovenian Employment Relations Act, which entered into force in April 2013, forbids employers to hire different workers on the same post using fixed-term contracts for more than two consecutive years. Reductions in the maximum cumulative duration of fixed-term contracts, although not applicable to multiple employees for the same position, have also recently been implemented in the Czech Republic, the Slovak Republic and Spain. However, the problem of provisions restricting renewals,

duration or the scope of fixed-term contracts is that their enforcement might be particularly difficult. In fact, enforcement of EPL is mainly dependent on individuals who consider themselves as having been wrongfully treated and lodge a complaint. While potential plaintiffs are well identified and able to react in the case of unfair terminations, breaches of legislation concerning hiring on temporary contracts are much more difficult to identify (see e.g. Muñoz-Bullón, 2004). The effectiveness of these measures must therefore be assessed through rigorous evaluations. In addition, as shown in Section 3, making hiring regulations too restrictive might be counterproductive, by increasing perceptions of job insecurity for those workers who are unable to use non-regular contracts as a stepping-stone into open-ended ones. The latter argument potentially applies also to strategies of selectively increasing social security contributions for fixed-term contracts above the rate paid in the case of permanent ones – as recently done in Italy, France and Slovenia (see Section 2) – if dismissal costs for regular contracts are left unchanged.

The implementation of flexibility-enhancing reforms of dismissal legislation for permanent workers in countries where it is overly strict is likely to increase the share of permanent contracts in new hires and gradually reduce the use of fixed-term contracts where the latter are not justified by the nature of tasks and activities involved (see Box 4.4 for a brief survey of the literature). The Spanish experience in the aftermath of the 2012 reform is an interesting case, since that reform clearly reduced dismissal costs without modifying regulations for fixed-term contracts. In particular, the reform redefined the conditions for a fair economic dismissal, reduced compensation for unfair dismissal from 45 to 33 days per year of service and increased the probationary period for small and medium firms. Despite the fact that the available data only cover the first year of implementation of the reform and the very difficult economic conditions in Spain in that year, an evaluation by the OECD (OECD, 2014c) suggest that the reform was responsible for about 25 000 new permanent contracts each month (representing an increase of 30% in the share of permanent contracts in new contracts).

However, there is also evidence which suggests that reforms involving the relaxation of regulatory provisions on individual and collective dismissals are likely to increase the number of workers who are affected by labour mobility at the initiative of the employer (see OECD, 2010). Those who lose their jobs in the aftermath of these reforms – but would have not lost their job otherwise – are likely to experience income losses both during their search for another job and at re-employment (see OECD, 2013a). For equity and political-economy reasons, therefore, these reforms should be accompanied by the provision of adequate unemployment benefits, albeit made conditional on strictly enforced work-availability conditions and part of a well-designed "activation" package, as suggested by the restated *OECD Jobs Strategy* (OECD, 2006). However, such a reform package might be difficult to implement insofar as it would impose significant extra costs on public budgets and would require adequate administrative capacity.

Significant reforms of overly strict regulations on dismissals appears to be effective at reducing the expansion of temporary contracts – where the latter are not motivated by the nature of the tasks or activities involved – because they remove the very same reason why employers are pushed to use excessively fixed-term contracts: namely, the cross-contract difference in job-termination costs and difficulties borne by employers. In addition, by diminishing the gap in entitlements across employees on different contracts, these reforms also mechanically lessen inequalities across workers. Yet, in practice, this might occur at the price of a significant reduction in worker protection, if government budget

constraints or lack of administrative capacity prevent coupling EPL reforms with adequate unemployment-benefit provision, well-enforced job-search requirements and effective re-employment services. This suggests that another way to alleviate labour market dualism, at least to the extent that it is induced by regulation, would be to explicitly enhance the convergence between the different types of contracts by reducing the wedge between termination costs associated to regular and non-regular contracts (e.g. making employment protection as much homogeneous as possible across different contractual relationships) while leaving more freedom to set overall worker protection at a level that precisely matches social and political preferences.

An extreme form of such convergence would be achieved through the introduction of a *single employment contract*, as currently discussed in a number of European countries but also suggested in the context of non-European labour markets (see, for example, Aoyagi and Ganelli, 2013). The over-arching principle of a single contract consists in suppressing all forms of temporary employment contracts while introducing a new open-ended (regular) contract with no *ex ante* time limit, with an overall level of job protection to be chosen according to political preferences but progressively increasing with tenure. Tenure-related severance pay can indeed be justified from an efficiency perspective if there are significant investments in job-specific skills by workers (e.g. Boeri et al., 2013).[58] Concrete policy proposals have been put forward and discussed, notably in France, Italy and Spain, based on academic work and models, but they differ considerably in their modalities and potential effectiveness in tackling labour market dualism.

Two broad types of single contract proposals have been put forward. A first type of proposals would consist in introducing a new open-ended contract for new hires with two phases, an "entry" phase, during which worker entitlements in the case of dismissal are reduced although possibly increasing progressively with job tenure and identical in the case of both fair and unfair dismissal, and a "stability" phase, during which the worker would obtain the standard permanent contract with no changes in his/her rights in case of termination.[59] The key problem of this type of proposals resides in the difficulty of eliminating the discontinuity induced by passing from the "entry" to the "stability" phase, to the extent that worker rights in current open-ended contracts are different in the case of fair and unfair dismissal. In general, therefore, employers would face a strong disincentive to keep their employees beyond the "entry" phase.[60]

A second class of single-contract proposals explicitly aims at avoiding discontinuities in patterns of workers' entitlements. The cornerstone of these proposals is the introduction of a smooth schedule of increasing severance pay entitlements with job tenure[61] and the redefinition of unfair dismissal, which would have to be restricted only to cases of discrimination and prohibited grounds. Such schemes would make dismissals easier while compensating worker's losses through monetary payments only, therefore without uncertainty. At the same time, in contrast with contracts with a long trial period and/or an entry "phase", there would be no spike in the incentive to dismiss workers as job tenure increases. Nevertheless, one problem of this type of proposals is that, in tying rights to the enterprise, it is likely to reduce turnover and prevent mobility across jobs. In order to address this problem, the idea of a single contract based on experience-increasing rights to severance pay has been also explored (Lepage-Saucier et al., 2013). In this case, for the whole duration of the employment relationship, employers would pay additional social security contributions into a fund tied to the worker, which would be portable across jobs when the worker changes employers. Then, if the worker is dismissed, the fund would finance his/her severance pay.[62]

However, while firms may use temporary contracts to possibly reduce labour costs or as a screening device for future permanent hiring, they also need this option to respond to fluctuations in activity or for jobs that are truly temporary (OECD, 2013a). So, removing temporary contracts brings the risk of introducing excessive rigidity in hiring decisions and could lead to employment losses, given that not all temporary jobs would be substituted by permanent ones. In addition, as suggested by the analysis in Section 3, preventing firms from hiring on fixed-term contracts in the presence of truly temporary activities would lead to enhanced utilisation of independent contractors and dependent self-employed, thereby inducing the expansion of an even less protected form of employment. More generally, imposing additional contractual rigidities on employers runs the risk that compliance with labour laws decrease, or employers may be tempted to substitute capital for labour inputs or to outsource work to lower cost jurisdictions.

In order to address these problems, a third group of proposals has been put forward, usually identified with the term *unified contract*. The idea would be to both maintain all types of contracts and have termination costs increasing with seniority, independently of the type of contract. In addition, in the case of termination, firms would pay a layoff tax to the public authorities, while dismissals would be unfair only in cases of discrimination and prohibited grounds (see e.g. Blanchard and Tirole, 2003; Cahuc, 2012). The layoff tax would yield resources to mutualise the reallocation costs of displaced workers and induce firms to internalise the social cost of dismissals, without any need of reinstating workers, if set at a sufficiently high level (Cahuc and Zylberberg, 2008).[63] The clear advantage of this proposal is that it would leave unchanged the cost of termination of short-term contracts, thereby not making more burdensome their use for tasks that are truly temporary.

A key requirement of all these proposals is, nonetheless, the restriction of the definition of unfair dismissal to false reasons, discrimination and prohibited grounds (plus violations of notification and severance pay requirements, the latter repressed only with light monetary sanctions). In other words, any economic motive or personal reason related to the worker's performance (such as reduction of individual productivity or unsuitability) would be a fair and justified reason for dismissal, with the judicial review of courts restricted to assessing that the purported reason is not in fact masking prohibited grounds. This is particularly important in the case of the unified contract, since otherwise temporary contracts would remain more attractive, given that termination of contracts at the end date is generally considered as fair. However, while this is already the case in common-law countries with few, limited exceptions (see OECD, 2013a), implementing this requirement might prove difficult in practice in a number of civil-law countries where the legal tradition of judicial review of employers' decisions is much more extensive. For example, among a number of other provisions, the 2012 reform in Spain lifted the obligation for employers to prove that the dismissal is essential for the future profitability of the firm. Even though initial rulings of the Supreme Court appeared to incorporate this principle, a recent court decision seems to restate the principle that the judge must verify the appropriateness of managerial decisions.[64]

In the case of dismissal for personal reasons related to the worker's performance, implementing a change of legal culture might be even more difficult. In fact, the boundary between personal reasons related to the work activity and those unrelated to that – thereby being unlawful grounds – might be tenuous. As a consequence, it might be difficult to specify this boundary in the law in a manner leading to effective modifications of actual practice. For example, the 2012 Italian reform restricted the possibility of reinstating the

employee when the dismissal is declared unfair by the court only to cases in which the alleged reason is inexistent – beyond cases of discrimination and prohibited grounds. The examination of the first court decisions under the new regime suggests, however, that, while in the case of redundancy this has significantly reduced the frequency of reinstatement orders, the application of the reform to cases of unfair dismissals for personal reasons has, at best, given rise to divergent interpretations by different judges.[65] In Italy and Spain, however, there are no or little disincentives for workers to file a complaint. By contrast, where disincentives are in place,[66] the evidence suggests that the number of cases of termination that are brought to court is significantly reduced (see Venn, 2009), thereby making the distinction between fair and unfair termination less binding. It remains to be seen whether or not this would suffice in practice.

In actual country experiences, however, there are no examples of *single contract* and only few examples of *unified contract*. While for the single contract this is likely to be motivated by the risk of discouraging hiring by introducing excessive rigidities in the labour market for volatile and occasional activities, the limited number of examples of unified contract is likely to be due to the fact that its enactment would require either relatively light dismissal regulations or limited judicial review of the dismissal decision or both. In fact, as discussed in Section 2, beyond the countries where employment-at-will is the dominant regime, only Ireland, New Zealand and the United Kingdom impose essentially the same termination costs to fixed-term and open-ended contracts. Yet, judicial review in these countries is essentially limited to prohibited grounds and violation of procedural requirements. And the degree of employment protection for *all* contracts in these countries is relatively low, thereby limiting resorting to contracts for services to circumvent regulations on termination (see Section 3) as well as avoiding negative effects on employment reallocation (see OECD, 2010). Other countries, with different legal tradition and strong social preference for a relatively high level of protection, have more generally taken some steps – albeit sometimes timid – in the direction of making termination costs for different contracts converge towards a uniform rate. The clearest example is perhaps the 2013 Slovenian reform, which equalised the level of severance pay across contracts, while simultaneously significantly enlarging the definition of fair dismissal.[67] Nevertheless, the judicial review of the reasons of dismissal remains extensive and reinstatement orders in the case of unfair dismissals are still, *de jure* and *de facto*, the main avenue for redress, thereby maintaining a significant gap in potential termination costs across contracts. Although much less extensive, the recent Spanish, French and Italian reforms go in the same direction.[68] However, by leading only to a very limited convergence of expected termination costs across contract types, these reforms are unlikely to radically change the functioning of the labour market in these countries.

While convergence of termination costs across contracts at a level that is not overly high is likely to reduce duality without negatively affecting efficient reallocation of resources and therefore employment and productivity growth, reforms of termination rules for employment contracts will not eliminate all forms of duality. Indeed, as long as differences across social protection regimes, including employers' costs, applicable to different contracts are not eliminated, employers will have a strong incentive to employ those under more favourable regimes. In fact, social security regimes are often different between employees and dependent self-employed and there are few countries in which social security contributions vary across employment contracts and are less favourable for temporary employees. For example, in Hungary, certain seasonal and temporary employees can be employed under a simplified

employment contract for which employers pay a flat daily rate of social contributions, giving employees entitlement to emergency healthcare, unemployment benefits and limited pension coverage, but not other forms of social security (Frey 2011). Moreover, although in principle guaranteed by anti-discrimination law, it might be difficult for temporary employees to take advantage of the right to sick and parental leave while under the threat of non-renewal (non-conversion) of the contract (Ichino and Riphahn, 2005).

Ultimately, it should also be recognised that certain jobs are likely to last longer, while others are likely to be more volatile, no matter how terminations are regulated in different contracts. Independently of their contract, therefore, workers who remain trapped in bad jobs, characterised by high job insecurity, are likely to experience more frequent non-employment spells. These workers are less likely to make sufficient contributions to be entitled to unemployment benefits when out of work. Moreover, they will, in many cases, accumulate lower pension rights – in contribution-based pension systems – and have worse access to health insurance – in countries where its coverage is entirely or partially dependent on the employment status.

Conclusions

This chapter uses the concept of non-regular employment, defined as all types of employment that do not benefit from the same provisions in term of employment protection as regular, open-ended contracts, to characterise labour market duality and capture inequalities in job security – one key dimension of job quality – across contracts. To document the size of the phenomenon, the chapter also provides new evidence on the share of dependent self-employed worker, a category of workers usually in a situation of economic and personal dependence. Some key recent patterns can be observed: temporary employment continues to be widely used in a number of OECD countries, even if permanent employment remains the most prevalent form of dependent employment contract. Moreover, beyond the multitude of types of existing employment contracts, contracts for services tend to be increasingly used as an alternative to regular open-ended contracts. Non-regular workers are not easy to characterise as a category since temporary workers and own-account self-employed have different profiles. But the portrait that emerges from available data confirms that temporary jobs are disproportionately held by younger, less-educated and lower-skilled workers, and are not a voluntary choice for most employees.

Furthermore, non-regular workers – be they temporary employees or DSEWs – are generally less protected by labour legislation against termination of the employment relationship. One clear point that emerges from the detailed review of legislation applying to these workers is the wide disparities in termination costs between regular and non-regular workers, which seem to trigger *de facto* differences in job quality (see also Chapter 3). The evidence presented in the chapter suggests that the majority of non-regular workers tend to display worse outcomes in terms of perceived job security and wages, even though the situation differs across countries and contracts: non-regular workers, notably fixed-term and TWA workers, appears to feel much more insecure than permanent employees as regards the risk of job loss, the probability of re-employment and the risk of costly job loss. More worrisome, even though non-regular contracts can be either a voluntary choice for certain workers or a stepping stone into stable employment for a number of them, notably youth, the low rates of transition from temporary to permanent contracts suggest that these inequalities tend to persist over time and may generate scarring effects.

As policy makers are increasingly aware of the danger of concentrating labour market adjustments mainly through non-regular jobs, some countries with stringent dismissal regulations for permanent contracts have made hiring on temporary contracts more difficult and costly, without much action as regards regulation on dismissal of permanent workers. Nevertheless, such a policy strategy is sometimes confronted with complex enforcement problems. In addition, the evidence presented in this chapter suggests that increasing restrictions on hiring regulations might adversely affect temporary workers by increasing their job insecurity. By contrast, reforms that relax regulations on dismissal of permanent workers have proved to be effective in reducing labour market dualism. However, for equity and political-economy reasons, given that not all workers would gain from these reforms, they should ideally be accompanied by adequate unemployment-benefit provision, conditional on properly enforced job-search requirements associated with well-designed activation packages, which nonetheless could be costly for public budgets and require significant administrative capacity.

Another way to alleviate labour market dualism is to enhance the convergence in termination costs between the different types of contracts, making regulation more homogeneous across contractual relationships. Recent proposals of single or unified employment contracts that have been put forward in the academic literature represent a radical version of such a convergence, since they would imply the disappearance of either all temporary contracts or of those for which termination costs could not be made equal to those applying to dismissal of permanent workers with equivalent job tenure. However, removing temporary contracts altogether brings the risk of introducing excessive rigidity in hiring decisions and could lead to employment losses. Conversely, a full convergence of termination costs at a relatively high level, while maintaining various forms of temporary contracts, would require addressing a number of practical issues whose solution is far from obvious, particularly in countries with a legal tradition of extensive judicial review of dismissal decisions. Indeed, the few countries that have implemented a significant convergence of termination costs across contracts are all countries with low degrees of employment protection and limited judicial review of contract terminations.

Overall, relaxation of overly strict employment protection for regular contracts – coupled with reforms in active and passive labour market policies – and/or some convergence towards adequately protective termination rules across contracts is likely to reduce duality while simultaneously allowing efficient reallocation of resources, and therefore employment and productivity growth. Nonetheless, other forms of duality – notably related to access to social protection and career progression – are likely to persist. Future research will have to focus on effective policy actions to alleviate these sources of inequality without jeopardising economic efficiency.

Notes

1. The concept of non-regular employment adopted here differs thus from that of atypical employment or non-standard forms of employment which would typically comprise either part-time work or all types of self-employment.
2. Lack of reliable cross-country comparable data prevents a systematic analysis of casual employment in this chapter.
3. In Poland, workers during the probationary period are automatically on a fixed-term contract.
4. A scatter plot between the share of fixed-term contracts and the incidence of contracts with duration below three months does not show any correlation.

5. For instance from 38.8% and 33.6% in 2006-07 to 21.2% and 15.9% in 2011-12, respectively, in Finland and Estonia.
6. Own-account self-employed workers are self-employed without employees.
7. For example, in Poland, there is a long history of some companies putting pressure on workers to convert their employment contract into a contract for services (see e.g. Zientara, 2008). This might explain the low rate of DSEWs, as measured with EWCS data, despite the fact that the phenomenon of DSEWs and its social implications are hotly debated in the country (OECD, 2014d). Indeed, according to the EWCS survey, about 1.6% of Polish employees declare having a contract that cannot be classified as either indefinite-term, or fixed-term, or TWA, or apprenticeship, against an average of only 0.6% in the other OECD countries covered by the survey.
8. Due to the lack of data, DSE workers are not included in that analysis. Data come from EU-LFS and national LFS covering thus fixed-term contracts and TWA employment.
9. The particularly high figure in Slovenia is largely driven by TWA (23% of youth employed in a temporary employment agency)
10. Literacy is defined as the ability to understand, evaluate, use and engage with written texts to participate in society, achieve one's goals, and develop one's knowledge and potential. Numeracy is defined as the ability to access, use, interpret and communicate mathematical information and ideas in order to engage in and manage the mathematical demands of a range of situations in adult life. Problem solving in technology-rich environments is defined as the ability to use digital technology, communication tools and networks to acquire and evaluate information, communicate with others and perform practical tasks.
11. Temporary employment covers fixed-term contracts and total TWA employment.
12. To be consistent with previous analysis.
13. However, in Australia, employees with no contract – most of which are likely to be casual workers – perform much worse than regular employees. The gaps in scores are statistically significant at the 1% level and quite large in size: 6.5% in literacy and numeracy and 4% in problem solving.
14. Further comparison performed by level of education to disentangle the respective effects of qualification and skills on differences in proficiency by contracts reveals that the gap in scores between temporary workers and permanent ones are strikingly high for low educated workers, in particular in the United Kingdom, but also in Sweden and Belgium (see OECD, 2014b).
15. The feedback from ILO staff – and in particular Mariya Aleksynska, Mélanie Jeanroy, Angelika Muller and Corinne Vargha – on the first draft of the sections of the questionnaire concerning non-regular contracts is gratefully acknowledged. Moreover, the contribution of Danielle Venn in the harmonisation of the country responses is gratefully acknowledged. Nevertheless, the OECD Secretariat retains full responsibility for its content and the analysis presented here.
16. The information presented below refers primarily to regulations imposed through legislation. However, where relevant, rules derived from case law and collective agreements are also referred to.
17. Seasonal and project work contracts are sometimes not allowed for employees. However, when this is the case, it is possible to make a contract for services to perform a project (or seasonal work) outside the employment relationship between an employer and an individual.
18. In some instances, these restrictions apply only in the case of successive contracts for the same job. For example, in France, a worker can be employed repeatedly by the same company on a standard fixed-term contract if this is done on different posts each time. In other cases, it is possible to obtain a derogation from restrictions imposed by regulations if the justification of the fixed-term contract changes. For instance, in Sweden, the two-year maximum cumulative duration of contracts applies for each type of contract, so that one worker can be employed on fixed-term contracts for more than two years by changing the reason for a fixed-term contract, provided that these reasons can be successfully defended in courts (see Engblom, 2008).
19. Austria, Denmark and Turkey also do not put restrictions on the number or duration of contracts, but their renewal must be based on objective reasons (as for the first contract in the case of Turkey).
20. In 2010, the Hungarian labour code was modified to allow "simplified employment" of seasonal and temporary workers in an attempt to counter widespread informality and tax and social security evasion among seasonal workers. Under those rules, firms can employ workers for up to 120 days per year in seasonal jobs in agriculture or tourism, and in "temporary" jobs in other industries. Temporary workers can work for up to five consecutive days, 15 days per month and 90 days per year. There are no quotas on the use of seasonal workers, but temporary workers are

limited at around 20% of total employment in the user firm. Simplified employment does not require a written employment contract (unlike standard employment in Hungary) but workers must be registered. Registration can be done quickly online or by mobile phone.

21. Synchronisation is also mandatory in France in the case of fixed-term contracts between the agency and the worker.

22. In many countries, the amount due as compensation is equivalent to wages due for the remaining contract period had the contract not been terminated.

23. Under the Employees' Income Provision Act (BMSVG) of 2002, employers withhold a legally defined contribution from an employee's monthly pay and transfer this contribution to the employees' chosen income provision fund. In the case of dismissal by the employer, an employee with at least three years of job tenure can chose between receiving his/her payment from the account, or saving the entitlement towards a future pension. If the employee quits or if job tenure is shorter than three years, no severance payment will be made but the balance of the account is carried over to the next employer. The amount of severance pay will depend on the capital accrued in the fund, the investment income earned and the capital guaranteed.

24. Yet, it might be more difficult to successfully make a claim of unfair dismissal in the case of termination at the end date in all these countries than in the case of termination of a regular contract.

25. Unemployment insurance contributions paid by employers on regular contracts are equal to 1.31% of the gross wage.

26. Subsidies for the conversion of fixed-term contracts into open-ended ones also exist in other countries (e.g. Japan), but without fiscal disincentives for FTCs.

27. The rules concerning termination of regular contracts usually apply in the case of open-ended TWA contracts.

28. Act No. 262/2006 Coll., Part 3, as amended in 2012. However this group of workers represent only a fraction of all DSEWs in the country.

29. Yet, in countries for which employment protection for regular employees is limited (such as the United States or many Canadian provinces; see e.g. OECD, 2013a), avoiding misuses of the category of self-employed is more a fiscal and social protection issue.

30. Civil-law countries are countries with a codified civil code. They are typically contrasted with common-law countries (notably English-speaking countries and Israel) where customs and precedents, as reflected in case law, are equally important in defining legislation. A number of countries, such as most Nordic countries, fall in between these two extreme categories.

31. In most countries, the legal tests are applied in a holistic manner, meaning that they are used for guidance but the relative importance of each of them is determined by the specificity of each case.

32. In Australia, the 2009 Fair Work Act (Sec. 358) also prohibits the dismissal or the threat of dismissal of an employee in order to re-engage this person as independent contractor to perform substantially the same type of work.

33. In order to capture unobserved heterogeneity, following Wooldridge (2002), the distribution of the individual effects is parameterised as a linear function of the initial employment status at the first wave of the panel and of the time means of the regressors (see OECD, 2014a, Box 2.1).

34. Subjective measures have been increasingly receiving attention from statisticians and economists over the last 15 years (Stiglitz et al., 2009) as adding significant valuable information alongside more conventional measures due to their intrinsic value and the fact that they capture the impact of factors not picked up elsewhere (see Chapter 3)

35. Figure 4.10 is also based on a sample excluding workers with more than eight years of job tenure. 95% of fixed-term workers in the sample have eight years of job tenure or less, therefore in practice this filter allows restricting the analysis to a common statistical support.

36. This does not exclude, however, that the results presented here could be affected by selectivity, which could occur if EPL affects unobservable characteristics of workers in different contracts in a way that is correlated with job security but uncorrelated with observable characteristics included in the specifications.

37. When countries are grouped in only two groups (high and low EPRC index), the difference across groups is significant at the 5% level.

38. Due to the small number of observations with TWA contracts in certain group of countries, it is not possible to differentiate between TWA contracts and standard FTCs in Figure 4.11.
39. The share of regular workers who perceive that there is a high risk of job loss varies relatively little across country groups.
40. The fact that results are similar when using dichotomous variables of high and low EPL and quantitative indicators is particularly reassuring. In fact, estimate effects of quantitative indicators are particularly sensitive to outliers with high leverage (that is at the top or the bottom of the distribution). By contrast, those of dichotomous variables are sensitive to outliers with low leverage (close to the centre of the distribution). This suggests that outliers are not an issue here.
41. However, EPL indicators appear to affect perceived job security only in the case of fixed-term employees, while no such effect is estimated in the case of TWA workers.
42. Again, comparing Figure 4.10 with Figure 4.11, it is possible to conclude that these percentage-point differences are quite large.
43. Reasons for use of FTCs or TWA employment, administrative burden for TWAs and requirements of equal treatment of TWA employees.
44. Yet, as discussed in Section 1, most fixed-term workers declare themselves to be involuntary.
45. A negative effect of churning on job satisfaction emerges only when controlling for the wage level, thereby suggesting that higher wages and churning compensate each other in terms of well-being.
46. This is likely to be especially an issue for the least educated, since their unemployment spells tend to be longer (see e.g. OECD, 2012).
47. General training usually defines training that imparts skills that can be used also with other firms. It is typically opposed to firm-specific training that provides competences that are of little use in other firms.
48. This approach was standard in early studies – see e.g. Amuedo-Dorantes (2000) and Dekker (2007) for a survey.
49. The estimates are obtained using the same data sources and methods as for Figure 4.9 above, and notably controlling for initial conditions. This approach has been recently used also by Buddelmeyer and Wooden (2010) for Australia, who find that having a causal job reduces the probability of being in a permanent job one year later with respect to being unemployed, and by Picchio (2008), who finds that, in Italy, being in a temporary job increases the probability of being in a permanent job two years later by about 15 percentage points.
50. These findings appear nonetheless consistent with other evaluations of labour market reforms facilitating temporary contracts while leaving regulations for permanent contracts unchanged. In fact these evaluations tend to show that these reforms lead to substitution of temporary for permanent positions with no overall increase in employment.
51. Exceptions are Iceland, Hungary, Norway and the Slovak Republic, where the transition rate is however below 60%. The low rate for the Netherlands can partially be explained by the high incidence of part-time in that country.
52. For example, for certain workers, low transition rates into regular contracts may not reflect that they initially had a temporary contract, but may instead reflect that the nature of their occupation requires such a type of contract (e.g. seasonal workers, media industry, etc.).
53. According to the same data, in all of these countries, less than 5% of permanent workers in a given year are employed in a temporary job three years later.
54. Including both non-regular and part-time workers.
55. The findings of Autor and Houseman (2010), Garcia-Pérez et al. (2014) and Jahn and Rosholm (2014) mentioned above can also be interpreted as evidence of a temporary job trap in the United States, Spain and Denmark, respectively, for selected group of workers.
56. The contribution of Michele Pellizzari from the University of Geneva to the analysis of temporary contracts and training referred to here is gratefully acknowledged.
57. In addition, the point estimates for these two countries are sensitive to the treatment of workers without contract. If these workers were included within non-regular workers in Australia – assuming that most of them are casual workers – the estimated effect of non-regular employment status would become negative. Similar results emerge if workers with no contract are excluded from regular workers in the United States.

58. These might concern also a reduced employability of workers if they spend too much time in one job.

59. For example, the proposal of *Contratto Unico di Inserimento*, put forward by Boeri and Garibaldi (2008) in the Italian context, envisaged an "entry" phase (up to three years) during which the worker has the right to severance payments proportional to tenure and, in case of unfair dismissal (dismissal without just cause), up to six months in severance payments (five days per month); this would be followed by a "stability" phase, during which the worker would get a permanent contract with no changes in his/her rights in case of termination (notably, in case of unfair dismissal, the right to reinstatement in firms above 15 employees and six months of severance pay in small firms).

60. An extreme version of this proposal consists in an extension of the trial period, sufficient to make fixed-term contracts unattractive, without any changes in termination costs for dismissing permanent workers after the trial period. In this case, however, threshold effects are likely to be of paramount importance. Moreover, an extended probationary period could be considered in contrast with supranational legislation, such as Convention 158 of the ILO for the countries that ratified it. In fact, Article 2 of this convention stipulates that probationary periods should be of reasonable duration. On this basis, in France (one of the countries that ratified Convention 158) the *Contrat Nouvelle Embauche* that was introduced in 2005 and allowed a two-year trial period under certain conditions was subsequently annulled by the administrative high court because it was considered in violation of the ILO convention.

61. For example, the Spanish proposal developed in 2009 by academic economists in favor of a *Contrato Unico* (Abadie et al., 2009) envisaged a more than proportional increase of severance pay with job tenure from 12 to 36 days per year of service, the latter amount being between compensation levels in the cases of fair and unfair dismissal in Spain in 2009.

62. The Austrian income provision fund follows closely this scheme, although without suppressing non-regular contracts (see Section 2).

63. The US system of experience rating in unemployment-insurance premia paid by firms is one example of such a tax scheme, even though with no lump-sum payment at the time of dismissal.

64. See STS 20-9-13, Rec. 11/2013, and STS 27-1-14, Rec. 100/2013. The latter concerns a case of unilateral opting-out of a collective agreement for economic reasons, but the court motivates its decision by restating the general principle that the judge has to assess the reasonable correspondence between the alleged reason and the managerial decision.

65. See, for example, Trib. Bologna, 15 Oct. 2012, est. Marchesini; Trib. Milano, 19 Dec. 12, est. Scarzella; Trib. Roma, 14 Jan. 13; est. Valle; Trib. Milano, 24 Jan. 13, est. Lualdi and Trib. Ravenna, 18 March 13, est. Riverso.

66. For example, in Germany, in the case of dismissal for economic reasons, employees can trade their right to contest their dismissal in court against a guaranteed minimum severance payment (and the right to claim unemployment benefits). Conversely, if they file a complaint and they lose the trial, they would get no compensation.

67. Recently, the Dutch government also approved a bill on similar lines that, however, still needs to be approved by the parliament.

68. See Box 4.3 above for Italy. In France, a reform of the labour code approved by Parliament in May 2013, facilitated dismissals for economic reasons while, simultaneously, increasing social security contributions for short-term contracts and a tax rebate in the case of conversion (see Section 2). In Spain, the 2010 and 2012 reforms introduced various provisions reducing the cost and difficulty of dismissals of permanent workers while, simultaneously, increasing severance pay at the end of a fixed-term contract (from eight days before the reform to 12 days per year of service in 2015). For firms with less than 25 employees, this was planned to gradually equalise termination costs across contracts in the case of fair termination, since these firms were entitled to a subsidy covering part of their severance pay in the case of fair dismissal, thereby reducing severance costs borne by employers to 12 days per year (see OECD, 2014c). The subsidy was, however, suppressed in December 2013, thereby making termination costs diverge again.

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ANNEX 4.A1

Additional tables and figures

Figure 4.A1.1. **Temporary employment by industry, 2011-12, people aged 25 to 54**

Percentage of all employees in each industry

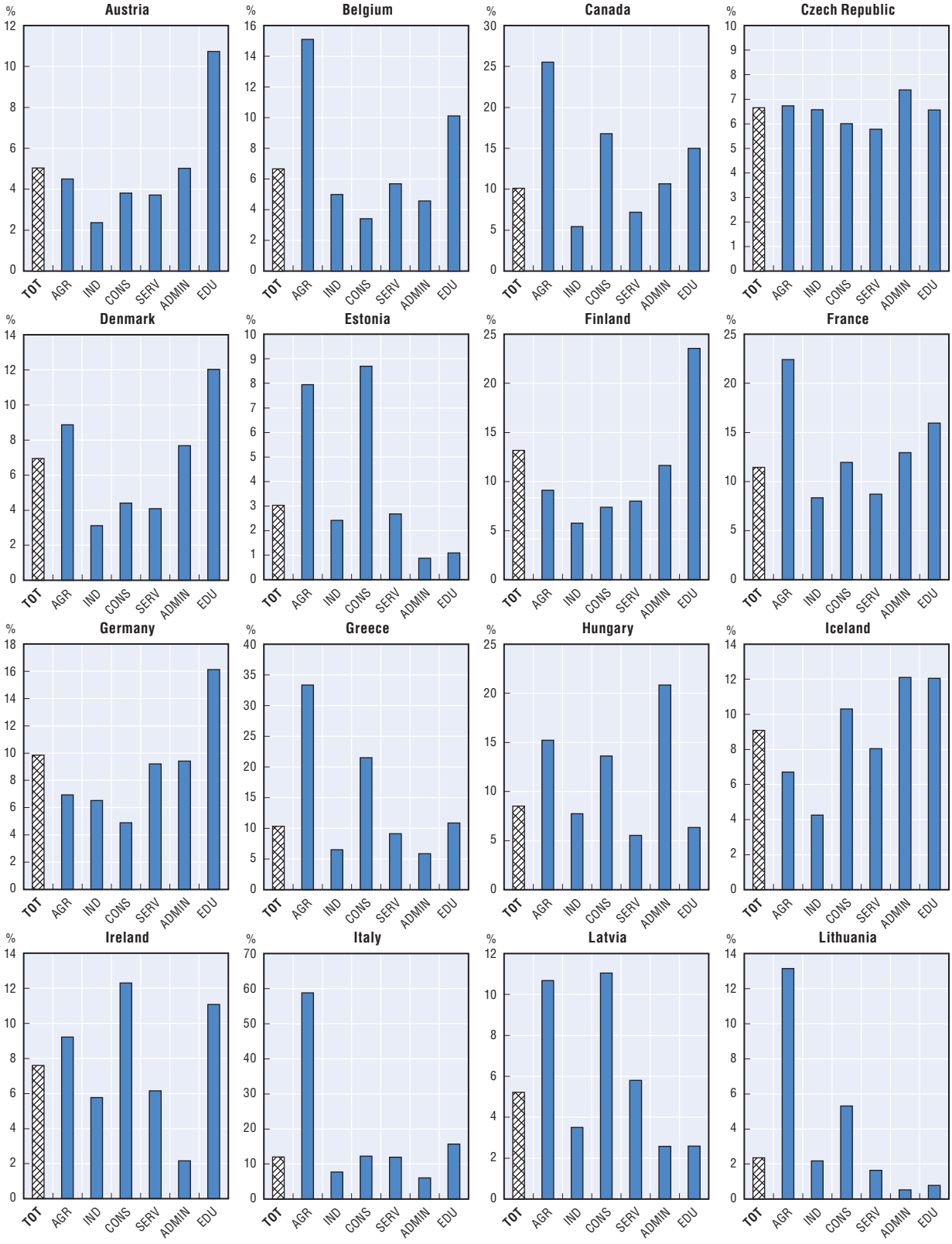
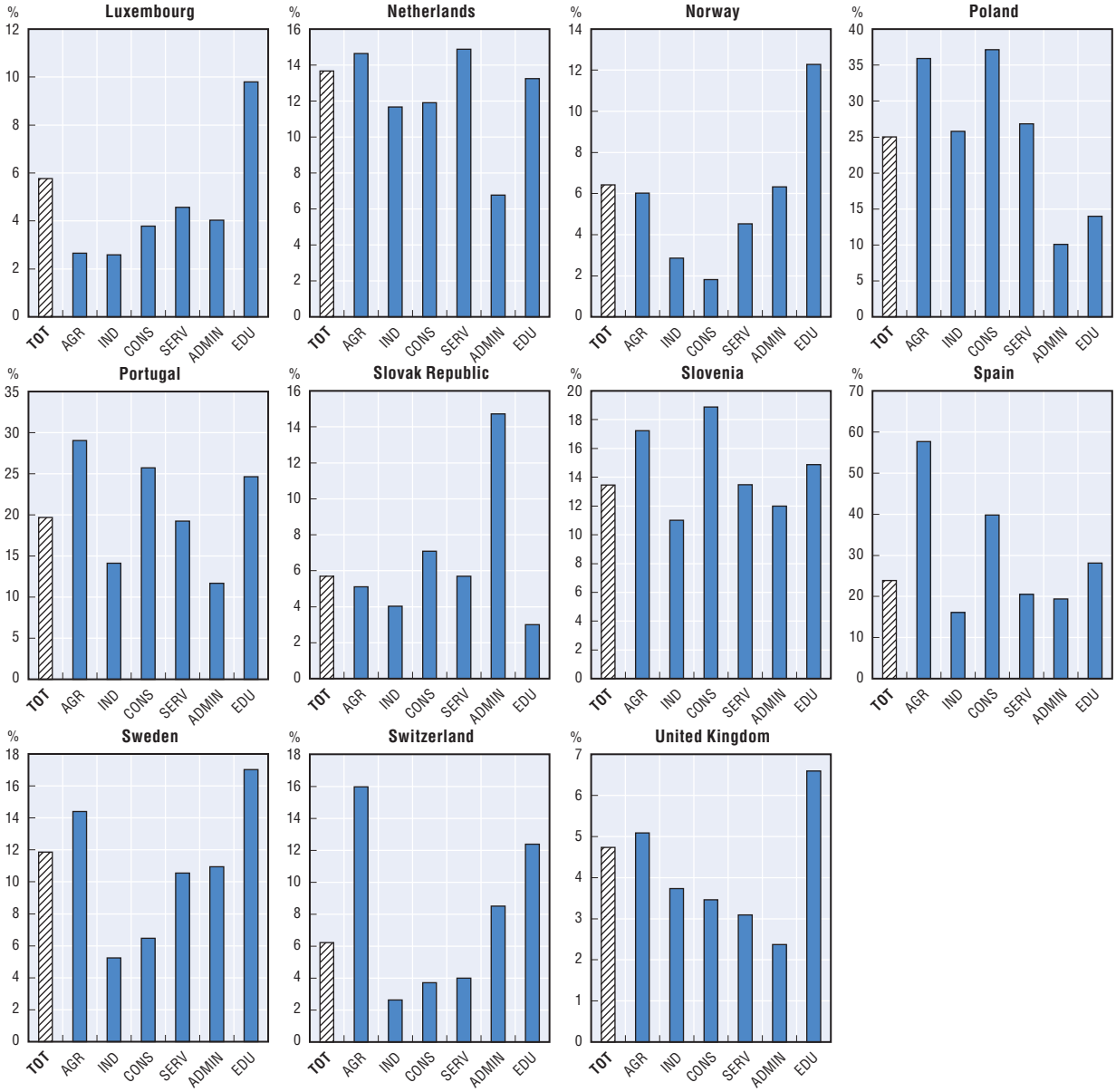


Figure 4.A1.1. **Temporary employment by industry, 2011-12, people aged 25 to 54** *(cont.)*

Percentage of all employees in each industry



Note: Canada: The education, social and entertainment industry includes information (Sector 51) of the NAICS 2002. Other services (sector 81 of the NAICS 2002) are excluded.

TOT: Total; ADMIN: Public administration and defence, compulsory social security; AGR: Agriculture, forestry and fishing; CONS: Construction; EDU: Education, social and entertainment services; IND: Industry; SERV: Commercial services.

Source: OECD calculations based on the European Union Labour Force Survey (EU-LFS) microdata and national labour force surveys.

StatLink http://dx.doi.org/10.1787/888933132830

Table 4.A1.1. **Seasonal and project work contracts**

	Seasonal contracts			Project work contracts		
	Contract end can be end of season (without specific date)?	Do FTC rules apply?	Other restrictions/requirements	Contract end can be end of project (without specific date)?	Do FTC rules apply?	Other restrictions/requirements
Australia	Yes	Yes	None	Yes	Yes	None
Austria[a]	Yes	Yes	End of the "season" must be properly specified in the contract. Can only apply to truly seasonal work, e.g. agriculture, construction.	Yes	No	Project-work contracts allowed as contracts for work and services. Cannot apply to work that is part of the employer's core business.
Belgium	No	Yes	End of contract must be defined by a specific date or an event at a known date.	Yes	Yes	The contract must describe in detail the work to be undertaken.
Canada	Yes (except in British Columbia)	Yes	Some jurisdictions require employers to provide a minimum notice of termination before ending a seasonal contract that is over a certain duration (typically 12 months).	Yes (except in British Columbia)	Yes	Some jurisdictions require employers to provide a minimum notice of termination before ending a project work contract that is over a certain duration (typically 12 months).
Chile	Yes	Yes	Seasonal contracts can only be used in agriculture, arts and entertainment and for professional football players. If there are numerous seasonal contracts between the same parties with little break in between, courts can find that a permanent employment relationship exists.	Yes	Yes	The event that signifies completion of the work must be defined and known to the parties in advance. If there are numerous project work contracts between the same parties with little break in between, courts can find that a permanent employment relationship exists.
Czech Republic[a]	Yes	No	Seasonal employment only allowed as work performed outside an employment relationship.	Yes	No	Project-work contracts only allowed as work performed outside an employment relationship.
Denmark	Yes	Yes	None	Yes	Yes	None
Estonia	Yes	Yes	None	Yes	Yes	None
Finland	No	Yes	None	No	Yes	Projects must have a specified start and end date and concern activities outside the normal business of the firm.
France	Yes	Yes	Courts do not generally recognise activities that take place year-round as seasonal work.	Yes	Only for termination at end of contract.	Project contracts can only be entered into if allowed in CAs. Contracts must specify the outcome of the project, have a duration of 18-36 months and cannot be renewed. Contracts can be terminated before the end of the project (between 18 and 36 months) for real and serious reasons by giving two months' notice.
Germany	Yes	Yes	At least two weeks advance notice for the date of end of season.	Yes	Yes	At least two weeks advance notice for the date of end of project.
Greece	Yes	Yes	Applies to seasonal hotel workers and tour bus drivers. Contract period defined by the operation period of the seasonal business. Termination possible during the contract period subject to FTC rules or in the off-season (abolishing the employee's right to be rehired) by the payment of compensation.	Yes	Yes	If the contract has been in place for 3+ years or renewed more than three times and the work undertaken is part of the fixed and permanent needs of the company, the contract will be converted into one of indefinite duration.

Table 4.A1.1. **Seasonal and project work contracts** *(cont.)*

	Seasonal contracts			Project work contracts		
	Contract end can be end of season (without specific date)?	Do FTC rules apply?	Other restrictions/requirements	Contract end can be end of project (without specific date)?	Do FTC rules apply?	Other restrictions/requirements
Hungary	Yes	Yes	Seasonal employment is allowed in agriculture and tourism up to 120 days per calendar year, or on an ad hoc basis in other industries for no more than five consecutive days and 15 days/month and 90 days/year.	Yes	Yes	None
Ireland	Yes	Yes	Case law has deemed some seasonal workers to be part-time on open-ended contracts (with hours averaged over a year).	Yes	Yes	Employee must be informed in writing of the objective condition determining the contract (e.g. completion of a specific task).
Israel	Yes	Yes	For the purposes of severance pay, a season is defined as working 60+ days over three consecutive months. A worker who works two consecutive seasons is entitled to severance pay.	Yes	Yes	None
Italy[a]	Yes	Yes	None	Yes	Yes	Cannot apply to work that is part of the employer's core business; project must be described in detail in the contract with specific reference to the final result.
Japan	Yes	Yes	None	Yes	Yes	None
Korea[b]	Yes	Yes	None	Yes	Yes	None
Luxembourg	Yes	Yes	Allowed for agriculture and tourism-related work and for retail, hospitality and transport work where there is a predictable increase in workload due to seasonal factors. Contract cannot be longer than ten successive months in duration. Renewal for more than two seasons transforms the contract to one of indefinite duration.	..	..	..
Netherlands	Yes	Yes	None	Yes	Yes	None
New Zealand	Yes	Yes	If employer does not outline in writing the way in which the contract will end (e.g. at the end of the season), the contract is assumed to be for an indefinite period.	Yes	Yes	If employer does not outline in writing the way in which the contract will end (e.g. at the end of the project), the contract is assumed to be for an indefinite period.
Norway	Yes	Yes	None	Yes	Yes	The work must be organised in projects and work requirements must be temporary.
Poland	Yes	Yes	None	Yes	Yes	None
Portugal	Yes	Yes	As well as FTCs, very short term contracts are also possible for seasonal agricultural work or tourist events, where the worker does not exceed 60 days per year with the same employer.	Yes	Yes	Available for civil construction work, public works and industrial assembly or repair.

Table 4.A1.1. **Seasonal and project work contracts** *(cont.)*

	Seasonal contracts			Project work contracts		
	Contract end can be end of season (without specific date)?	Do FTC rules apply?	Other restrictions/requirements	Contract end can be end of project (without specific date)?	Do FTC rules apply?	Other restrictions/requirements
Slovak Republic[a]	Yes	Yes	The performance of seasonal work which repeats every year and does not exceed eight months in the calendar year is an objective reason for renewing/extending FTCs more than three times within three years.	Yes	No	Project-work contracts allowed as contracts for work and services.
Slovenia[c]	Yes	Yes	None	Yes	Yes	The type of work for which project contracts can be made is defined in CAs The contract can exceed the normal two year limit if the project has a duration of more than two years and the contract is for the entire duration of the project.
Spain	Yes	Yes	None	Yes	Yes	Maximum duration is three years, with an extension of up to 12 months if allowed in CAs.
Sweden	Yes	Yes	The season must have a definite end date or the circumstances that cause the season to end must be specified. It is also possible to have a contract of indefinite duration where the worker is only required to work during specific seasons. In this case, dismissal rules for regular contracts apply.	Yes	Yes	The contract must have a specific end date or specify the circumstances that cause termination of employment. Other forms of project work contracts may be entered into by CAs.
Switzerland	Yes	Yes	None	Yes	Yes	None
Turkey	Yes	Yes	None	Yes	Yes	None
United Kingdom	Yes	Yes	None	Yes	Yes	None
United States[d]	Yes	Yes	None	Yes	Yes	None

.. Information not available; CA: Collective agreement; FTC: Standard fixed-term contract.

a) Project workers are dependent self-employed workers (DSEWs).

b) In principle, contracts without a fixed end date are prohibited in Korea. However, where the contract period is not specified (such as in the case of a seasonal or project-based engagement), a specific contract period is assumed by taking into account the intentions of the employer and employee and the nature of the work.

c) In Slovenia, a special civil law work contract can be made with a foreign worker for the purposes of seasonal work in the agriculture or forestry industries for up to 30 days up to three times within a calendar year.

d) In the United States, people are generally free to contract for various types of employment relationships. The United States does not have regulations specifically governing fixed-term, seasonal or project work contracts.

Source: 2013 OECD EPL questionnaire.

Table 4.A1.2. **Temporary work agency employment**

	Restrictions on renewals and duration of TWA assignments and contracts				Termination before end date of the TWA contract	
	Assignments with user firm	Fixed-term contracts	Open-ended contracts allowed?	Pay between assignments?[a]	Acceptable reasons	Termination cost/difficulty
Australia	No limit	No limit	Yes	Depends on arrangement between worker and TWA	General rules apply[b]	General rules apply[b]
Austria	No limit	An objective reason is needed for contract with TWA to be other than open-ended.	Yes	Yes	General rules apply[b]	General rules apply[b]
Belgium	Maximum duration is 3-18 months depending on the reason for using TWA workers.	General rules for FTCs apply. Assignments and contracts must be synchronised.	No	Not applicable	General rules apply[b]	General rules apply[b]
Canada	No limit	No limit	Yes	Not specified in legislation	General rules apply[b]	General rules apply[b]
Chile	Generally 90-180 days	General rules for FTCs apply.	Yes	Yes	General rules apply[b]	General rules apply[b]
Czech Republic	12 months maximum except if agreed by employee or to replace worker on maternity leave.	General rules for FTCs apply	Yes	Yes	General rules apply[b]	General rules apply[b]
Denmark	No limit	No limit	Yes	Not specified in legislation	General rules apply[b]	General rules apply[b]
Estonia	General rules for FTCs apply	General rules for FTCs apply	Yes	Yes	General rules apply[b]	General rules apply[b]
Finland	No limit	General rules for FTCs apply	Yes	Not specified in legislation	General rules apply[b]	General rules apply[b]
France	General rules for FTCs apply	General rules for FTCs apply. If fixed-term, assignments and contracts must be synchronised.	Yes	Yes with a floor 15%-25% above the minimum wage.	General rules apply.[b] Termination of assignment by the user firm is not *per se* a justified reason for dismissal or termination before the end date.	General rules apply[b]
Germany	24 months in the metalworking sector (set by CA). No limit elsewhere.	General rules for FTCs apply	Yes	Yes. If a CA applies, the worker is paid their normal wage. If there is no CA, they must be paid at least the minimum wage for the sector.	General rules apply[b]	General rules apply[b]
Greece	General rules for FTCs apply	General rules for FTCs apply	Yes	Yes, at minimum wage provided for in national CA	General rules apply[b]	General rules apply[b]
Hungary	Maximum duration of five years including any breaks of less than six months between successive contracts.	General rules for FTCs apply	Yes	Yes by agreement.	General rules apply[b]. In addition, contract can be terminated by the TWA if the user firm terminates the assignment.	General rules apply[b]. If the contract is terminated because the assignment is terminated by the user firm, the TWA must give the worker 15 days' notice.
Ireland	No limit	No limit	Yes	Yes	Worker's fault, worker capability, lack of assignments and end of assignment with the user firm.	General rules apply[b]

Table 4.A1.2. **Temporary work agency employment** *(cont.)*

	Restrictions on renewals and duration of TWA assignments and contracts				Termination before end date of the TWA contract	
	Assignments with user firm	Fixed-term contracts	Open-ended contracts allowed?	Pay between assignments?[a]	Acceptable reasons	Termination cost/difficulty
Israel	If an employee is employed by the same user firm continuously for more than nine months, the employee is deemed to be an employee of the user firm. A break of more than nine months is required for two assignments to not be considered successive.	General rules for FTCs apply	Yes	Not regulated	General rules apply[b]	General rules apply[b]
Italy	Yes, set out in CAs. The current agreement stipulates no limit for assignments if open-ended and 36 months if fixed-term.	Yes, set out in CAs. The current agreement stipulates 42 months for contracts if fixed-term.	Yes	Yes, the worker is paid an allowance	General rules apply[b]	General rules apply[b]
Japan	Three years maximum duration, with at least three months required between assignments for them to not be considered successive. In a limited number of specified occupations there is no maximum duration.	General rules for FTCs apply, except in specified occupations, where there is no limit.	Yes	Not regulated	General rules apply[b]	General rules apply[b]
Korea	Maximum duration: 24 months (six months in case of temporary and intermittent work).	Maximum two years per contract. No limit to the number of successive contracts.	Yes	Yes	General rules for FTCs apply	General rules for FTCs apply
Luxembourg	12 months maximum duration, with break of 1/3 contract duration between contracts.	12 months maximum duration, with break of 1/3 contract duration between contracts.	Yes	..	Serious reasons such as death of employer	Compensation for the remainder of the contract period must be paid.
Netherlands	No limit	After 3.5 years of cumulation of TWA-contracts, the last fixed-term contract will be altered into a contract for an indefinite period with the TWA.	Yes	Yes, workers receive 90% of average wage they received for previous assignment.	Capability and fault of the worker. End of assignment at the user firm and illness can be specified in advance as acceptable reasons for termination.	General rules apply[b]
New Zealand	No limit	General rules for FTCs apply	Yes	Depends on the agreement, generally no requirement for pay during non-work periods.	General rules apply[b]	General rules apply[b]
Norway	General rules for FTCs apply	An objective reason is needed for contract with TWA to be other than open-ended. General rules for FTCs apply.	Yes	Generally no	General rules apply[b]	General rules apply[b]

Table 4.A1.2. **Temporary work agency employment** *(cont.)*

	Restrictions on renewals and duration of TWA assignments and contracts				Termination before end date of the TWA contract	
	Assignments with user firm	Fixed-term contracts	Open-ended contracts allowed?	Pay between assignments?[a]	Acceptable reasons	Termination cost/difficulty
Poland	Maximum of 18 months with the same user firm within 36 month period, with a break of 36 months before working for the same user firm again.	General rules for FTCs apply	No	Not applicable	Termination is possible for reasons related to the worker and to the user firm.	Written notice of dismissal must be given three days in advance (for contracts up to two weeks) or one week in advance (for contracts of 2+ weeks). Compensation of up to three months' salary is paid for UNFD.
Portugal[c]	Maximum two years duration, with interval of 1/3 of contract duration between contracts.	Maximum two years duration, with interval of 1/3 of contract duration between contracts.	Yes	Yes, the worker is paid 2/3 of the previous wage or national minimum wage, whichever is more favourable.	General rules apply[b]	General rules apply[b]
Slovak Republic	No limit	General rules for FTCs apply	Yes	Yes	General rules apply[b]	General rules apply[b]
Slovenia	No limit	General rules for FTCs apply	Yes	Yes, as agreed in contract. Pay between assignments may not be lower than 70% of minimum wage.	General rules apply.[b] Termination of assignment by the user firm is not *per se* a justified reason for dismissal or termination before the end date.	General rules apply[b]
Spain	General rules for FTCs apply	General rules for FTCs apply	Yes	No	General rules apply[b]	General rules apply[b] plus four extra days of severance pay
Sweden	No limit	General rules for FTCs apply except if stipulated otherwise in CAs. The CA for blue-collar workers limits duration of fixed-term contracts between the agency and the worker to 12 months.	Yes	Required in main collective agreements.	General rules apply[b]	General rules apply[b]
Switzerland	Chains of assignments of the same workers on the same post in the same firm are not allowed.	General rules for FTCs apply	Yes	Yes if the employee is paid monthly, no if the employee is paid hourly.	Termination with notice can occur for any reason if specified in the contract. Termination for cause is always possible.	General rules apply,[b] but with shorter notice period (two days for < three months; seven days for 4-6 months).
United Kingdom	No limit	No limit	Yes	Generally no	General rules apply[b]	General rules apply[b]
United States	No limit	No limit	Yes	Not regulated	General rules apply[b]	General rules apply[b]

.. Not available; CA: Collective agreement; FTC: Standard fixed-term contract; UNFD: Unfair dismissal.

a) Assuming the worker has an open-ended contract and that he/she remains available for a new assignment.

b) Dismissal rules for fixed-term or open-ended contracts apply, depending on the type of contract in effect between the employee and the agency.

c) In Portugal, the maximum duration of assignments is six months when filling a vacancy that arises during a recruitment process or 12 months for a temporary increase in workload. The minimum duration of the interval between contracts does not apply for seasonal fluctuations in workload or for a new absence of a worker for whom the temporary worker was the replacement.

Source: 2013 OECD EPL questionnaire; OECD (2013), "Detailed Description of Employment Protection Legislation, 2012-2013", *www.oecd.org/els/emp/oecdindicatorsofemploymentprotection.htm*.

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Chapter 5

The role of skills in early labour market outcomes and beyond

This chapter draws on the OECD's international Survey of Adult Skills to shed light on how different skills contribute to two key labour market outcomes for young people (16 to 29): the risk of not being in employment nor in education or training and, if in work, the level of hourly wages. The skills areas covered include: educational attainment; information-processing skills (literacy, numeracy, and problem solving in technology-rich environments); generic skills (the ability to organise one's own work or influence that of others, to work in a team and to solve complex problems); and skills specific to fields of study and training. The chapter also assesses the extent to which employers make the best use of young people's skills in the labour market and identifies those skills areas most prone to mismatches between what workers can do and what their job demands. Finally, the chapter identifies the main policy levers that are most likely to influence the way in which employers recognise and reward their employees' skills. This provides new insights to policy makers, strengthening previous findings based chiefly on returns to education.

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 draws on the OECD's international Survey of Adult Skills to shed light on how different skills contribute to two key labour market outcomes for young people (16 to 29): the risk of not being in employment nor in education or training and, if in work, the level of hourly wages. The skills areas covered include: educational attainment; information-processing skills (literacy, numeracy, and problem solving in technology-rich environments); generic skills (the ability to organise one's own work or influence that of others, to work in a team and to solve complex problems); and skills specific to fields of study and training.

The chapter also assesses the extent to which employers make the best use of young people's skills in the labour market and identifies those skills areas most prone to mismatches between what workers can do and what their job demands. Finally, the chapter identifies the main policy levers that are most likely to influence the way in which employers recognise and reward their employees' skills. This provides new insights to policy makers, strengthening previous findings based chiefly on returns to education. The key findings of the chapter are the following:

- Skills do matter for labour market outcomes. Individuals with lower educational attainment and weaker information-processing skills are more likely to be neither in employment nor in education or training (NEET) and this association increases with age.
- It is not just educational attainment but also the type of skills acquired and proficiency in these skills that affect the probability of finding a job and its level of pay. All four skills areas – education, information-processing, generic skills and those related to field of study – are found to be significantly and independently associated with the level of hourly wages. The strength of the association between education and hourly wages is lower but not eliminated when the other skill areas are included in standard wage regressions. This confirms that education provides more than just the skills captured by the other three areas. It also demonstrates that individuals with similar levels of educational attainment vary in their information-processing proficiency, which may reflect differences in innate ability as well as variation in the quality and degree of skills acquisition, both in and outside the education system.
- Educational attainment is a key signalling device when a young person enters the labour market. All other things being equal, educational attainment and specific skills related to field of study have a strong effect on entry wages, although the education-wage relationship weakens somewhat with age/experience. College graduates receive sizeable wage *premia*, although those who have degrees in the humanities or in teacher training and education earn less than social science graduates. Over time, employers learn about their workers' unobserved productivity and signals delivered by formal qualifications become less important in setting wages. Such employer learning is observed in many, though not all, countries.

- The link between skills and wages changes with age, partly reflecting skills acquired through work experience. For youth, the level of education is the biggest single contributor to the variance in young people's hourly earnings, followed closely by generic skills and those related to specific fields of study and training. Information-processing skills appear to play only a minor role for this age group. For prime-aged and older workers, specific field of study skills account hardly at all for variations in hourly wages, while the contribution of information-processing skills grows in importance, eventually exceeding the influence of education. The contributions of education and generic skills increase slightly with age.
- The mismatch between workers' skills and those required on the job (skills mismatch) also varies with age as employers are better able to recognise the actual skills of more experienced workers. In line with the other findings in this chapter, the incidence of over-skilling declines with age, while that of field of study mismatch tends to increase – suggesting that employers better recognise (and use) the skills of older workers and place less emphasis on their field of study when assigning them to jobs. Consistent with this finding, over-qualification related to field of study mismatch (and its associated wage penalty) is almost twice as likely among young workers than among older ones: while 38% of young people who are mismatched by field of study are over-qualified, this figure is only 22% among older workers. In addition, not only is over-skilling more common among young people, it also leads to greater wage penalties.
- Labour market institutions and policy settings affect the extent to which employers reward and use skills appropriately, as well as the speed at which they learn to recognise them. Countries with more rigid wage-setting institutions and higher non-wage labour costs, or high minimum-to-median wage ratios, tend to show lower returns to information-processing skills. The evidence also suggests that high wage floors and rigid wage setting may slow down how wages adjust to actual skills during the career of workers.
- Firm characteristics and type of contract also matter for the returns to skills. Large firms appear better able to reward skills. At the same time, workers on temporary contracts are consistently found to earn less for their information-processing skills, with little adjustment taking place after hiring. Nevertheless, there is some evidence that employers use temporary contracts as a testing ground to learn about skills which are then better rewarded after conversion to a permanent position.

The findings of the chapter underscore the key role for youth labour market outcomes of promoting higher educational attainment, but also of fostering the quality of education leading to better information-processing skills, and improving the information available to young people when choosing their field of study. Work experience is also found to positively affect wages early on as well as generic skills. Nevertheless, in several countries, few youth appear to combine work and study, and most students who work do so outside such formal programmes as vocational education and training (VET) courses or apprenticeships. This suggests that, in order to familiarise students more closely with the labour market, not only should work-based modules in VET and apprenticeship schemes be introduced or expanded, but measures that make it generally easier for students to gain work experience should be strengthened. Such measures could include removing barriers for firms to take on part-time workers and possibly introducing tax incentives for students working up to a certain number of hours.

Introduction

What people know and what they can do with what they know has a major impact on their working lives. This was the central message of the inaugural *OECD Skills Outlook*, published in 2013, which reported the results of the first round of the OECD's international Survey of Adult Skills (see Box 5.1 for more details on the survey). The survey is a rich source of data on the skill endowments of adults and the use of skills at work and in everyday life. This includes: proficiency in literacy, numeracy and problem solving in technology-rich environments – so-called information-processing skills;[1] details of the highest level of education achieved; field of study and vocational orientation; and information on the use of other generic skills at work, such as co-operation, communication, and time management.[2]

This chapter draws on the new survey to shed light on how different skills contribute to two key labour market outcomes for young people aged between 16 and 29:[3] the likelihood of their being neither in employment nor in education or training (NEET) and, for those employed, the level of hourly wages. It also assesses the mismatch between young workers' skills and how they are used at work. In doing so, it attempts to disentangle the separate role played by different skill areas, namely: information-processing, generic and more job-specific skills as captured by information on the field of study for the highest completed level of education. Based on these findings, the chapter puts forward some practical policy recommendations to help countries equip their young people for more successful working lives.

Young people should be a group of particular interest to policy makers since they represent an essential asset in any country's economy, yet their potential is often not being fully realised because of high rates of unemployment and inactivity as well as poor quality entry jobs. While the focus in this chapter is on youth, it is critical to view investments in their skills as investments in their future and, more generally therefore, as investments in the future prosperity and well-being of nations. In fact, as shown in the chapter, different types of skills matter at different points in the life cycle, suggesting that early investment is important even when the benefits are reaped only later in the working life.

The analysis included in the chapter covers 22 OECD countries and regions as well as the Russian Federation.[4]

The chapter proceeds as follows. Section 1 documents the importance of skills in determining youth labour market outcomes and how different types of skills overlap and interact, while Section 2 discusses the inefficiencies in skills investments and use. Section 3 sheds light on factors that may influence the way in which skills are used and rewarded at work as well as on how skills can be improved, particularly among the least proficient. The concluding section summarises the key policy lessons that emerge from the chapter, and points to aspects where further research is warranted.

1. The importance of skills for youth labour market outcomes

Most existing research into the link between skills and labour market outcomes uses educational attainment as a proxy for human capital. The strength of the OECD Survey of Adult Skills is the fact that the impact of different types of skills can be assessed separately. This section uses multivariate analysis to explore how different skill measures – namely information-processing skills, generic skills, education levels and field of study (see Table 5.1 and Annex 5.A1) – are associated with the labour market outcomes of youth, as

Box 5.1. **The OECD Survey of Adult Skills**

As part of the OECD's Programme for the International Assessment of Adult Skills (PIAAC), a survey of 166 000 adults was carried out in 24 countries in 2011-12. The survey provides internationally comparable data on a range of skills that are possessed by the adult population in each country (or sub-region) and that are used at work. The survey also contains information on a range of background factors that are driving the acquisition and use of these skills as well as their associated labour market and social outcomes.

This chapter covers the following OECD countries (sub-regions in some cases) participating in the survey: Australia, Austria, Belgium (Flanders), Canada, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Ireland, Italy, Japan, Korea, the Netherlands, Norway, Poland, the Slovak Republic, Spain, Sweden, the United Kingdom (England and Northern Ireland), and the United States; and the Russian Federation.

What is assessed

The OECD Survey of Adult Skills assesses the proficiency of adults from age 16 onwards in literacy, numeracy and problem solving in technology-rich environments. These skills are "key information-processing competencies" that are necessary for successfully participating in the labour market, further learning, and social and civic life.

The survey also collected a range of information on skill use both at work and in everyday life based on questions about the frequency that a range of skill-related activities and tasks are carried out. This includes the use of literacy, numeracy and information and communication technology (ICT) skills at work and in everyday life derived from questions about respondents' reading- and numeracy-related activities, and the use of ICT. In addition, information is also collected on a range of other generic skills used at work based on questions about, for example, collaboration with others and time management. Respondents were also asked whether their skills and qualifications matched their work requirements and whether they had autonomy in key aspects of their work (see Table 5.1 and Annex 5.A1 for more information concerning the skills variables considered in this chapter).

Methods

- Data collection for the OECD Survey of Adult Skills took place from 1 August 2011 to 31 March 2012 in most participating countries. In Canada, data collection took place from November 2011 to June 2012; and France collected data between September and November 2012.
- The language of assessment was the official language or languages of each participating country. In some countries, the assessment was also conducted in widely spoken minority or regional languages.
- The assessment of problem solving in technology-rich environments was optional and, therefore, was carried out in only 20 of the 24 participating countries.
- The target population for the survey was the non-institutionalised population, aged 16 to 65 years, residing in the country at the time of data collection, irrespective of nationality, citizenship or language status. Some countries included the older population as well but the analysis in this chapter is confined to individuals aged 16 to 65.
- Sample sizes depended primarily on the number of cognitive domains assessed and the number of languages in which the assessment was administered. Some countries boosted sample sizes in order to obtain reliable estimates of proficiency for the residents of particular geographical regions and/or for certain sub-groups of the population such as indigenous inhabitants or immigrants. The achieved samples ranged from a minimum of approximately 4 500 to a maximum of nearly 27 300 (Canada).
- The survey was administered under the supervision of trained interviewers either in the respondent's home or in a location agreed between the respondent and the interviewer. The background questionnaire was administered in computer-aided personal interview format by the interviewer. Depending on the situation of the respondent, the time taken to complete the questionnaire ranged between 30 and 45 minutes.
- After answering the background questionnaire, respondents completed the assessment either on a laptop computer or, depending on their computer skills, by completing a paper version using printed test booklets. Respondents could take as much or as little time as needed to complete the assessment. On average, the respondents took 50 minutes to complete the cognitive assessment.

Table 5.1. **Glossary of skill areas explored in the chapter**

Skill area	Variable(s) available in Survey of Adult Skills	Measurement issues	Notes
Information-processing skills	Literacy, numeracy, problem solving in technology-rich environments (TRE).	Proficiency in information-processing skills is obtained using computer- and paper-based direct assessment. Different levels of proficiency are distinguished, ranging from the lowest in Level 1 and below to the highest in Level 5 for literacy and numeracy, and Level 3 for problem solving.	On average across countries, 74% of respondents took the computer-based assessment and some 21% took the paper-based assessment as they had no or very low computer skills or expressed a preference to do so (OECD, 2013a). For individuals in the latter case, no information is available on problem-solving proficiency. The analysis of information-processing skills in this chapter is conducted using literacy proficiency only as literacy and numeracy convey very similar information, giving rise to collinearity issues when both are included in the same regression. France, Italy and Spain did not carry out the problem solving in TRE which was optional, reducing sample size and country coverage for this proficiency domain.
Education	Highest educational attainment, years of education.	Highest educational attainment has been recoded using the International Standard Classification of Education (ISCED). See Annex 5.A1 for more details.	Years of education are derived from respondents' self-reported highest educational attainment. They do not include years of study that did not lead to a further qualification.
Generic skills	Use at work of problem solving, learning, influencing skills, co-operative skills, self-organising skills, task discretion, physical skills and dexterity.	Derived using sum scales from information on tasks carried out at work (see Quintini, 2014a). Higher values indicate more intensive (i.e. more frequent) use of these skills. See Annex 5.A1 for further details.	The survey does not measure generic skills directly but it includes an extensive section on the use of these skills at work and, while skills use is primarily driven by job requirements (OECD, 2013a), education does play a role suggesting that use is at least partly supply-driven – i.e. driven by what workers can actually do.
Field of study	Field of specialisation at the highest level of education achieved.	Field of study follows the International Standard Classification of Education (ISCED) and includes general qualifications as a category.	It is only available for educational levels at which field of study choice is possible. As a result, the vast majority of countries have data on field of study only at the upper secondary level or higher as very few give the option of specialising in a specific field at a lower level. Where missing, a missing value dummy has been included in the regressions to preserve sample size.

Source: OECD (2013), *OECD Skills Outlook 2013: First Results from the Survey of Adult Skills*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264204256-en*; Quintini, G. (2014), "Skills at Work: How Skills and their Use Matter in the Labour Market", *OECD Social, Employment and Migration Working Papers*, No. 158, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5jz44fdfjm7j-en*.

well as how they interact with each other and evolve with age/work experience. In a second part, the section applies a novel technique to identify which skill area affects hourly wages the most and whether this changes with age. It is important to acknowledge that the OECD Survey of Adult Skills is not a longitudinal study and therefore does not allow disentangling cohort effects from age effects. As a result, different results by age group could either reflect differential effects of skill areas as workers age or changes in the way skills affect labour market outcomes over time or, most likely, a combination of both.[5]

Two indicators are used to assess how individuals perform in the labour market: the likelihood of being NEET and, for those in work, their hourly wages. In fact, compared to adults, youth are less likely to be active in the labour market, primarily because many of them are still completing their studies. As a result, the NEET status of youth – which captures both being out of work and not studying – is a better indicator of labour market distress for this age group than the unemployment rate taken on its own. Examining the wages of those in work provides information on how much various skills are valued in the labour market, which no doubt influences the education and skill decisions made by youth. In addition, wages reflect, albeit partially, the quality of jobs (see Chapter 3).

Weak information-processing skills among youth are more strongly associated with the probability of being NEET than educational attainment

Multivariate analysis using a probit model shows that educational attainment, proficiency level in literacy and field of study, when included jointly, have independent and significant effects on the likelihood of being NEET, suggesting that they capture distinct skills. Proficiency in literacy has a strong relationship with NEET status regardless of age. Youth scoring at Level 4 or 5 of the literacy scale are about 7 percentage points less likely to be NEET than those scoring below Level 1 (Figure 5.1). While those scoring at Level 3 appear even less likely to be NEET, the difference with those scoring at Level 4 or 5 is not statistically significant. The relationship between the probability of being NEET and a high level of literacy is somewhat stronger among adults aged 30-49 (9 percentage points) and, even more strikingly, among older workers. Among the latter group – whose primary reason for being NEET is retirement – those scoring at Level 4 or 5 of the literacy scale are 24 percentage points less likely to be NEET than those scoring below Level 1.

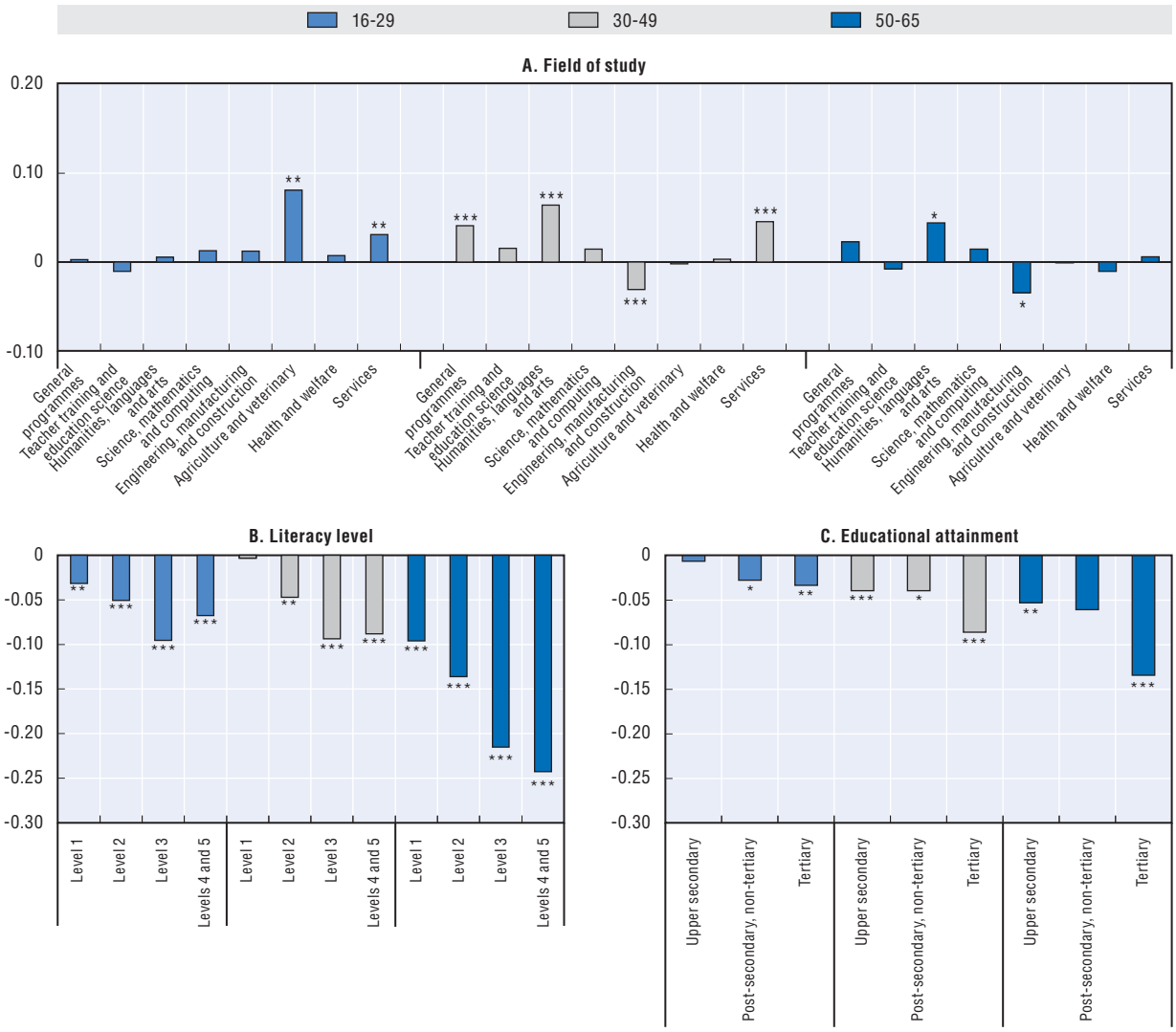
Similarly, higher educational attainment is associated with a smaller probability of being NEET. While field of study plays some role in explaining NEET status for all age groups, the pattern changes somewhat with age, possibly reflecting differences in the length of study programmes as well as in the time it takes to find jobs in particular fields. For young and prime-age individuals, those who studied services-related subjects are more likely to be NEET than those who studied social sciences (the reference category). For prime-age and older individuals, the likelihood is higher for those who studied humanities and lower for those who studied engineering, mathematics and construction.

But educational attainment matters more for young people's wages

Multivariate analysis of hourly wages also shows that different skill areas matter and not just educational attainment, providing new evidence with respect to most of the literature that focuses on how education is rewarded in the labour market. Because some skills are learnt in formal education, the inclusion of controls for other skill variables reduces the coefficient on education itself (see Box 5.2). However, the coefficient on education remains relatively large and statistically significant suggesting that different skill areas capture distinct aspects of human capital. While education encompasses more than just literacy and numeracy – e.g. other cognitive skills and field-specific ones – these two information-processing skills are at least partly learnt in school. Similarly, individuals with the same level of educational attainment are heterogeneous in their proficiency in information-processing skills because of the variation in the quality of education provision, skill acquisition outside of school and innate differences in ability. Finally, while educational attainment incorporates information about the level at which a field of study

Figure 5.1. **The relationship between the probability of being NEET, the level of literacy proficiency,[a] educational attainment and field of study, by age group**

Marginal effects from probit regressions (percentage points)[b]



***, **, *: statistically significant at the 1%, 5% and 10% levels, respectively.

a) *Below Level 1* corresponds to the lowest level of literacy proficiency while *Levels 4 and 5* are the two highest levels (for more information on the literacy skills required to attain each level of proficiency, see Annex 5.A1). Similar results are obtained when numeracy proficiency is used instead of literacy.

b) Probit regressions pooling all countries with the probability of being NEET as the dependent variable and each skill area as the explanatory variable with additional controls for gender, marital status, migration status, language spoken at home and country fixed effects. The omitted categories for each skill area are: Social Sciences for field of study; below Level 1 for literacy proficiency; and lower than upper secondary education for educational attainment.

Source: OECD calculations based on the Survey of Adult Skills (PIAAC) 2012.

StatLink http://dx.doi.org/10.1787/888933132849

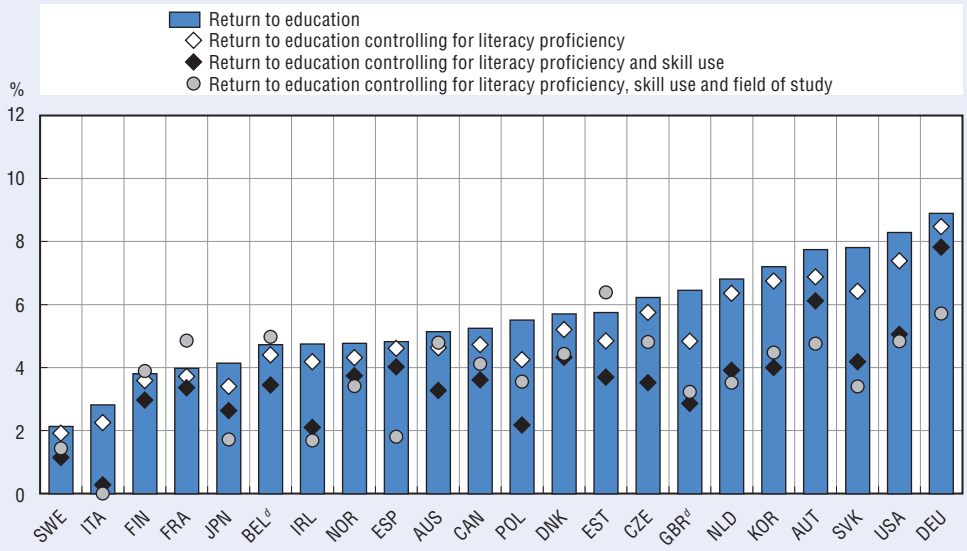
has been pursued – i.e. either in secondary or tertiary education – they do not reflect the area of specialisation. Therefore, it is of interest to examine the separate effects of all three skill areas (education, literacy and field of study) on labour market outcomes.

Box 5.2. **How much of the return to education is explained by information-processing skills?**

The OECD Survey of Adult Skills can help identify how much of the return to education can be attributed to information-processing skills, generic skills and/or to field-specific skills. The figure below for youth shows how the coefficient on years of education changes when these other skill areas are included in the same regression – along with a number of other controls. Starting with the effect of education alone on hourly wages, across all countries in the survey, it is estimated that one additional year of education increases the earnings of youth by 5.6%, on average. These estimates are in line with those obtained in other studies (see Psacharopoulos and Patrinos, 2004; and Dickson and Harmon, 2011 amongst others). However, once the effect of the other three skill areas is accounted for, the residual effect of years of education on hourly wages is much reduced.

The return to one additional year of education, with and without controlling for other skill areas (youth 16-29)[a]

Percentage increase in hourly wages[b] associated with one extra year of education[c]



a) Results obtained from a linear OLS regression (run by country and correcting for measurement error and sampling design) of log hourly wages on years of education, gender, marital status, migration status, language spoken at home, experience and its square. Other controls are added in separate steps: literacy proficiency is added in a second step; controls for the use of reading, numeracy, writing, ICT, problem-solving, task discretion, learning, influencing, co-operation, self-organisation, dexterity and physical skills at work are included in a third step; and dummies for field of study are added in the final step.

b) Gross hourly earnings including bonuses for wage and salary earners. Wage data have been trimmed at the 1st and 99th centile, by country.

c) The analysis excludes the Russian Federation because wage data obtained through the survey do not compare well with those available from other sources. Hence further checks are required before wage data for this country can be considered reliable.

d) The OECD Survey of Adult Skills only covered Flanders (BEL) and England/Northern Ireland (GBR).

Source: OECD Survey of Adult Skills (PIAAC) 2012.

StatLink http://dx.doi.org/10.1787/888933132868

For youth, 11% of the returns to education can be attributed to the greater proficiency in information-processing skills.[a] The introduction of a measure of generic skills into the regression in addition to information-processing skills further reduces the coefficient on years of education, suggesting that education also plays a role in the learning of generic skills, such as the ability to organise one's work and time autonomously, the ability to work well with a team of co-workers or the ability to solve complex problems.[b] Together, information-processing and generic skills explain about 36% of the return to education for youth.[c] In contrast, in most countries, controlling for field of study does not reduce the coefficient on education much further. It actually increases it in some instances, suggesting a complex relationship between field of study and the other skill areas the role of which is explored in this section.

Box 5.2. **How much of the return to education is explained by information-processing skills?** *(cont.)*

The fact that information-processing skills contribute significantly to hourly wages and that their inclusion in hourly wages regressions reduces the measured impact of schooling is well-documented (see, for instance, Blackburn and Neumark, 1993; Denny et al., 2003; Green and Riddell, 2003; Fasih et al., 2013; and Hanushek et al., 2013).

The relatively small reduction in the coefficient on education following the inclusion of information-processing skills has led some researchers (Gintis, 1971; Bowles et al., 2001) to downplay the importance of cognitive skills in explaining the return to schooling in favour of the non-cognitive skills acquired (or signaled) through schooling which are more important in determining hourly wages.

However, these conclusions assume that equations of this type properly measure the labour market value of information-processing skills acquired through schooling, which has been challenged by some researchers. In particular, the above analysis assumes that the market rewards information-processing skills acquired through schooling in the same way as those acquired elsewhere (e.g. at work or in other learning environments after school completion). If this is not the case – for instance, because employers recognise (hence reward) more easily certified skills than uncertified ones – Pasche (2008) shows that the reduction in the education coefficient resulting from the inclusion of information-processing skills in a regression setting cannot be easily interpreted as the contribution of the latter to the returns to schooling. He proves this by partitioning information-processing skills into those acquired through formal schooling (by regressing measures of cognitive skill on education variables) and those acquired elsewhere (the residual). Doing so, Pasche (2008) finds that 50% of the return to schooling can be ascribed to information-processing skills, and argues that even this is likely to be a lower bound as it relates to basic cognitive skills only. Ishikawa and Ryan (2002) perform a similar exercise and partition adult skills by source and find that skills acquired through school are a more important determinant of hourly wages than the skills acquired elsewhere (as defined by parental background, number of books in the home, presence of a library card, etc.).

Finally, a recent study by Fasih, Patrinos and Sakellariou (2013) using the International Adult Literacy Survey and the Adult Literacy and Life Skills Survey not only confirms this finding, but also observes that there exists considerable heterogeneity across countries in the portion of the return to education that can be attributed to cognitive skills. In particular, the authors argue that there are two different groups of countries: in educationally advanced countries, nearly half of the return to schooling can be attributed to functional literacy skills associated with schooling, while in less educationally advanced countries, such skills account for just over 20% of the return to schooling. In these latter countries, the authors argue, schooling is predominantly rewarded independently of skill and therefore holds a very strong signalling value.

a) Several authors have pointed to the difficulty in estimating the separate effects of education and skills due to the high correlation between them, which means there are few highly skilled individuals with very low levels of education, and vice versa. As a result, strong parametric assumptions must be imposed onto the data (Cawley et al., 2001).

b) The OECD Survey of Adult Skills can help shed some light on the extent to which education contributes to the acquisition of these skills. The survey does not measure generic skills directly but it includes an extensive section on the use of these skills at work and, while skills use is primarily driven by job requirements (OECD, 2013a), education does play a role suggesting that use is at least partly supply-driven – i.e. driven by what workers can actually do. As a result, the extent to which the coefficient on years of education in a wage regression is reduced when skills use variables are included should capture the contribution of education to the learning of these soft skills.

c) Barone and van de Werfhorst (2011) have also shown that the additional inclusion of "work-specific cognitive ability" (or what is referred to as generic skills in this chapter) further explains the effect of education on hourly wages. Other authors have treated skills proficiency as "general cognitive skills" and generic skills as "specific skills", and have argued that the former should better predict hourly wages in liberal market economies while the latter should have a greater value in social market economies (Estevez-Abe et al., 2001).

Figure 5.2 shows that youth are rewarded for possessing higher educational qualifications. A tertiary degree is associated with hourly wages that are approximately 14% higher than those earned without upper secondary qualifications – however the size of this effect diminishes somewhat for older age groups. Interestingly, and contrary to what was found in the previous section, while higher literacy levels are associated with higher wage premia, this relationship is not statistically significant for youth.

With the exception of influencing skills, generic skills appear to be associated with wages only for adults and older workers, possibly due to the fact that it is harder to assess them at hiring and hence reward them in entry jobs.[6] All generic skill variables are measured on a scale that goes from 1 – the skill is never used – to 5 – the skill is used every day. As the scales are treated as linear in the regression analysis, the hourly wage of a young person who uses his/her influence skills every day is found to be about 15% higher than the wage of someone who never uses these skills and the association declines with age.

Figure 5.2. **The link between hourly wages, literacy level,[a] educational attainment, field of study and generic skills, by age group**

OLS regression coefficients[b] of log hourly wages for (full-time) wage and salary earners[c, d]

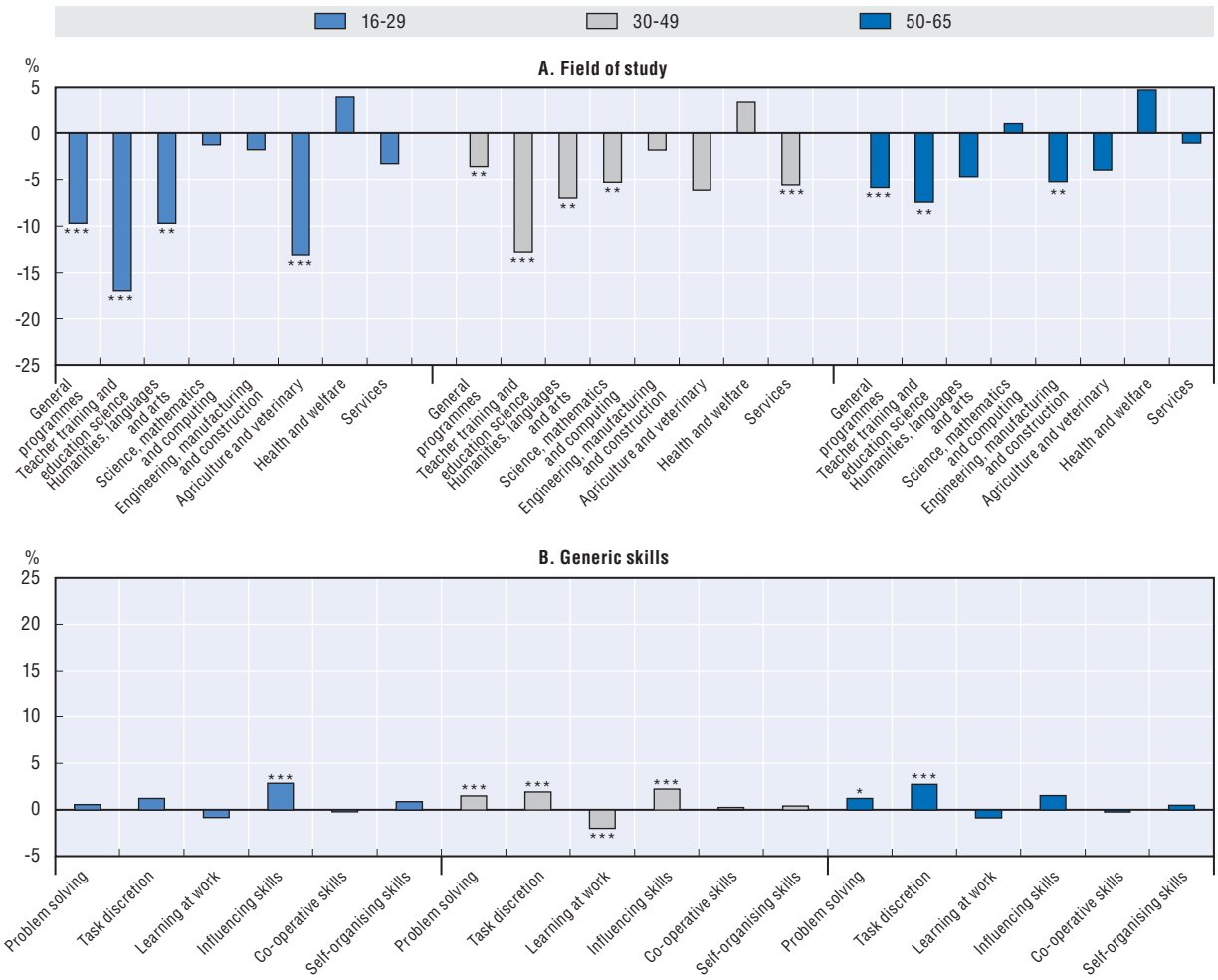
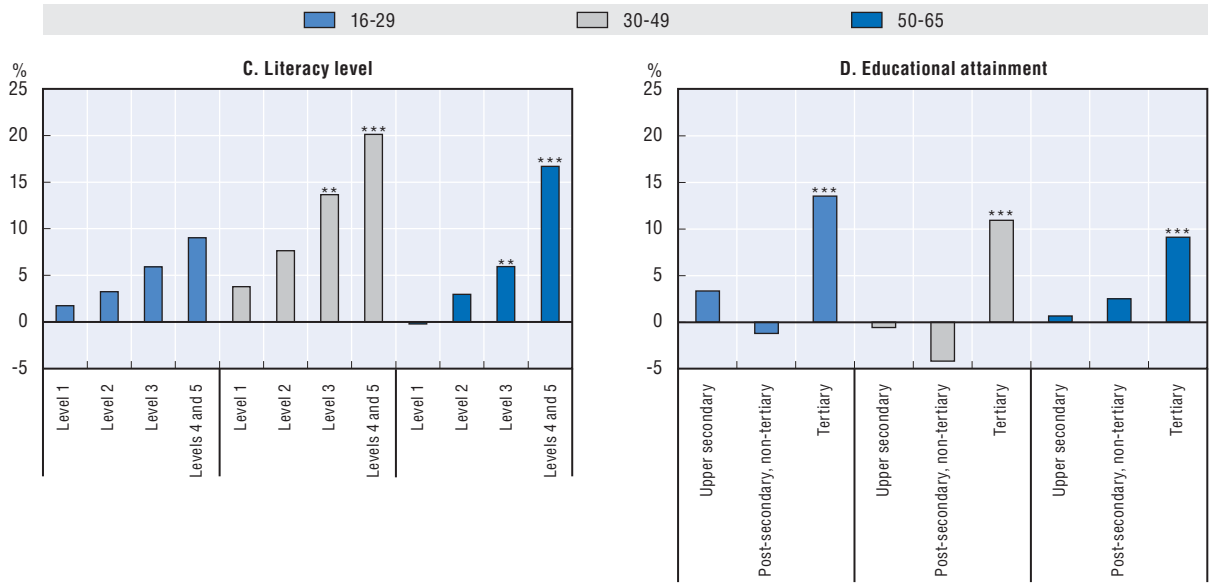


Figure 5.2. **The link between hourly wages, literacy level,[a] educational attainment, field of study and generic skills, by age group** *(cont.)*

OLS regression coefficients[b] of log hourly wages for (full-time) wage and salary earners[c, d]



***, **, *: statistically significant at the 1%, 5% and 10% levels, respectively.

a) *Below Level 1* corresponds to the lowest level of literacy proficiency while *Levels 4 and 5* are the two highest levels (for more information on the literacy skills required to attain each level of proficiency, see Annex 5.A1). Similar results are obtained when numeracy proficiency is used instead of literacy.

b) OLS regressions pooling all countries, correcting for measurement error and sampling design, with controls for gender, marital status, migration status, language spoken at home, experience and its square, firm size, occupation at 1-digit, industry at 1-digit, contract type, sector (public, private, non-profit), a dummy for full-time work and country fixed effects. The omitted categories for each skill area are: Social Sciences for field of study; below Level 1 for literacy proficiency; and lower than upper secondary education for educational attainment. Generic skills are measured on a scale of 1 to 5 depending on frequency of use.

c) Gross hourly earnings including bonuses for wage and salary earners. Wage data have been trimmed at the 1st and 99th centile, by country.

d) The analysis excludes the Russian Federation because wage data obtained through the survey do not compare well with those available from other sources. Hence further checks are required before wage data for this country can be considered reliable.

Source: OECD calculations based on the Survey of Adult Skills (PIAAC) 2012.

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Finally, field of study appears to be correlated with wages for all age groups – although the size of the effects tends to wane slightly with age. In relation to social sciences (the reference category) a number of fields of study appear to carry a wage penalty, in particular general programmes, teacher training and education science and humanities – although these patterns vary slightly by age groups, possibly reflecting differences in the shape of experience-earnings profiles across professions. In addition, it is important to highlight that this pooled analysis may hide important differences at the country level. The finding that the importance of field of study declines with age might reflect the fact that employers particularly value specific skills acquired through education in young recruits while, over time, experience becomes a more powerful signal of specialisation than what was studied in initial education.[7] More generally, the findings presented in this section suggest that employers may rely to some extent on signals conveyed by education to set initial wages for young workers in the absence of direct evidence on their actual skills and productivity. Once on the job, however, employees reveal their true ability and employers slowly align remuneration with workers' true productivity. This theory of "employer learning", where the return to education falls with experience and the return to actual skills increases with age, is tested further in Box 5.3.

Box 5.3. **Returns to information-processing skills increase with experience**

The findings in this chapter suggest that the returns to information-processing skills might be increasing as individuals gain more labour market experience while the returns to education may be decreasing.

Increasing returns to cognitive skills with experience in the United States was first found by Altonji and Pierret (2001) who, at the same time, observed a fall in the returns to education with experience. They attributed this to a phenomenon called "statistical discrimination with employer learning". According to this theory, employers use information on education as an indicator of the unobserved productivity of young workers to set wages at the time of hiring. Educated youth are therefore rewarded more highly, in line with their qualifications and regardless of actual productivity. With experience, however, the true productivity of workers emerges and employers therefore set wages more in line with observed productivity. This implies that the role of education in determining wages should fall as workers gain more experience, whereas the returns to productivity should increase. The predictions of the theory have since been tested and confirmed by various studies for a number of countries, including: Australia (Cheung, 2008), Canada (Pan, 2005; Riddell, 2007), for university graduates in Chile (Bordón, 2013), Germany (Bauer and Haisken-DeNew, 2001), for New Zealand born Pakeha women (but not men) (Gill, 2012), Switzerland (Falter, 2007) and the United Kingdom (Galindo-Rueda, 2002).

The table tests the relevance of this theory among the countries that participated in the OECD Survey of Adult Skills. It summarises how the coefficients on the interactions of both education and skills with experience, taken from a simple wage regression, change with experience. In countries where employer learning and statistical discrimination is found the return to education falls and the return to information-processing skills increases with experience. Strong evidence in favour of the theory (i.e. where the expected direction of change is in line with the theory, as well as statistically significant) is found in seven of the 23 countries, while in another four countries the evidence is broadly supportive (i.e. the direction of change is as expected, and at least one of the coefficients is statistically significant). None of the signs are statistically significant in the opposite direction (with the exception of the return to education in the Slovak Republic, which increases with experience). In about half of the countries, therefore, there is relatively strong support for the idea that employers initially use information on qualifications to reward young workers but that, as true productivity reveals itself, this information becomes less valuable and the return to qualifications falls, while the return to skills increases. Section 2 (and in particular Table 5.3) will investigate to what extent these patterns can be related to specific labour market and education institutions and policies.

Box 5.3. **Returns to information-processing skills increase with experience** *(cont.)*

Evidence of employer learning and statistical discrimination across the OECD

Direction and significance of the change in returns to education and information-processing skills as experience increases

	Return to education with experience	Return to skill with experience
Australia	↘	↗
Austria	↘	↗
Belgium (Flanders)	↗	↗
Canada	↘	↗
Czech Republic	↗	↗
Denmark	↘	↗
Estonia	↗	↘
Finland	↘	↗
France	↘	↗
Germany	↘	↗
Ireland	↘	↗
Italy	↗	↗
Japan	↗	↘
Korea	↘	↘
Netherlands	↘	↗
Norway	↘	↗
Poland	↗	↘
Russian Federation	↘	↘
Slovak Republic	↗	↘
Spain	↘	↗
Sweden	↘	↗
United Kingdom (England/Northern Ireland)	↗	↗
United States	↘	↗

Note: The results are obtained from country-level OLS regressions where the dependent variable is the log of gross hourly earnings (including bonuses for wage and salary earners, and trimmed at the 1st and 99th centile, by country). The explanatory variables include experience, experience squared, years of education, numeracy skills (standardised at the country level), and the latter two interacted with experience. Experience is instrumented using potential experience, and restricted to 40 years or less. The signs and significance of the coefficients on the interaction variables are the ones reported in the table.
↗: return increases with experience; ↘: return decreases with experience.
Grey shading: indicates that the return is statistically significant at the 5% level.
Source: Broecke, S. (2014), "Employer Learning and Statistical Discrimination in OECD Countries", *OECD Social, Employment and Migration Working Papers*, forthcoming, OECD Publishing, Paris.

StatLink http://dx.doi.org/10.1787/888933133210

Once all skill areas are accounted for, education still plays a key role in explaining the variance in youth hourly wages

Assessing the relative importance of different skill areas in labour market outcomes is complicated by the fact that each uses a different metric: years of education or levels of educational attainment in the case of education; scores in the case of information-processing skills; an index in case of generic skill variables; and a dummy variable for fields of study. OECD (2013a) attempted to compare the impact of education with that of information-processing skills by standardising these two variables but the outcome is subject to a number of limitations. An alternative way of comparing the importance of

different skill areas is not to look at the size and significance of coefficients, but rather at how much of the variance in the outcome variables they explain. This can be done by decomposing the explained variance of a regression (R-squared) into its various components. Another advantage of this approach is that it also makes it easier to look at the contribution of a group of variables (Box 5.4). On the negative side, this technique can only be applied to regression models with continuous outcome variables (i.e. wages in the present case, but not NEET status).

Figure 5.3 breaks down the R-squared of a regression of hourly wages on a range of explanatory variables (including, among others, education, information-processing skills, generic skills and field of study) in an attempt to better understand which factors determine the variation in hourly wages amongst youth (and other age groups).[8]

Box 5.4. **Measuring the relative importance of different skill areas on labour market outcomes**

Assessing the relative importance of skill areas in determining labour market outcomes based on regression coefficients is far from simple as each relevant variable is based on a different metric. In OECD (2013a), the impact of years of education and literacy/numeracy scores are compared by standardising the variables so that their coefficients reflect the percentage change in hourly wages associated with a standard deviation change in each skill-related dependant variable, e.g. three years of education and 46 score points in literacy. If this methodology was applied to youth aged 16-29, three years of education would increase hourly wages by 11%, while an additional 46 score points in literacy would raise hourly wages by 4%. However, the *effort* required to achieve a standard deviation change in years of education and in score points is not equivalent as it takes, on average, more than three years of education to move up 46 points on the literacy proficiency scale. In addition, since this chapter aims to include the impact of generic skills and of fields of study on hourly wages, standardisation is not applicable to indices or indicator variables.

Given the importance for policy makers of establishing the role played by each skill area on youth labour market outcomes, this chapter adopts an alternative methodology of assessing importance by estimating the contribution of each area to the total variance in youth hourly wages. Variance decomposition is important in itself because in econometric terms a large and significant coefficient does not necessarily imply a high R-squared. In practice, both measures are useful in assessing the relative importance of different explanatory factors. The coefficient measures how large the impact of a variable is on the outcome of interest. The R-squared reflects how much of the variance in the outcome of interest can be explained by the explanatory variable.

The variance analysis presented here uses Fields (2004) regression-based decomposition technique. Fields' approach consists in decomposing the explained portion of the regression (R-squared) into weights for each of the factors. The method allows for two kinds of factors: "simple factors" represented by a single regressor and "composite factors" represented by two or more regressors. The decomposition is "exact" in that the variance of Y is decomposed exactly into the variance attributable to each regressor and the residual. By contrast, in standard analysis of variance, the sum of squares explained by the model is not the exact sum of the sums of squares attributable to each component.

Box 5.4. **Measuring the relative importance of different skill areas on labour market outcomes** *(cont.)*

Starting with a standard regression of the form:

$$Y = \beta^0 + \sum_{k=1}^{K} X^k \beta^k + \varepsilon$$

The resultant parameter estimates are:

$$(\hat{\beta}^0 \hat{\beta}^1 \ldots \hat{\beta}^K)$$

And the calculated residuals are:

$$\hat{\varepsilon}^i = Y^i - \hat{\beta}^0 - \sum_{k=1}^{K} X^{ik} \hat{\beta}^k, i = 1, \ldots, n$$

Letting $s(X^k)$ denote the share of the variance of Y that is attributable to the kth explanatory factor and letting R-squared be the fraction of the variance that is explained by all of the *X*s taken together, the variance of Y can then be decomposed as:

$$var(Y) = \sum_{k=1}^{K} cov[X^k \hat{\beta}^k, Y] + cov[\hat{\varepsilon}, Y]$$

Dividing through by *var(Y)*:

$$1 = \frac{\sum_{k=1}^{K} cov[X^k \hat{\beta}^k, Y] + cov[\hat{\varepsilon}, Y]}{var(Y)} = \sum_{k=1}^{K} s(X^k) + s(\hat{\varepsilon})$$

Where each "s-weight" $s(X^k)$ is given by:

$$s(X^k) = \frac{\sum_{k=1}^{K} cov[X^k \hat{\beta}^k, Y]}{var(Y)}$$

Finally, the decomposition results need to be presented in the form of p-weights so that each factor's explanatory power is expressed as a percentage of the R-squared. These *p*-weights are obtained simply by dividing the $s(X^k)$'s in terms of their percentage contribution to the R-squared:

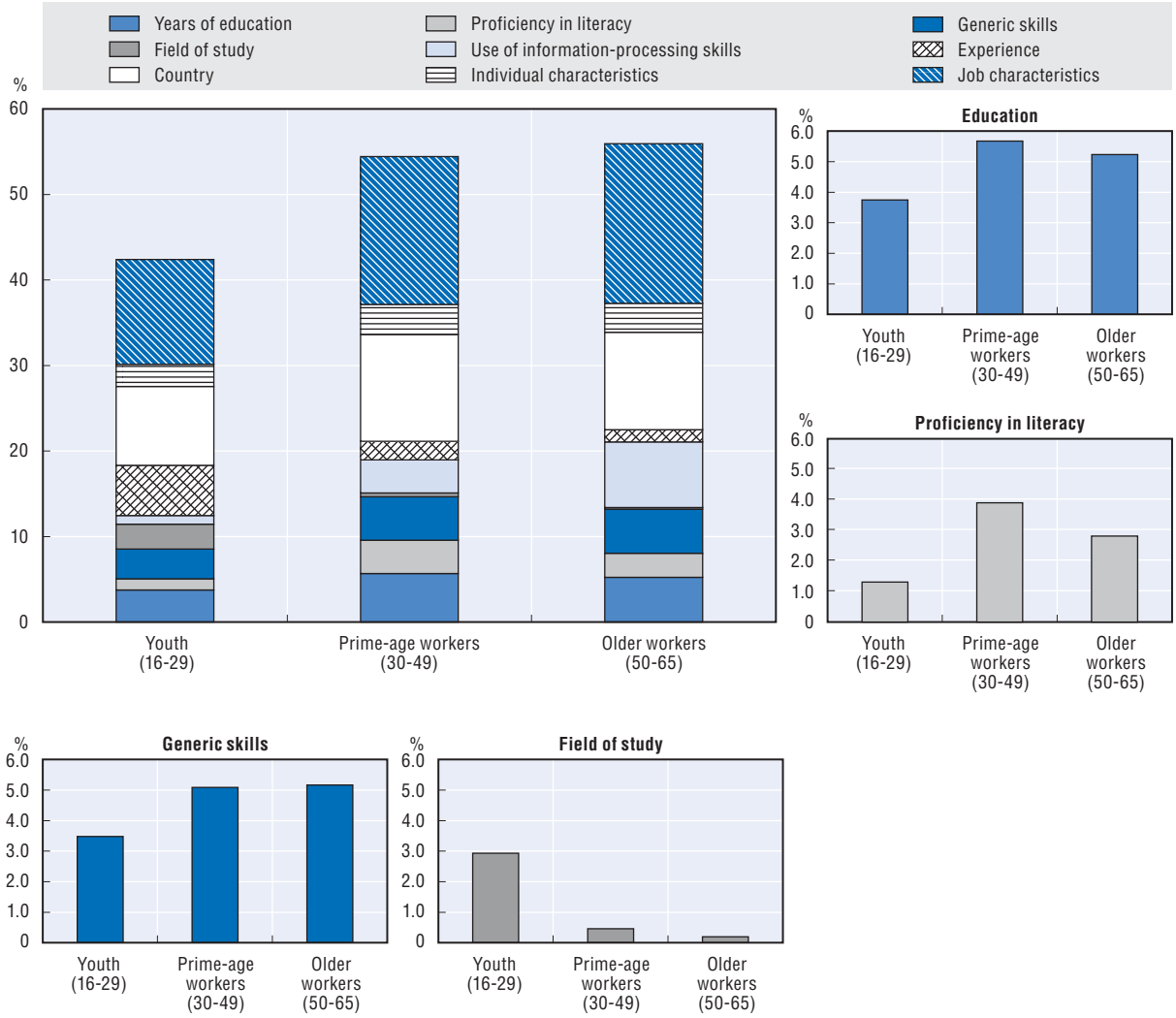
$$p(X^k) = \frac{s(X^k)}{R^2}$$

Where by construction the *p(Xk)*'s sum to 100%.

The user-written programme *INEQRBD* (Fiorio and Jenkins, 2007) in Stata is used to decompose the R-squared of the hourly wages regressions. While in principle the same exercise could be carried out on the probability of being NEET, the R-squared is less meaningful in contexts where the dependent variable is a binary variable makes the exercise less useful.

Figure 5.3. **The determinants of the variation in hourly wages by age group**[a]

Proportion of the explained variance (R-squared) in hourly wages[b] explained by each factor[c, d]



a) Results obtained using regression-based decomposition. Each bar summarises the results from one regression and the height of each bar represents the total R-squared for that regression. The sub-components of each bar show the contribution of each factor (or set of regressors) to the R-squared. The Fields decomposition is explained in more detail in Box 5.4 of this chapter. The analysis excludes the Russian Federation because wage data obtained through the survey do not compare well with those available from other sources. Hence further checks are required before wage data for this country can be considered reliable.

b) The dependent variable is the log of hourly wages (including bonuses for wage and salary earners).

c) Experience includes a squared term. Use of information-processing skills refers to the use of numeracy, reading and writing skills at work. Generic skills include problem-solving, task discretion, learning, influencing, co-operation, self-organisation, dexterity and physical skills. Literacy proficiency refers to the literacy proficiency score. Demographic variables include gender, marital status, migration status and the language spoken at home. Job characteristics include firm size, occupation at 1-digit, industry at 1-digit, contract type, sector (public, private, non-profit) and a dummy for full-time work.

d) Using numeracy proficiency rather than literacy proficiency produces virtually identical results.

Source: OECD Survey of Adult Skills (PIAAC) 2012.

StatLink http://dx.doi.org/10.1787/888933132906

Altogether, the factors included in the wage regression explain about half of the total variance in hourly wages. The four skill areas which are the focus of this chapter account for about a quarter of this explained variance. Of the four skill areas explored in this chapter, "years of education" contributes the most to the total variance in hourly wages for youth and adults, while it is overtaken in importance by information-processing skills for

older workers. For young people, information-processing skills account for just about 2% of the total variance in hourly wages – but for older workers this increases to 5.5% (Figure 5.3). A similar increase with age, although of a smaller magnitude, is also observed in the contribution of generic skills to the variance of hourly wages. One interpretation of this finding is that, as individuals age (and also gain more experience in the labour market), employers are able to better assess the information-processing and generic skills of their employees, hence these skills play a bigger role in explaining differences in pay between workers. The opposite pattern is observed for field of study which accounts for about 3% of the variance in hourly wages among youth while it hardly plays a role for adults and older workers. This suggests that field-specific skills acquired through education may matter more in the initial stages of one's career but that, as one progresses, other, more generic skills gain in importance. The waning importance of field of study in explaining the variance in wages is consistent with the change in the magnitude and significance of the coefficients on field of study shown in Figure 5.2.

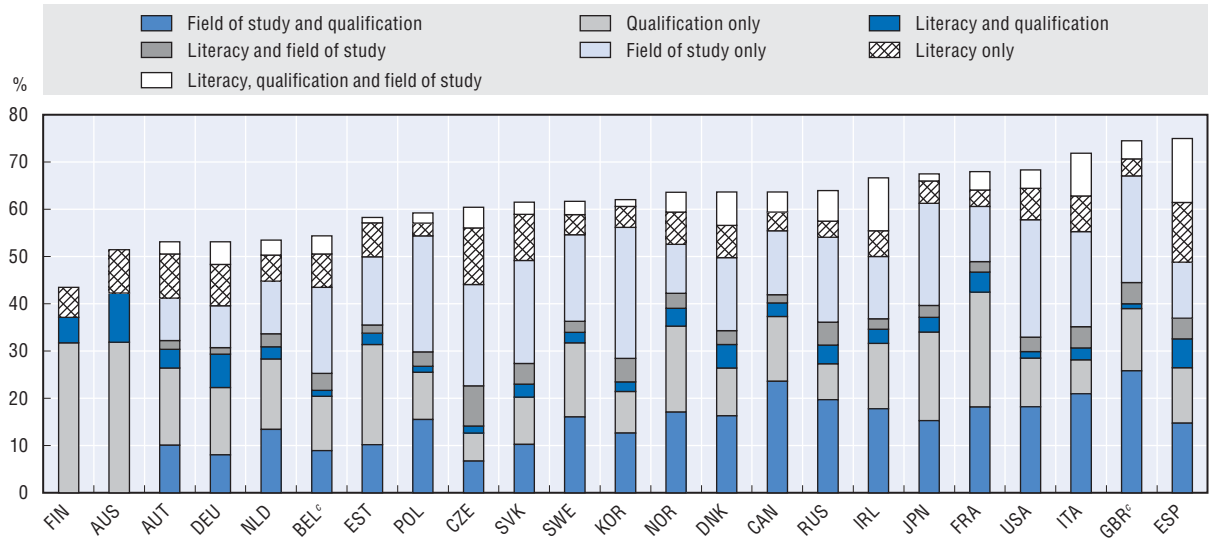
Skills are not the only factors determining hourly wage differences – particularly for the young. Experience plays a more important role in explaining hourly wage variation amongst youth than amongst the older age groups, which highlights the importance of gaining some work experience for individuals at the beginning of their career. It also points to the importance of gaining some work while studying. Job characteristics – including occupation, industry, firm size, contract type and hours worked – and country fixed effects explain 12% and 9% of the variance of hourly wages for youth, respectively, and their role increases with age. Country fixed effects are likely to reflect differences in wage-setting mechanisms and other labour market institutional characteristics. Finally, a large portion of the variance in hourly wages of all three age groups – between 44% and 58% – remains unexplained and could reflect policy-relevant factors such as the availability of networks through which youth can access internships or jobs as well as family background characteristics – for instance, family income – beyond parental education.

2. Inefficient investments in education and skills

Evidence presented in the previous section suggests that low educational attainment, poor information-processing and generic skills and poor field of study choices negatively affect the labour market outcomes of young people. However, even youth who are highly skilled in all these areas encounter difficulties when leaving education as existing competences are also not always put to their best use in the labour market. Figure 5.4 reports three types of mismatch and the extent to which they overlap: qualification mismatch – whereby workers have higher or lower qualifications than required by their job; field of study mismatch – whereby individuals work in an occupation that does not correspond to their field of study; and skills mismatch – whereby workers have literacy proficiency exceeding or below that required in their job (see Box 5.5 and Annex 5.A2 for further details). As the figure shows, in all countries, more than half of all workers are employed in jobs for which their level of skills, education or their field of study are inappropriate. This very high incidence, compared to the existing literature, is mostly due to the inclusion of field of study mismatch which is rarely assessed in other studies and which alone accounts for a significant share of total mismatch in several countries. While adding field of study mismatch allows for a more comprehensive view of mismatch, it should be kept in mind that working outside one's field of study does not necessarily carry the same wage or productivity penalties as working below one's skills or qualification does. This is discussed later in the chapter.

Figure 5.4. **Total mismatch among youth (16-29) by type of mismatch**[a, b]

As a percentage of all youth in employment



a) Workers are classified as mismatched by qualification if they have higher or lower qualifications than required by their job; workers are classified as mismatched in terms of literacy skills if they have literacy proficiency exceeding or below that required by their job; workers are classified as mismatched by field of study if they are working in an occupation that is not related to their field of study (see Box 5.5 and Annex 5.A2 for further details).

b) Occupation is only available at the 2-digit level in the ISCO-08 classification for Australia and Finland. Hence, it is not possible to assess the extent of field of study mismatch in these two countries using the same definition used for the other countries.

c) The OECD Survey of Adult Skills only covered Flanders (BEL) and England/Northern Ireland (GBR).

Source: OECD calculations based on the Survey of Adult Skills (PIAAC) 2012.

StatLink http://dx.doi.org/10.1787/888933132925

The total incidence of mismatch among employed youth varies significantly across countries. In Austria, 53% of employed youth are mismatched while the same figure exceeds 70% in Spain, England/Northern Ireland and Italy (Figure 5.4). Similar variation is observed in terms of the composition of mismatch. For instance, while qualification mismatch only affects just 6% of young workers in the Czech Republic, 24% of French youth are in jobs that require lower qualifications than those they possess while working in their field of study. The extent to which youth are mismatched by field of study and over-qualified also varies between just 7% in the Czech Republic and 26% in England/Northern Ireland. Field of study mismatch alone affects between 9% of youth in Germany and Austria and 28% in Korea. Confirming the evidence in the literature (e.g. Quintini, 2011b), the only sizeable overlap appears to be between qualification and field of study mismatch.

As Figure 5.5 suggests, the average incidence of mismatch – across countries and types of mismatch – varies little by age group: mismatch affects 62% of youth, 60% of adults and 61% of older workers, on average.[9] However, the composition of mismatch appears to change with age. Compared with adults, youth are more likely to be over-qualified and over-skilled in literacy and to suffer from field of study mismatch that is a source of over-qualification. Of all youth who are mismatched by field of study, 34% are over-qualified, while this is the case for only 26% of adults and older workers. On the other hand, youth are less likely to work in an area outside their field of study but for which their qualification level is appropriate. It is important to keep in mind that these changes could also reflect changes over time in the incidence of various types of mismatch.

Box 5.5. **Qualification, skills and field of study mismatch: Definitions and measurement**

Qualification mismatch

Qualification mismatch arises when workers have an educational attainment that is higher or lower than that required by their job. If their education level is higher than that required by their job, workers are classified as over-qualified; if the opposite is true, they are classified as under-qualified. In the OECD Survey of Adult Skills, workers are asked what would be the usual qualifications, if any, "that someone would need to GET (their) type of job" if applying today. The answer to this question is used as each worker's qualification requirement. While biased by individual perceptions, self-reported qualification requirements along these lines have the advantage of being job-specific rather than assuming that all jobs with the same occupational code require the same level of qualification.[a]

Skills mismatch

Skills mismatch arises when workers have a level of skills that is higher or lower than that required by their job. If their skill level is higher than that required by their job, workers are classified as over-skilled; if the opposite is true, they are classified as under-skilled. For the purpose of this chapter, skill requirements at work, the key term in the measurement of skills mismatch, are derived as follows (see Pellizzari and Fichen, 2013):

- ***Step 1.*** Identify workers who self-report being well-matched as those workers who neither feel they have the skills to perform a more demanding job nor feel the need of further training in order to be able to perform their current jobs satisfactorily.
- ***Step 2.*** For each skill dimension (literacy, numeracy and problem solving), define the minimum and maximum skill level required in an occupation as the minimum and the maximum proficiency of self-reported well-matched workers (defined as in Step 1) by country and within each 1-digit ISCO code. To limit the potential impact of outliers on these measurements, the 5th and the 95th percentile are used instead of the actual minimum and maximum. Because of sample size, ISCO Group 0 (armed forces) and ISCO Group 6 (skilled agricultural workers) were dropped and ISCO Group 1 was merged to ISCO Group 2 for the purpose of calculating skill requirements.
- ***Step 3.*** For each skills dimension (literacy, numeracy and problem solving), classify workers as under-skilled if their proficiency is lower than the minimum requirement in their occupation and country and as over-skilled if their proficiency is higher than the maximum requirement in their occupation and country. All other workers are classified as well-matched.

The main limitation of the skills mismatch measure developed in Pellizzari and Fichen (2013) and used in this chapter is that the analysis needs to be carried out using 1-digit occupation codes because of sample size, introducing the assumption that all jobs with the same 1-digit occupation code have the same skill requirements. However, the measure has other key advantages over the two commonly used in the literature, namely self-reported skills mismatch and measures derived by the direct comparison of skill proficiency with skills use at work. Indeed, both these methodologies suffer from limitations that have been highlighted in the literature. When asked directly, an unrealistically high proportion of workers in most countries report being qualified to perform more demanding jobs, thus undermining the validity of skills mismatch measures based on self-reported information.

Box 5.5. **Qualification, skills and field of study mismatch: Definitions and measurement** *(cont.)*

On the other hand, the comparison of skills proficiency and skills use rests on the assumption that the two can be measured on the same scale, which is very difficult to defend for concepts that are so clearly distinct theoretically and that cannot be represented along the same metrics (Krahn and Lowe, 1998). Additionally, the measures of skills proficiency and skills use are based on structurally different pieces of information: the indicators of skills use exploit survey questions about the frequency (and/or the importance) with which specific tasks are carried out at work, whereas skills proficiency is measured through foundation tests.

Field of study mismatch

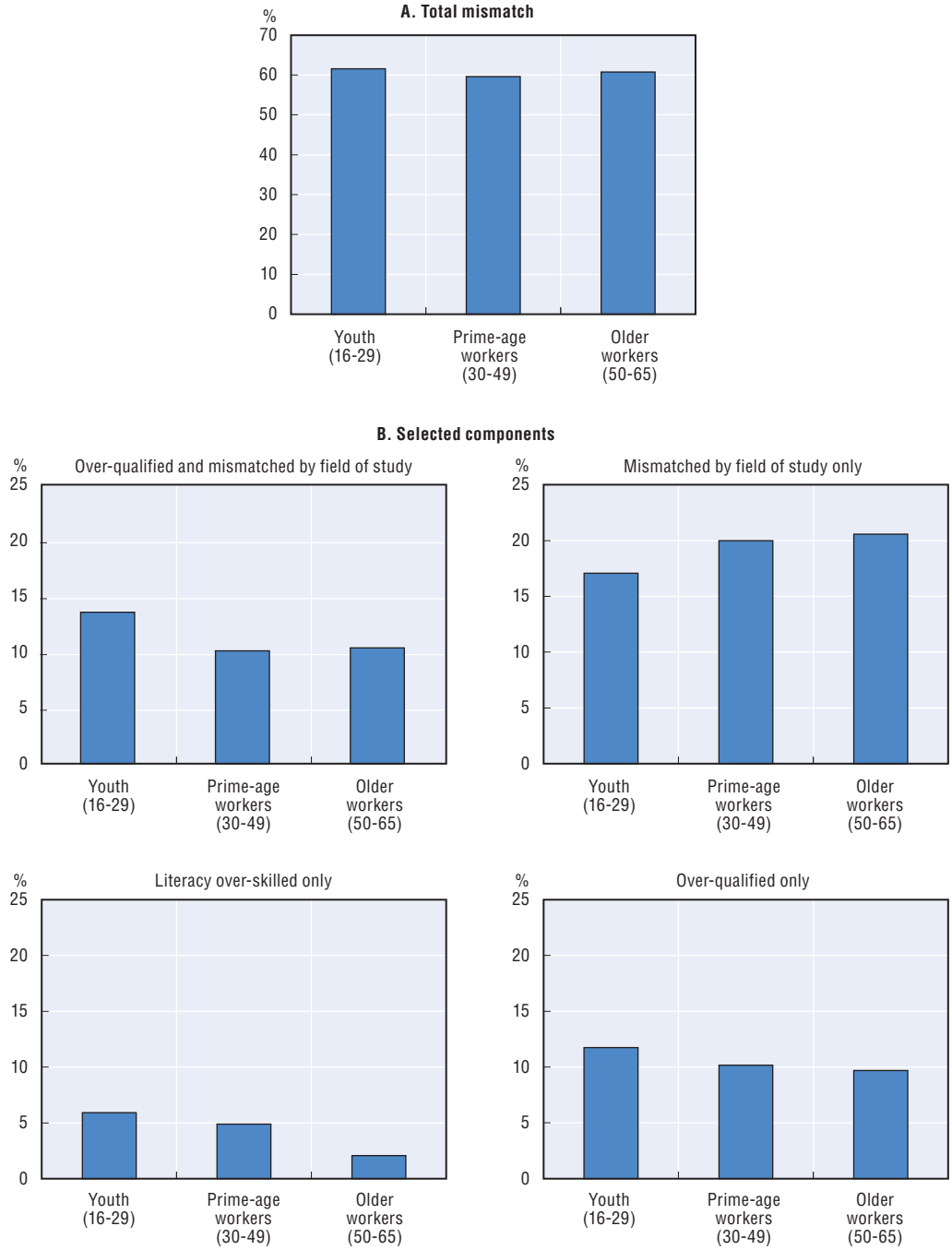
Field of study mismatch arises when workers are employed in a different field from what they have specialised in. The matching is based on a list of occupations (at the 3-digit level of the ISCO classification) that are considered as an appropriate match for each field of study. Workers who are not employed in an occupation that is considered a good match for their field are counted as mismatched. The list of fields and occupations used in this chapter can be found in Annex 5.A2. The list is largely based on that developed by Wolbers (2003) but has been adapted to the ISCO-08 classification.

a) Using the results of the OECD Survey of Adult Skills, skill requirements can be measured in several alternative ways, including the mode of self-reported requirements across individuals in the same 1-digit occupation or the mode of observed educational attainment across individuals in the same 1-digit occupation. In all cases, requirements are computed separately for each country. These alternatives give very similar country rankings and incidences of the same order of magnitude as those obtained using self-reported qualification requirements.

Whether field of study mismatch is accompanied or not by qualification mismatch is an important issue as it affects the consequences of mismatch on wages and skills use. For instance, over-qualification implies a sizeable under-use of skills for all age groups while this is not the case for field of study mismatch alone (Figure 5.6). Similarly, while over-qualification is a source of wage penalty when workers are compared to equally qualified well-matched counterparts, field of study mismatch alone brings about a statistically significant increase in wages for youth (Figure 5.7). Interestingly, and in line with findings in previous sections, mismatch in literacy is a source of skill under-use only for youth and it is only for this age group that it results in a wage penalty, although not statistically significant. This is in line with the idea that, over time, employers may use information other than formal qualifications to fill vacancies and shape job content based on actual (revealed) skills.

Figure 5.5. **Skills mismatch by age group and type of mismatch**[a]

As a percentage of total employment in each age group



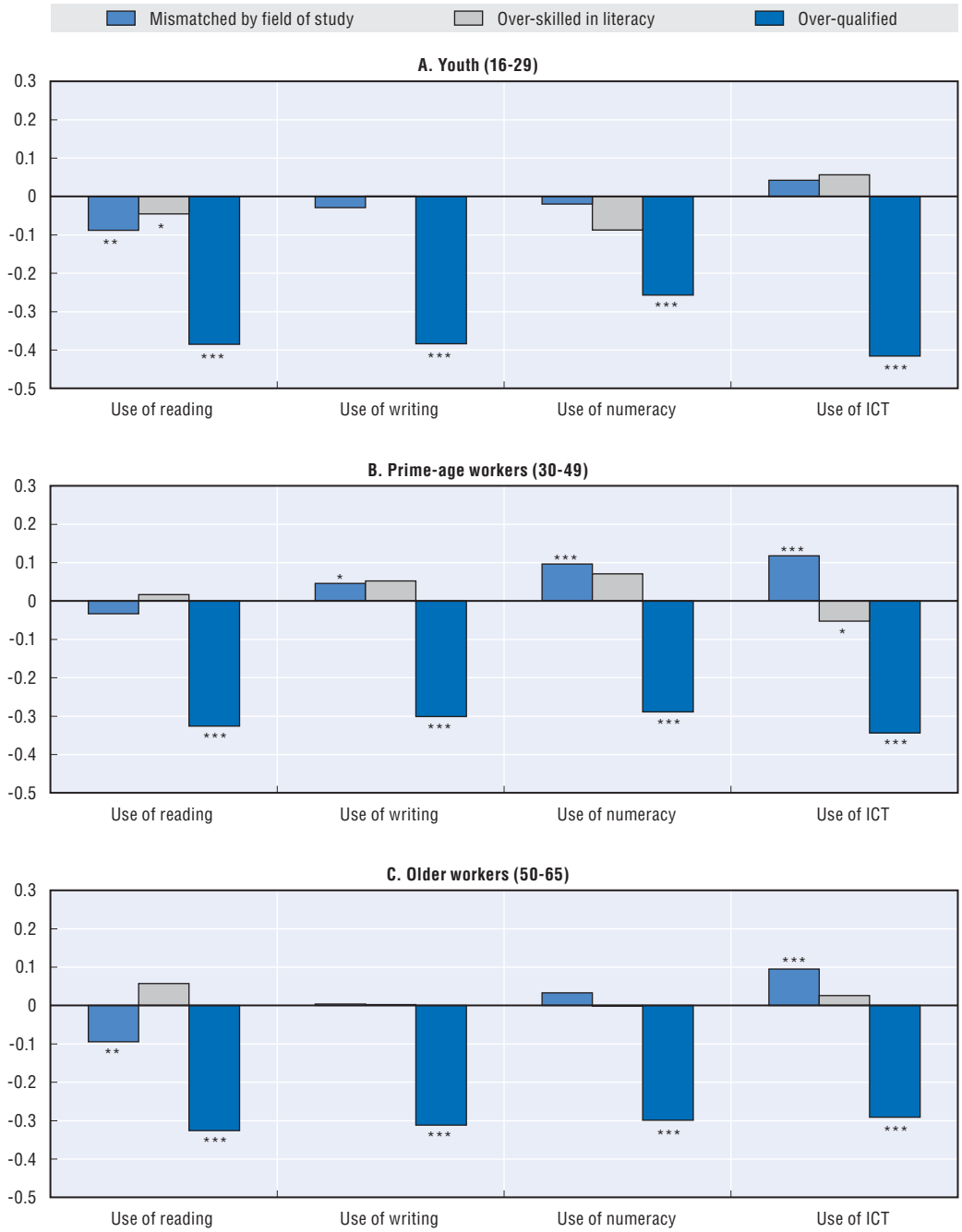
a) Workers are classified as mismatched by qualification if they have higher or lower qualifications than required by their job; workers are classified as mismatched in terms of literacy skills if they have literacy proficiency exceeding or below that required by their job; and workers are classified as mismatched by field of study if they are working in an occupation that is not related to their field of study (see Box 5.5 and Annex 5.A2 for further details).

Source: OECD calculations based on the Survey of Adult Skills (PIAAC) 2012.

StatLink http://dx.doi.org/10.1787/888933132944

Figure 5.6. **Skills use and mismatch, by age group and type of mismatch**[a]

Effect of mismatch on skills use[b]



***, **, *: statistically significant at the 1%, 5% and 10% levels, respectively.

a) See note *a)* of Figure 5.5. Each skills use variable was regressed (using OLS) on the three types of mismatch, with controls for gender, level of educational attainment, field of study, literacy proficiency score, firm size, occupation at 1-digit, industry at 1-digit, contract type, sector (public, private, non-profit), a dummy for students, a dummy for full-time work and country fixed effects. Standard errors are corrected for measurement error and sampling design.

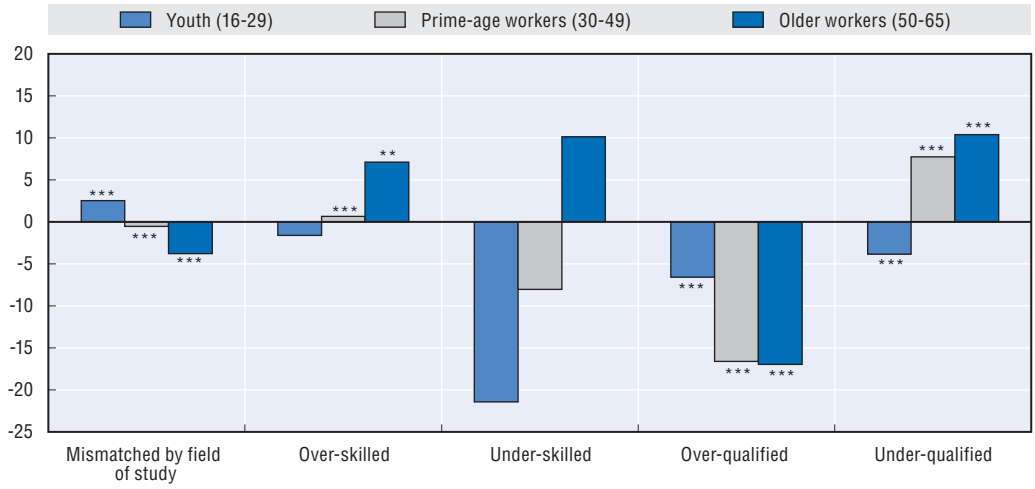
b) The coefficients can be interpreted as point changes in the indicators of skills use ranging from 1 to 5.

Source: OECD calculations based on the Survey of Adult Skills (PIAAC) 2012.

StatLink http://dx.doi.org/10.1787/888933132963

Figure 5.7. **Wages and mismatch, by age group and type of mismatch**[a]

Percentage change in wages[b] due to mismatch



***, **, *: statistically significant at the 1%, 5% and 10% levels, respectively.

a) See note *a)* of Figure 5.5. A single OLS regression of the log of wages on the three types of mismatch was run including controls for gender, level of educational attainment, field of study, literacy proficiency score, firm size, occupation at 1-digit, industry at 1-digit, contract type, sector (public, private, non-profit), a dummy for students, a dummy for full-time work and country fixed effects. Standard errors are corrected for measurement error and sampling design.

b) Log of gross hourly earnings including bonuses for wage and salary earners, trimmed at the 1st and 99th centile, by country.

Source: OECD calculations based on the Survey of Adult Skills (PIAAC) 2012.

StatLink *http://dx.doi.org/10.1787/888933132982*

3. Improving labour market outcomes through skill-related policies

Skills are distributed unequally across youth within countries (see OECD, 2013a) and skills investments are not always relevant to the demands of the labour market, hence pointing to the important role of education and labour market policies, particularly for the least advantaged. In addition, it is important that returns to skills reflect true productivity – but evidence presented in this chapter suggests that employers (at least in some countries) may rely on signals conveyed by educational attainment and field of specialisation. This is an issue as education level and field of study, although useful proxies, do not necessarily allow employers to differentiate between more and less productive young job candidates. This section will look separately at these two aspects.

Enhancing investments in work-relevant skills

Much is known about how to raise educational attainment among youth so as to improve their labour market outcomes, but less is known about how to improve information-processing and generic skills. Given the importance of these skills in determining the labour market outcomes of youth, as well as the need for further investments in these skills, this section looks at their determinants among young people in OECD countries. Understanding what determines information-processing and generic skills is critical for identifying the correct policy levers through which the labour market outcomes of youth might be improved.

Education is a key factor behind literacy and numeracy proficiency

To a large extent, information-processing skills are learnt in school (see Box 5.6) and, as a result, can be improved by raising educational attainment. In Figure 5.8, the explained variance in literacy proficiency of the three age groups – close to 40% overall – is broken down into three broad components: education and field of study; skills use at work, work experience and training; and the cumulative impact of the remaining controls, notably country fixed effects, parental background, demographic factors and attitude towards learning.[10] Across the OECD, formal education – including both educational attainment and field of study – contributes to about 10% of the overall variation in skills proficiency among youth (which corresponds to about 30% of the explained variance in youth skills proficiency, or the R-squared) suggesting that policies targeted at increasing the educational attainment of young people are likely to have an impact on information-processing skills (see Box 5.6 on causality).

The second set of determinants of information-processing skills includes factors related to the practice of literacy and numeracy at work and includes: the use of information-processing skills at work; work experience; and training. Overall, these three factors account for about 5% of the variance in skills proficiency among youth, rising to 10% for adults and

Box 5.6. **The causal impact of education on information-processing skills**

The causal effect of education on information-processing skills is not straightforward to identify in practice. While individuals with more education tend to have higher information-processing skills, it could simply be that more skilled individuals are more likely to pursue their studies. It is not clear, therefore, in which direction the causality runs: does more education lead to higher information-processing skills, or do higher information-processing skills entail more education?

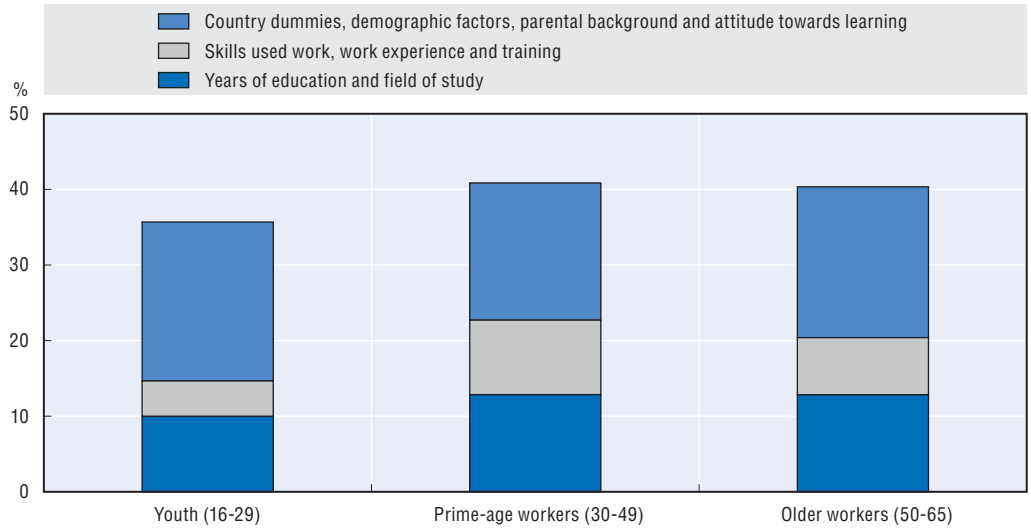
Some studies have exploited the fact that cut-offs based on date of birth create exogenous variation in some countries in the age at which children start school as well as in the quantity of schooling they receive. For example, Leuven et al. (2010) find that one additional month in school in the Netherlands increases language scores of disadvantaged pupils by 6% of a standard deviation and their mathematics scores by 5% of a standard deviation.

Other studies have analysed changes or differences in the length of compulsory schooling and their effect on the cognitive skills of the individuals affected by these laws. For example, Banks and Mazzonna (2012) found that the change to the minimum school-leaving age in England from 14 to 15 in 1947 led to around half a standard deviation increase in male memory and executive functioning at older ages as measured using a set of cognitive tests. In Norway, the lengthening of compulsory schooling from seven to nine years, which was gradually implemented in municipalities between 1955 and 1972, increased the performance of young men on IQ tests by 3.7 points (Brinch and Galloway, 2012). Other studies have found similar results (Cascio and Lewis, 2006; Falch and Massih, 2010; Schneeweis et al., 2012).

In one recent and related study, Carlsson, Dahl and Rooth (2012) exploit variation in the assigned test date for cognitive tests which almost all 18 year-old males were required to take in preparation for military service in Sweden. The authors find that an additional year of schooling (180 days) raises cognitive scores on some cognitive tests by roughly one-fifth of a standard deviation. Their analysis also shows that approximately 18% of the return to an extra year of schooling in wage regressions can be attributed to the increase in cognitive ability resulting from that extra year of schooling – similar to the magnitude found in other studies.

Figure 5.8. **The determinants of the variation in literacy proficiency by age group**

Proportion of the explained variance (R-squared) in literacy proficiency explained by each factor[a, b]



a) The results are obtained using regression-based decomposition. Each bar summarises the results from one regression and the height of each bar represents the total R-squared for that regression. The sub-components of each bar show the contribution of each factor (or set of regressors) to the R-squared. The Fields decomposition is explained in more detail in Box 5.4 of this chapter. The decomposition of the variance in numeracy proficiency gives very similar results.

b) Attitude towards learning includes information on how individuals respond to new ideas and challenges, whether they enjoy learning, and the extent to which they relate ideas to one another. Demographic variables include gender, self-reported health status, migration status and the language spoken at home. Experience includes a squared term. Parental background variables include mother's and father's education, parental migration status, and the number of books at home. Country dummies refer to country fixed effects. Skills used at work includes the use of reading, numeracy, writing, ICT, problem-solving, task discretion, learning, influencing, co-operation, self-organisation, dexterity and physical skills at work. Training refers to the participation in any form of training over the previous 12 months.

Source: OECD calculations based on the Survey of Adult Skills (PIAAC) 2012.

StatLink http://dx.doi.org/10.1787/888933133001

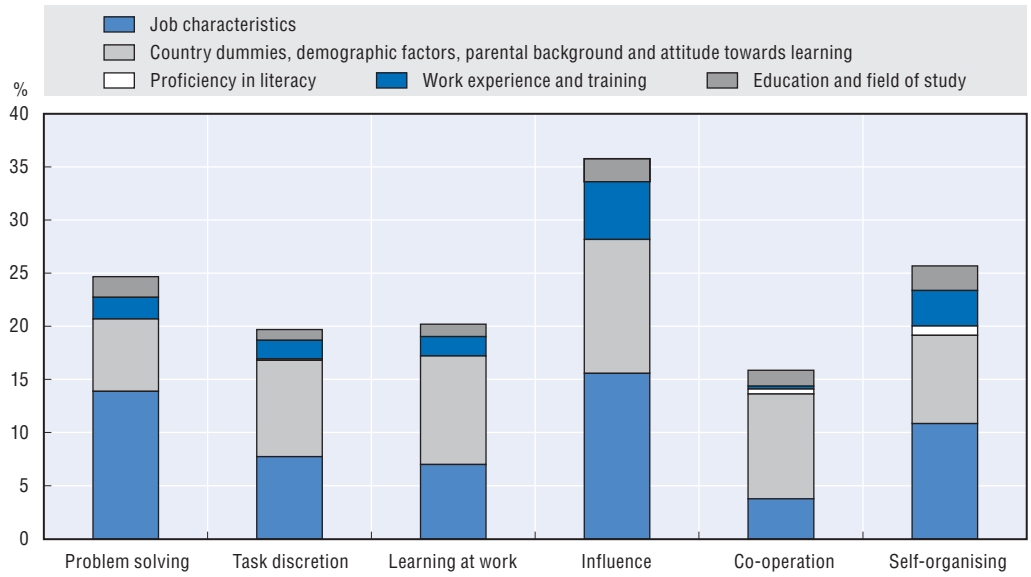
7.5% for older workers. The most important factor of the three, irrespective of the age group, appears to be the extent to which skills are used at work which accounts for about 4% of the variance in skills proficiency among youth (about 10% of the explained variance).[11] This suggests that learning-by-doing could be a very important channel through which skills can be improved. The contribution of work experience is rather small although it increases with age – a conclusion also reached by Green (2001) in the case of Canada. The contribution of formal training is equally small which could be due to the way training is measured in the OECD Survey of Adult Skills. Although the survey includes questions about training, training content is not known – i.e. it could be unrelated to information-processing skills – and training participation is only assessed over a relatively short period of time making it impossible to assess the cumulative effect of training on proficiency.[12]

Personal attitudes, cultural attributes and experience influence the development of generic skills

Net of job-specific characteristics,[13] generic skills used at work by youth are largely explained by personal attitudes and country specificities – presumably cultural attributes (Figure 5.9). These two factors together explain between 7% and 13% of the variance in generic skills among youth (equivalent to up to 62% of explained variance). Of these two factors, personal attitudes explain a larger share of the variance of learning at work,

Figure 5.9. **The determinants of the variation in generic skills used at work, youth (16-29)**

Proportion of the explained variance (R-squared) in skills explained by each factor[a, b]



a) The results are obtained using regression-based decomposition. Each bar summarises the results from one regression and the height of each bar represents the total R-squared for that regression. The sub-components of each bar show the contribution of each factor (or set of regressors) to the R-squared. The Fields decomposition is explained in more detail in Box 5.4 of this chapter.

b) Attitude towards learning includes information on how individuals respond to new ideas and challenges, whether they enjoy learning, and the extent to which they relate ideas to one another. Demographic variables include gender, self-reported health status, migration status and the language spoken at home. Experience includes a squared term. Parental background variables include mother's and father's education, parental immigration status, and the number of books at home. Country dummies refer to country fixed effects. Education refers to years of education. Job characteristics include occupation at 1-digit, industry at 1-digit, firm size, contract type and a dummy for full-time work. Training refers to the participation in any form of training over the previous 12 months. Using numeracy proficiency rather than literacy proficiency as a control produces virtually identical results.

Source: OECD calculations based on the Survey of Adult Skills (PIAAC) 2012.

StatLink http://dx.doi.org/10.1787/888933133020

influence and self-organising and problem-solving skills while country specificities play a bigger role in explaining the variation of co-operative skills and task discretion (not shown in the figure). Work experience and training – reflecting formal and non-formal learning on the job – play a sizeable role in explaining the variance in influencing and self-organisation skills. Finally, education and field of study contribute to just about 2% of the variance of influence, self-organisation and problem solving skills.

How policies can help

Improving the skills of school leavers through prevention and remedial learning. Acting early with sustained interventions throughout schooling is a key requirement to ensure better learning outcomes, particularly for disadvantaged youth. There is a large body of empirical evidence showing that early childhood education and care can play a key role when it is targeted on children from poor socio-economic backgrounds and sustained in the transition to compulsory education (OECD, 2006b). Improved education and labour market outcomes – relative to carefully constructed comparison groups – are experienced several years/decades after school leaving (OECD, 2009b; OECD, 2010). Policies that make access to quality education more equitable can also play a key role in fighting disadvantage at school entry.

Addressing early school leaving – i.e. before completion of upper secondary education – is also crucial and requires early detection of youth at risk of dropping out early from school and remedial education for those young people who leave education too early only to become NEET. As part of their "Keeping in Touch" strategy, Careers Wales North East have developed a data-led approach to identify youth at risk of becoming NEET. The indicators include family characteristics that may be a signal of deprivation as well as educational history with a particular focus on attendance and offending behaviours (OECD, 2014). Similarly in New Zealand, and since 2012, schools send regular reports to the Department of Education (approximately every fortnight) about every young person who leaves school either with or without a qualification. These data are filtered by the department, which identifies "at-risk" youth (based on information on qualifications and grades) and directly refers these youth to specialised service providers.

In most countries, access to remedial learning is independent of labour market status and can take several forms: return to initial education through attendance of ordinary or fast-track special adult learning classes; second-chance schools/programmes with access limited to youth. Public employment services can play a key role in encouraging participation by unemployed youth who lack the skills necessary to find work while more specific outreach policies are needed for youth who have become marginalised (OECD, 2010).[14]

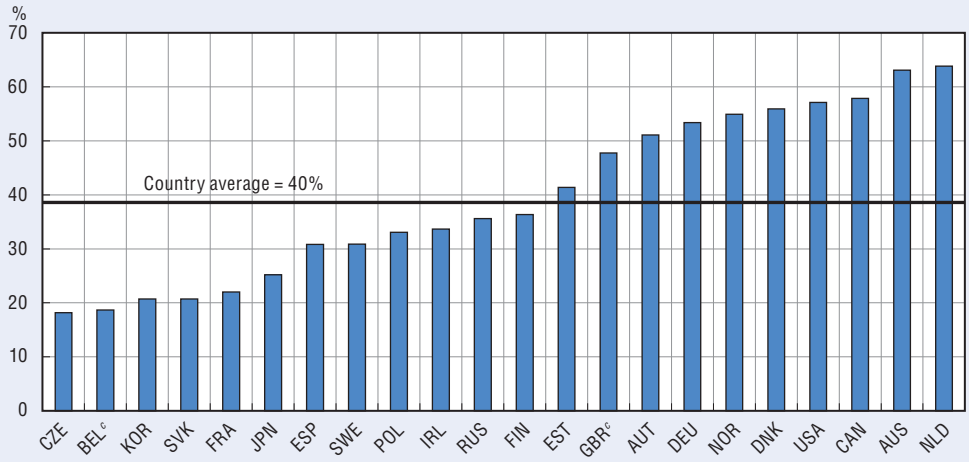
Boosting work experience by encouraging work and study. As shown in Figure 5.3, work experience explains a sizeable share of the variance in the hourly wages of youth. Other findings in the chapter suggest that work experience may help build generic skills and help employers value actual skills more over observed qualifications. Despite this fact, in many countries, few young people combine work and study (Box 5.7). Acknowledging the importance of work experience, many countries have put forward specific initiatives to encourage work while in school. However, as Quintini (2014b) shows using the OECD Survey of Adult Skills, most working youth do so outside of formal arrangements such as work-based components in vocational education or apprenticeship programmes. As a result, along with broadening formalised work and study, policies that support work by students could encourage the acquisition of work experience before completing education. Slovenia has a programme in place that provides a digital tool for validation of informally gained work experience called Nefiks. This tool produces certificates that the young person can subsequently use to prove and demonstrate relevant skills to potential employers, who might be concerned about credentials. Canada, as part of its Youth Employment Strategy, helps students who are having difficulty finding summer jobs by funding subsidies to Canadian employers so that they may create career-related summer jobs for students. In its most recent budget, the Government of Canada announced that it will continue to improve the Youth Employment Strategy to better align it with the evolving realities of the job market and to ensure federal investments in youth employment provide students with real-life work experience in high-demand fields such as science, technology, engineering, mathematics and the skilled trades. Encouraging work and study also requires the contribution of other stakeholders – employers in particular – and a key challenge is therefore to identify incentives for their engagement.

Box 5.7. **A picture of work and study using the OECD Survey of Adult Skills**

The combination of work and study has been seen as a key strategy to ensure that youth develop the skills required on the labour market so that transitions from school to work are shorter and smoother (see Greenberger and Steinberg, 1986; Ruhm, 1997; Dundes and Marx, 2006; Beffy et al., 2009). The effects of work and study on subsequent labour market outcomes cannot be studied directly using the OECD Survey of Adult Skills, but it does provide unique comparable cross-country information on the incidence and composition of work and study. The figure below shows that the combination of work and study is most common in Anglo-Saxon countries as well as in countries with a long tradition of apprenticeships where at least half of students work.

Share of youth (16-29) combining work and study[a]

Percentage of all students[b]



a) All apprentices – by labour market status and/or by contract type – are counted as combining work and study, irrespective of what they report. Indeed, some apprentices classify themselves as students while others see themselves as simply working.
b) Apprentices who report "only work" as their labour force status are added to the student total. This is done for consistency with their inclusion among youth who are working and studying.
c) The OECD Survey of Adult Skills only covered Flanders (BEL) and England/Northern Ireland (GBR).
Source: OECD calculations based on the Survey of Adult Skills (PIAAC) 2012.

StatLink *http://dx.doi.org/10.1787/888933133039*

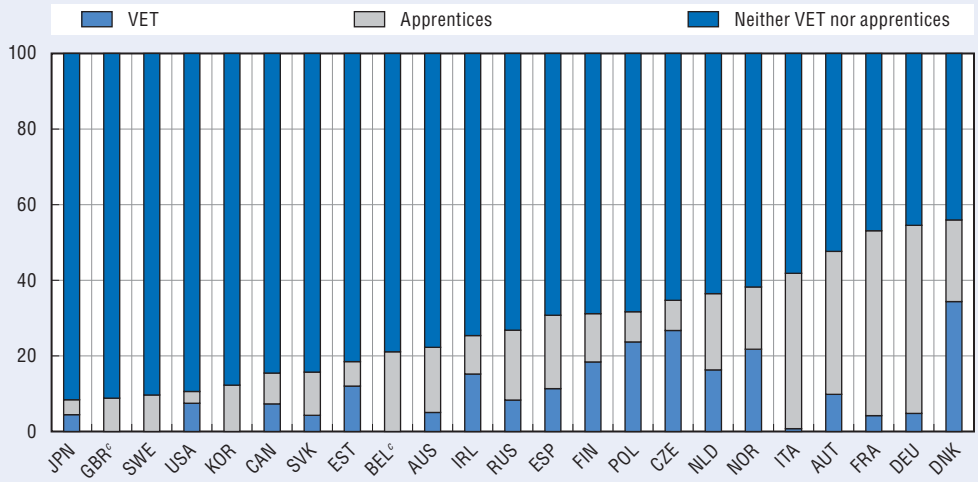
Apprenticeships account for about 50% of all work and study in Germany and France but less than 5% in the United States and Japan figure on the composition of work and study. VET programmes also account for a sizeable portion of work and study. However, many youth who combine work and study are neither apprentices nor studying towards a VET programme. This is particularly the case in Anglo-Saxon countries. A further split (not presented here) would show that most youth working outside VET or apprenticeship programmes are in tertiary education.

The literature provides mixed evidence as to whether work needs to be related to field of study or to involve only a small number of hours to generate positive labour market outcomes upon education completion. European studies tend to emphasise the relation between work content and the student's field of study, with evidence from France (Beffy et al., 2009) showing that work experience acquired while studying has a clear positive effect on future labour market outcomes only if the job is related to the student's field of study. In addition, most analyses provide evidence that working a moderate number of hours helps youth in post-school labour market outcomes without compromising school achievement (Dundes and Marx, 2006).

Box 5.7. **A picture of work and study using the OECD Survey of Adult Skills** *(cont.)*

Composition of work and study by type of programme[a]

Percentages of all youth (16-29) combining work and study[b]



a) Information to identify VET programmes is missing in the following countries: Flanders (Belgium), England/Northern Ireland (United Kingdom) and Sweden. Values for Denmark and Italy represent a lower bound as the distinction between VET and not is not available at all relevant ISCED levels.

b) The categories are mutually exclusive. Hence VET refers to all students in VET programmes who do not report being apprentices. All apprentices – by labour market status and/or by contract type – are counted as combining work and study, irrespective of what they report. Indeed, some apprentices classify themselves as students while others see themselves as simply working.

c) The OECD Survey of Adult Skills only covered Flanders (BEL) and England/Northern Ireland (GBR).

Source: OECD calculations based on the Survey of Adult Skills (PIAAC) 2012.

StatLink *http://dx.doi.org/10.1787/888933133058*

While the OECD Survey of Adult Skills cannot offer definitive answers to these two issues, it suggests a more nuanced picture than the one presented by country-specific studies. Countries are found to differ significantly in the extent to which students get jobs in their field or not (Quintini, 2014b; Montt, 2014) and these differences appear to be correlated with the overall incidence of field of study mismatch in each country suggesting that cultural differences probably play a major role, both on the supply and the demand side. On the supply side, countries differ in the extent to which students engage in work outside structured internships and apprenticeships or outside vocational education work-based practice. This is very uncommon in continental European countries where a *study first, work later* logic applies to the majority of students, while it is extremely common in Anglo-Saxon countries where student jobs – evening, summer, week-end jobs – are commonplace. On the demand side, employers vary in the extent to which curriculum activities that are not related to a candidate's studies are valued. In some countries, employers are open to all work activities that are susceptible to teach young people the generic skills required at work – time-keeping, team-work, self-organisation, presentation skills, etc. In others, generally those where credentials play a key role, employers are focused on work experience that is specific to the content of the job they are recruiting for. It goes without saying that these two elements – supply and demand – are related, with students engaging more in work outside their field in countries where they know these activities will be valued by employers.

Improve field of study choice through better labour market information in career guidance. Field of study plays a relatively large role in explaining the variance of hourly wages for young people, and continues to play a role later in life. In parallel, while working in a different field from that studied in school is not in itself a bad thing for young people, this is often accompanied by over-qualification and therefore carries a sizeable wage penalty.[15]

However, in most OECD countries, student preferences rather than potential labour market outcomes remain the key driver of field of study choice and educational provision, particularly for the most disadvantaged youth. Indeed, while there is some evidence from the United States and Canada that expected earnings play a prominent role in the choice of field of study by post-secondary students (Berger, 1988; Flyer, 1997; Arcidiacono, 2004; Arcidiacono et al., 2012; and Wisfall and Zafar, 2013), Usher (2006) shows that in the United States those from lower socio-economic groups have shorter-term decision-making horizons and do not give appropriate weight to medium-term returns. Davis et al. (2013) present similar findings for the United Kingdom and conclude that students from lower income households are less likely to choose high wage premium subjects. Risk aversion, affected by family income, has also been shown to play a role in the choice of field of study with youth from richer households more likely to choose riskier majors (Saks and Shore, 2005).[16] The OECD Survey of Adult Skills cannot be used to explore this issue in depth as it does not include information on parental/family income[17] – an important element influencing the choice of field of study – but the findings of the literature suggest that some youth may be better equipped than others in making this decision.

In this context, it is important that all youth make informed decisions about the field they would like to specialise in, while also investing in portable foundation skills. The provision of high-quality career guidance (see Box 5.8) supported by timely data on labour market needs is desirable but not always made available. Indeed, in many countries, career guidance is provided by busy teachers with a preference for academic education and little knowledge of skill requirements in the labour market. In addition, education systems are often too slow in adapting curricula and courses on offer to projections/forecasts of future skill requirements.

Box 5.8. **Career guidance: Getting it right**

Career guidance refers to services intended to assist people, of any age and at any point throughout their lives, to make educational, training and occupational choices and to manage their careers. Career guidance can improve the efficiency of labour markets and education systems, support key policy objectives ranging from lifelong learning to social equity, and enable people to build human capital and employability throughout their lives.

In its contemporary forms, career guidance draws upon a number of disciplines: psychology; education; sociology; and labour economics. Historically, psychology is the major discipline that has under-pinned its theories and methodologies. One-to-one interviews and psychological testing for many years were seen as its central tools. There are many countries where psychology remains the major entry route. However, in most countries today, career guidance is provided by people with a very wide range of training and qualifications. Training programmes are still heavily based upon developing skills in providing help in one-to-one interviews. On the other hand, psychological testing now receives a reduced emphasis in many countries as counselling theories have moved from an emphasis upon the practitioner as expert to seeing practitioners as facilitators of individual choice and development. While personal interviews are still the dominant tool, career guidance includes a wide range of other services: group discussions; printed and electronic information; school lessons; structured experience; telephone advice; on-line help. Career guidance is provided to people in a very wide range of settings: schools and tertiary institutions; public employment services; private guidance providers; enterprises; and community settings.

Box 5.8. **Career guidance: Getting it right** *(cont.)*

Schools

In schools, career guidance has largely focused upon helping young people at the point of leaving school with key decisions such as which occupation or which course of tertiary study to choose. In the United Kingdom, since September 2012, schools have been legally responsible for securing access to independent and impartial careers guidance for all pupils aged 12-18, for which careers guidance must include information on all options available in respect of 16-18 education or training, including apprenticeships and other work-based education and training. However, an evaluation of the programme found that of the 60 schools visited for the survey, only 12 had ensured that all students received sufficient information to consider a wide breadth of career possibilities (Ofsted, 2013), suggesting that more could be done to provide effective career guidance programmes in schools.

Recognising the need to improve guidance in secondary schools, the Ministry of Education in New Zealand, in co-operation with Career Services – an independent body providing advice on work and education options to job seekers and school leavers – has developed the Creating Pathways and Building Lives (CPaBL) programme, assisting schools in the development of effective careers advice. CPaBL helps participating schools – 100 across the country – to incorporate career education into school policy and strategic plans with the aim of assisting students to make a smooth transition from school to further training and employment.

Tertiary institutions

Career services are often underdeveloped in this sector, and where they exist, often focus upon job placement or are integrated with personal counselling services. The need for career guidance becomes more pressing as tertiary education in OECD countries increasingly operates in a more open and competitive environment, and as the expansion of tertiary participation widens its purposes substantially beyond preparing students for traditional professions. These two trends mean that students face more choices, the link between particular courses of study and specific labour market destinations becomes less direct, and institutions need to become better at monitoring their students' destinations and using their employment outcomes as a key marketing tool to attract new students. All of these imply a shift in tertiary career services towards a greater emphasis upon developing students' employability skills. Career services in tertiary education have traditionally been much more strongly developed in some OECD countries, notably the United Kingdom and the United States, than in others. However, services are now developing rapidly in a number of countries, such as Ireland and Spain.

Public employment services

Career guidance delivered by public employment services (PES) has largely focused upon helping people with immediate job and academic decisions. For example, Finland has educated psychologists located in PES offices to help young people and those changing occupations in finding their strengths and possibilities with respect to the education system and the labour market. Each has a masters degree in psychology and has also completed short in-service training. Many obtain further postgraduate qualifications. Their clients include undecided school leavers, unemployed people, and adults who want to change careers. Clients need to make appointments, and typically have more than one interview. Demand is very high, and it is not unusual for clients to have to wait six weeks for an appointment.

Source: OECD (2003), "Career Guidance: New Ways Forward", Chapter 2 in *Education Policy Analysis 2003*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/epa-2003-en*; OECD (2004), *Career Guidance and Public Policy: Bridging the Gap*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264105669-en*; OECD (2008), *Jobs for Youth/Des emplois pour les jeunes: New Zealand 2008*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264041868-en*; Ofsted (2013), "Going in the Right Direction? Careers Guidance in Schools from September 2012", Ofsted, Manchester, *www.ofsted.gov.uk/resources/going-right-direction-careers-guidance-schools-september-2012* (accessed 14 May 2014).

Ensuring that investments in skills pay off

Labour costs and wage-setting institutions affect the way skills are recognised and rewarded in the labour market but contract type and firm size play a role too

A number of different labour market institutions are likely to affect the ability of employers to appropriately identify and reward the skills that young people possess. The scope for analysis in this area is limited by the cross-sectional nature of the OECD Survey of Adult Skills data but some simple analysis can nevertheless shed some light on the issue.

Rigid wage-setting arrangements, too-high wage floors and, in some cases, rigid rules on the hiring and firing of permanent workers are likely to make employers more cautious when hiring young people (see also OECD, 2006a; and OECD, 2013c). Because of these rigidities employers may prefer to set the wages of young people based on observable characteristics – such as educational attainment and the field of study – rather than the underlying skills youth possess. These skills may be conveyed to perspective employers during hiring interviews but, for youth without experience, they remain largely untested and hence uncertain. In some countries, it is also the case that collective bargaining agreements tie wages to certified skills – i.e. education level achieved or specific vocational qualifications – with only limited possibilities to reward actual abilities.

Table 5.2 reports the coefficients of standardised literacy scores as well as interactions of these scores with key labour market institutions and job characteristics from an hourly wage regression similar to that underlying the results presented in Figure 5.2. The findings suggest that rewards to information-processing skills are lower in countries with more centralised wage bargaining systems, higher labour costs in the form of high minimum-to-median wage ratios and/or high tax wedges.[18] In line with the findings in the literature,[19] this suggests that more rigid wage-setting systems may make employers more likely to reward education over information-processing skills. This could be due to the fact that wage rigidities make it more difficult to adjust wages once actual skills are revealed or that collective bargaining agreements set wages based on observable characteristics such as certified skills (i.e. educational qualifications). Similarly, when hiring is more costly – either because of high wage floors or high social security contributions – employers may be more cautious and make decisions based on observable characteristics. Finally, when the returns to literacy are interacted with job characteristics, they are higher in larger firms but lower on fixed-term and part-time contracts.[20]

Labour costs and wage-setting institutions might also affect the likelihood that employers learn about workers' skills over time

Box 5.3 addressed the issue of employer learning, namely whether the returns to information-processing skills increase with workers' experience, and found evidence in favour of it in about half of the countries participating in the OECD Survey of Adult Skills. Table 5.3 splits the countries based on whether or not evidence of employer learning is found along with information on key labour market institutions and the incidence of vocational education and training in the country. Institutions are marked with a "+" sign if their value is higher than the cross-country average and a "-" sign if the inverse is true.

Implicit in some of the literature is that employer learning is the hallmark of efficient labour markets, where "efficient" is taken to mean "flexible" – i.e. with limited employment protection, and no or little collective bargaining and/or wage regulation (Bauer and Haisken-DeNew, 2001; Hanushek and Zhang, 2006). In such labour markets, it is argued, employers have the ability to "learn" about the true productivity of workers and adjust their

Table 5.2. **Labour market institutions and returns to information-processing skills**

Coefficients of an hourly wage regression[a, b]

	Coefficient
Standardised literacy score	0.197***
Interaction of standardised literacy score with:	
Level at which wage bargaining takes place	-0.007**
Protection against individual and collective dismissals	-0.005
Ratio of minimum to median wages	-0.200***
Tax wedge	-0.001**
Firm size	
11-50	0.007
51-250	0.015**
251-1 000	0.026***
More than 1 000	0.003
Contract type	
Fixed-term	-0.038***
Temporary work agency/apprentice/no contract	-0.002
Hours worked	
Part-time	-0.053***
Sample size	52 301

***, **, *: statistically significant at the 1%, 5% and 10% levels, respectively.

a) OLS regression pooling all countries and correcting for measurement error and sampling design. In addition to the controls reported in the table, the following additional controls are included: yeas of education, gender, age, industry at 1-digit, occupation at 1-digit, firm size, contract type, a dummy for full-time work and country fixed effects. The dependent variable is the log of gross hourly earnings including bonuses for wage and salary earners, trimmed at the 1st and 99th centile, by country. The level at which wage bargaining takes place is measured by an indicator as follows: 1, bargaining takes place primarily at the local or company level; 2, intermediate or alternating between sector and company bargaining; 3, bargaining predominantly takes place at the sector or industry level; 4, intermediate or alternating between central and industry bargaining; 5, bargaining predominantly takes place at the central or cross-industry level and there are centrally determined binding norms or ceilings to be respected by agreements negotiated at lower levels. The tax wedge refers to a single person without children earning 67% of the average wage in each country (see note 18).

b) Countries with no statutory minimum wage are not included in the analysis, but their exclusion does not affect the direction and significance of the coefficients of the other policy variables.

Source: OECD calculations based on the Survey of Adult Skills (PIAAC) 2012; *OECD Employment Protection Database*, *OECD Taxing Wages Database*, and *Database on Institutional Characteristics of Trade Unions, Wage-setting, State Intervention and Social Pacts, 1960-2011*; Visser, J. (2013), "Data Base on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts, 1960-2011 (ICTWSS)", Amsterdam Institute for Advanced Labour Studies, Amsterdam.

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wages accordingly – contrary to more "rigid" labour markets, where employers supposedly have less leeway in adjusting wages since these are set either by collective agreements or are subject to high minima. Given the relationship between employer learning and signalling theories of education, such arguments have sometimes been supplemented with assumptions around how education systems function. In particular, it has been suggested that in systems that are more vocational and/or where there is less variability in the quality of education, true productivity is more easily observed by employers at the point of hiring, and so there is less need for employer learning (Bauer and Haisken-DeNew, 2001).

A first basic look at the data suggests that the relationship between institutional features of labour markets and employer learning is more complicated than that put forward in the literature. Table 5.3 suggests that while it is true that the most "liberal" of group of countries participating in the OECD Survey of Adult Skills (Australia, Canada and the United States) exhibits employer learning and the most regulated one (Belgium [Flanders], France, Italy and Spain) do not, there are no obvious education and/or labour market characteristics linking together countries where employer learning is detected.

Table 5.3. **Employer learning and labour market institutions**

Increase in wage returns to information-processing skills with experience and relation of each institution to the cross-country average[a]

	Return to numeracy[b]	Protection against individual and collective dismissals	Difficulty of use of temporay contracts	Level at which wage bargaining takes place	Minimum-to-median wage ratio	Existence of a national minimum wage	Tax wedge	VET
Employer learning								
Australia	0.037	-	-	-	+	+	-	-
Austria	0.041	+	-	+		-	+	+
Canada	0.086	-	-	-	-	+	-	-
Denmark	0.049	+	-	+		-	+	+
Finland	0.060	+	+	+		-	+	-
Germany	0.084	+	-	+		-	+	+
Netherlands	0.056	+	-	+	+	+	-	-
Norway	0.094	+	+	+		-	-	+
Sweden	0.053	+	-	+		-	+	-
United States	0.074	-	-	-	-	+	-	
No employer learning								
Belgium (Flanders)	0.065	-	+	+	+	+	+	-
Czech Republic	0.102	+	-	-	-	+	+	+
England/Northern Ireland	0.161	-	-	-	+	+	-	
Estonia	0.171	-	+	-	-	+	+	-
France	0.040	+	+	-	+	+	+	-
Ireland	0.061	-	-	-	+	+	-	-
Italy	0.015	+	+	+		-	+	-
Japan	0.137	-	-	-	-	-	-	
Korea	0.064	+	+		-		-	
Poland	0.109	+	+	-	+	+	-	+
Slovak Republic	0.144	+	+	-	+	+	+	+
Spain	0.107	+	+	+	-	+	+	-
Average	**0.082**	**2.0**	**1.5**	**2.3**	**0.45**	**1.3**	**35.1**	**36.7**

a) See note *a)* of Table 5.2. VET refers to the share of individuals holding vocational education and training qualifications in the country.
b) Estimated return to numeracy from a regression including controls for years of education and interactions of both numeracy and years of education with experience (taken from Broecke, 2014).

Source: OECD calculations based on the Survey of Adult Skills (PIAAC) 2012; *OECD Employment Protection Database*; *OECD Taxing Wages Database*; *Database on Institutional Characteristics of Trade Unions, Wage-setting, State Intervention and Social Pacts, 1960-2011*; Broecke, S. (2014), "Employer Learning and Statistical Discrimination in OECD Countries", *OECD Social, Employment and Migration Working Papers*, forthcoming, OECD Publishing, Paris; Visser, J. (2013), "Data Base on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts, 1960-2011 (ICTWSS)", Amsterdam Institute for Advanced Labour Studies, Amsterdam; OECD (2013), *Education at a Glance 2013: OECD Indicators*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/eag-2013-en*.

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Similarly, there is significant heterogeneity in labour market institutions and policies in countries where no employer learning is observed. However, when examining Table 5.3 it should be kept in mind that countries in which no employer learning is observed could be doing much better at signalling the true productivity of young workers to potential firms, making employer learning less relevant. Similarly, a situation could be imagined where wage bargaining institutions cause, rather than hinder, employer learning if wages for new recruits are initially set by agreements (and therefore do not necessarily reflect productivity), but companies do have some leeway to reward the most productive workers over time.[21] This is supported by the fact that no evidence of employer learning is found in the countries with the highest returns to numeracy skills.[22]

Overall, the most consistent findings appear to apply to the difficulty of use of temporary contracts, the level at which wage bargaining takes place and the existence and level of a statutory minimum wage. In most countries where employer learning is observed, temporary contracts are easier to use than on average,[23] while the opposite is true in most countries where employer learning does not take place. Although the evidence is tentative, this would suggest that while returns to skills are lower for fixed-term contracts compared to permanent contracts, temporary contracts may act as a trial period – a sort of learning ground for employers to judge the skills of new hires. Indeed, recent research using European data has argued that temporary contracts are used by firms to screen workers for permanent positions (Faccini, 2013; see also the results of transitions out of temporary contracts in Chapter 4).

A second observation is that most countries where employer learning takes place tend to have wage bargaining systems that are more centralised than the average, while the opposite tends to be true for the group of countries without employer learning. However, it is noteworthy that several countries where employer learning takes place have lower than average returns to skill to start with while the opposite is true for countries where employer learning is not found. As a result, the positive link between the level of wage bargaining and employer learning may actually be the reflection of the negative association between the level of wage bargaining and the returns to skill. This would be in line with findings presented in Table 5.2 suggesting that returns to skill are lower in countries with more centralised wage bargaining systems.

Finally, the existence of a statutory minimum wage in a country is associated with a reduced likelihood of employer learning. In this regard, it is noteworthy that in most of the countries that combine statutory minimum wages with employer learning, the level of the minimum wage is actually quite low. This is the case for the United States and Canada, as well as for the Netherlands if the very low minimum wage applicable to workers up to 22 years of age is taken into account.

Skills in excess of job requirements are better valued in large firms, in permanent contracts and when labour costs are low

Low returns to information-processing skills at hiring could be due to skills mismatch. If a candidate is hired for a job for which he/she is over-skilled, the average return to his/her skill endowment is likely to be lower than otherwise would be the case. Because of skills under-use, at the individual level, over-skilling will negatively affect hourly wages and job satisfaction, thus increasing turnover (Quintini, 2011a, 2011b). In addition, skills in excess of formal job requirements can become obsolete if left unused, compromising the worker's long-term employment/career prospects. The extent to which skills are fully exploited at work also has important implications for a number of labour market phenomena of key policy relevance, such as labour productivity and the gender wage gap (Quintini, 2014a).

Employers can tackle mismatch and reduce its negative consequences by adjusting job content and requirements once the new hire's skills become apparent, but the extent to which this is and can be done may be affected by labour market institutions. One way to test this is to assess whether and how skills in excess of those required by the worker's occupation are rewarded. Assuming jobs vary within occupational codes, the rewarding of excess skills should indicate that the job content has been adapted to ensure that these skills are used at work. Table 5.4 shows the returns to over-skilling in literacy over and above the returns to required skills and how they are affected by labour market institutions

Table 5.4. **Returns to over-skilling in literacy**

Coefficients of an hourly wage regression[a, b]

	Coefficient
Required literacy score	0.005***
Overskilled with respect to being well-matched	0.251***
Interaction of overskilling with:	
Level at which wage bargaining takes place	-0.028***
Protection against individual and collective dismissals	0.011
Ratio of minimum to median wages	-0.329***
Tax wedge	0.001
Firm size	
11-50	-0.045**
51-250	0.005
251-1 000	-0.016
More than 1 000	-0.016
Contract type	
Fixed-term	-0.041*
Temporary work agency/apprentice/no contract	-0.025
Hours worked	
Part-time	-0.045**
Sample size	50 801

***, **, *: statistically significant at the 1%, 5% and 10% levels, respectively.

a) See note *a)* of Table 5.2. Regressions only include workers who are over-skilled and well-matched in literacy. The dependent variable is the log of gross hourly earnings including bonuses for wage and salary earners, trimmed at the 1st and 99th centile, by country. Besides the variables shown, controls for years of education, gender, age, industry at 1-digit, firm size, contract type, a dummy for full-time work and country fixed effects are included. Required literacy, expressed as a score on the literacy scale, is calculated as detailed in Box 5.5.

b) Countries with no statutory minimum wage are not included in the analysis, but their exclusion does not affect the direction and significance of the coefficients of the other policy variables (see note 18).

Source: OECD calculations based on the Survey of Adult Skills (PIAAC) 2012; *OECD Employment Protection Database*; *OECD Taxing Wages Database*; *Database on Institutional Characteristics of Trade Unions, Wage-setting, State Intervention and Social Pacts, 1960-2011*; Visser, J. (2013), "Data Base on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts, 1960-2011 (ICTWSS)", Amsterdam Institute for Advanced Labour Studies, Amsterdam; OECD (2013), *Education at a Glance 2013: OECD Indicators*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/eag-2013-en*.

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and job characteristics. Mostly in line with findings in Table 5.2, the returns to over-skilling are lower for workers on fixed-term or temporary contracts and for part-time workers as well as in countries with more centralised wage bargaining systems and a higher minimum-to-median wage ratio.

How policies can help

The above evidence suggests that rigidities in wage-setting mechanisms as well as high labour costs – in the form of high minimum-to-median wage ratios or a high tax wedge – are likely to affect the way information-processing skills are rewarded in the labour market. They also suggests that large firms are better at rewarding information-processing skills and that workers on permanent and full-time contracts have a better chance to reap the full benefits of their human capital. The findings of this section also suggest that high minimum-to-median wage ratios make adjustments after hiring less likely and that these adjustments are more probable for workers on permanent contracts and working for large firms. These adjustments are particularly important for youth whose actual skills often go undetected at hiring because of their lack of work experience.

The consistent finding that large firms are better at rewarding and using the skills of their employees than smaller ones, which in turn generates less mismatch (see also OECD, 2013a; and Quintini, 2014a), could be due to several factors. First, smaller firms are less likely to have well-developed human resource policies/divisions for the screening of candidates at hiring, hence placing more emphasis on observable features; second, smaller firms may have more limited opportunities to move workers to more suitable jobs or adjust their tasks.

This poses a problem particularly in countries that have experienced rapid growth in tertiary education attendance but whose industrial structure is still dominated by small firms in traditional sectors. Where this happens, mismatch is likely to be high at least until the production structure adjusts to the availability of a more highly educated workforce. Innovation policies, particularly focused on the adoption of new technology and targeted on small firms, could help speed up the process.

Another consistent finding concerns the lower returns to information-processing skills for workers on temporary contracts, which is likely to affect youth more than their older counterparts as they tend to be over-represented in non-permanent work arrangements. While employers do not appear to reward excess skills for workers on temporary contracts there is some tentative evidence that employer learning may be more likely in countries where temporary contracts are easier to use. The former suggests that over-skilling tends to be permanent for workers on temporary contracts. The latter points to learning through these contracts. One way to reconcile these two findings is that employers learn about the skills of their employees hired on temporary contracts and better reward them through conversion to permanent positions.

Conclusions

In light of the role played by educational attainment, field of study choice, information-processing and generic skills in the labour market outcomes of young people, three key areas for policy action were identified in the chapter: improving career guidance and complementing it with sound labour market information; encouraging the combination of work and study; and ensuring that returns to skills reflect true productivity. All three areas deserve further attention, as highlighted below.

Despite the importance of field of study choices for the prospects of young people in the labour market, in most countries the quality of career guidance, and of the labour market data that supports it, are patchy at best. Understanding how countries assess and anticipate skill needs and how findings are fed back into the education system – to adapt curricula and inform guidance – is crucial to assess career guidance provision and design policies to improve it. The OECD is about to engage in a review of how countries assess, anticipate and respond to changing skill needs, hopefully unveiling examples of good practice that could inform policy in this area.

Work and study can be important for young people to accumulate work experience and develop crucial generic skills, such as influence, self-organisation and task discretion. While the emphasis in many countries has been on broadening and improving work-based learning by expanding and improving apprenticeships and vocational education and training programmes, many students who work do so outside these formalised settings. This calls for a better understanding of the type of jobs that improve students' chances to find work after leaving education in order to design appropriate policy measures. Crucial

questions include: whether the job needs to be related to the student's field of specialisation; and what channels need to be strengthened to ensure that more students get some labour market exposure before graduation. At the same time, there is the question of what the optimal balance between work and study time, as concerns exist in some countries that students may work too much. While the OECD Survey of Adult Skills cannot offer definitive answers to these questions, the evidence it provides could be complemented by further analysis carried out on longitudinal surveys of youth which exist in some OECD countries as well as in those countries introducing their own longitudinal dimension into the OECD Survey of Adult Skills.

Finally, while this chapter sheds some light on the complex links between labour market institutions and the way in which skills are recognised and used at work, more work is needed to thoroughly understand these relationships and develop relevant policies. While the existing wave of the OECD Survey of Adult Skills cannot yield definitive answers on this issue, a second wave – currently planned for 2020 – will allow changes in both returns to skills and institutions to be exploited to shed further light on it. Furthermore, when added to existing findings, data on the additional countries participating in the survey in 2014 and 2016 (Round 2 and Round 3, respectively) could yield more robust results by adding greater country variation in both returns to skills and institutional settings.

Notes

1. The chapter focuses on literacy but similar results are obtained when numeracy or problem solving in technology-rich environments are used instead.
2. In addition, the survey includes measures of the use of information-processing skills. These measures will be included in some of the analyses presented in the present chapter. More detail on the construction of these variables is described in Annex 5.A1.
3. Youth in this chapter is defined as the age group 16-29 rather than the usual 16-24. This choice was made for two reasons: i) to allow most youth to have completed education (and in particular tertiary education) so that the role of education in determining young people's skills (and other outcomes) could be studied more reliably; and ii) to increase sample sizes, particularly for the analysis at the country level. The other age groups analysed in this chapter include: prime age (30-49) and older (50-65). Because a substantial part of the chapter focuses on hourly wages as the outcome variable, the results for youth are largely driven by those of young adults (aged 20-29) and focusing on this group only would strengthen the results both in magnitude and statistical significance. However, the results for teenagers (aged 16-19) show very similar patterns, justifying treating youth aged 16-29 as a single age group.
4. It should be kept in mind that the sample for the Russian Federation does not include the population of the Moscow municipal area. In addition, the Russian Federation is excluded from analysis involving wages as wages reported in the OECD Survey of Adult Skills do not compare well with data available from other sources.
5. One aspect of this is that different cohorts may have faced very different economic circumstances which, particularly if they occurred at the start of their careers, might have longer-term effects on their labour market outcomes – a phenomenon known as "scarring".
6. In this regard, it is important to remember that generic skills are measured as the residual effect of the use at work of generic skills after controlling from demand-side factors – notably, occupation, industry, firm size, contract type and hours worked.
7. This finding is in line with assignment theories used to explain field of study mismatch. Assignment theories predict that workers mismatched by field of study will suffer a wage penalty by virtue of their lower productivity (i.e. their lack field-specific skills) or higher costs (i.e. need to acquire field-specific skills) than their well-matched peers, and that, as workers acquire experience in the field of their jobs (and field-specific skills), the quality of the match between

their skills and their job requirements will improve and so will their wages relative to their matched-field of study peers .

8. The decomposition of the variance is done using Fields' (2004) regression-based decomposition technique. Details of this procedure are provided in Box 5.4 of this chapter.

9. Even at the country level (not shown), there is no clear pattern in the overall incidence by age group, with all patterns (decline and fall with age as well as U or inverted-U shape) representing about equal shares.

10. Using Field's technique (Box 5.4) the contributions of individual variables to the variance of the dependent variable can be summed to obtain the total contribution of a group of variables.

11. Instrumenting the use of information-processing skills at work with their use at home to deal with endogeneity issues strengthens the results presented in Figure 5.8.

12. In addition, the question of training is plagued by causality issues: it is not clear whether training improves proficiency, or whether more proficient workers simply receive more training.

13. Because of the way in which generic skills are measured – based on tasks carried out at work – job-specific characteristics are key in explaining the variation in generic skills. This chapter (and Figure 5.9 in particular) focuses more specifically on the portion not explained by the job.

14. Several OECD countries have created ad hoc services for this group such as the Missions Locales in France (OECD, 2009a), Connexions in the United Kingdom (OECD, 2008a) and Youth Transition Services in New Zealand (OECD, 2008b). Another example of more formalised outreach activities to engage disadvantaged youth is that of the Jobs Corps programme in the United States – a residential programme providing remedial education, job-related training and adult mentoring (OECD, 2009b). The programme is aimed at the most disadvantaged youth. To be eligible, youth must be 16-24, meet low-income criteria and face one or more barriers to employment such as lacking qualifications or being a runaway, a foster child, a teenage parent or a homeless youth. Outreach are run by private contractors, with contracts allocated through a competitive tendering process and lasting up to seven years after a series of renewals. Outreach contractors are evaluated based on several objective criteria, including: the number of youth recruited; the percentage of women recruited; the share of recruited youth who remain enrolled for a minimum of 60 days; and the share of recruited youth who do not separate within 30/45 days due to a violation of Job Corps' Zero Tolerance policy against violence/drugs.

15. Also, while most of the analysis above is conducted by pooling countries to preserve sample size, the importance that employers attach to the field of specialisation in school varies markedly across countries. For instance, as Box 5.7 shows, countries where students often work outside their field of study are also those where field of study mismatch is more prevalent among out-of-school young people, possibly suggesting that employers in these countries put less emphasis on job-specific skills and more on foundation and generic skills.

16. Socio-demographic characteristics other than family income have also been found to affect field of study choice. For instance, Boudarbat (2004) finds that the field of study chosen by Canadian university graduates shifted in response to changing relative wages and employment prospects but males, those with prior work experience, and those in Business and Commerce-related fields were more sensitive to wage changes than others.

17. The two are likely to influence the decision in opposite directions. On the one hand, better educated parents may help their children make decisions based on expected labour market outcomes by field. On other hand, wealthier parents and children may be less prone to make decisions based purely on returns as they can afford to live on lower wages or wait around for jobs in fields where employment opportunities are scarcer.

18. The analysis presented in Table 5.2 excludes countries with no statutory minimum wage: Germany, Austria, Italy, Denmark, Finland, Norway and Sweden. While the inclusion of these countries in the analysis does not change the conclusions drawn with respect to the other policy variables and their effect on how skills are rewarded, it is found that the absence of a statutory minimum wage in these countries reduces the return to skill. It is not the case, however, that these countries have no wage floor. On the contrary: in nearly all of the aforementioned countries, wages are set by collective bargaining agreements that are likely to restrict the extent to which employers can reward workers (and young recruits in particular) in line with actual productivity. Further analysis in those countries is therefore required to better understand the relationship between wage levels set as part of collective agreements and the median wage, and how this impacts on return to skill.

19. Various researchers claim to have established links between labour market institutions and returns to education and skills. Devroye and Freeman (2001) argue that it is wage-determining factors rather

than differences in the distribution of skills that best explain why earnings inequality is higher in the United States than in low inequality EU countries. In particular, Blau and Kahn (2005) believe that the higher price of labour market skills in the United States could be caused by the lower coverage of collective bargaining, which is a conclusion echoed by Carbonaro (2006) who finds that returns to literacy skills are higher in liberal market economies than in social market economies, which the author argues is due primarily to collective bargaining coverage. In a recent paper, Hanushek et al. (2013) argue that returns to skills are systematically lower in countries with higher union density, stricter employment protection, and larger public-sector shares.

20. These findings are broadly in line with those in Hanushek et al. (2013).

21. In this context it is important to remember that collectively agreed pay is only one part of actual compensation paid to workers, partly because the latter also includes overtime payments, bonuses, stock options and other forms of variable pay, and partly because not all workers will be covered by collective agreements.

22. In this regards, Broecke (2014) shows that, in countries where employer learning is found, the return to skill is about 10% of the return to education to start with. On the other hand, in countries where no employer learning is found, the return to skill is approximately a third of the return to education to start with.

23. The OECD indicator of the difficulty of use of temporary contracts includes information such as: the jobs for which fixed-term and temporary contracts can be used; the maximum number of times these contracts can be renewed and maximum total duration of successive contracts; authorisation and reporting obligation for the use of temporary work agency contracts; and equal treatment obligations for temporary work agency workers.

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ANNEX 5.A1

Information-processing and generic skills in the OECD Survey of Adult Skills

How information-processing skills are measured

In each of the three domains assessed, proficiency is considered as a continuum of ability involving the mastery of information-processing tasks of increasing complexity. Each respondent is then assigned a score on a 500-point scale in each domain. The proficiency of each respondent can also be expressed as the level achieved by that respondent. Each of the domains assessed can be described in relation to the items that are located at the different points on the scale according to their difficulty. Six proficiency levels are defined for the domains of literacy and numeracy while four proficiency levels are defined for the domain of problem solving in technology-rich environments (see Table 5.A1.1).

The use of information-processing and generic skills at work

The information collected in the Job Requirements section of the survey questionnaire (JRA) includes questions on the frequency with which workers carry out specific tasks at work. Although what workers do in the workplace is partly dependant on their ability, the questions are designed to capture the requirements imposed by the employer rather than the workers' skills.

The questions in the survey allow deriving twelve indicators of skills use at work. Table 5.A1.2 lists the items of the section of the questionnaire on skills use at work that are associated with each of the 12 skills-use indicators.

A number of skills use variables are taken directly from questions asked in the background questionnaire of the OECD Survey of Adult Skills:

- Problem-solving skills: How often are you usually confronted with more complex problems that take at least 30 minutes to find a good solution?
- Co-operative skills: What proportion of your time do you usually spend collaborating or co-operating with co-workers?
- Self-organising skills: How often does your job usually involve organising your own time?
- Physical skills: How often does your job usually involve working physically for a long period?
- Dexterity: How often does your job usually involve using skill or accuracy with your hands or fingers?

Table 5.A1.1. **Proficiency levels: Tasks completed successfully at the lowest and highest levels of proficiency in each domain**

Skill domain	Below Level 1	Level 5 (Level 3 for problem solving)
Literacy	Tasks at this level require the respondent to read brief texts on familiar topics and locate a single piece of specific information. There is seldom any competing information in the text. Only basic vocabulary knowledge is required, and the reader is not required to understand the structure of sentences or paragraphs or make use of other text features.	Tasks at this level may require the respondent to search for and integrate information across multiple, dense texts; construct syntheses of similar and contrasting ideas or points of view; or evaluate evidence based arguments. They often require respondents to be aware of subtle, rhetorical cues and to make high-level inferences or use specialised background knowledge.
Numeracy	Tasks at this level require the respondent to carry out simple processes such as counting, sorting, performing basic arithmetic operations with whole numbers or money, or recognising common spatial representations.	Tasks at this level may require the respondent to integrate multiple types of mathematical information where considerable translation or interpretation is required; draw inferences; develop or work with mathematical arguments or models; and critically reflect on solutions or choices.
Problem solving in technology-rich environments[a]	Tasks are based on well-defined problems involving the use of only one function within a generic interface to meet one explicit criterion without any categorical or inferential reasoning, or transforming of information. Few steps are required and no sub-goal has to be generated.	At this level, tasks typically require the use of both generic and more specific technology applications. Some navigation across pages and applications is required to solve the problem. The task may involve multiple steps and operators. The goal of the problem may have to be defined by the respondent, and the criteria to be met may or may not be explicit. Integration and inferential reasoning may be needed to a large extent.

a) The problem solving in technology-rich environments scale includes three additional categories of respondents who: i) had no computer experience; ii) failed an ICT core-test aimed at assessing whether or not their ICT knowledge was enough to allow them to take the assessment on a computer or whether they should be directed to the paper and pen version which does not include the domain of problem solving in a technology-rich environment; and iii) opted-out of taking the computer-based assessment.

Source: OECD (2013), *The Survey of Adult Skills: Reader's Companion*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264204027-en*.

Table 5.A1.2. **Indicators of skills use at work**

Indicator	Group of tasks
Reading	Reading documents (directions, instructions, letters, memos, e-mails, articles, books, manuals, diagrams, maps).
Writing	Writing documents (letters, memos, e-mails, reports, forms).
Numeracy	Calculating prices, costs or budgets; use of fractions, decimals or percentages; use of calculators; preparing graphs or tables; algebra or formulas; use of advanced math or statistics (calculus, trigonometry, regressions).
ICT skills	Using e-mail, Internet, spreadsheets, word processors, programming languages; conducting transactions on line; participating in online discussions (conferences, chats).
Problem solving	Facing hard problems (at least 30 minutes of thinking to find a solution).
Task discretion	Choosing or changing sequence of job tasks, the speed of work; choosing how to do the job.
Learning at work	Learning new things from supervisors or co-workers; learning-by-doing; keeping up-to-date with new products or services.
Influencing skills	Instructing, teaching or training people; making speeches or presentations; advising people; planning others' activities; persuading or influencing others; negotiating.
Co-operative skills	Co-operating or collaborating with co-workers.
Self-organising skills	Organising one's time and activities.
Dexterity	Using skill or accuracy with one's hands or fingers.
Physical skills (gross)	Working physically for a long period.

For these skills use variables, a value of 1 indicates that the skill is never used; a value of 2 indicates that it is used less than once a month; a value of 3 indicates that it is used less than once a week but at least once a month; a value of 4 indicates that it is used at least once a week but not every day; and a value of 5 indicates that it is used every day.

All other variables described in Table 5.A1.2 have been derived based on more than one question from the background questionnaire. Cronbach's Alpha, a statistical technique, is used to test that the items used to derive each skills use variable are grouped appropriately. The resulting scale for these variables is a continuous but ranges from 1 to 5 as it is the case for the underlying items: a value close to 1 indicates that the person does not use that particular skill at work while a value close to 5 suggests that the person uses the skill every day.

It should be noted that the items used to calculate the scales related to ICT skill use at work are only asked to people who report having used a computer before, thus few individuals report "never" using their ICT skills at work. As a result, the scale of ICT skills at work needs to be interpreted slightly differently from the other scales.

Because all indices are expressed on the same scale going from 1 to 5, numerical comparisons between countries and indicators are possible, with the exception of the use of ICT skills for the reason mentioned above. Nevertheless, some comparisons may not be conceptually meaningful. For instance, the appropriate frequency of use of self-organising skills may not be the same as the frequency with which workers are required to solve complex problems.

How generic skills are captured in the chapter

In the chapter, problem solving, task discretion, learning at work, influencing skills, co-operative skills, self-organising skills, dexterity and physical skills are referred to as "generic skills" while the term "use of information-processing skills" is reserved for reading, writing, numeracy and ICT. The different labelling is loosely dictated by the fact that "information-processing skills" are measured in the direct-assessment section of the survey as well as in the JRA while only job requirements are available for the group labelled as "generic skills". Because of this, the two sets of variables need to be interpreted differently in the regression analysis conducted in this chapter.

In fact, where applicable, the regressions in the chapter include controls for job characteristics – occupation, industry, firm-size, contract type, and work hours – and proficiency scores in literacy, numeracy and problem solving. As a result, in regressions including both "generic skills" indices and controls for job characteristics, the "generic skills" variables will capture the "supply" of generic skills after the demand for them has been controlled for by the job-specific controls. On the other hand, this interpretation is not valid for information-processing skills because, in addition to job-specific controls capturing job requirements, the supply of these skills is controlled for by the inclusion of proficiency scores.

ANNEX 5.A2

Coding of ISCO-08 3-digit occupation classification to field of study

- *(2) Teacher training and education science:* university, higher education, vocational, secondary, primary, early childhood and other teaching professionals (ISCO 231-235); sports and fitness workers (ISCO 342); and child care workers and teaches' aides (ISCO 531).
- *(3) Humanities, languages and arts:* university, higher education, vocational and secondary education teaching professionals (ISCO 231-233); architects, planners, surveyors and designers (ISCO 216); librarians, archivists and curators (ISCO 262); social and religious professionals (ISCO 263); authors, journalists and linguists (ISCO 264); creative and performance artists (ISCO 265); legal, social and religious associate professionals (ISCO 341); and artistic, cultural and culinary associate professionals (ISCO 343).
- *(4) Social sciences, business and law:* directors and chief executives (ISCO 112), managers (ISCO 121-122, 131-134, 141-143); university, vocational and secondary education teaching professionals (ISCO 231-233); business and administration professionals (ISCO 241-243); other health professionals (ISCO 226); legal professionals (ISCO 261); librarians, archivists and curators (ISCO 262); social and religious professionals (ISCO 263); authors, journalists and linguists (ISCO 264); business and administration associate professionals (ISCO 331-335); other health associate professionals (ISCO 325); legal, social and religious associate professionals (ISCO 341); clerical support workers (ISCO 411-413, 421-422, 431-432, 441); sales workers (ISCO 521-524); and street vendors (excluding food) (ISCO 952).
- *(5) Science, mathematics and computing:* physical and earth science professionals (ISCO 211); mathematicians, actuaries and statisticians (ISCO 212); life science professionals (ISCO 213); other health professionals (ISCO 226); university, vocational and secondary education teaching professionals (ISCO 231-233); information and communications technology professionals (ISCO 251-252); physical and engineering science technicians (ISCO 311); process control technicians (ISCO 313); life science technicians and related associate professionals (ISCO 314); medical and pharmaceutical technicians (ISCO 321); financial and mathematical associate professionals (ISCO 331); information and communications technicians (ISCO 351-352).
- *(6) Engineering, manufacturing and construction:* engineering professionals (ISCO 214); electrotechnology engineers (ISCO 215); architects, planners, surveyors and designers (ISCO 216); university, higher education and vocational education teaching professionals (ISCO 231-232); information and communications technology professionals (ISCO 251-252);

physical and engineering science technicians (ISCO 311); mining, manufacturing and construction supervisors (ISCO 312); process control technicians (ISCO 313); ship and aircraft controllers and technicians (ISCO 315); regulatory government associate professionals (ISCO 335); information and communications technicians (ISCO 351-352); building and housekeeping supervisors (ISCO 515); crafts and related trades workers (ISCO 711-713, 721-723, 731-732, 741-742, 751-754); plant and machine operators and assemblers (ISCO 811-818, 821, 831-835); and labourers in mining, construction, manufacturing and transport (ISCO 931-933).

- *(7) Agriculture and veterinary:* life science professionals (ISCO 213); veterinarians (ISCO 225); university, higher education and vocational education teaching professionals (ISCO 231-232); life science technicians and related associate professionals (ISCO 314); medical and pharmaceutical technicians (ISCO 321); veterinary technicians and assistants (ISCO 324); other health associate professionals (ISCO 325); skilled agricultural, forestry and fishery workers (ISCO 611-613, 621-622, 631-634); food processing and related trades workers (ISCO 751); other craft and related workers (ISCO 754); mobile plant operators (ISCO 834); and agricultural, forestry and fishery labourers (ISCO 921).
- *(8) Health and welfare:* life science professionals (ISCO 213), health professionals (ISCO 221-227); university and higher education teaching professionals (ISCO 231); primary school and early childhood teachers (ISCO 234); social and religious professionals (ISCO 263); health associate professionals (ISCO 321-325); legal, social and religious associate professionals (ISCO 341); other personal service workers (ISCO 516); personal care workers (ISCO 531-532); and protective services workers (ISCO 541).
- *(9) Service:* professional services managers (ISCO 134); sales, marketing and public relations professionals (ISCO 243); other health associate professionals (ISCO 325); administrative and specialised secretaries (ISCO 334); regulatory government associate professionals (ISCO 335); legal, social and religious associate professionals (ISCO 341); artistic, cultural and culinary associate professionals (ISCO 343); clerical support workers (ISCO 411-413, 421-422, 431-432, 441); service and sales workers (ISCO 511-516, 521-524, 531-532, 541); drivers and mobile plant operators (ISCO 831-835); cleaners and helpers (ISCO 911-912); food preparation assistants (ISCO 941); street and related service workers (ISCO 951); and street vendors (excluding food) (ISCO 952).

Coded as missing: all self-employed workers and those who majored in "general programmes"; armed forces occupations (ISCO major Group 0); legislators and senior officials (ISCO 111); and refuse workers and other elementary workers (ISCO 961-962).

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Statistical annex

Sources and definitions

The tables of the statistical annex show data for all 34 OECD countries. Data for Brazil, Colombia, Latvia, the Russian Federation and South Africa are included in a number of tables.

In general, Tables A to J and Table L report annual averages of monthly and quarterly estimates, when they are available, based on labour force surveys. The remaining Tables K, M, N, O, P 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 and Table L are taken from the European Labour Force Survey (EU-LFS), which are more comparable and sometime more consistent over time than data series from national LFS (i.e. France).

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 a the charts and 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 intervals, part-time employment, temporary employment, duration of unemployment, and other series than are shown in this annex, such as, involuntary part-time employment, distribution of employment by weekly usual hours worked intervals, people not in the labour force marginally attached to the labour force, etc. The datasets include information on definitions, notes and sources used by member countries. The on-line 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 full-time equivalent employee.
- Distribution of gross earnings of full-time workers by earnings decile and by sex for earnings dispersion measures.
- Gross mean and median earnings of full-time workers by age group and gender.

- Statutory minimum 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

. Decimal point

| 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 J and Table L: 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) and Luxembourg (2002/03, quarterly results as of 2007).
- *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 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 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.)*

- Work availability 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. 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).
- 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:* Israel (2007/08), 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, Latvia and the Russian Federation are currently undergoing an accession process.

Table A. **Harmonised unemployment rates in OECD countries**

As a percentage of civilian labour force

	1991	1995	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Australia	9.6	8.5	6.3	6.4	5.9	5.4	5.0	4.8	4.4	4.2	5.6	5.2	5.1	5.2	5.7
Austria	..	3.9	3.6	4.2	4.3	5.0	5.2	4.8	4.4	3.8	4.8	4.4	4.1	4.4	4.9
Belgium	6.4	9.7	6.9	7.5	8.2	8.4	8.4	8.3	7.5	7.0	7.9	8.3	7.2	7.6	8.5
Canada	10.3	9.5	6.8	7.7	7.6	7.2	6.8	6.3	6.0	6.1	8.3	8.0	7.5	7.2	7.1
Chile	8.2	7.3	9.7	9.8	9.5	10.0	9.2	7.8	7.1	7.8	9.7	8.2	7.1	6.4	5.9
Czech Republic	..	4.0	8.8	7.3	7.8	8.3	7.9	7.1	5.3	4.4	6.7	7.3	6.7	7.0	7.0
Denmark	7.9	6.7	4.3	4.6	5.4	5.5	4.8	3.9	3.8	3.5	6.0	7.5	7.6	7.5	7.0
Estonia	..	..	14.5	11.3	10.4	10.1	8.0	5.9	4.6	5.5	13.6	16.7	12.4	10.0	8.6
Finland	6.6	15.4	9.8	9.1	9.0	8.8	8.4	7.7	6.9	6.4	8.2	8.4	7.8	7.7	8.2
France	8.5	10.5	9.0	8.3	8.6	8.9	8.9	8.9	8.0	7.5	9.1	9.3	9.2	9.8	10.3
Germany	5.5	8.3	8.0	8.7	9.8	10.5	11.3	10.3	8.7	7.5	7.8	7.1	6.0	5.5	5.3
Greece	..	..	11.2	10.3	9.7	10.5	9.9	8.9	8.3	7.7	9.5	12.6	17.7	24.3	27.3
Hungary	..	..	6.3	5.6	5.7	6.1	7.2	7.5	7.4	7.8	10.0	11.2	11.0	10.9	10.2
Iceland	..	..	..	..	3.4	3.1	2.6	2.9	2.3	3.0	7.2	7.6	7.1	6.0	5.4
Ireland	14.8	12.3	4.2	4.5	4.6	4.5	4.4	4.5	4.7	6.4	12.0	13.9	14.7	14.7	13.1
Israel	..	6.9	8.8	10.3	10.7	10.4	9.0	8.4	7.3	6.1	7.5	6.6	5.6	6.9	6.2
Italy	8.5	11.2	10.1	8.5	8.4	8.0	7.7	6.8	6.1	6.7	7.8	8.4	8.4	10.7	12.2
Japan	2.1	3.2	4.7	5.4	5.3	4.7	4.4	4.1	3.8	4.0	5.1	5.1	4.6	4.4	4.0
Korea	2.5	2.1	4.4	3.3	3.6	3.7	3.7	3.5	3.3	3.2	3.7	3.7	3.4	3.2	3.1
Luxembourg	1.7	2.9	2.2	2.6	3.8	5.0	4.7	4.6	4.2	4.9	5.1	4.6	4.8	5.1	5.8
Mexico	2.7	6.3	2.5	3.0	3.4	3.9	3.6	3.6	3.7	4.0	5.5	5.4	5.2	5.0	4.9
Netherlands	4.8	7.1	3.1	3.1	4.2	5.1	5.3	4.3	3.6	3.1	3.7	4.5	4.5	5.3	6.7
New Zealand	10.6	6.5	6.2	5.3	4.8	4.1	3.8	3.9	3.7	4.2	6.1	6.5	6.5	6.9	6.2
Norway	5.5	4.9	3.2	3.7	4.2	4.3	4.5	3.4	2.5	2.6	3.2	3.6	3.3	3.2	3.5
Poland	..	..	16.1	20.0	19.8	19.1	17.9	14.0	9.6	7.0	8.1	9.7	9.7	10.1	10.3
Portugal	4.2	7.2	4.5	5.7	7.1	7.5	8.5	8.6	8.9	8.5	10.6	12.0	12.9	15.8	16.5
Slovak Republic	..	..	18.9	18.8	17.7	18.4	16.4	13.5	11.2	9.6	12.1	14.5	13.7	14.0	14.2
Slovenia	..	..	6.7	6.3	6.7	6.3	6.5	6.0	4.9	4.4	5.9	7.3	8.2	8.9	10.2
Spain	15.5	20.8	11.9	11.5	11.5	11.0	9.2	8.5	8.2	11.3	17.9	19.9	21.4	24.8	26.1
Sweden	3.1	8.8	5.6	6.0	6.6	7.4	7.6	7.0	6.1	6.2	8.3	8.6	7.8	8.0	8.0
Switzerland	..	..	..	..	..	..	..	..	..	..	..	4.5	4.0	4.2	4.4
Turkey	..	..	..	..	..	..	9.2	8.8	8.8	9.7	12.6	10.7	8.8	8.2	8.7
United Kingdom	8.6	8.5	5.4	5.1	5.0	4.7	4.8	5.4	5.3	5.7	7.6	7.8	8.0	7.9	7.5
United States	6.8	5.6	4.0	5.8	6.0	5.5	5.1	4.6	4.6	5.8	9.3	9.6	9.0	8.1	7.4
OECD[a]	6.6	7.3	6.1	6.9	7.0	6.9	6.6	6.1	5.6	6.0	8.1	8.3	7.9	7.9	7.9

Note: The OECD harmonised unemployment rates are compiled for 34 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/dataoecd/21/0/44743407.pdf.

a) Weighted average.

Source: OECD (2014), *Main Economic Indicators* , Vol. 2014, Issue 6, OECD Publishing, Paris, http://dx.doi.org/10.1787/mei-v2014-6-en.

StatLink http://dx.doi.org/10.1787/888933133286

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	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013
Australia	69.1	72.8	72.4	72.0	61.7	64.1	59.6	58.7	76.2	79.9	79.5	79.2	46.1	56.5	61.5	61.5
Austria	68.3	71.4	72.5	72.3	52.8	55.5	54.6	53.8	82.5	84.0	85.4	84.9	28.3	38.6	43.1	44.9
Belgium	60.9	62.0	61.8	61.8	30.3	27.5	25.3	23.6	77.9	79.7	79.3	79.0	25.0	34.4	39.5	41.7
Canada	70.9	73.5	72.2	72.5	56.2	59.5	54.5	55.1	79.9	82.2	81.4	81.5	48.1	57.0	59.8	60.5
Chile	53.3	56.3	61.8	62.3	26.4	26.4	31.1	30.4	65.0	69.5	74.5	75.2	47.5	54.4	62.7	64.0
Czech Republic	65.2	66.1	66.5	67.7	38.3	28.5	25.2	25.6	81.6	83.5	82.9	83.5	36.3	46.0	49.4	51.6
Denmark	76.4	77.0	72.6	72.5	67.1	65.3	55.0	53.7	84.3	86.1	81.9	82.0	54.6	58.9	60.8	61.7
Estonia	60.6	69.6	67.2	68.5	34.9	34.6	33.7	33.4	74.4	84.6	79.4	80.3	42.8	59.4	60.3	62.5
Finland	67.5	70.5	69.5	68.5	42.9	46.4	43.3	40.2	80.9	83.3	82.0	81.0	42.3	55.0	58.2	58.7
France	61.7	64.3	63.9	64.1	28.3	31.0	28.4	28.6	78.4	82.0	80.8	80.7	29.3	38.2	44.5	45.6
Germany	65.6	69.0	72.8	73.3	47.2	45.9	46.6	46.8	79.3	80.3	83.2	83.3	37.6	51.3	61.5	63.5
Greece	55.9	61.4	51.3	49.3	26.9	24.0	13.1	11.9	70.2	75.6	64.1	61.5	39.0	42.4	36.4	35.6
Hungary	56.0	57.3	57.2	58.4	32.5	21.0	18.6	19.8	73.0	74.6	74.6	75.5	21.9	33.1	36.9	38.5
Iceland[a]	84.6	85.7	80.2	81.8	68.2	74.3	66.0	70.4	90.6	89.4	85.1	85.5	84.2	84.9	79.2	81.6
Ireland	65.1	69.2	58.8	60.2	49.3	50.4	27.9	28.8	75.5	78.8	69.4	70.8	45.3	54.2	49.5	50.9
Israel[b]	56.1	58.9	66.5	67.1	28.2	27.2	43.5	44.4	70.4	73.0	76.8	77.1	46.6	57.2	63.1	64.6
Italy	53.9	58.7	57.6	56.4	27.8	24.7	20.5	18.0	68.0	73.5	70.3	68.5	27.7	33.8	40.4	42.7
Japan	68.9	70.7	70.6	71.7	42.7	41.4	38.5	39.7	78.6	80.2	80.5	81.4	62.8	66.1	65.4	66.8
Korea	61.5	63.9	64.2	64.4	29.4	25.7	24.2	24.2	72.2	74.0	74.7	75.0	57.8	60.6	63.1	64.3
Luxembourg	62.7	64.2	65.8	65.7	31.8	22.5	21.7	21.9	78.2	81.9	83.1	82.9	27.2	32.0	41.0	40.5
Mexico	60.1	61.1	61.3	61.0	48.9	44.2	43.1	42.3	67.4	70.3	71.1	70.7	51.7	54.7	55.5	55.2
Netherlands	72.1	74.4	75.1	74.3	66.5	65.5	63.3	62.3	81.0	84.4	83.8	82.4	37.6	48.8	58.6	60.1
New Zealand	70.4	75.2	72.1	73.1	54.2	58.2	49.5	50.1	78.3	81.9	79.8	80.9	56.9	71.8	73.9	74.4
Norway[a]	77.9	76.9	75.8	75.5	58.1	55.1	52.7	52.4	85.3	85.8	84.6	84.1	67.1	69.0	70.9	71.1
Poland	55.0	57.0	59.7	60.0	24.5	25.8	24.7	24.2	70.9	74.9	77.2	77.0	28.4	29.7	38.7	40.6
Portugal	68.3	67.6	61.4	60.6	41.8	34.4	23.0	21.7	81.8	80.9	75.5	74.6	50.8	51.0	46.5	46.9
Slovak Republic	56.8	60.7	59.7	59.9	29.0	27.6	20.1	20.4	74.7	78.0	76.4	76.0	21.3	35.7	43.1	44.0
Slovenia	..	67.8	64.1	63.3	..	37.6	27.3	26.5	..	85.3	83.3	81.9	..	33.5	32.9	33.5
Spain[a]	57.4	66.8	56.5	55.6	36.3	43.0	20.3	18.6	68.4	77.1	66.7	65.8	37.0	44.5	43.9	43.2
Sweden[a]	74.3	74.2	73.8	74.4	46.7	42.1	40.0	41.5	83.8	86.1	85.2	85.4	65.1	70.1	73.1	73.7
Switzerland	78.3	78.6	79.4	79.6	65.0	62.6	61.7	61.9	85.4	86.1	86.7	86.4	63.3	67.2	70.5	71.7
Turkey	48.9	44.6	48.9	49.5	37.0	30.2	31.5	32.2	56.7	53.2	58.3	59.1	36.4	27.1	31.9	31.5
United Kingdom[a]	72.2	72.4	70.9	71.3	61.5	56.5	50.0	48.8	80.2	81.4	80.3	80.8	50.4	57.3	58.1	59.7
United States[a]	74.1	71.8	67.1	67.4	59.7	53.1	46.0	46.5	81.5	79.9	75.7	75.9	57.8	61.8	60.7	60.9
OECD[c]	65.4	66.5	65.1	65.3	45.5	43.1	39.7	39.6	75.9	77.0	75.6	75.6	47.6	53.5	55.6	56.4
Brazil	..	67.4	67.2	..	..	52.9	50.4	..	..	76.1	76.8	..	..	53.8	52.3	..
Colombia[d]	..	38.0	44.3	44.2	..	38.0	44.3	44.2	..	72.0	77.3	77.7	..	37.4	44.9	45.0
Latvia	..	68.1	63.0	65.0	..	38.1	28.7	30.2	..	82.1	76.3	77.9	..	58.0	52.8	54.8
Russian Fed.	63.3	68.5	69.0	68.8	34.6	33.7	33.7	34.3	80.2	84.7	85.7	85.2	34.8	52.0	47.1	47.3
South Africa	..	44.4	42.2	42.7	..	15.7	12.3	12.5	..	60.6	57.3	57.7	..	42.2	38.6	39.2

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	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013
Australia	76.9	79.5	78.1	77.6	62.6	65.0	59.7	58.6	85.6	88.1	86.7	86.1	57.6	65.7	69.1	69.0
Austria	77.3	78.4	77.8	77.1	57.6	59.6	58.8	57.4	91.4	90.6	89.6	88.5	40.5	49.8	52.5	54.3
Belgium	69.8	68.7	66.9	66.4	33.7	29.9	27.8	25.3	87.9	87.0	84.5	84.0	35.1	42.9	46.0	47.7
Canada	76.2	77.1	75.2	75.4	56.7	59.1	53.4	54.2	85.8	86.3	85.2	85.1	57.4	63.6	64.7	65.1
Chile	71.9	72.3	73.6	73.8	34.2	32.7	36.0	35.3	87.4	89.0	88.4	88.1	71.6	77.2	82.1	83.1
Czech Republic	73.6	74.8	74.6	75.7	42.8	32.8	29.2	29.9	89.3	91.7	90.9	91.2	51.7	59.6	60.4	62.5
Denmark	80.7	80.8	75.2	75.0	70.3	66.5	54.6	52.3	88.3	89.8	84.6	85.0	61.9	64.9	65.9	66.5
Estonia	64.1	73.2	69.9	71.4	40.8	39.1	36.9	36.0	75.8	89.4	83.1	84.6	51.0	58.1	58.8	61.3
Finland	70.5	72.4	70.9	69.2	45.7	47.9	44.1	36.8	84.1	85.9	84.5	83.8	43.7	55.1	56.7	56.8
France	68.8	69.1	67.9	67.9	31.4	34.1	30.8	31.3	87.3	88.2	85.8	85.2	32.8	40.5	47.5	48.3
Germany	72.9	74.7	77.6	77.7	49.7	48.2	48.6	48.3	87.2	86.4	88.1	87.9	46.4	59.4	68.5	69.8
Greece	71.3	74.9	60.6	58.4	31.9	29.2	16.1	14.6	88.6	90.1	74.0	71.5	55.3	59.1	47.6	45.8
Hungary	62.7	64.0	62.5	64.3	36.0	24.2	20.0	22.4	79.2	81.3	80.4	81.1	32.8	41.7	42.6	46.2
Iceland[a]	88.2	89.5	81.9	83.7	66.1	73.6	63.1	65.3	95.1	94.2	87.9	88.7	94.2	89.6	83.0	87.2
Ireland	76.3	77.5	62.4	64.6	53.4	53.2	25.8	28.0	88.4	87.9	74.2	76.2	63.6	68.1	55.9	58.7
Israel[b]	61.4	63.3	70.7	71.2	26.9	26.1	44.5	45.7	78.1	78.9	81.6	81.7	58.7	67.2	71.6	72.9
Italy	68.2	70.7	67.5	65.8	33.2	29.6	24.2	20.7	84.9	87.3	81.6	79.1	40.9	45.1	50.4	52.9
Japan	80.9	81.7	80.3	80.8	42.5	41.3	37.9	38.6	93.4	92.8	91.5	91.7	78.4	81.5	78.8	79.8
Korea	73.1	74.7	74.9	74.9	24.6	20.5	19.9	20.3	88.0	87.3	87.8	87.8	68.5	74.7	77.2	78.2
Luxembourg	75.0	72.3	72.5	72.1	35.3	26.5	23.4	24.2	92.8	92.2	91.0	90.1	37.9	35.6	47.4	48.3
Mexico	82.8	80.9	78.9	78.3	64.7	57.8	55.6	54.8	93.8	92.9	91.1	90.2	78.1	79.2	76.7	75.4
Netherlands	81.2	81.1	79.7	78.7	67.9	66.9	62.4	61.8	91.4	91.4	88.6	86.4	49.7	60.0	68.1	70.2
New Zealand	77.9	81.9	77.5	78.5	56.3	60.5	51.3	52.0	87.0	90.1	86.9	88.2	67.9	80.7	79.6	79.3
Norway[a]	81.7	79.7	77.7	77.4	61.0	54.0	51.4	50.9	88.8	89.2	87.0	86.5	73.1	73.9	74.8	74.9
Poland	61.2	63.6	66.3	66.6	27.3	29.2	29.2	28.6	77.6	81.1	82.9	82.7	36.7	41.4	49.3	51.3
Portugal	76.3	73.6	64.5	63.5	47.3	38.5	24.8	22.9	90.0	87.2	78.6	77.1	62.2	58.7	51.6	53.5
Slovak Republic	62.2	68.4	66.7	66.4	29.8	30.9	24.1	24.5	79.6	85.0	83.0	82.2	35.4	52.6	53.6	53.2
Slovenia	..	72.7	67.4	67.1	..	43.2	30.4	29.7	..	88.1	85.4	84.3	..	45.3	40.7	41.8
Spain[a]	72.7	77.3	61.1	60.1	43.2	48.6	20.4	19.1	85.6	87.5	71.3	70.4	55.2	59.6	52.1	50.5
Sweden[a]	76.3	76.5	75.6	76.3	47.9	41.9	38.7	40.4	85.9	89.0	87.8	87.9	67.7	73.1	76.4	77.0
Switzerland	87.3	85.6	85.2	84.6	66.5	65.4	63.2	62.7	95.2	93.6	92.7	91.8	77.0	76.4	79.5	79.9
Turkey	71.7	66.8	69.2	69.5	49.7	41.5	42.5	43.1	85.0	80.7	82.8	83.2	51.9	40.5	46.4	45.2
United Kingdom[a]	78.9	78.6	76.1	76.1	64.0	58.0	50.4	48.9	87.4	88.3	86.4	86.5	59.7	66.1	65.4	66.6
United States[a]	80.6	77.8	72.3	72.6	61.9	54.4	46.6	46.9	89.0	87.5	82.5	82.8	65.7	67.4	65.5	66.0
OECD[c]	76.1	75.8	73.2	73.2	50.2	47.0	42.9	42.7	88.2	87.9	85.1	84.8	59.2	63.9	64.5	65.1
Brazil	..	79.7	79.3	..	..	63.0	59.6	..	..	89.0	89.4	..	..	70.2	69.5	..
Colombia[d]	..	47.9	54.6	54.0	..	47.9	54.6	54.0	..	88.9	90.9	90.8	..	54.6	60.6	60.7
Latvia	..	72.7	64.4	66.8	..	43.8	31.8	33.3	..	86.0	77.7	79.9	..	64.3	53.2	55.2
Russian Fed.	67.6	72.0	73.6	73.6	38.2	36.6	37.5	38.2	82.7	87.0	88.7	88.6	46.8	63.9	58.1	57.9
South Africa	..	52.2	48.7	48.7	..	18.8	14.6	14.5	..	71.3	65.9	65.5	..	55.3	47.6	48.2

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	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013
Australia	61.3	66.1	66.6	66.4	60.8	63.2	59.5	58.8	67.0	71.9	72.3	72.2	34.2	47.3	53.9	54.0
Austria	59.4	64.4	67.3	67.6	48.1	51.5	50.5	50.3	73.6	77.5	81.1	81.2	16.8	28.0	34.1	36.0
Belgium	51.9	55.3	56.8	57.2	26.7	25.0	22.6	21.9	67.8	72.3	73.9	74.0	15.4	26.0	33.1	35.8
Canada	65.6	69.9	69.2	69.6	55.7	59.8	55.6	56.0	73.9	78.2	77.6	77.9	39.1	50.7	55.1	56.1
Chile	35.1	40.4	50.2	51.0	18.2	19.6	25.6	25.1	43.4	50.6	61.2	62.6	24.6	32.5	45.2	45.6
Czech Republic	56.9	57.3	58.2	59.6	33.6	23.9	21.0	21.0	73.7	74.9	74.6	75.5	22.4	33.5	39.1	41.4
Denmark	72.1	73.2	70.0	70.0	64.0	64.0	55.4	55.0	80.4	82.3	79.1	79.0	46.2	52.9	55.8	56.8
Estonia	57.3	66.1	64.6	65.6	28.5	29.8	30.3	30.6	73.2	79.9	75.7	76.0	36.5	60.5	61.5	63.6
Finland	64.5	68.5	68.2	67.8	39.9	44.7	42.5	43.8	77.6	80.7	79.4	78.1	40.9	54.8	59.7	60.5
France	54.8	59.6	59.9	60.4	25.2	27.9	25.9	25.8	69.6	76.0	76.0	76.2	26.0	36.0	41.7	43.1
Germany	58.1	63.2	68.0	68.8	44.6	43.5	44.6	45.2	71.2	74.0	78.2	78.5	29.0	43.4	54.8	57.5
Greece	41.3	47.9	41.9	40.1	22.0	18.7	10.0	9.1	52.6	60.8	53.8	51.3	24.4	26.9	26.0	25.9
Hungary	49.6	50.9	52.1	52.8	28.8	17.8	17.2	17.2	66.9	67.9	68.9	69.8	13.1	26.2	32.2	32.3
Iceland[a]	81.0	81.7	78.5	79.9	70.5	75.0	69.1	76.0	86.0	84.1	82.3	82.3	74.4	80.0	75.5	75.9
Ireland	53.7	60.6	55.2	55.9	45.1	47.6	30.0	29.7	62.6	69.5	64.7	65.6	26.8	40.0	43.2	43.2
Israel[b]	50.9	54.6	62.4	63.0	29.6	28.3	42.4	43.0	63.0	67.1	72.1	72.5	35.9	48.0	55.1	57.0
Italy	39.6	46.6	47.8	47.2	22.1	19.5	16.6	15.2	50.9	59.6	59.1	57.8	15.3	23.0	30.9	33.1
Japan	56.7	59.5	60.7	62.5	43.0	41.5	39.0	40.8	63.6	67.4	69.2	70.8	47.9	51.2	52.4	54.2
Korea	50.0	53.2	53.5	53.9	33.7	30.4	28.3	27.8	56.0	60.5	61.2	61.8	47.9	46.9	49.3	50.8
Luxembourg	50.0	56.1	59.0	59.1	28.3	18.4	20.1	19.4	63.0	71.7	75.0	75.5	16.8	28.6	34.3	32.4
Mexico	39.6	43.6	45.3	45.3	34.0	31.5	30.7	30.1	44.3	51.0	53.4	53.5	27.7	32.7	37.2	37.5
Netherlands	62.7	67.5	70.4	69.9	65.1	64.0	64.3	62.8	70.3	77.3	78.9	78.3	25.5	37.5	49.1	50.0
New Zealand	63.2	68.7	67.0	67.9	52.2	55.9	47.5	48.1	70.0	74.3	73.1	74.0	46.1	63.1	68.4	69.8
Norway[a]	74.0	74.0	73.8	73.5	55.0	56.3	54.0	54.0	81.6	82.3	82.1	81.6	61.2	64.0	66.9	67.1
Poland	48.9	50.6	53.1	53.4	21.8	22.4	19.9	19.5	64.3	68.8	71.5	71.2	21.4	19.4	29.2	31.0
Portugal	60.5	61.8	58.5	57.9	36.1	30.2	21.2	20.4	73.9	74.8	72.5	72.2	40.9	44.3	42.0	41.0
Slovak Republic	51.5	53.0	52.7	53.4	28.2	24.1	15.9	16.2	69.8	71.0	69.6	69.6	9.8	21.2	33.6	35.7
Slovenia	..	62.6	60.5	59.2	..	31.4	23.7	23.0	..	82.4	81.0	79.3	..	22.2	25.0	25.2
Spain[a]	42.0	56.0	51.8	51.0	29.0	37.2	20.1	18.0	51.0	66.3	62.0	61.2	20.1	30.2	36.0	36.3
Sweden[a]	72.2	71.8	71.8	72.5	45.4	42.2	41.5	42.8	81.7	83.0	82.5	82.7	62.4	67.2	69.8	70.5
Switzerland	69.3	71.6	73.6	74.4	63.4	59.7	60.1	61.0	75.6	78.5	80.6	80.9	50.1	58.1	61.5	63.6
Turkey	26.2	22.8	28.7	29.6	24.8	19.3	20.7	21.5	27.6	25.6	33.7	34.8	21.5	14.6	18.0	18.2
United Kingdom[a]	65.6	66.3	65.7	66.6	59.1	54.8	49.6	48.7	73.1	74.6	74.3	75.3	41.4	48.9	51.0	53.0
United States[a]	67.8	65.9	62.2	62.3	57.4	51.8	45.4	46.0	74.2	72.5	69.2	69.3	50.6	56.6	56.1	56.2
OECD[c]	55.0	57.2	57.2	57.5	40.8	39.2	36.4	36.5	63.7	66.3	66.3	66.5	36.7	43.6	47.1	48.1
Brazil	..	55.9	55.7	..	..	42.7	41.1	..	..	64.3	65.1	..	..	39.5	37.5	..
Colombia[d]	..	28.2	33.9	34.3	..	28.2	33.9	34.3	..	56.3	64.6	65.2	..	22.4	31.4	31.7
Latvia	..	63.9	61.7	63.4	..	32.2	25.4	27.0	..	78.4	75.0	76.1	..	53.4	52.5	54.6
Russian Fed.	59.3	65.3	64.7	64.4	30.9	30.8	29.8	30.3	77.8	82.5	82.9	82.0	25.9	43.1	39.0	39.5
South Africa	..	37.4	36.0	36.9	..	12.6	9.9	10.5	..	51.2	49.0	50.2	..	31.8	31.1	31.7

a) The lower age limit is 16 instead of 15 for Iceland up to 2008, Italy prior to 2009, Norway up to 2005 and Sweden up to 2006.

b) Ratios are under-estimated prior to 2012. See details in the PDF reported below.

c) Weighted average.

d) Data for 15-64 and 55-64 year olds refer to 15 and over and 55 and over, which underestimates the ratios compared to other countries.

Source and definition: OECD Online Employment Database : www.oecd.org/employment/database and www.oecd.org/els/emp/lfsnotes_sources.pdf.

StatLink http://dx.doi.org/10.1787/888933133305

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	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013
Australia	73.8	76.2	76.4	76.4	70.2	70.8	67.5	66.8	80.3	82.7	82.8	82.9	48.2	58.1	63.7	63.9
Austria	70.8	74.7	75.9	76.1	55.7	60.8	59.9	59.3	85.2	87.4	88.7	88.8	29.8	39.8	44.4	46.5
Belgium	65.2	67.1	66.9	67.5	35.7	33.9	31.5	31.0	82.8	85.3	85.0	85.3	25.9	35.9	41.4	44.1
Canada	76.2	78.3	77.9	78.1	64.4	66.9	63.6	63.8	84.8	86.6	86.6	86.6	50.9	60.1	63.8	64.7
Chile	58.8	60.8	66.3	66.4	33.6	32.1	37.1	36.3	70.4	73.9	78.9	79.2	50.3	56.5	65.0	65.9
Czech Republic	71.6	69.8	71.6	72.9	46.1	31.9	31.3	31.5	88.4	87.8	88.3	89.1	38.2	48.2	52.4	54.8
Denmark	80.0	80.1	78.6	78.1	71.9	70.6	64.1	61.7	87.9	88.9	87.8	87.5	56.9	61.0	64.4	65.0
Estonia	71.1	73.0	74.8	75.1	44.8	38.4	42.0	40.7	86.6	88.3	87.7	87.6	48.3	61.6	65.0	66.6
Finland	74.9	75.7	75.4	74.8	53.8	55.0	52.7	50.2	87.9	88.0	87.4	86.8	46.6	58.8	62.2	62.9
France	68.8	69.9	70.9	71.2	35.6	38.4	37.3	37.6	86.4	88.1	88.5	88.3	31.6	40.2	47.9	49.1
Germany	71.1	75.6	77.1	77.5	51.5	52.0	50.7	50.9	85.3	87.2	87.7	87.6	42.9	57.2	65.4	67.4
Greece	63.0	67.0	67.9	68.0	38.1	31.1	29.2	28.4	77.6	81.9	83.9	84.0	40.6	43.9	42.2	42.5
Hungary	59.9	61.9	64.3	65.1	37.2	25.6	25.9	27.2	77.3	80.0	82.9	83.2	22.6	34.5	40.0	41.7
Iceland[a]	86.6	87.8	85.5	86.6	71.6	80.1	76.3	78.9	92.2	90.6	89.2	89.7	85.7	85.7	82.8	84.3
Ireland	68.2	72.7	69.4	70.1	53.6	56.2	41.6	40.9	78.7	82.1	80.3	81.0	46.5	55.5	55.1	56.9
Israel[b]	61.5	63.7	71.5	71.6	33.9	32.4	49.5	49.6	76.1	77.8	81.8	81.7	50.0	60.4	66.3	67.6
Italy	60.3	62.5	64.6	64.4	39.5	30.9	31.6	30.0	74.3	77.6	77.9	77.1	29.0	34.6	42.6	45.3
Japan	72.5	73.6	73.9	74.9	47.0	44.9	41.8	42.6	81.9	83.3	84.0	84.8	66.5	68.4	68.2	69.4
Korea	64.4	66.2	66.4	66.6	33.0	28.2	26.6	26.6	75.2	76.4	77.0	77.3	59.5	62.0	64.7	65.7
Luxembourg	64.2	66.9	69.4	69.9	34.0	26.5	26.8	25.9	79.8	84.7	87.0	87.5	27.6	32.7	41.9	42.5
Mexico	61.7	63.3	64.5	64.3	51.5	47.4	47.6	46.6	68.6	72.3	74.0	73.9	52.4	55.6	57.1	56.8
Netherlands	74.3	77.1	79.3	79.7	70.8	70.4	69.9	70.0	83.1	86.8	87.7	87.5	38.5	50.8	61.5	64.1
New Zealand	75.1	78.1	77.7	78.1	62.8	64.7	60.1	59.5	82.1	84.1	84.3	84.9	59.7	72.9	77.0	77.5
Norway[a]	80.7	78.9	78.4	78.3	64.7	59.4	57.6	57.7	87.6	87.5	86.9	86.7	68.0	69.7	71.8	72.0
Poland	65.8	63.2	66.5	67.0	37.8	33.0	33.6	33.3	82.4	81.7	84.6	84.6	31.3	31.8	41.8	44.0
Portugal	71.2	73.9	73.4	73.0	45.7	41.3	37.1	35.0	84.8	87.7	88.5	88.3	52.5	54.6	53.3	54.4
Slovak Republic	69.9	68.2	69.4	69.8	46.0	34.5	30.5	30.8	88.4	86.8	87.1	87.2	24.3	38.8	48.5	49.5
Slovenia	..	71.3	70.4	70.5	..	41.8	34.4	33.8	..	89.3	90.8	90.7	..	34.6	35.1	36.0
Spain[a]	66.7	72.8	75.3	75.3	48.5	52.5	43.0	41.7	78.0	83.1	86.9	87.2	40.9	47.4	53.5	54.1
Sweden[a]	79.0	79.1	80.3	81.1	52.9	52.1	52.5	54.3	88.2	90.0	90.6	90.9	69.3	73.0	77.1	77.7
Switzerland	80.5	81.6	83.0	83.3	68.3	67.4	67.4	67.7	87.4	88.9	90.0	90.1	65.1	69.3	72.7	73.9
Turkey	52.4	49.8	54.0	55.0	42.5	37.7	38.2	39.6	59.6	58.2	63.5	64.5	37.2	28.3	33.4	33.2
United Kingdom[a]	76.4	76.5	77.1	77.4	69.7	65.8	63.3	61.7	83.9	84.6	85.5	85.8	52.7	59.2	61.1	62.6
United States[a]	77.2	75.3	73.1	72.8	65.8	59.4	54.9	55.0	84.0	83.0	81.4	81.0	59.2	63.8	64.5	64.4
OECD[c]	69.9	70.5	70.9	71.1	51.7	49.0	47.4	47.3	80.2	81.0	81.5	81.5	50.1	55.7	58.9	59.7
Brazil	..	73.5	71.7	..	..	63.6	59.0	..	..	81.1	80.4	..	..	55.4	53.5	..
Colombia[d]	..	48.8	55.8	54.6	..	48.8	55.8	54.6	..	79.1	84.4	84.3	..	39.5	47.5	47.5
Latvia	..	72.6	74.4	74.0	..	42.6	40.1	39.4	..	87.1	88.4	87.6	..	60.7	61.8	61.3
Russian Fed.	70.9	72.9	73.0	72.8	43.6	39.4	39.5	39.8	88.3	89.2	89.9	89.4	37.5	53.7	48.8	49.1
South Africa	..	57.2	56.2	56.8	..	29.3	25.4	25.8	..	74.5	73.3	73.8	..	44.8	41.5	42.5

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	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013
Australia	82.3	83.0	82.5	82.4	71.9	71.8	68.2	67.4	90.2	90.8	90.1	90.1	60.9	67.7	71.8	72.2
Austria	79.9	81.7	81.4	81.2	60.6	65.0	64.5	63.1	94.0	93.7	93.1	92.7	42.8	51.3	54.4	56.4
Belgium	73.8	73.6	72.5	72.7	38.7	36.1	35.0	33.7	92.1	92.5	90.7	90.9	36.3	44.4	47.9	50.5
Canada	81.9	82.4	81.6	81.6	65.8	67.4	63.5	63.8	91.0	91.1	90.8	90.7	60.7	67.1	69.3	70.0
Chile	78.9	77.4	78.0	78.1	42.5	39.0	42.1	41.1	94.4	93.9	92.5	92.3	76.5	80.2	85.0	85.7
Czech Republic	79.4	78.1	79.5	80.5	51.3	36.7	36.4	36.8	94.9	95.0	95.5	95.8	54.5	62.4	64.0	66.1
Denmark	84.0	83.7	81.4	80.6	75.2	72.0	64.1	61.1	91.5	92.3	90.6	90.2	64.5	66.9	69.9	70.2
Estonia	76.3	77.5	78.5	78.6	52.1	44.3	46.6	43.1	89.2	93.2	92.1	92.3	60.0	62.4	65.0	66.7
Finland	77.6	77.4	77.3	76.0	56.4	56.3	53.6	47.8	90.7	90.3	90.5	90.0	48.1	59.2	61.7	61.6
France	75.3	74.7	75.3	75.5	38.7	41.8	40.6	41.0	94.3	94.2	93.7	93.3	35.4	42.7	51.2	52.3
Germany	78.9	81.8	82.4	82.4	54.7	54.9	53.2	52.9	93.4	93.8	93.0	92.7	52.4	65.8	73.0	74.4
Greece	77.1	79.1	77.4	77.4	41.0	34.7	31.2	31.5	94.3	94.6	93.6	93.5	57.3	60.8	55.2	54.9
Hungary	67.5	69.0	70.5	71.7	41.8	29.3	28.0	30.4	84.4	86.9	89.5	89.4	34.1	43.6	46.4	50.2
Iceland[a]	89.8	91.6	87.6	88.8	70.1	80.0	74.0	75.5	96.1	95.3	92.3	92.8	94.7	90.4	86.9	90.0
Ireland	80.0	81.6	76.7	77.2	57.8	59.6	42.3	41.5	92.3	91.7	89.3	89.5	65.2	69.8	64.6	66.9
Israel[b]	67.1	68.0	75.9	76.0	32.4	30.7	50.4	51.0	84.0	83.7	86.9	86.5	63.9	71.4	75.5	76.7
Italy	74.3	74.4	75.0	74.5	44.6	36.1	36.5	34.0	90.6	91.0	89.4	88.3	42.7	46.3	53.6	56.7
Japan	85.2	85.2	84.3	84.6	47.4	45.1	41.5	41.8	97.1	96.3	95.6	95.7	84.1	84.9	82.9	83.5
Korea	77.1	77.6	77.6	77.6	28.4	23.1	22.1	22.5	92.2	90.5	90.7	90.7	71.3	76.8	79.6	80.4
Luxembourg	76.4	75.0	75.9	76.3	37.4	30.6	28.8	29.8	94.2	94.9	94.6	94.4	38.6	36.4	48.3	50.5
Mexico	84.7	83.7	83.0	82.5	67.7	61.7	61.2	59.9	95.2	95.3	94.7	94.3	79.3	80.9	79.3	78.2
Netherlands	83.2	83.8	84.2	84.7	71.6	71.4	68.5	69.3	93.2	93.5	92.9	92.3	50.9	62.6	71.6	75.3
New Zealand	83.2	84.9	83.2	83.3	65.9	67.2	62.1	61.5	91.2	92.1	91.2	91.8	71.9	81.9	83.1	82.6
Norway[a]	84.8	81.8	80.7	80.4	67.5	58.6	57.1	56.9	91.4	90.9	89.6	89.2	74.4	74.7	76.0	76.0
Poland	71.7	70.0	73.3	73.9	40.9	36.5	38.5	38.4	88.3	87.9	90.0	90.0	40.4	44.8	53.5	55.9
Portugal	78.9	79.2	77.3	76.5	50.5	44.7	39.2	36.2	92.5	92.9	92.1	91.1	64.5	63.2	60.4	62.7
Slovak Republic	76.8	75.8	77.1	77.2	49.4	38.7	37.1	37.6	93.9	93.0	93.8	93.6	41.0	56.9	60.3	59.5
Slovenia	..	75.8	73.7	74.2	..	47.6	38.1	37.1	..	91.3	92.4	92.6	..	46.7	43.6	45.1
Spain[a]	80.4	82.6	81.2	80.9	53.6	57.3	44.5	43.7	93.0	92.5	92.6	92.4	60.5	62.8	63.6	63.3
Sweden[a]	81.5	81.4	82.6	83.3	54.4	51.5	51.6	53.7	90.7	92.9	93.5	93.6	72.6	76.4	81.0	81.8
Switzerland	89.4	88.2	88.8	88.6	70.5	70.2	69.3	68.8	96.7	95.8	95.9	95.6	79.3	78.4	82.0	82.4
Turkey	76.9	74.4	75.8	76.3	57.6	51.6	50.8	51.9	89.5	88.1	89.5	90.0	53.4	42.9	49.1	48.2
United Kingdom[a]	84.1	83.3	83.2	83.1	73.6	68.8	66.2	63.8	91.9	91.7	92.0	92.0	63.2	68.9	69.4	70.4
United States[a]	83.9	81.7	78.8	78.7	68.6	61.5	56.5	56.6	91.6	90.9	88.7	88.4	67.3	69.6	69.9	70.0
OECD[c]	80.8	80.3	79.7	79.7	57.0	53.6	51.5	51.2	92.6	92.2	91.5	91.3	62.5	66.7	68.7	69.3
Brazil	..	84.9	83.3	..	..	72.3	67.2	..	..	92.8	92.3	..	..	72.3	70.9	..
Colombia[d]	..	58.2	64.8	63.2	..	58.2	64.8	63.2	..	95.2	96.5	96.3	..	58.1	64.5	64.3
Latvia	..	77.9	77.1	76.6	..	49.2	44.0	42.6	..	91.6	91.2	90.6	..	67.6	63.2	62.2
Russian Fed.	75.9	76.9	78.1	78.1	47.5	42.7	43.8	44.1	91.4	92.0	93.3	93.2	50.6	66.3	60.6	60.4
South Africa	..	64.3	63.3	63.4	..	32.0	27.8	27.9	..	84.0	82.5	82.2	..	59.1	52.0	53.0

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	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013
Australia	65.3	69.4	70.4	70.5	68.5	69.7	66.8	66.3	70.5	74.8	75.6	75.8	35.3	48.6	55.7	55.8
Austria	61.8	67.8	70.3	71.1	50.8	56.7	55.3	55.5	76.3	81.1	84.3	85.0	17.6	28.9	35.0	37.1
Belgium	56.6	60.4	61.3	62.3	32.6	31.6	27.9	28.2	73.2	78.0	79.1	79.7	15.8	27.5	34.9	37.8
Canada	70.4	74.1	74.3	74.6	62.9	66.5	63.6	63.8	78.5	82.1	82.3	82.5	41.4	53.2	58.5	59.5
Chile	39.1	44.4	54.6	54.9	24.2	24.8	31.6	31.1	47.3	54.6	65.8	66.5	25.5	33.7	46.8	47.0
Czech Republic	63.7	61.5	63.5	65.1	40.6	26.9	25.9	26.1	81.8	80.3	80.9	81.9	23.7	35.2	41.6	44.2
Denmark	75.9	76.4	75.8	75.6	68.8	69.1	64.0	62.4	84.3	85.3	84.9	84.8	48.2	55.1	58.9	59.9
Estonia	66.3	68.8	71.3	71.7	37.1	32.1	37.1	38.1	84.1	83.4	83.4	82.8	39.4	61.0	65.0	66.5
Finland	72.1	73.9	73.4	73.5	51.1	53.7	51.9	52.8	85.0	85.6	84.2	83.4	45.2	58.3	62.8	64.1
France	62.5	65.2	66.6	67.0	32.6	35.0	34.0	34.1	78.6	82.3	83.4	83.5	28.1	37.8	44.8	46.1
Germany	63.3	69.4	71.7	72.4	48.2	49.0	48.1	48.7	76.9	80.6	82.2	82.4	33.5	48.9	58.0	60.7
Greece	49.7	54.9	58.4	58.5	35.4	27.6	27.2	25.4	61.7	69.1	73.9	74.2	25.5	28.2	29.9	30.8
Hungary	52.6	55.1	58.3	58.8	32.5	21.8	23.7	24.0	70.5	73.2	76.3	76.9	13.3	27.3	34.8	34.8
Iceland[a]	83.3	83.6	83.3	84.3	73.2	80.1	78.8	82.5	88.2	85.4	86.1	86.6	76.8	80.7	78.6	78.5
Ireland	56.3	63.5	62.2	63.2	49.2	52.7	40.9	40.3	65.1	72.2	71.7	72.8	27.6	40.8	45.7	47.0
Israel[b]	56.1	59.4	67.1	67.3	35.5	34.1	48.6	48.2	68.5	72.0	76.9	77.0	37.7	50.3	57.6	59.1
Italy	46.3	50.7	54.2	54.4	34.3	25.5	26.5	25.9	57.9	64.1	66.4	66.0	16.1	23.5	32.2	34.6
Japan	59.6	61.9	63.4	65.0	46.6	44.7	42.0	43.5	66.5	70.1	72.3	73.6	49.7	52.5	54.0	55.8
Korea	52.0	54.8	55.2	55.6	37.0	32.7	30.9	30.6	57.8	62.0	62.8	63.4	48.8	47.6	50.2	51.4
Luxembourg	51.7	58.9	62.8	63.2	30.6	22.3	24.7	21.8	64.9	74.7	79.2	80.5	16.8	29.1	35.2	34.2
Mexico	41.0	45.3	47.7	47.8	36.3	34.1	34.1	33.6	45.4	52.6	55.7	55.9	28.0	32.9	37.8	38.0
Netherlands	65.2	70.4	74.3	74.6	70.0	69.4	71.4	70.8	72.7	79.9	82.4	82.6	25.9	38.9	51.3	52.9
New Zealand	67.2	71.6	72.5	73.2	59.5	62.2	58.0	57.5	73.5	76.6	77.7	78.5	47.8	64.0	71.1	72.7
Norway[a]	76.5	75.9	75.9	76.1	61.8	60.3	58.2	58.5	83.5	84.0	84.0	84.0	61.6	64.6	67.5	68.0
Poland	59.9	56.5	59.7	60.1	34.8	29.3	28.4	27.9	76.5	75.6	79.1	79.1	23.7	20.6	31.3	33.3
Portugal	63.8	68.7	69.7	69.8	40.9	37.8	34.9	33.8	77.3	82.7	85.0	85.5	42.0	47.0	47.0	46.9
Slovak Republic	63.2	60.7	61.7	62.4	42.6	30.1	23.6	23.7	82.9	80.5	80.3	80.5	10.7	23.3	38.0	40.4
Slovenia	..	66.6	66.9	66.6	..	35.4	30.0	30.2	..	87.3	89.1	88.7	..	23.1	26.5	27.0
Spain[a]	52.9	62.8	69.3	69.7	43.3	47.5	41.3	39.6	62.8	73.3	81.1	81.8	22.6	32.7	43.9	45.2
Sweden[a]	76.4	76.8	77.9	78.8	51.2	52.6	53.4	55.0	85.6	87.1	87.6	88.1	65.9	69.6	73.1	73.5
Switzerland	71.6	75.0	77.2	78.0	66.0	64.5	65.4	66.5	78.0	81.9	84.1	84.5	51.3	60.3	63.5	65.4
Turkey	28.0	25.7	32.3	33.7	28.1	24.4	25.9	27.5	28.9	28.0	37.3	38.9	21.6	14.8	18.3	18.8
United Kingdom[a]	68.9	69.8	71.0	71.7	65.7	62.7	60.4	59.6	76.2	77.6	79.0	79.7	42.5	49.9	53.1	55.1
United States[a]	70.7	69.1	67.6	67.2	63.0	57.2	53.2	53.5	76.7	75.4	74.5	73.9	51.9	58.3	59.4	59.2
OECD[c]	59.1	60.9	62.3	62.6	46.5	44.4	43.2	43.3	67.9	70.1	71.7	71.9	38.3	45.3	49.7	50.7
Brazil	..	62.8	60.8	..	..	54.6	50.6	..	..	..	69.4	..	..	40.6	38.5	..
Colombia[d]	..	39.5	46.6	46.0	..	39.5	46.6	46.0	..	..	73.1	73.1	..	23.4	33.0	33.2
Latvia	..	67.8	72.0	71.6	..	35.8	36.1	36.0	..	..	85.7	84.8	..	55.7	60.8	60.5
Russian Fed.	66.2	69.2	68.2	67.9	39.7	36.0	35.1	35.4	85.3	86.6	86.7	85.8	27.8	44.2	40.0	40.7
South Africa	..	50.8	49.4	50.4	..	26.6	22.9	23.6	..	66.2	64.5	65.7	..	33.3	32.9	33.7

a) The lower age limit is 16 instead of 15 for Iceland up to 2008, Italy after 2009, Norway up to 2005 and Sweden up to 2006.

b) Ratios are under-estimated prior to 2012. See details in the PDF reported below.

c) Weighted average.

d) Data for 15-64 and 55-64 year olds refer to 15 and over and 55 and over, which underestimates the ratios compared to other countries.

Source and definition: OECD Online Employment Database : www.oecd.org/employment/database and www.oecd.org/els/emp/lfsnotes_sources.pdf.

StatLink http://dx.doi.org/10.1787/888933133324

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	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013
Australia	6.4	4.4	5.3	5.8	12.1	9.4	11.7	12.2	5.0	3.4	4.1	4.6	4.5	2.7	3.5	3.8
Austria	3.5	4.5	4.4	5.0	5.1	8.7	8.7	9.2	3.1	3.8	3.8	4.4	5.2	3.0	3.0	3.5
Belgium	6.6	7.5	7.6	8.5	15.2	18.8	19.8	23.7	5.8	6.6	6.7	7.4	3.2	4.2	4.5	5.4
Canada	6.9	6.1	7.3	7.2	12.7	11.2	14.3	13.7	5.8	5.1	6.0	5.9	5.5	5.0	6.3	6.4
Chile	9.4	7.4	6.7	6.2	21.3	17.8	16.3	16.1	7.6	6.0	5.5	5.1	5.6	3.8	3.5	2.9
Czech Republic	8.8	5.4	7.0	7.0	17.0	10.7	19.5	19.0	7.7	4.9	6.1	6.2	5.2	4.6	5.8	5.8
Denmark	4.5	3.8	7.7	7.2	6.7	7.5	14.1	13.1	4.1	3.1	6.7	6.3	4.0	3.4	5.5	5.1
Estonia	14.8	4.7	10.2	8.8	22.2	9.9	19.8	17.9	14.0	4.2	9.5	8.3	11.5	3.6	7.2	6.0
Finland	9.8	6.9	7.8	8.3	20.3	15.7	17.8	20.0	8.0	5.3	6.2	6.7	9.4	6.5	6.4	6.7
France	10.3	8.0	9.9	9.9	20.6	19.1	23.9	23.9	9.3	7.0	8.6	8.7	7.4	5.1	7.1	7.0
Germany	7.8	8.7	5.5	5.4	8.4	11.7	8.1	7.9	7.0	8.0	5.1	4.9	12.3	10.3	5.9	5.8
Greece	11.3	8.4	24.5	27.5	29.5	22.9	55.3	58.3	9.6	7.8	23.6	26.8	3.8	3.4	13.6	16.3
Hungary	6.4	7.4	11.0	10.3	12.7	18.0	28.1	27.2	5.7	6.8	10.0	9.2	3.0	4.2	7.9	7.7
Iceland[a]	2.3	2.3	6.2	5.5	4.7	7.2	13.6	10.7	1.7	1.3	4.6	4.6	1.7	0.9	4.3	3.2
Ireland	4.7	4.9	15.3	14.1	7.9	10.3	33.0	29.6	4.0	4.0	13.6	12.6	2.6	2.3	10.1	10.7
Israel	8.9	7.4	7.0	6.3	16.9	16.1	12.1	10.5	7.5	6.2	6.1	5.7	6.8	5.3	4.8	4.4
Italy	10.6	6.2	10.8	12.4	29.7	20.3	35.3	40.0	8.5	5.3	9.6	11.3	4.5	2.4	5.3	5.7
Japan	5.0	4.1	4.6	4.3	9.2	7.7	7.9	6.9	4.1	3.7	4.3	4.1	5.6	3.4	4.1	3.8
Korea	4.6	3.4	3.3	3.2	10.8	8.8	9.0	9.3	4.0	3.1	3.0	2.9	2.9	2.2	2.5	2.1
Luxembourg	2.4	4.1	5.2	5.9	6.4	15.2	18.8	15.5	2.0	3.4	4.5	5.3	1.4	2.1	2.1	4.7
Mexico	2.6	3.5	5.0	5.2	5.1	6.7	9.3	9.2	1.8	2.7	4.0	4.3	1.4	1.6	2.7	2.8
Netherlands	3.1	3.6	5.3	6.7	6.1	7.0	9.5	11.0	2.5	2.8	4.4	5.8	2.1	4.0	4.7	6.3
New Zealand	6.2	3.8	7.2	6.4	13.6	10.1	17.7	15.8	4.7	2.6	5.3	4.7	4.7	1.5	4.0	4.0
Norway[a]	3.5	2.6	3.3	3.6	10.2	7.3	8.6	9.2	2.6	1.9	2.7	2.9	1.3	1.0	1.3	1.3
Poland	16.4	9.7	10.2	10.5	35.2	21.7	26.5	27.3	13.9	8.4	8.8	9.0	9.4	6.8	7.4	7.7
Portugal	4.2	8.5	16.3	17.0	8.6	16.7	37.9	38.1	3.5	7.7	14.7	15.5	3.2	6.5	12.7	13.7
Slovak Republic	18.8	11.0	14.0	14.3	37.0	20.1	34.0	33.6	15.5	10.1	12.4	12.8	12.3	8.1	11.2	11.0
Slovenia	..	5.0	9.0	10.3	..	10.1	20.6	21.6	..	4.5	8.3	9.7	..	3.3	6.2	7.0
Spain[a]	13.9	8.3	24.9	26.2	25.3	18.1	52.9	55.5	12.3	7.2	23.3	24.5	9.4	6.0	18.0	20.0
Sweden[a]	5.9	6.2	8.1	8.2	11.7	19.2	23.7	23.6	4.9	4.4	5.9	6.1	6.1	3.9	5.2	5.1
Switzerland	2.7	3.7	4.3	4.5	4.8	7.1	8.4	8.5	2.3	3.1	3.7	4.1	2.7	3.1	3.1	3.0
Turkey	6.7	10.5	9.4	9.9	13.1	20.0	17.5	18.7	4.9	8.5	8.1	8.5	2.1	4.3	4.5	5.3
United Kingdom[a]	5.5	5.3	8.1	7.8	11.7	14.2	21.0	20.9	4.4	3.7	6.0	5.8	4.4	3.3	4.9	4.7
United States[a]	4.0	4.7	8.2	7.5	9.3	10.5	16.2	15.5	3.1	3.7	7.0	6.3	2.5	3.1	5.9	5.3
OECD[b]	6.3	5.8	8.2	8.1	12.1	12.0	16.3	16.2	5.4	4.9	7.2	7.3	4.9	4.0	5.7	5.6
Brazil	..	8.3	6.3	..	..	16.7	14.6	..	..	6.1	4.5	..	..	2.9	2.3	..
Colombia[c]	..	22.2	20.5	19.1	..	22.2	20.5	19.1	..	9.0	8.4	7.9	..	5.5	5.6	5.2
Latvia	..	6.2	15.3	12.1	..	10.6	28.5	23.2	..	5.7	13.7	11.0	..	4.5	14.7	10.5
Russian Fed.	10.7	6.1	5.5	5.5	20.7	14.4	14.8	13.8	9.2	5.1	4.6	4.7	7.3	3.1	3.3	3.7
South Africa	..	22.3	24.9	24.7	..	46.5	51.7	51.4	..	18.6	21.9	21.8	..	5.6	7.0	7.7

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	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013
Australia	6.6	4.1	5.3	5.9	12.9	9.5	12.5	13.0	5.1	3.0	3.8	4.4	5.3	2.8	3.7	4.3
Austria	3.3	4.0	4.4	5.0	5.0	8.3	8.8	8.9	2.8	3.3	3.7	4.5	5.4	2.9	3.5	3.8
Belgium	5.3	6.7	7.7	8.7	12.9	17.1	20.4	24.7	4.6	5.9	6.9	7.5	3.4	3.6	4.1	5.5
Canada	7.0	6.4	7.8	7.6	13.8	12.3	15.9	15.1	5.7	5.3	6.3	6.1	5.5	5.2	6.7	6.9
Chile	9.0	6.5	5.7	5.5	19.4	16.1	14.3	13.9	7.4	5.2	4.4	4.5	6.3	3.8	3.5	3.0
Czech Republic	7.4	4.3	6.1	6.0	16.7	10.6	19.9	18.6	6.0	3.5	4.8	4.9	5.0	4.5	5.7	5.4
Denmark	4.0	3.5	7.7	6.9	6.5	7.6	14.8	14.3	3.5	2.7	6.6	5.7	3.9	3.0	5.7	5.2
Estonia	16.0	5.5	11.0	9.1	21.7	11.8	20.8	16.5	15.0	4.2	9.8	8.3	15.0	6.9	9.4	8.2
Finland	9.1	6.5	8.3	9.0	18.9	14.8	17.7	23.0	7.2	4.8	6.6	6.9	9.3	6.9	8.1	7.8
France	8.6	7.5	9.8	10.1	19.0	18.3	24.0	23.6	7.5	6.3	8.3	8.7	7.3	5.3	7.3	7.5
Germany	7.6	8.6	5.8	5.7	9.2	12.2	8.8	8.6	6.6	7.8	5.2	5.2	11.5	9.7	6.2	6.2
Greece	7.5	5.3	21.6	24.5	22.1	15.7	48.4	53.6	6.1	4.7	20.9	23.6	3.5	2.9	13.8	16.5
Hungary	7.1	7.2	11.3	10.3	13.8	17.6	28.8	26.3	6.2	6.5	10.2	9.2	3.7	4.5	8.2	8.0
Iceland[a]	1.8	2.3	6.5	5.8	5.7	8.0	14.7	13.6	1.1	1.2	4.8	4.4	0.5	0.9	4.6	3.1
Ireland	4.7	5.0	18.6	16.3	7.6	10.7	38.9	32.5	4.2	4.2	16.8	14.9	2.5	2.4	13.5	12.3
Israel	8.6	6.9	6.8	6.3	17.1	15.0	11.6	10.4	7.1	5.7	6.1	5.5	8.1	5.9	5.1	5.0
Italy	8.2	5.0	10.0	11.7	25.4	18.2	33.7	39.0	6.3	4.0	8.6	10.4	4.4	2.6	6.0	6.7
Japan	5.1	4.1	4.7	4.5	10.4	8.3	8.7	7.6	3.9	3.6	4.3	4.2	6.8	4.1	4.9	4.4
Korea	5.1	3.8	3.5	3.4	13.5	11.4	9.7	9.8	4.5	3.6	3.2	3.2	3.9	2.7	3.0	2.8
Luxembourg	1.8	3.6	4.6	5.5	5.7	13.5	18.9	18.7	1.4	2.8	3.8	4.6	2.0	2.3	1.9	4.3
Mexico	2.3	3.3	4.9	5.2	4.4	6.2	9.1	8.5	1.5	2.5	3.8	4.4	1.5	2.0	3.3	3.6
Netherlands	2.5	3.2	5.3	7.1	5.3	6.3	8.9	10.8	1.9	2.3	4.6	6.3	2.5	4.2	5.0	6.9
New Zealand	6.4	3.5	6.8	5.8	14.6	10.0	17.3	15.4	4.6	2.2	4.8	3.9	5.5	1.5	4.2	3.9
Norway[a]	3.6	2.6	3.7	3.8	9.5	7.9	10.0	10.6	2.9	1.9	3.0	2.9	1.8	1.1	1.6	1.4
Poland	14.6	9.1	9.5	9.8	33.3	20.0	24.1	25.4	12.1	7.8	8.0	8.2	9.1	7.4	8.0	8.3
Portugal	3.3	7.0	16.5	17.0	6.3	13.8	36.7	36.7	2.7	6.1	14.7	15.4	3.6	7.1	14.5	14.6
Slovak Republic	19.0	9.8	13.6	14.0	39.7	20.3	35.0	34.9	15.2	8.6	11.5	12.2	13.5	7.7	11.0	10.6
Slovenia	..	4.1	8.5	9.6	..	9.4	20.3	20.1	..	3.4	7.6	8.9	..	3.0	6.6	7.4
Spain[a]	9.6	6.5	24.7	25.7	19.4	15.2	54.1	56.2	8.0	5.5	23.0	23.8	8.6	5.0	18.1	20.3
Sweden[a]	6.3	6.0	8.4	8.4	12.1	18.6	25.0	24.8	5.3	4.1	6.1	6.0	6.8	4.3	5.7	5.8
Switzerland	2.3	3.0	4.1	4.4	5.6	6.8	8.8	8.8	1.6	2.3	3.4	3.9	3.0	2.6	3.1	3.1
Turkey	6.8	10.2	8.7	8.9	13.7	19.6	16.3	16.9	5.0	8.5	7.5	7.6	2.9	5.4	5.6	6.3
United Kingdom[a]	6.1	5.6	8.6	8.4	13.2	15.7	23.8	23.3	4.8	3.7	6.0	6.1	5.5	4.1	5.8	5.4
United States[a]	3.9	4.8	8.3	7.8	9.7	11.6	17.6	17.1	2.9	3.7	6.9	6.4	2.4	3.2	6.3	5.6
OECD[b]	5.9	5.6	8.1	8.1	11.9	12.2	16.8	16.6	4.8	4.6	7.0	7.1	5.3	4.2	6.1	6.1
Brazil	..	6.1	4.7	..	..	12.9	11.4	..	..	4.2	3.1	..	..	2.9	2.1	..
Colombia[c]	..	17.8	15.7	14.6	..	17.8	15.7	14.6	..	6.6	5.9	5.7	..	6.0	6.0	5.6
Latvia	..	6.7	16.5	12.8	..	11.0	27.8	21.8	..	6.1	14.9	11.8	..	4.9	15.8	11.4
Russian Fed.	10.9	6.4	5.8	5.8	19.5	14.5	14.5	13.3	9.6	5.4	4.9	5.0	7.5	3.5	4.1	4.2
South Africa	..	18.8	23.0	23.1	..	41.1	47.6	48.0	..	15.1	20.2	20.3	..	6.4	8.4	9.1

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	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013
Australia	6.1	4.8	5.4	5.7	11.2	9.2	11.0	11.3	4.9	3.9	4.4	4.7	3.2	2.6	3.1	3.2
Austria	3.8	5.1	4.4	5.0	5.2	9.1	8.7	9.4	3.5	4.5	3.8	4.4	4.7	3.1	2.4	3.0
Belgium	8.3	8.5	7.4	8.2	18.2	20.9	18.9	22.5	7.4	7.4	6.6	7.2	2.8	5.3	5.1	5.3
Canada	6.7	5.7	6.9	6.7	11.4	10.0	12.6	12.2	5.8	4.8	5.8	5.6	5.5	4.9	5.8	5.8
Chile	10.2	8.8	8.1	7.1	24.8	20.8	19.1	19.2	8.1	7.3	7.0	5.8	3.4	3.6	3.5	2.9
Czech Republic	10.6	6.8	8.3	8.4	17.4	11.0	19.0	19.4	9.9	6.7	7.8	7.9	5.4	4.8	6.0	6.4
Denmark	5.0	4.2	7.7	7.4	7.0	7.4	13.5	11.8	4.7	3.6	6.8	6.9	4.2	4.0	5.3	5.1
Estonia	13.5	3.9	9.3	8.5	23.0	7.2	18.5	19.7	12.9	4.2	9.2	8.2	7.5	0.9	5.4	4.4
Finland	10.6	7.3	7.1	7.7	21.8	16.8	18.0	17.2	8.8	5.8	5.7	6.4	9.4	6.0	4.9	5.6
France	12.3	8.6	10.0	9.8	22.6	20.1	23.8	24.3	11.4	7.7	8.9	8.7	7.4	4.8	6.9	6.5
Germany	8.1	8.9	5.3	5.0	7.5	11.1	7.3	7.1	7.5	8.1	4.9	4.6	13.6	11.2	5.6	5.3
Greece	16.9	12.9	28.3	31.5	37.7	32.1	63.2	64.2	14.7	12.0	27.2	30.9	4.4	4.3	13.2	16.0
Hungary	5.7	7.7	10.7	10.3	11.2	18.6	27.3	28.4	5.0	7.2	9.7	9.2	1.6	3.9	7.6	7.3
Iceland[a]	2.8	2.4	5.8	5.2	3.6	6.3	12.4	7.8	2.4	1.6	4.4	4.9	3.2	0.9	4.0	3.4
Ireland	4.7	4.7	11.2	11.5	8.3	9.8	26.7	26.5	3.8	3.7	9.7	9.9	2.9	2.0	5.4	8.3
Israel	9.3	8.0	7.1	6.3	16.8	17.0	12.7	10.7	8.0	6.8	6.2	5.8	4.9	4.6	4.4	3.7
Italy	14.6	7.9	12.0	13.2	35.4	23.3	37.5	41.4	12.1	7.1	11.0	12.4	4.7	2.1	4.2	4.1
Japan	4.7	3.9	4.3	3.9	7.9	7.1	7.1	6.2	4.4	3.9	4.3	3.9	3.6	2.4	3.0	2.8
Korea	3.8	2.8	3.1	3.0	9.0	7.1	8.5	9.0	3.0	2.4	2.6	2.6	1.6	1.4	1.7	1.2
Luxembourg	3.2	4.7	5.9	6.4	7.3	17.5	18.6	10.9	2.9	4.0	5.3	6.2	-	1.7	2.5	5.3
Mexico	3.4	3.8	5.0	5.1	6.2	7.5	9.8	10.5	2.4	3.1	4.1	4.2	0.9	0.6	1.6	1.4
Netherlands	3.9	4.1	5.2	6.3	7.0	7.8	10.0	11.2	3.3	3.3	4.2	5.2	1.5	3.8	4.4	5.5
New Zealand	6.0	4.0	7.6	7.1	12.4	10.1	18.0	16.3	4.8	3.0	5.9	5.7	3.6	1.4	3.8	4.1
Norway[a]	3.2	2.5	2.8	3.4	10.9	6.6	7.2	7.7	2.3	2.0	2.3	2.9	0.7	0.8	0.9	1.2
Poland	18.4	10.4	11.0	11.2	37.3	23.8	30.0	30.1	16.0	9.1	9.7	10.0	9.7	5.7	6.6	6.9
Portugal	5.2	10.1	16.1	17.0	11.6	20.3	39.3	39.6	4.4	9.5	14.7	15.6	2.6	5.8	10.7	12.5
Slovak Republic	18.6	12.6	14.5	14.6	33.8	19.9	32.5	31.6	15.8	11.9	13.4	13.6	8.7	9.1	11.6	11.6
Slovenia	..	6.0	9.5	11.1	..	11.2	21.0	23.7	..	5.6	9.0	10.6	..	3.8	5.4	6.3
Spain[a]	20.6	10.7	25.2	26.8	32.9	21.7	51.4	54.6	18.9	9.5	23.6	25.2	11.3	7.7	17.9	19.7
Sweden[a]	5.4	6.5	7.8	8.0	11.3	19.8	22.3	22.3	4.5	4.7	5.7	6.1	5.4	3.5	4.6	4.2
Switzerland	3.2	4.6	4.6	4.6	3.9	7.4	8.1	8.3	3.1	4.1	4.2	4.2	2.3	3.8	3.1	2.9
Turkey	6.5	11.3	11.0	12.2	11.9	20.8	19.9	21.9	4.6	8.8	9.6	10.6	0.5	1.1	1.8	2.7
United Kingdom[a]	4.8	5.0	7.5	7.2	10.1	12.5	17.9	18.3	4.0	3.8	6.0	5.6	2.7	2.2	3.8	3.8
United States[a]	4.1	4.6	8.0	7.2	8.9	9.4	14.7	13.9	3.3	3.8	7.1	6.3	2.5	3.0	5.6	5.0
OECD[b]	7.0	6.0	8.2	8.1	12.3	11.8	15.7	15.6	6.2	5.3	7.5	7.5	4.4	3.7	5.1	5.0
Brazil	..	11.0	8.4	..	..	21.9	18.9	..	..	8.4	6.2	..	..	2.7	2.7	..
Colombia[c]	..	28.6	27.3	25.4	..	28.6	27.3	25.4	..	12.3	11.6	10.7	..	4.3	5.0	4.5
Latvia	..	5.7	14.2	11.4	..	10.0	29.5	24.9	..	5.3	12.5	10.3	..	4.1	13.8	9.9
Russian Fed.	10.4	5.7	5.1	5.2	22.2	14.4	15.1	14.5	8.8	4.8	4.4	4.4	7.1	2.6	2.5	3.1
South Africa	..	26.4	27.2	26.7	..	52.8	56.7	55.5	..	22.6	24.0	23.6	..	4.5	5.3	5.9

a) The lower age limit is 16 instead of 15 for Iceland up to 2008, Italy after 2009, Norway up to 2005 and Sweden up to 2006.

b) Weighted average.

c) Data for 15-64 and 55-64 year olds refer to 15 and over and 55 and over, which underestimates the ratios compared to other countries.

Source and definition: OECD Online Employment Database : www.oecd.org/employment/database and www.oecd.org/els/emp/lfsnotes_sources.pdf.

StatLink http://dx.doi.org/10.1787/888933133343

Table E. **Employment/population ratios by educational attainment, 2012**

Persons aged 25-64, as a percentage of the population in each gender

	Total			Men			Women		
	Less than upper secondary education	Upper secondary education	Tertiary education	Less than upper secondary education	Upper secondary education	Tertiary education	Less than upper secondary education	Upper secondary education	Tertiary education
Australia	66.2	80.5	84.4	77.6	87.8	90.6	56.4	70.8	79.4
Austria	56.0	78.2	87.4	64.7	82.1	90.5	51.2	74.0	83.6
Belgium	47.6	73.5	84.6	57.5	79.8	87.2	36.9	66.5	82.3
Canada	56.2	74.8	81.7	64.9	79.9	85.0	45.3	68.3	79.0
Chile[a]	60.0	70.3	84.3	83.7	86.2	91.7	40.0	56.1	77.8
Czech Republic	40.4	75.9	83.6	48.6	84.3	91.2	36.1	66.8	76.0
Denmark	61.4	78.7	86.4	67.1	81.5	89.2	55.5	75.0	84.3
Estonia	50.6	74.5	82.2	54.6	79.5	86.4	44.5	68.9	79.8
Finland	55.2	74.6	84.4	59.0	76.9	86.9	49.8	71.8	82.5
France	55.5	73.5	84.4	63.1	77.5	87.6	48.6	69.2	81.7
Germany	57.5	78.2	87.9	67.6	82.7	91.3	50.1	73.6	83.8
Greece	47.3	57.6	71.2	60.7	69.5	75.9	34.0	45.6	66.4
Hungary	38.8	67.9	79.7	47.9	73.1	86.4	32.3	62.0	74.8
Iceland	73.0	84.9	90.6	78.2	88.4	92.0	68.4	79.5	89.7
Ireland	44.1	65.4	80.0	52.5	72.3	84.4	33.8	58.3	76.5
Israel	47.2	71.7	84.9	63.2	76.7	89.0	30.1	65.9	81.6
Italy	50.9	71.1	78.7	66.7	80.4	84.0	34.2	61.8	74.6
Japan	[b]	73.6	79.8	[b]	85.4	92.0	[b]	61.9	67.4
Korea	65.3	70.9	77.1	77.4	84.1	89.9	57.6	57.4	61.2
Luxembourg	63.0	71.9	84.8	73.1	79.3	90.1	54.3	64.6	78.5
Mexico	64.1	71.9	80.5	88.4	90.5	88.3	43.8	56.3	71.9
Netherlands	62.2	80.0	87.6	74.3	84.6	89.9	51.2	75.4	85.2
New Zealand	68.3	81.3	83.9	76.5	88.0	89.4	60.9	72.7	79.8
Norway	65.2	81.2	90.3	69.2	85.2	91.7	61.0	76.1	89.1
Poland	39.8	65.4	84.7	49.6	74.3	89.1	30.2	55.4	81.5
Portugal	63.2	76.0	81.8	69.0	77.8	82.2	56.8	74.4	81.5
Slovak Republic	30.7	70.3	80.1	36.0	78.2	85.9	27.3	61.4	75.6
Slovenia	47.2	70.7	85.1	56.1	74.5	87.4	39.3	65.7	83.5
Spain	49.1	65.7	77.1	57.1	71.5	80.7	40.4	60.1	73.9
Sweden	64.0	82.6	88.7	72.9	85.9	89.7	52.3	78.6	88.0
Switzerland	68.5	82.3	89.3	77.8	88.5	93.7	62.2	76.8	83.1
Turkey	51.2	61.7	76.2	75.4	81.2	84.2	27.1	30.8	64.6
United Kingdom	56.8	78.8	84.1	66.4	84.0	89.0	48.7	73.0	79.3
United States	52.9	67.5	80.1	63.0	73.1	84.9	41.6	61.8	76.0
OECD[c]	55.1	73.6	83.2	65.4	80.7	87.9	45.5	65.8	78.6
Brazil	66.8	77.3	85.7	83.2	89.3	92.2	50.3	66.8	81.3
Latvia	51.8	66.9	86.2	59.0	70.5	87.7	40.0	63.1	85.4
Russian Fed.	49.5	73.2	83.0	57.2	80.2	88.6	40.5	64.6	79.2

Note: The classification of the levels of education is based on the International Standard Classification of Education (ISCED 1997). ISCED 97 is an instrument for compiling statistics on education internationally and distinguishes among six levels of education (ISCED 1-6). Less than upper secondary education corresponds to ISCED levels 0, 1, 2 and 3C short programmes; upper secondary education corresponds to ISCED levels 3A, 3B, 3C long programmes, and 4; and tertiary education corresponds to ISCED levels 5A, 5B and 6.

a) Year of reference is 2011.

b) Data at the lower and upper secondary levels of education are not broken down. Individuals with lower secondary education are included in upper secondary education.

c) Unweighted average.

Source: OECD (2014), *Education at a Glance 2014 – OECD Indicators* (Indicator A5), OECD Publishing, Paris, http://dx.doi.org/10.178/eag-2014-en.

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Table F. **Labour force participation rates by educational attainment, 2012**

Persons aged 25-64, as a percentage of the population in each gender

	Total			Men			Women		
	Less than upper secondary education	Upper secondary education	Tertiary education	Less than upper secondary education	Upper secondary education	Tertiary education	Less than upper secondary education	Upper secondary education	Tertiary education
Australia	70.6	83.6	86.9	82.7	90.7	92.9	60.1	74.1	82.0
Austria	60.7	81.1	89.2	71.4	85.1	92.1	54.7	76.6	85.7
Belgium	54.1	78.8	87.6	65.2	84.9	90.4	42.2	72.0	85.1
Canada	63.1	80.1	85.9	72.8	85.6	89.6	50.9	73.1	83.0
Chile[a]	63.8	75.1	88.1	87.7	90.6	95.9	43.6	61.3	81.2
Czech Republic	54.2	80.5	85.8	66.3	88.3	93.3	47.9	72.0	78.4
Denmark	67.9	83.8	90.6	74.6	86.8	93.1	60.9	80.1	88.7
Estonia	64.9	82.4	87.5	71.5	87.6	91.6	55.0	76.4	85.2
Finland	62.4	80.3	87.8	66.1	83.2	91.0	57.2	76.7	85.4
France	64.3	80.2	88.9	72.9	84.0	92.2	56.6	76.1	86.1
Germany	65.9	82.6	90.0	79.0	87.7	93.3	56.4	77.5	86.1
Greece	63.4	76.2	85.8	80.1	87.5	88.5	46.6	64.7	83.1
Hungary	50.2	75.0	83.1	62.0	80.9	90.0	41.8	68.2	78.0
Iceland	78.8	88.6	93.4	84.1	92.0	b	73.9	b	b
Ireland	57.5	77.1	86.1	72.0	87.9	91.4	39.9	66.1	81.7
Israel	52.5	77.2	88.6	70.4	82.2	92.6	33.5	71.3	85.4
Italy	58.0	77.0	84.1	75.0	86.1	88.7	39.9	68.1	80.4
Japan	c	77.6	82.4	c	90.4	95.0	c	64.8	69.6
Korea	67.0	73.1	79.4	80.2	87.0	92.5	58.7	58.9	63.0
Luxembourg	67.3	75.0	87.8	77.8	81.9	92.8	58.3	68.2	81.7
Mexico	66.5	74.9	84.3	91.6	94.3	92.5	45.5	58.6	75.4
Netherlands	66.6	83.9	90.4	79.7	88.8	92.8	54.6	78.9	87.7
New Zealand	73.0	85.8	87.6	81.5	92.2	92.9	65.2	77.5	83.6
Norway	68.1	83.2	91.7	72.6	87.3	93.6	63.4	77.8	90.2
Poland	48.4	72.1	89.0	59.9	80.9	93.2	37.2	62.2	86.1
Portugal	75.2	88.9	91.5	82.5	89.5	92.2	67.3	88.3	91.0
Slovak Republic	52.5	79.6	85.2	65.1	87.6	90.6	44.4	70.7	81.0
Slovenia	54.9	77.0	90.3	65.2	80.5	91.4	45.7	72.3	89.5
Spain	71.4	84.3	89.7	82.4	90.1	92.4	59.5	78.5	87.2
Sweden	72.9	87.6	92.5	82.1	91.0	94.0	60.8	83.5	91.3
Switzerland	74.4	85.1	91.8	84.5	91.6	95.9	67.5	79.5	85.9
Turkey	55.6	67.5	82.3	82.0	86.9	89.2	29.3	36.9	72.5
United Kingdom	63.5	83.5	87.2	74.6	88.9	92.3	54.0	77.4	82.3
United States	61.7	74.2	84.0	72.9	80.9	89.3	49.2	67.4	79.5
OECD[d]	63.4	79.8	87.5	75.4	87.1	92.1	52.2	71.4	82.8
Brazil	69.6	81.4	88.3	85.8	92.4	94.2	53.4	71.8	84.2
Latvia	67.1	80.3	91.9	73.1	85.0	94.5	57.4	75.5	90.6
Russian Fed.	56.4	77.9	85.4	65.5	85.1	91.3	45.7	68.9	81.4

Note: The classification of the levels of education is based on the International Standard Classification of Education (ISCED 1997). ISCED 97 is an instrument for compiling statistics on education internationally and distinguishes among six levels of education (ISCED 1-6). Less than upper secondary education corresponds to ISCED levels 0, 1, 2 and 3C short programmes; upper secondary education corresponds to ISCED levels 3A, 3B, 3C long programmes, and 4; and tertiary education corresponds to ISCED levels 5A, 5B and 6.

a) Year of reference is 2011.

b) There are too few observations to provide reliable estimates.

c) Data at the lower and upper secondary levels of education are not broken down. Individuals with lower secondary education are included in upper secondary education.

d) Unweighted average.

Source: OECD (2014), *Education at a Glance 2014 – OECD Indicators* (Indicator A1), OECD Publishing, Paris, http://dx.doi.org/10.178/eag-2014-en.

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Table G. **Unemployment rates by educational attainment, 2012**

Persons aged 25-64, as a percentage of the labour force in each gender

	Total			Men			Women		
	Less than upper secondary education	Upper secondary education	Tertiary education	Less than upper secondary education	Upper secondary education	Tertiary education	Less than upper secondary education	Upper secondary education	Tertiary education
Australia	6.2	3.7	2.8	6.2	3.2	2.5	6.2	4.6	3.2
Austria	7.7	3.5	2.1	9.5	3.5	1.7	6.4	3.4	2.5
Belgium	12.1	6.7	3.4	11.9	6.0	3.6	12.4	7.6	3.3
Canada	10.8	6.6	5.0	10.8	6.7	5.1	11.0	6.5	4.9
Chile[a]	6.0	6.4	4.3	4.6	4.8	4.4	8.3	8.4	4.2
Czech Republic	25.5	5.7	2.6	26.7	4.5	2.3	24.6	7.2	3.1
Denmark	9.6	6.2	4.7	10.1	6.1	4.3	8.9	6.3	5.0
Estonia	22.1	9.5	6.1	23.6	9.3	5.6	19.1	9.8	6.3
Finland	11.6	7.1	3.9	10.8	7.5	4.5	12.8	6.4	3.4
France	13.8	8.3	5.1	13.5	7.7	5.0	14.1	9.0	5.2
Germany	12.8	5.3	2.4	14.4	5.6	2.1	11.2	5.0	2.6
Greece	25.3	24.4	17.0	24.3	20.6	14.2	27.1	29.5	20.1
Hungary	22.8	9.4	4.0	22.6	9.6	4.0	22.9	9.2	4.0
Iceland	7.3	4.1	2.9	7.1	3.9	b	7.5	b	b
Ireland	23.3	15.2	7.0	27.1	17.7	7.6	15.2	11.7	6.4
Israel	10.2	7.1	4.2	10.2	6.7	3.9	10.1	7.6	4.4
Italy	12.2	7.7	6.4	11.1	6.6	5.3	14.3	9.1	7.3
Japan	c	5.1	3.2	c	5.5	3.2	c	4.5	3.2
Korea	2.6	3.0	2.9	3.5	3.4	2.9	1.7	2.5	2.8
Luxembourg[d]	6.4	4.2	3.4	6.0	3.2	3.0	6.9	5.3	3.9
Mexico	3.5	4.0	4.6	3.5	3.9	4.6	3.6	4.0	4.6
Netherlands	6.6	4.6	3.0	6.8	4.8	3.2	6.2	4.4	2.9
New Zealand	6.4	5.2	4.2	6.2	4.6	3.8	6.6	6.2	4.5
Norway	4.3	2.3	1.6	4.6	2.5	2.0	3.8	2.2	1.2
Poland	17.8	9.3	4.9	17.2	8.2	4.3	18.7	10.9	5.3
Portugal	16.0	14.5	10.5	16.3	13.1	10.8	15.6	15.7	10.3
Slovak Republic	41.5	11.7	6.0	44.7	10.7	5.2	38.5	13.1	6.7
Slovenia	14.0	8.1	5.8	13.8	7.5	4.4	14.1	9.1	6.7
Spain	31.2	22.0	14.0	30.6	20.6	12.7	32.1	23.5	15.3
Sweden	12.3	5.7	4.0	11.2	5.6	4.6	14.1	5.9	3.6
Switzerland	7.9	3.3	2.7	7.8	3.3	2.3	7.9	3.3	3.3
Turkey	7.9	8.6	7.5	8.0	6.5	5.6	7.5	16.5	10.8
United Kingdom	10.5	5.6	3.6	11.1	5.5	3.6	9.9	5.8	3.6
United States	14.3	9.1	4.6	13.6	9.7	4.9	15.4	8.4	4.4
OECD[e]	13.4	7.7	5.0	13.6	7.3	4.8	13.2	8.6	5.4
Brazil	4.1	5.1	2.9	2.9	3.4	2.2	5.9	7.0	3.5
Latvia	22.9	16.7	6.2	19.3	17.0	7.2	30.3	16.4	5.7
Russian Fed.	12.2	5.9	2.8	12.7	5.8	3.0	11.3	6.2	2.8

Note: The classification of the levels of education is based on the International Standard Classification of Education (ISCED 1997). ISCED 97 is an instrument for compiling statistics on education internationally and distinguishes among six levels of education (ISCED 1-6). Less than upper secondary education corresponds to ISCED levels 0, 1, 2 and 3C short programmes; upper secondary education corresponds to ISCED levels 3A, 3B, 3C long programmes, and 4; and tertiary education corresponds to ISCED levels 5A, 5B and 6.

a) Year of reference is 2011.

b) There are too few observations to provide reliable estimates.

c) Data at the lower and upper secondary levels of education are not broken down. Individuals with lower secondary education are included in upper secondary education.

d*)* Data for less than upper secondary education are subject to reduced reliability (see *Education at a Glance 2014 – OECD Indicators* , Annex 3 for more information).

e) Unweighted average.

Source: OECD (2014), *Education at a Glance 2014 – OECD Indicators* (Indicator A5), OECD Publishing, Paris, http://dx.doi.org/10.178/eag-2014-en.

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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	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013
Australia[b]	..	23.7	24.5	24.8	..	12.3	13.1	13.6	..	37.7	38.2	38.1	..	71.5	71.1	70.3
Austria	12.2	17.3	19.2	19.7	2.6	5.6	6.9	7.7	24.4	31.4	33.3	33.3	88.1	82.1	80.6	79.3
Belgium	19.0	18.1	18.7	18.2	7.1	6.4	7.1	6.6	34.5	32.2	32.1	31.4	79.0	80.7	79.8	80.8
Canada	18.1	18.3	18.8	18.9	10.4	11.1	11.8	12.0	27.2	26.3	26.6	26.5	69.1	67.9	67.0	66.6
Chile	4.7	8.0	16.7	16.5	3.1	5.2	11.3	11.3	8.7	13.9	24.6	24.3	53.9	56.9	59.2	59.2
Czech Republic	3.2	3.5	4.3	4.9	1.6	1.7	2.3	2.5	5.4	5.9	7.0	8.0	72.5	72.3	69.7	71.2
Denmark	16.1	17.3	19.4	19.2	9.3	11.9	14.4	14.2	24.0	23.4	24.9	24.7	69.4	63.3	60.9	61.1
Estonia	7.2	6.8	8.2	8.0	4.6	3.6	4.6	4.9	10.0	10.1	11.9	11.3	67.9	73.2	71.7	69.3
Finland	10.4	11.7	13.0	13.0	7.1	8.2	9.7	9.6	13.9	15.5	16.5	16.7	63.8	63.7	61.7	62.2
France	14.2	13.3	13.7	14.0	5.5	4.9	5.9	6.2	24.9	22.8	22.4	22.5	78.8	80.5	77.5	76.9
Germany	17.6	22.0	22.1	22.4	4.8	7.8	8.7	9.1	33.9	39.1	37.8	37.9	84.5	80.7	78.7	78.2
Greece	5.5	7.7	9.7	10.2	3.0	4.1	6.0	6.5	9.5	13.3	15.1	15.6	65.4	67.6	63.0	61.7
Hungary	2.9	2.8	4.7	4.5	1.5	1.6	3.1	3.0	4.5	4.2	6.6	6.2	71.2	68.6	64.6	63.5
Iceland[b,c]	20.4	15.9	17.3	17.4	8.8	8.0	11.4	10.9	33.7	25.4	23.7	24.6	77.0	72.7	65.8	67.5
Ireland	18.1	19.8	25.0	24.2	7.8	7.3	13.1	13.1	33.0	35.0	37.5	36.2	74.4	79.8	73.3	71.9
Israel	14.6	14.8	15.0	14.4	6.6	7.1	8.8	8.3	24.1	23.8	22.0	21.5	75.3	74.2	68.5	69.1
Italy	12.2	15.2	17.8	18.5	5.7	5.5	7.5	8.2	23.4	29.8	32.3	32.8	70.5	78.1	75.1	74.0
Japan[d]	..	18.9	20.5	21.9	..	9.2	10.3	11.3	..	32.6	34.5	36.2	..	71.5	70.8	70.3
Korea[d]	7.0	8.9	10.2	11.1	5.1	6.3	6.8	7.5	9.8	12.5	15.0	16.2	57.7	58.9	61.0	60.5
Luxembourg	12.4	13.1	15.5	15.3	2.0	1.4	5.4	5.4	28.4	27.6	28.1	27.7	90.0	93.9	80.5	80.3
Mexico	13.5	17.6	19.4	19.0	7.1	11.2	13.6	13.1	25.6	28.1	28.7	28.4	65.1	60.1	56.8	57.6
Netherlands	32.1	35.9	37.8	38.7	13.4	16.1	18.0	19.3	57.2	59.9	60.7	61.1	76.2	75.5	74.4	73.2
New Zealand	22.2	22.0	22.2	21.4	10.9	11.1	11.0	11.0	35.7	34.6	34.9	33.4	73.2	73.0	73.7	72.7
Norway[c]	20.2	20.4	19.8	19.5	8.7	10.5	11.5	11.3	33.4	31.6	29.1	28.8	77.0	72.9	69.4	69.4
Poland	12.8	10.1	8.0	7.7	8.8	6.0	4.7	4.5	17.9	15.0	12.2	11.8	61.7	67.0	67.6	67.9
Portugal	9.4	9.9	12.2	11.7	4.9	6.2	9.8	9.6	14.9	14.2	14.8	14.0	71.5	66.4	58.3	57.9
Slovak Republic	1.9	2.4	3.8	4.3	1.0	1.1	2.7	3.3	2.9	4.0	5.1	5.6	70.6	74.0	59.4	58.0
Slovenia	..	7.8	7.9	8.6	..	6.3	5.9	6.4	..	9.7	10.3	11.2	..	56.2	59.5	59.1
Spain[c]	7.7	10.5	13.6	14.7	2.6	3.6	6.0	7.3	16.5	20.1	22.4	23.4	78.5	80.0	76.0	73.4
Sweden[c]	14.0	14.4	14.3	14.3	7.3	9.5	10.3	10.6	21.4	19.7	18.6	18.4	72.9	65.0	62.0	61.2
Switzerland	24.4	25.4	26.0	26.4	8.4	8.7	9.6	9.8	44.7	45.6	45.6	45.7	80.6	81.3	80.0	80.0
Turkey	9.4	8.1	11.8	12.3	5.7	4.4	6.7	7.0	19.3	18.6	24.2	24.5	55.4	59.6	60.0	59.9
United Kingdom[c]	23.0	22.9	24.9	24.5	8.6	9.8	12.2	12.0	40.8	38.3	39.4	38.7	79.4	77.0	73.8	73.8
United States[c,e]	12.6	12.6	13.4	12.3	7.7	7.6	8.7	8.2	18.0	17.9	18.3	16.7	68.1	68.4	66.4	65.5
OECD[f]	11.9	15.4	16.9	16.8	5.7	7.8	9.3	9.4	20.2	25.3	26.4	26.1	72.1	71.5	69.3	68.9
Brazil	..	18.3	16.2	..	..	10.3	10.0	..	..	29.1	24.6	..	..	67.6	64.4	..
Colombia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Latvia	..	5.4	8.3	7.6	..	3.4	5.9	5.4	..	7.4	10.7	9.9	..	67.5	65.6	65.5
Russian Fed.	7.4	5.1	4.1	4.3	4.9	3.5	2.9	2.9	10.0	6.6	5.4	5.8	66.0	64.8	64.5	65.5
South Africa	..	8.0	7.7	8.3	..	4.8	4.7	5.2	..	12.0	11.7	12.2	..	66.2	65.5	64.9

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) The lower age limit is 16 instead of 15 for Iceland up to 2008, Italy prior to 2009, Norway up to 2005 and Sweden up to 2006.

d) Data are based on actual hours worked.

e) Data are for wage and salary workers only.

f) Weighted average.

Source and definition: OECD Online 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.

StatLink http://dx.doi.org/10.1787/888933133419

Table I. **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	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013
Australia[b]	4.8	6.3	5.9	..	4.6	6.0	5.7	..	5.0	6.4	5.8	..	53.1	52.3	51.7	..
Austria	7.9	8.9	9.3	9.2	33.0	34.9	35.6	34.8	3.8	4.3	5.0	5.3	47.1	46.8	47.8	47.0
Belgium	9.0	8.7	8.1	8.2	30.9	31.6	31.4	32.8	6.7	6.6	6.4	6.5	58.6	57.3	54.2	54.2
Canada	12.5	13.0	13.6	13.4	29.1	28.8	30.9	29.9	8.8	9.2	10.1	10.1	51.0	51.8	51.9	50.9
Chile	30.6	30.6	30.4	29.7	47.5	47.5	46.5	45.8	28.5	28.5	28.5	28.1	34.5	34.5	34.9	35.7
Czech Republic	9.3	8.6	8.8	9.6	19.6	17.4	27.0	29.0	5.2	5.6	6.7	7.6	46.6	54.3	54.4	54.7
Denmark	10.2	9.1	8.5	8.8	29.8	22.5	20.9	20.9	6.5	6.9	7.0	7.3	55.5	55.7	53.7	53.4
Estonia	..	2.1	3.7	3.5	..	6.6	13.1	12.3	..	1.6	2.8	2.9	..	37.6	38.6	43.7
Finland	16.5	16.0	15.7	15.6	45.6	42.4	42.0	43.0	13.0	13.2	13.2	12.7	60.3	61.8	60.4	61.0
France	15.5	15.1	15.1	16.5	55.0	53.5	55.7	58.6	11.7	11.2	11.4	12.8	49.5	52.5	52.2	52.3
Germany	12.7	14.6	13.9	13.4	52.4	57.4	53.6	52.9	7.5	9.1	9.7	9.5	46.2	46.7	47.7	48.2
Greece	13.1	10.9	10.0	10.0	28.8	27.0	25.9	27.1	11.4	9.9	9.6	9.5	47.4	50.3	50.6	48.1
Hungary	7.1	7.3	9.4	10.8	13.9	19.1	22.5	24.6	5.9	6.5	8.8	10.1	43.8	44.1	43.3	45.9
Iceland[c]	12.2	12.4	13.1	14.2	28.9	32.0	33.0	33.9	7.5	8.9	9.6	11.0	53.3	53.8	49.8	49.9
Ireland	4.7	8.1	10.2	10.0	12.3	20.5	34.9	33.1	2.5	5.4	7.7	7.6	57.4	56.6	53.1	50.4
Israel	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Italy	10.1	13.2	13.8	13.2	26.2	42.3	52.9	52.5	8.6	11.4	12.3	12.1	48.2	51.5	48.4	48.5
Japan	12.5	13.9	13.7	..	24.9	26.4	26.9	..	9.5	10.9	10.5	..	67.1	65.1	64.0	..
Korea	..	24.7	23.4	22.4	..	30.0	27.3	27.5	..	21.3	18.9	17.4	..	44.4	48.4	48.0
Luxembourg	3.4	6.8	7.7	7.1	14.5	34.1	39.0	30.9	2.3	5.3	5.8	5.7	54.0	49.9	47.3	55.5
Mexico	20.5	..	..	..	25.7	..	..	..	17.8	..	..	..	19.7	..	..	..
Netherlands	14.0	18.1	19.5	20.6	35.4	45.1	51.2	53.1	9.5	12.9	14.0	15.1	53.4	51.1	50.7	50.6
New Zealand	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Norway[c]	9.3	9.5	8.4	8.3	28.5	27.3	23.9	23.6	6.9	7.4	6.7	6.6	58.8	59.8	58.8	59.3
Poland	..	28.2	26.9	26.9	..	65.7	56.2	68.6	..	24.0	25.1	24.2	..	45.9	45.4	45.6
Portugal	20.4	22.4	20.7	21.5	41.5	52.6	56.5	60.9	16.6	19.8	19.0	20.1	50.8	48.5	49.3	50.2
Slovak Republic	4.8	5.1	6.8	7.0	10.5	13.7	19.1	21.3	3.4	3.7	5.8	5.7	44.6	48.3	50.0	49.5
Slovenia	..	18.5	17.1	16.5	..	68.3	72.0	73.6	..	12.9	13.6	12.9	..	52.4	52.2	49.4
Spain[c]	32.1	31.6	23.4	23.1	68.6	62.7	62.2	64.7	27.5	29.3	22.9	22.7	41.8	45.4	51.1	50.4
Sweden[c]	15.2	17.5	16.4	16.9	49.5	57.3	55.8	55.9	11.9	13.0	11.7	12.1	57.6	56.9	56.4	56.3
Switzerland	11.5	12.9	12.9	12.9	47.0	50.3	52.5	51.9	5.1	6.4	6.2	6.5	50.1	47.1	46.8	48.2
Turkey	20.3	11.9	12.1	12.0	23.7	12.4	19.3	19.8	18.6	11.3	10.2	10.0	12.1	21.6	22.6	23.0
United Kingdom[c]	6.8	5.9	6.3	6.2	13.2	13.3	14.9	14.7	5.3	4.2	4.7	4.6	53.8	53.6	52.6	52.6
United States[c]	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
OECD[d]	11.3	12.2	11.8	11.8	24.3	25.6	24.7	25.0	8.8	10.1	9.8	9.7	46.5	47.5	47.7	47.7
Brazil	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Colombia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Latvia	..	4.1	4.7	4.4	..	9.0	9.7	10.0	..	3.5	4.3	3.7	..	33.8	37.1	42.4
Russian Fed.	5.5	12.3	8.5	8.5	14.5	23.1	17.3	16.9	4.2	11.2	7.9	7.9	36.5	41.9	37.2	37.0
South Africa	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

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. 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 refer to 2001 instead of 2000.

c) The lower age limit is 16 instead of 15 for Iceland up to 2008, Italy after 2009, Norway up to 2005 and Sweden up to 2006.

d) Weighted average.

Source and definition: OECD Online Employment Database : www.oecd.org/employment/database and www.oecd.org/els/emp/lfsnotes_sources.pdf.

StatLink http://dx.doi.org/10.1787/888933133438

Table J. **Incidence of job tenure of 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	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013
Australia	..	23.6	20.7	..	..	47.7	42.3	..	..	20.1	18.1	..	..	10.2	8.6	..
Austria	..	15.4	15.3	15.0	..	39.5	38.8	37.0	..	12.3	12.7	12.7	..	5.0	5.1	5.1
Belgium	13.7	13.0	12.1	10.9	52.5	48.8	46.8	45.9	10.3	10.7	10.3	9.3	2.6	2.7	2.5	2.0
Canada	21.4	21.0	19.1	18.9	54.0	53.2	49.8	48.7	16.2	16.2	15.4	15.4	8.0	8.4	7.7	7.5
Chile	..	..	36.6	29.7	..	..	50.4	61.9	..	..	36.2	27.6	..	..	27.4	15.7
Czech Republic	9.4	10.7	10.0	9.6	27.5	35.0	35.6	34.7	7.5	8.8	8.7	8.5	2.9	7.6	5.9	5.1
Denmark	23.2	26.0	20.1	21.2	54.5	56.4	48.2	49.5	19.2	23.3	17.1	18.2	7.6	10.2	7.5	8.6
Estonia	..	15.1	16.7	15.7	..	42.5	54.2	47.8	..	12.7	14.7	13.9	..	7.9	6.1	8.0
Finland	21.7	20.3	18.8	18.2	67.6	62.6	61.1	58.0	16.4	16.8	15.5	15.3	5.9	6.3	6.2	6.0
France	15.8	15.4	14.2	12.3	56.7	54.9	53.2	50.5	12.6	12.3	11.7	10.1	3.6	4.6	5.3	3.8
Germany	14.9	14.9	14.4	13.6	38.8	40.9	39.5	39.0	13.0	12.7	12.9	12.1	4.7	4.9	5.0	4.7
Greece	9.6	8.3	6.6	8.0	31.7	29.1	29.6	33.5	8.0	7.4	6.3	7.7	3.0	3.1	2.5	3.0
Hungary	11.7	11.6	13.9	14.7	29.4	38.8	41.8	46.9	9.4	10.2	12.9	13.6	4.5	5.2	8.1	7.4
Iceland[a]	25.5	22.5	20.7	19.9	59.2	53.1	51.7	46.5	20.0	18.3	16.6	16.4	6.1	7.2	6.5	6.7
Ireland	21.3	18.8	13.1	13.6	48.4	46.8	44.7	45.9	15.7	14.9	11.1	11.8	6.2	5.7	3.9	4.1
Israel	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Italy	11.2	11.7	9.7	9.1	38.4	41.0	38.7	36.3	9.3	10.4	9.0	8.6	3.7	3.7	3.7	3.5
Japan	..	12.5	..	..	..	41.2	..	..	..	10.3	..	..	..	6.3	..	..
Korea	..	38.1	33.3	31.8	..	70.7	74.6	72.6	..	33.8	28.3	26.8	..	44.7	38.7	36.6
Luxembourg	11.6	10.6	11.9	11.7	40.4	44.0	48.4	48.7	9.6	9.0	10.5	10.2	0.5	1.9	3.0	3.8
Mexico	..	35.0	22.0	21.4	..	61.3	43.6	42.6	..	29.3	17.8	17.6	..	15.8	9.6	8.4
Netherlands	..	9.8	14.6	14.1	..	34.3	42.4	40.8	..	8.2	10.7	10.4	..	2.5	3.9	3.6
New Zealand	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Norway[a]	16.9	20.9	16.3	15.5	46.1	52.5	44.4	42.3	14.0	18.1	13.7	13.2	3.3	4.9	4.2	3.6
Poland	14.5	15.7	12.1	11.4	44.7	47.3	41.1	39.4	11.6	12.8	10.6	10.0	6.2	6.9	5.2	4.8
Portugal	14.2	13.2	12.0	12.4	40.1	39.6	40.7	45.8	11.6	11.8	11.0	11.4	3.1	3.6	4.8	4.0
Slovak Republic	..	11.8	8.3	8.2	..	35.7	31.3	31.7	..	9.5	7.2	7.1	..	6.3	4.4	4.5
Slovenia	..	13.9	11.6	11.2	..	51.1	46.1	43.4	..	10.5	9.8	9.5	..	2.8	3.8	4.9
Spain[a]	20.9	21.9	14.2	14.4	54.3	55.5	48.0	50.1	17.6	19.8	13.7	14.0	6.2	6.1	4.6	5.0
Sweden[a]	15.9	20.4	19.2	18.9	49.4	65.4	60.3	59.2	14.0	17.0	16.1	15.7	4.7	6.5	6.4	6.6
Switzerland	16.5	15.3	15.8	15.6	44.6	41.4	40.7	41.8	13.4	12.7	13.7	13.3	3.9	4.2	4.5	4.3
Turkey	..	19.6	25.3	25.6	..	41.6	52.6	52.8	..	15.7	21.3	21.7	..	6.4	11.5	11.7
United Kingdom[a]	19.5	17.9	15.0	15.1	48.5	45.9	41.3	41.7	15.8	14.5	12.2	12.4	7.6	7.2	6.0	6.3
United States[a, b]	27.1	23.4	21.7	..	61.8	56.6	54.6	..	21.7	19.3	18.1	..	11.2	9.4	9.4	..
OECD[c]	22.9	21.6	18.7	19.4	55.1	53.7	49.8	50.4	18.4	17.8	15.7	16.4	9.5	9.2	8.4	8.9
Brazil	..	20.7	20.8	..	..	40.1	42.7	..	..	15.9	16.4		..	7.5	7.5	..
Colombia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Latvia	..	19.3	17.7	16.8	..	50.1	52.4	50.6	..	15.7	15.4	14.7	..	10.2	10.3	9.9
Russian Fed.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
South Africa	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Table J. **Incidence of job tenure of 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	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013
Australia	..	22.2	20.1	..	..	45.6	40.7	..	..	19.0	18.0	..	..	9.9	8.2	..
Austria	..	14.7	14.5	14.5	..	39.5	37.7	36.2	..	11.6	11.9	12.2	..	5.0	5.1	5.2
Belgium	12.8	12.5	11.6	10.7	48.7	46.2	43.1	43.7	9.9	10.4	10.0	9.2	2.5	2.8	2.5	2.2
Canada	20.6	20.8	19.3	19.4	53.9	52.7	50.0	49.2	15.6	16.2	15.7	16.0	8.3	8.7	8.3	8.3
Chile	..	..	36.8	30.0	..	..	51.7	61.9	..	..	36.2	28.0	..	..	28.0	16.3
Czech Republic	8.6	9.5	8.7	7.9	27.3	34.3	33.5	31.3	6.8	7.5	7.2	6.6	3.5	6.0	5.6	4.7
Denmark	21.0	24.1	19.9	20.6	50.9	51.6	46.9	48.2	17.4	21.7	17.1	17.8	7.3	9.8	8.5	9.1
Estonia	..	14.6	16.7	15.4	..	39.2	55.3	46.9	..	11.9	13.8	13.0	..	7.7	6.9	9.7
Finland	20.5	18.9	17.7	16.8	64.4	60.2	60.2	56.8	15.5	15.2	14.1	13.6	5.3	6.9	6.8	6.4
France	15.7	15.2	14.1	11.9	56.7	53.2	50.5	47.7	12.4	12.0	11.7	9.5	4.1	4.5	5.3	3.6
Germany	13.8	14.4	13.8	12.8	37.9	39.7	38.4	37.4	12.0	12.4	12.3	11.4	4.1	4.9	5.0	4.4
Greece	8.7	7.5	6.3	7.7	29.4	26.8	27.2	31.5	7.3	6.7	6.0	7.5	2.8	3.2	2.2	3.0
Hungary	11.7	11.8	14.4	14.7	28.5	38.0	40.7	45.6	9.5	10.3	13.3	13.3	4.5	6.0	9.3	8.9
Iceland[a]	24.0	21.1	20.2	19.2	58.3	52.1	51.5	44.0	19.5	17.1	16.1	16.4	2.8	6.4	7.0	8.0
Ireland	18.7	17.3	13.0	13.7	45.3	42.1	43.2	45.6	13.8	14.4	11.6	12.2	5.1	5.4	4.2	4.3
Israel	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Italy	10.2	10.4	8.7	8.2	37.4	38.7	35.6	33.5	8.5	9.1	7.9	7.6	3.9	3.5	3.5	3.3
Japan	..	9.7	..	..	..	39.6	..	..	..	7.1	..	..	..	6.3	..	..
Korea	..	34.0	29.8	28.5	..	81.1	82.1	81.0	..	30.0	25.3	24.0	..	40.2	35.9	33.9
Luxembourg	10.3	10.0	11.1	10.6	41.2	43.8	45.5	44.1	8.3	8.2	9.9	9.2	0.8	1.3	2.5	3.9
Mexico	..	33.0	20.8	20.1	..	58.5	40.2	39.0	..	27.3	16.7	16.5	..	14.9	9.0	8.4
Netherlands	..	9.3	13.9	13.6	..	31.5	40.9	39.8	..	8.1	10.5	10.4	..	2.6	4.0	3.9
New Zealand	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Norway[a]	15.9	20.2	16.5	15.1	43.0	51.1	43.9	39.7	13.4	17.9	14.2	13.2	3.2	5.1	4.9	4.6
Poland	15.6	15.8	12.2	11.3	44.9	45.5	37.7	35.6	13.0	13.1	10.7	10.1	6.2	7.6	5.7	5.4
Portugal	14.0	13.1	12.2	12.3	39.8	38.0	38.7	42.7	11.1	11.7	11.2	11.6	3.7	3.5	5.3	4.2
Slovak Republic	..	11.6	8.1	7.7	..	34.8	29.7	28.9	..	9.5	7.0	6.4	..	5.3	4.1	4.4
Slovenia	..	13.5	11.2	10.9	..	49.4	42.1	42.1	..	9.9	9.4	9.1	..	3.1	4.1	4.8
Spain[a]	18.9	20.4	13.4	13.9	52.4	53.2	47.3	48.9	15.9	18.6	13.1	13.6	5.8	5.7	4.3	4.8
Sweden[a]	16.0	20.3	18.5	18.0	46.2	62.7	55.5	54.8	14.7	17.3	16.1	15.4	4.8	7.3	7.0	6.9
Switzerland	15.2	13.8	14.6	14.3	41.8	39.2	37.3	39.2	12.6	11.3	12.9	12.3	4.2	3.6	4.0	3.9
Turkey	..	19.7	25.4	25.6	..	43.3	55.1	54.7	..	15.9	21.3	21.7	..	7.2	11.4	11.7
United Kingdom[a]	18.5	17.3	14.7	14.6	47.8	44.3	39.8	40.3	14.8	14.1	12.2	12.1	8.1	7.8	6.4	6.9
United States[a, b]	25.9	22.8	21.6	..	59.4	55.6	53.7	..	20.6	19.0	18.0	..	11.3	8.5	10.0	..
OECD[c]	21.3	20.6	18.0	19.0	53.0	52.3	48.4	48.9	17.0	17.0	15.1	16.0	9.2	8.9	8.6	9.6
Brazil	..	20.1	20.2	..	..	37.9	40.6	..	..	15.5	15.9	..	..	7.5	7.6	..
Colombia	..	..	..	..	..	62.1	61.2	60.6		30.7	30.9	30.1	..	..	..	..
Latvia	..	20.8	20.2	17.8	..	47.7	49.7	50.8	..	16.9	17.6	14.6	..	12.3	13.3	13.1
Russian Fed.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
South Africa	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Table J. **Incidence of job tenure of 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	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013
Australia	..	25.4	21.4	..	..	50.1	44.0	..	..	21.4	18.2	..	..	10.6	9.1	..
Austria	..	16.3	16.2	15.7	..	39.5	40.0	37.9	..	13.1	13.5	13.3	..	5.0	5.0	4.9
Belgium	14.8	13.6	12.7	11.2	57.5	52.0	51.5	48.5	10.8	10.9	10.6	9.4	2.9	2.7	2.4	1.8
Canada	22.3	21.3	19.0	18.4	54.2	53.6	49.6	48.2	16.9	16.1	15.0	14.7	7.7	7.9	7.0	6.6
Chile	..	..	36.2	29.2	..	..	48.4	61.8	..	..	36.2	27.0	..	..	26.4	14.7
Czech Republic	10.3	12.3	11.7	11.7	27.7	36.1	38.7	39.6	8.4	10.5	10.7	10.9	1.1	10.1	6.3	5.6
Denmark	25.7	28.2	20.3	21.9	58.4	61.7	49.5	50.8	21.1	24.9	17.1	18.7	7.9	10.7	6.3	8.0
Estonia	..	15.7	16.7	15.9	..	46.9	52.9	48.9	..	13.5	15.7	14.9	..	8.1	5.4	6.8
Finland	22.9	21.9	20.0	19.8	70.9	64.9	61.9	59.0	17.4	18.5	17.1	17.1	6.4	5.8	5.6	5.6
France	15.9	15.6	14.3	12.8	56.7	57.1	56.5	54.0	12.8	12.6	11.7	10.6	2.9	4.6	5.3	4.0
Germany	16.4	15.5	15.0	14.4	39.8	42.2	40.8	40.7	14.2	13.0	13.5	12.9	5.8	4.9	5.1	5.0
Greece	11.1	9.4	7.2	8.4	35.1	32.5	33.5	36.7	9.0	8.4	6.7	8.1	3.4	3.0	2.9	3.1
Hungary	11.8	11.4	13.3	14.6	30.6	39.9	43.1	48.6	9.3	10.1	12.3	13.9	4.5	4.2	6.8	5.8
Iceland[a]	27.1	24.2	21.3	20.6	60.1	54.2	51.9	48.9	20.7	19.7	17.1	16.5	10.1	8.2	5.9	5.1
Ireland	25.1	20.7	13.2	13.6	52.2	52.0	46.0	46.3	18.5	15.6	10.6	11.3	8.7	6.3	3.6	3.9
Israel	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Italy	12.9	13.5	11.2	10.4	39.7	44.6	43.4	40.2	10.7	12.2	10.4	9.9	3.2	4.0	4.0	3.8
Japan	..	16.2	..	..	..	42.9	..	..	..	14.5	..	..	..	6.4	..	..
Korea	..	43.8	38.0	36.1	..	64.6	69.7	66.8	..	39.4	32.6	30.9	..	52.1	42.6	40.3
Luxembourg	13.6	11.4	12.9	13.1	39.4	44.4	51.8	54.5	11.5	10.1	11.2	11.4	-	2.6	3.6	3.7
Mexico	..	38.1	24.1	23.4	..	66.1	50.1	49.3	..	32.3	19.4	19.2	..	17.8	10.6	8.5
Netherlands	..	10.5	15.4	14.6	..	37.7	43.9	41.9	..	8.3	10.9	10.4	..	2.3	3.6	3.2
New Zealand	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Norway[a]	18.0	21.7	16.1	15.9	49.4	53.9	44.8	44.8	14.6	18.3	13.1	13.1	3.4	4.5	3.4	2.4
Poland	13.1	15.5	12.1	11.4	44.5	49.9	46.4	45.2	10.0	12.5	10.4	10.0	6.1	5.6	4.5	4.0
Portugal	14.4	13.3	11.7	12.4	40.4	41.8	43.1	49.6	12.2	11.9	10.8	11.3	2.3	3.7	4.2	3.8
Slovak Republic	..	12.1	8.6	8.9	..	37.0	33.8	36.0	..	9.5	7.5	7.8	..	8.6	5.0	4.6
Slovenia	..	14.3	12.1	11.5	..	53.5	52.1	45.2	..	11.1	10.2	9.8	..	2.3	3.2	5.2
Spain[a]	24.5	23.9	15.1	14.9	57.2	58.5	48.8	51.4	20.5	21.5	14.4	14.4	7.2	6.8	5.1	5.3
Sweden[a]	15.7	20.5	19.9	19.8	52.8	68.3	65.1	63.5	13.3	16.6	16.2	16.1	4.5	5.6	5.8	6.2
Switzerland	18.2	17.1	17.3	17.1	47.6	43.8	44.4	44.5	14.5	14.3	14.5	14.5	3.5	5.0	5.1	4.8
Turkey	..	19.5	25.0	25.5	..	38.2	47.6	49.0	..	15.1	21.2	21.7	..	4.3	11.7	11.7
United Kingdom[a]	20.7	18.6	15.4	15.7	49.3	47.6	42.9	43.2	17.1	14.9	12.2	12.7	7.0	6.3	5.5	5.6
United States[a, b]	28.4	24.0	21.8	..	64.2	57.7	55.5	..	22.9	19.7	18.1	..	11.2	10.3	8.8	..
OECD[c]	21.3	20.6	18.0	19.0	53.0	52.3	48.4	48.9	17.0	17.0	15.1	16.0	9.2	8.9	8.6	9.6
Brazil	..	21.4	21.5	..	..	43.3	45.7	..	..	16.5	17.1	..	..	7.5	7.5	..
Colombia	..	..	..	..	..	69.7	68.6	69.2	..	35.4	36.9	36.7	..	..	..	..
Latvia	..	17.7	15.4	15.9	..	53.4	56.0	50.3	..	14.4	13.2	14.7	..	8.3	8.0	7.4
Russian Fed.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
South Africa	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

a) The lower age limit is 16 instead of 15 for Iceland up to 2008, Italy prior to 2009, Norway up to 2005 and Sweden up to 2006.

b) Data cover dependent employment and 2007 refers to 2008.

c) Weighted average.

Source and definition: OECD Online Employment Database : www.oecd.org/employment/database and www.oecd.org/els/emp/lfsnotes_sources.pdf.

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Table K. **Average annual hours actually worked per person in employment**[a]

	Total employment								Dependent employment							
	1979	1983	1990	1995	2000	2007	2012	2013	1979	1983	1990	1995	2000	2007	2012	2013
Australia	1 835	1 785	1 787	1 797	1 780	1 719	1 686	1 676	..	..	..	..	..	..	..	..
Austria	..	..	..	1 826	1 842	1 771	1 699	1 623	..	..	..	1 455	1 509	1 527	1 461	1 447
Belgium	1 727	1 675	1 663	1 585	1 599	1 583	1 572	1 570	..	..	..	1 452	1 464	1 452	1 434	1 433
Canada	1 841	1 779	1 796	1 774	1 777	1 739	1 711	1 706	1 815	1 763	1 780	1 767	1 770	1 738	1 718	1 713
Chile	..	..	..	..	2 263	2 128	2 024	2 015	..	..	..	..	2 318	2 168	2 096	2 085
Czech Republic	..	..	..	1 863	1 904	1 793	1 802	1 772	..	..	..	1 793	1 837	1 729	1 700	1 680 [b]
Denmark	1 557	1 541	1 441	1 424	1 468	1 439	1 431	1 411	1 470	1 469	1 381	1 366	1 407	1 390	1 387	1 370
Estonia	..	..	..	..	1 987	1 999	1 889	1 868	..	..	..	..	..	2 009	1 968	1 935
Finland	1 869	1 823	1 769	1 776	1 751	1 706	1 679	1 666	..	..	1 666	1 672	1 638	1 594	1 575	1 591
France	1 832	1 712	1 665	1 605	1 535	1 500	1 489	1 489	1 666	1 555	1 536	1 489	1 428	1 407	1 402	1 401
Germany	..	..	..	1 529	1 471	1 422	1 393	1 388	..	..	..	1 438	1 375	1 340	1 316	1 313
Greece	..	2 208	2 105	2 132	2 130	2 037	2 034	2 037	..	1 760	1 761	1 785	1 818	1 781	1 728	1 729
Hungary[c]	..	2 080	1 945	2 006	2 033	1 978	1 888	1 883	..	1 829	1 710	1 765	1 795	1 778	1 797	1 803
Iceland	..	..	..	1 832	1 885	1 781	1 706	1 704	..	..	..	1 776	1 820	1 704	1 647	1 633
Ireland	..	..	..	..	1 933	1 865	1 806	1 815	..	1 702	1 712	1 655	1 596	1 549	1 460	1 481
Israel	..	..	..	1 995	2 017	1 931	1 910	1 867	..	..	..	..	..	..	..	..
Italy	..	1 876	1 867	1 859	1 861	1 816	1 752	1 752	..	1 630	1 603	1 570	1 570	1 553	1 484	1 478
Japan[d]	2 126	2 095	2 031	1 884	1 821	1 785	1 745	1 735	..	..	..	1 910	1 853	1 808	1 765	1 746
Korea	..	2 911	2 677	2 648	2 512	2 306	2 163	..	..	..	..	..	..	2 090	2 092	2 071
Luxembourg	..	1 798	1 787	1 740	1 683	1 537	1 609	1 643	..	1 661	1 683	1 632	1 619	1 535	1 578	1 615
Mexico	..	..	..	2 294	2 311	2 262	2 226	2 237	..	..	..	2 360	2 360	2 338	2 317	2 328
Netherlands	1 556	1 524	1 451	1 456	1 435	1 388	1 383	1 380	1 512	1 491	1 434	1 414	1 381	1 340	1 334	1 328
New Zealand	..	..	1 809	1 841	1 834	1 774	1 737	1 760	..	..	1 734	1 766	1 775	1 753	1 725	1 754
Norway	1 580	1 553	1 503	1 488	1 455	1 426	1 420	1 408	..	..	..	..	..	..	..	..
Poland	..	..	..	..	1 988	1 976	1 929	1 918	..	..	..	..	1 963	1 953	1 893	1 879
Portugal	..	..	1 990	1 923	1 791	1 752	1 691	1 712	..	..	1 806	1 754	1 705	1 708	1 662	1 672
Slovak Republic	..	..	..	1 853	1 816	1 791	1 789	1 770	..	..	..	..	1 776	1 782	1 749	1 743
Slovenia	..	..	..	..	1 710	1 655	1 537	1 547	..	..	..	..	1 607	1 593	1 484	1 493
Spain	1 930	1 825	1 741	1 733	1 731	1 658	1 666	1 665	1 844	1 750	1 678	1 668	1 687	1 621	1 626	1 623
Sweden	1 530	1 532	1 561	1 640	1 642	1 612	1 618	1 607	..	..	..	..	..	..	..	..
Switzerland[e]	..	..	..	1 685	1 674	1 633	1 602	1 585	..	..	..	..	..	..	..	..
Turkey	1 964	1 935	1 866	1 876	1 937	1 911	1 855 [b]	1 832 [b]	..	..	..	..	..	..	..	..
United Kingdom	1 813	1 711	1 765	1 731	1 700	1 677	1 654	1 669	1 747	1 649	1 700	1 695	1 680	1 658	1 637	1 659
United States	1 829	1 820	1 831	1 844	1 836	1 797	1 789	1 788	1 828	1 827	1 833	1 849	1 836	1 798	1 797	1 795
OECD (weighted)	1 928	1 905	1 881	1 867	1 845	1 799	1 773	1 770	..	..	..	..	..	..	..	..
Russian Fed.	..	..	..	1 891	1 982	1 999	1 982	1 980	..	..	..	1 886	2 000	2 020	2 002	2 002

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) OECD 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 34 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/40526481.pdf). 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 21 countries: Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Korea, the Netherlands, Norway, the Slovak Republic, Spain, Sweden, Switzerland and Turkey. OECD estimates for Luxembourg and Portugal for annual hours worked are based on the European Labour Force Survey, as are estimates for dependent employment for Austria, Estonia, Greece, Ireland, Italy and the Slovak Republic. The table includes labour-force-survey-based estimates for the Russian Federation.

Country specific notes can be found at: www.oecd.org/employment/outlook and data at the *OECD Online Employment Database*: www.oecd.org/employment/database.

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Table L. **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	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013
Australia	28.3	15.4	19.0	19.2	17.1	9.9	13.3	14.2	33.5	17.2	20.0	19.7	48.2	30.5	35.7	34.0
Austria	25.8	26.8	24.8	24.3	12.7	12.9	14.6	14.8	25.5	30.0	25.8	25.2	49.7	57.1	53.2	47.4
Belgium	56.3	50.4	44.7	46.0	32.1	29.7	29.3	30.8	62.8	54.8	46.7	48.4	85.7	80.3	73.1	70.2
Canada	11.3	7.4	12.5	12.7	4.0	2.2	5.1	6.1	12.2	7.7	12.0	12.6	18.7	12.5	19.6	18.4
Chile	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Czech Republic	48.8	53.4	43.4	44.9	37.8	33.6	32.3	33.3	53.3	58.3	45.7	47.9	45.6	51.7	48.0	46.0
Denmark	20.0	16.1	28.0	25.5	2.4	4.2	9.0	10.1	21.6	16.6	33.8	29.8	47.5	38.3	46.4	40.4
Estonia	45.1	49.8	54.7	44.5	26.3	30.5	29.9	34.9	49.4	52.7	59.7	45.7	52.5	73.5	66.7	52.9
Finland	29.0	23.0	21.7	21.2	8.8	5.5	5.7	5.4	34.0	25.9	24.3	24.1	56.5	47.6	43.8	41.7
France	39.6	40.2	40.4	40.4	21.1	24.3	28.4	27.3	42.8	43.0	41.5	42.2	67.7	66.9	60.6	57.6
Germany	51.5	56.6	45.4	44.7	23.5	32.2	23.3	23.2	51.0	57.5	46.0	44.6	69.1	76.9	62.8	63.0
Greece	56.4	50.0	59.3	67.5	51.3	41.6	49.0	52.3	59.0	51.7	60.5	69.3	54.4	59.7	67.3	74.8
Hungary	48.9	47.5	46.3	49.8	37.8	37.1	31.8	33.8	52.6	49.5	48.1	52.3	57.9	54.6	59.7	62.6
Iceland[b]	(11.)	(8.0)	(27.9)	(21.9)	-	-	(10.4)	(10.2)	(17.0)	(8.6)	(32.1)	(23.1)	(33.0)	(56.8)	(58.2)	(46.5)
Ireland	..	29.5	61.7	60.6	..	20.3	48.3	41.2	..	32.9	64.3	64.1	..	42.4	73.9	74.2
Israel	12.0	24.9	13.3	12.7	6.1	13.2	8.9	6.3	13.5	27.3	14.0	13.2	21.8	41.6	20.4	24.8
Italy	61.3	47.3	53.0	56.9	58.2	40.7	49.7	53.3	62.7	49.4	53.5	57.6	63.1	52.6	58.7	61.5
Japan	25.5	32.0	38.5	41.2	21.5	20.0	31.0	32.4	22.5	33.1	39.7	42.2	36.0	39.6	40.3	43.9
Korea	2.3	0.6	0.3	0.4	1.0	0.4	-	0.2	2.8	0.7	0.4	0.4	3.0	-	0.2	0.9
Luxembourg	(22.4)	(28.7)	(30.3)	(30.4)	(14.3)	(23.0)	(19.2)	(23.0)	(24.9)	(29.9)	(33.3)	(30.5)	(26.4)	(43.7)	(43.3)	(45.9)
Mexico	1.2	2.3	1.8	1.5	0.9	1.0	0.8	1.3	1.2	3.1	2.5	1.6	4.3	4.3	1.7	2.5
Netherlands	..	39.4	33.7	35.9	..	12.6	13.8	17.0	..	44.1	37.3	38.5	..	74.4	57.0	56.5
New Zealand	19.8	6.1	13.2	12.1	9.8	2.4	6.3	6.5	22.9	9.0	15.7	14.5	44.8	15.8	28.7	21.7
Norway[b]	(5.3)	(8.8)	(8.7)	(9.2)	(1.3)	(2.6)	(2.9)	(2.6)	(7.3)	(11.8)	(10.9)	(11.5)	(14.1)	(19.5)	(23.2)	(26.2)
Poland	37.9	45.9	34.8	36.5	28.0	30.0	25.4	25.5	41.5	50.6	36.8	38.8	44.2	57.0	43.9	45.8
Portugal	42.9	47.1	48.7	56.3	21.0	27.7	30.9	36.5	48.4	49.5	50.6	58.0	75.1	67.9	67.6	74.6
Slovak Republic	54.6	70.8	63.7	66.6	43.1	53.9	52.4	57.6	59.9	74.5	66.2	68.0	60.1	82.6	69.3	73.2
Slovenia	..	45.7	47.9	51.0	..	29.2	32.2	39.4	..	49.8	50.9	52.1	..	57.4	54.8	63.5
Spain[b]	42.4	20.4	44.4	49.7	29.8	10.1	35.7	39.4	45.7	21.2	44.3	49.7	59.5	46.8	60.9	66.1
Sweden[b]	26.4	12.8	17.5	17.0	8.9	3.5	6.1	5.7	26.6	16.4	22.0	22.0	49.3	27.8	33.4	31.0
Switzerland	29.0	40.8	35.3	33.2	..	..	..	..	..	..	..	..	..	..	..	..
Turkey	21.1	30.3	24.9	24.4	19.8	26.6	19.6	19.0	21.8	32.2	26.6	26.0	31.4	41.0	38.1	40.0
United Kingdom[b]	28.0	23.7	34.8	36.3	14.4	15.7	27.4	29.0	33.2	28.5	37.9	39.5	42.1	35.4	47.7	47.7
United States[b]	6.0	10.0	29.3	25.9	3.9	6.5	18.2	15.9	6.6	11.1	31.5	28.7	11.9	14.3	40.7	34.7
OECD[d]	30.9	28.5	34.2	35.3	20.0	16.4	22.3	22.7	34.2	32.1	37.0	38.4	41.6	39.2	43.9	43.8
Brazil	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Colombia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Latvia	..	27.1	52.1	48.5	..	11.1	31.1	29.4	..	30.6	55.8	53.2	..	38.4	61.5	50.4
Russian Fed.	46.2	40.6	30.9	31.0	32.6	28.6	20.0	20.0	50.2	45.9	34.5	34.5	62.8	44.2	38.6	36.8
South Africa	..	57.7	58.5	57.8	..	36.2	35.3	35.6	..	61.8	61.8	60.9	..	80.5	66.1	67.2

Table L. **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	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013
Australia	31.8	16.4	20.1	20.1	18.3	10.0	14.9	15.5	37.3	18.9	20.7	20.0	51.6	30.7	35.1	34.3
Austria	28.1	26.6	25.7	25.4	10.0	13.9	14.7	13.4	27.2	29.0	26.2	25.9	56.4	55.5	55.5	53.0
Belgium	55.9	49.3	46.0	46.5	29.4	30.1	28.7	29.8	63.1	53.0	49.2	49.8	80.3	80.2	73.8	68.1
Canada	12.3	8.4	12.7	12.9	4.4	2.2	5.1	5.7	13.7	9.4	11.9	13.2	20.0	13.5	20.5	18.6
Chile	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Czech Republic	47.5	51.7	41.7	43.3	37.2	35.4	34.3	33.9	53.3	56.5	43.2	46.7	45.2	54.9	47.1	43.3
Denmark	20.1	15.6	28.5	23.5	..	3.3	9.0	9.3	21.3	17.6	34.7	27.9	49.1	35.4	45.3	38.2
Estonia	47.1	53.3	55.5	46.6	31.3	33.8	31.6	35.8	51.2	55.2	60.7	49.3	51.3	80.4	69.6	47.3
Finland	32.2	26.5	25.3	23.6	8.8	5.9	6.5	7.4	39.1	30.2	28.8	26.5	58.3	52.4	45.5	45.2
France	38.3	40.4	41.1	40.8	19.8	28.6	30.3	28.1	41.7	42.0	41.9	43.1	66.3	66.2	62.0	55.2
Germany	50.1	56.7	46.8	45.4	23.7	33.5	24.8	24.0	49.1	57.9	47.8	45.6	69.1	76.2	63.0	62.5
Greece	49.4	41.8	56.6	66.4	42.5	32.8	47.4	53.9	52.6	42.7	57.0	67.6	51.7	58.2	68.0	73.7
Hungary	51.1	47.3	46.7	50.4	40.7	38.4	34.6	34.6	54.4	49.0	48.6	53.0	62.9	55.0	56.1	61.6
Iceland[b]	(8.7)	(9.5)	(27.5)	(22.4)	-	-	(9.7)	(10.9)	(17.1)	(14.3)	(31.5)	(25.9)	..	(59.3)	(57.5)	(42.7)
Ireland	..	34.8	68.2	67.2	..	23.8	54.6	48.7	..	39.1	70.5	70.4	..	44.5	79.2	77.3
Israel	13.5	28.9	13.4	13.8	8.1	15.7	8.1	6.6	13.7	31.0	13.9	14.2	25.5	44.4	21.7	24.3
Italy	61.4	45.5	51.6	56.8	58.0	41.0	49.9	55.8	62.8	46.7	51.2	56.4	66.0	53.4	59.5	62.8
Japan	30.7	40.3	46.2	48.7	26.3	24.0	30.4	36.8	29.4	43.0	50.5	52.6	35.6	44.7	44.4	45.2
Korea	3.1	0.7	0.3	0.5	1.4	0.3	-	-	3.5	0.9	0.3	0.4	3.6	-	0.1	1.2
Luxembourg	(26.4)	(35.4)	(28.8)	(30.5)	(20.4)	(30.5)	(23.2)	(28.0)	(28.7)	(36.5)	(30.4)	(28.8)	(26.4)	(46.5)	(37.3)	(50.0)
Mexico	0.6	2.4	1.6	1.4	-	0.7	0.7	1.2	0.5	3.5	2.1	1.6	5.3	4.6	2.1	1.1
Netherlands	..	41.8	34.5	36.3	..	12.2	13.4	19.2	..	45.9	36.8	36.8	..	75.3	56.0	55.1
New Zealand	23.7	6.8	14.1	13.6	12.1	2.3	6.4	6.3	27.3	10.7	17.3	18.3	47.6	18.2	29.5	22.9
Norway[b]	(6.9)	(10.2)	(9.5)	(10.5)	(1.3)	(3.1)	(3.3)	(3.4)	(9.3)	(14.4)	(11.7)	(12.8)	(16.6)	(18.5)	(24.9)	(31.2)
Poland	34.1	45.8	34.0	35.9	25.5	31.0	25.4	26.4	37.3	49.9	35.7	37.7	43.3	57.2	42.9	45.0
Portugal	46.7	47.7	48.9	57.5	18.8	26.6	33.7	40.2	49.0	49.9	49.9	58.3	84.1	66.9	66.1	75.4
Slovak Republic	54.1	72.3	65.1	67.9	43.9	57.8	54.6	58.5	59.2	75.6	68.4	70.3	59.3	86.5	67.9	72.8
Slovenia	..	45.3	48.8	51.9	..	27.8	36.9	40.3	..	51.1	52.3	53.2	..	57.9	47.8	62.2
Spain[b]	36.6	17.4	43.5	48.9	26.7	8.6	38.6	41.6	36.6	17.4	42.5	48.2	59.7	42.3	60.0	65.3
Sweden[b]	29.3	14.2	19.3	18.7	11.0	3.3	7.8	5.9	30.1	18.9	23.8	24.9	48.6	28.1	34.5	31.3
Switzerland	28.2	37.9	33.5	29.9	..	..	..	..	..	..	..	..	..	..	..	..
Turkey	18.1	27.0	21.2	20.4	16.0	23.3	16.8	15.8	19.0	28.3	21.8	20.8	31.4	40.4	37.2	39.4
United Kingdom[b]	33.7	28.4	38.2	39.8	17.4	18.9	30.8	32.2	40.3	34.7	41.7	43.9	46.1	39.5	49.4	48.5
United States[b]	6.7	10.7	29.6	26.4	4.5	7.6	19.9	17.7	6.7	11.4	31.6	28.6	15.6	16.8	40.6	35.4
OECD[d]	29.8	28.5	34.3	35.3	19.2	17.0	23.3	23.8	32.5	31.7	36.7	38.0	42.0	40.2	43.9	43.5
Brazil	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Colombia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Latvia	..	30.1	53.5	52.2	..	11.6	32.1	31.6	..	37.2	58.0	57.8	..	29.3	61.8	50.8
Russian Fed.	42.7	39.1	30.2	30.3	31.2	28.4	20.1	20.5	45.7	43.7	33.5	33.0	59.2	44.4	38.2	38.5
South Africa	..	52.6	55.0	53.7	..	34.2	32.6	31.2	..	55.5	58.0	56.5	..	80.7	62.5	63.5

Table L. **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	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013	2000	2007	2012	2013
Australia	23.6	14.4	17.7	18.1	15.5	9.9	11.3	12.7	28.3	15.6	19.3	19.3	38.3	30.2	36.5	33.6
Austria	22.8	27.1	23.7	23.2	16.5	12.0	14.5	16.3	23.5	30.8	25.5	24.6	31.7	59.6	48.7	37.2
Belgium	56.7	51.4	43.1	45.4	34.4	29.3	30.2	32.1	62.6	56.6	43.8	46.7	..	80.3	72.4	73.1
Canada	10.0	6.2	12.2	12.5	3.4	2.2	5.1	6.6	10.5	5.6	12.2	11.8	17.0	11.3	18.4	18.1
Chile	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Czech Republic	49.8	54.7	45.0	46.4	38.5	31.1	29.4	32.3	53.3	59.4	47.6	48.8	46.3	46.6	49.3	49.3
Denmark	20.0	16.6	27.5	27.5	4.7	5.3	8.8	11.0	22.0	15.8	32.7	31.5	45.0	41.0	47.8	43.1
Estonia	42.6	44.4	53.6	42.1	19.4	22.8	27.4	33.9	47.3	49.9	58.7	41.5	54.9	29.6	63.1	62.0
Finland	26.2	19.5	17.1	18.1	8.8	5.0	4.7	2.8	29.6	21.8	18.3	21.1	54.5	42.2	41.3	37.2
France	40.8	40.0	39.6	39.9	22.3	19.7	26.0	26.3	43.6	44.0	41.0	41.3	69.2	67.8	59.2	60.6
Germany	53.1	56.5	43.7	43.8	23.2	30.4	21.2	22.0	52.9	57.0	43.8	43.2	69.1	77.8	62.6	63.7
Greece	61.0	54.8	62.0	68.6	57.0	47.1	50.4	50.5	62.9	56.6	64.0	71.0	58.9	61.9	66.2	76.7
Hungary	45.7	47.9	45.7	49.1	33.1	35.5	28.3	32.8	50.1	50.1	47.5	51.4	37.5	54.1	63.8	63.8
Iceland[b]	(14.1)	(5.7)	(28.5)	(21.4)	-	-	(11.2)	(8.9)	(16.9)	(2.7)	(32.9)	(20.5)	(27.4)	(53.1)	(59.3)	(51.3)
Ireland	..	21.3	48.8	49.3	..	15.3	38.0	30.6	..	23.3	51.8	53.0	..	37.6	57.6	67.3
Israel	10.4	20.9	13.1	11.6	4.2	11.2	9.8	5.9	13.2	23.8	14.1	12.2	12.4	36.3	18.2	25.8
Italy	61.2	49.1	54.6	57.1	58.4	40.5	49.4	49.9	62.7	51.5	55.9	59.0	56.4	50.8	57.0	58.3
Japan	17.1	19.4	26.6	29.3	14.8	15.0	31.6	26.7	13.8	20.6	24.7	27.5	37.5	20.0	29.4	40.0
Korea	0.8	0.3	0.3	0.2	0.5	0.5	-	0.3	0.9	0.2	0.5	0.2	1.1	-	0.3	-
Luxembourg	(18.8)	(22.3)	(31.8)	(30.4)	(8.4)	(14.8)	(14.3)	(10.5)	(21.9)	(24.0)	(35.8)	(31.9)	-	(39.1)	(49.9)	(40.8)
Mexico	2.0	2.0	2.2	1.7	2.1	1.4	0.9	1.5	1.9	2.5	3.1	1.5	-	1.7	-	10.5
Netherlands	..	37.1	32.7	35.3	..	13.0	14.2	14.7	..	42.7	37.9	40.8	..	72.8	58.6	59.1
New Zealand	14.7	5.4	12.4	10.7	7.0	2.4	6.2	6.6	17.7	7.6	14.4	11.7	37.5	12.5	27.5	20.3
Norway[b,c]	(3.3)	(7.1)	(7.5)	(7.5)	(1.4)	(2.0)	(2.4)	(1.6)	(4.4)	(9.2)	(9.8)	(10.1)	(9.3)	(21.4)	(19.8)	(17.2)
Poland	41.3	46.0	35.6	37.2	30.7	29.0	25.5	24.3	45.1	51.3	37.8	39.9	45.7	56.7	45.9	47.3
Portugal	40.0	46.7	48.5	54.9	22.1	28.6	27.8	32.8	48.0	49.1	51.3	57.6	58.9	69.5	69.9	73.3
Slovak Republic	55.1	69.4	62.2	65.0	42.0	48.5	48.5	56.1	60.5	73.5	63.9	65.5	63.3	75.8	71.3	73.8
Slovenia	..	46.1	47.0	50.0	..	31.1	25.5	38.5	..	48.9	49.7	51.1	..	56.7	69.1	66.1
Spain[b]	46.6	22.8	45.3	50.5	32.1	11.3	32.3	36.9	51.3	24.0	46.4	51.4	59.0	52.2	62.2	67.3
Sweden[b]	22.8	11.3	15.4	15.0	6.4	3.7	4.2	5.4	22.1	14.0	20.0	18.9	50.3	27.3	31.8	30.4
Switzerland	29.7	43.0	37.2	37.1	..	..	..	..	..	..	..	..	..	..	..	..
Turkey	29.8	38.9	31.9	30.9	28.5	32.9	23.9	23.6	31.3	43.8	35.8	34.5	..	50.0	45.5	43.8
United Kingdom[b]	19.0	17.6	30.4	31.6	9.9	11.2	22.6	24.4	22.9	21.5	33.5	34.2	30.4	25.7	44.2	46.4
United States[b]	5.3	9.0	28.9	25.3	3.1	5.1	16.1	13.6	6.4	10.7	31.5	28.8	7.4	11.2	40.8	33.9
OECD[d]	32.1	28.5	34.1	35.2	21.0	15.5	21.1	21.1	35.9	32.7	37.3	38.9	40.8	37.7	43.9	44.3
Brazil	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Colombia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Latvia	..	23.4	50.4	44.5	..	10.4	29.9	26.9	..	22.8	53.2	47.9	..	47.2	61.2	50.0
Russian Fed.	50.0	42.4	31.7	31.8	34.2	28.7	19.9	19.4	55.1	48.3	35.7	36.3	67.4	43.9	39.3	34.4
South Africa	..	62.3	62.7	62.7	..	38.3	38.3	40.3	..	66.9	66.4	66.0	..	79.8	73.8	74.7

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 2009, Norway up to 2005 and Sweden up to 2006.

c) Data for 2000 refer to 1999.

d) Weighted average.

Source and definition: OECD Online Employment Database : www.oecd.org/employment/database and www.oecd.org/els/emp/lfsnotes_sources.pdf.

StatLink http://dx.doi.org/10.1787/888933133495

Table M. **Real average annual wages and real unit labour costs in the total economy**

Annualised growth rates, percentages

	Average wages in 2013 in USD PPPs[a]	Average wages[b]					Unit labour costs[b]				
		2000-07	2007-13	2007	2012	2013	2000-07	2007-13	2007	2012	2013
Australia	50 449	1.6	0.2	2.1	-2.5	-1.2	0.9	0.2	1.9	-0.4	-2.4
Austria	45 199	0.9	0.2	0.7	-0.1	0.1	-1.1	0.5	-1.0	0.8	0.2
Belgium	48 082	0.3	0.5	-0.4	1.0	0.8	-0.3	0.8	-0.6	1.4	0.3
Canada	46 911	1.5	1.5	2.4	2.3	2.2	1.0	0.8	1.7	1.3	0.5
Chile[c]	..	..	..	..	..	..	0.3	2.0	2.1	0.8	..
Czech Republic	20 338	4.9	0.1	3.1	-0.6	-3.3	0.6	-0.3	-0.2	0.1	-0.6
Denmark	48 347	1.8	0.5	1.2	-1.2	0.3	1.3	0.1	3.7	-1.3	0.2
Estonia	18 944	8.1	-0.1	15.5	2.4	3.1	2.2	-0.2	7.3	0.2	4.0
Finland	40 060	2.3	0.7	1.6	0.6	0.6	0.0	1.1	-1.6	1.4	0.7
France	40 242	1.2	0.8	0.5	0.2	0.8	0.1	0.5	-0.3	0.1	0.3
Germany	43 682	0.1	0.7	0.0	1.2	0.7	-1.9	0.8	-2.2	1.4	0.6
Greece	25 503	3.2	-3.4	0.7	-4.0	-5.0	1.2	-2.6	0.8	-6.5	-5.8
Hungary	20 948	4.4	-0.8	-1.4	-4.5	2.7	1.0	-1.3	0.0	-3.1	2.3
Iceland	..	..	..	..	..	..	1.9	-2.8	4.8	0.8	0.5
Ireland	49 506	2.4	0.9	2.6	0.5	-3.3	1.2	-0.5	1.0	-0.5	-1.7
Israel[c]	28 817	..	-0.8	2.6	0.5	-0.2	-0.5	-1.2	0.7	0.3	..
Italy	34 561	0.2	-0.3	0.0	-1.8	0.5	0.5	0.5	0.0	-0.4	0.1
Japan	35 405	-0.5	0.5	-0.8	-1.6	0.7	-1.3	0.5	-1.7	-0.4	-0.5
Korea	36 354	2.4	1.3	1.6	4.3	0.9	0.5	-0.6	-0.1	0.5	0.2
Luxembourg	56 021	1.1	0.5	2.0	0.1	1.5	0.4	3.0	-0.3	3.0	1.2
Mexico[d]	..	..	-1.7	0.5	3.1	..	0.1	-1.1	-0.8	-2.9	..
Netherlands	47 590	0.7	0.5	1.8	-0.9	0.3	-0.3	0.5	0.0	0.0	-1.0
New Zealand[c]	..	..	..	..	..	..	2.3	-0.4	3.0	-1.8	..
Norway	50 282	3.4	1.9	4.2	2.1	1.2	2.3	2.9	6.8	2.4	2.2
Poland	22 655	0.5	1.8	2.0	-1.2	1.1	-1.5	-0.3	1.5	-2.3	1.5
Portugal[c]	23 688	0.2	0.4	1.1	-3.1	2.5	0.0	-1.2	-1.4	-6.2	..
Slovak Republic	20 307	3.6	1.1	6.1	-1.0	-0.1	-2.5	-0.9	-2.7	-1.9	-1.9
Slovenia	32 037		0.3	2.1	-2.9	-0.6	-0.3	0.0	-1.3	-1.1	-2.2
Spain	34 824	-0.1	0.6	1.4	-3.1	-0.6	0.2	-2.1	1.3	-6.3	-3.6
Sweden	40 818	1.9	1.1	3.3	1.8	1.2	-0.1	-0.1	2.7	1.5	0.2
Switzerland	54 236	1.1	0.8	1.2	2.1	1.0	0.2	1.1	-0.1	2.6	0.3
Turkey	..	..	..	..	..	..	..	..	..	..	..
United Kingdom	41 192	1.9	-1.0	2.2	0.0	-0.7	0.2	-0.3	-0.8	0.3	-0.7
United States	56 340	0.9	0.3	1.7	0.5	0.5	-0.4	-0.7	0.9	-0.6	-0.1
OECD[e]	43 772	0.8	0.4	1.2	0.1	0.4	-0.5	-0.2	0.0	-0.6	-0.1

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 2013 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 2013 prices.

c) Annualised changes of real unit labour costs for 2007-13 refer to 2007-12.

d) Annualised real average wage changes for 2007-13 and 2011-12 refer to 2007-11 and 2010-11 respectively.

e) Aggregates are weighted averages computed on the basis of 2013 GDP weights expressed in 2013 purchasing power parities and include the countries shown.

Source: OECD estimates based on *OECD National Accounts Database;* OECD (2014) *OECD Economic Outlook*, Vol. 2014, No.1, OECD Publishing, Paris; OECD (2013) *OECD Economic Outlook*, Vol. 2013, No.1, OECD Publishing, Paris, for Israel and Mexico for average wages and unit labour costs and Chile, New Zealand and Portugal for unit labour costs (www.oecd.org/eco/outlook/economicoutlook.htm).

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Table N. **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]	
	2002	2012	2002	2012	2002	2012	2002	2012	2002	2012
Australia	3.07	3.38	1.84	1.99	1.67	1.70	13.8	18.9	..	..
Austria	3.23	3.35	1.90	1.94	1.70	1.72	15.2	16.1	19.7	20.9
Belgium	2.31	2.47	1.69	1.76	1.37	1.41	6.3	6.0	10.7	13.4
Canada	3.65	3.72	1.83	1.90	1.99	1.95	22.4	21.7	10.6	9.9
Chile	5.21	4.38	3.13	2.92	1.67	1.50	15.6	9.4	30.2	27.6
Czech Republic	3.23	3.44	1.77	1.83	1.83	1.88	18.3	19.7	..	..
Denmark	2.57	2.86	1.62	1.67	1.59	1.71	14.1	19.0	..	..
Estonia	5.88	4.05	2.35	2.06	2.50	1.97	28.3	..	25.2	..
Finland	2.45	2.54	1.71	1.73	1.44	1.47	7.3	8.9	16.0	16.4
France	3.03	2.97	2.00	1.99	1.51	1.50	..	..	..	..
Germany	3.07	3.26	1.74	1.84	1.77	1.77	17.6	18.3	15.6	19.1
Greece	3.44	2.71	2.00	1.75	1.72	1.55	20.0	11.8	22.1	16.2
Hungary	4.07	3.76	2.32	2.36	1.75	1.60	21.7	17.4	..	..
Iceland	3.15	2.88	1.72	1.75	1.83	1.65	18.7	14.7	15.8	16.8
Ireland	3.90	3.64	2.03	1.95	1.92	1.87	19.2	21.8	..	..
Israel	5.37	4.91	2.66	2.65	1.99	1.85	24.2	22.1	28.6	27.9
Italy	2.56	2.32	1.64	1.53	1.56	1.52	10.5	10.1	12.2	11.1
Japan	2.97	2.99	1.83	1.85	1.62	1.61	14.4	14.3	..	..
Korea	4.19	4.71	2.07	2.29	2.02	2.08	24.2	25.1	..	..
Luxembourg	3.03	3.18	1.90	2.03	1.60	1.56	20.8	..	18.0	..
Mexico	3.75	3.67	2.14	2.20	1.75	1.67	17.9	16.0	20.1	20.7
Netherlands	2.79	2.90	1.75	1.77	1.59	1.64	12.7	..	17.5	..
New Zealand	2.68	2.89	1.74	1.85	1.54	1.55	13.6	14.6	..	..
Norway	2.10	2.36	1.45	1.48	1.45	1.60	..	..	..	..
Poland	3.89	4.10	1.96	2.04	1.99	1.95	20.1	21.6	22.5	20.2
Portugal	4.65	3.81	2.84	2.57	1.64	1.49	14.1	8.8	27.5	27.9
Slovak Republic	3.25	3.60	1.89	1.98	1.72	1.82	17.0	19.0	..	..
Slovenia	..	3.34	..	2.03	..	1.64	..	..	..	..
Spain	3.55	3.08	2.10	1.88	1.69	1.65	16.3	14.6	23.3	20.6
Sweden	2.29	2.27	1.66	1.65	1.38	1.38	..	..	..	..
Switzerland	2.58	2.70	1.74	1.84	1.48	1.47	9.4	9.2	..	..
Turkey	..	3.80	..	3.22	..	1.18	..	..	..	..
United Kingdom[d]	3.54	3.55	1.95	1.98	1.81	1.79	20.5	20.5	..	..
United States	4.66	5.22	2.26	2.44	2.06	2.14	23.5	25.3	..	..
OECD[e]	3.44	3.38	1.98	2.02	1.72	1.67	17.2	16.3	19.7	19.2

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. Data refer to 2003 (instead of 2002) for Chile and Ireland; to 2004 for Austria, Greece, Iceland, Portugal and Spain; and to 2005 for Mexico. They refer to 2010 (instead of 2012) for Estonia, France, Luxembourg, the Netherlands, Slovenia, Switzerland and Turkey; and to 2011 for Chile and Israel.

b) The incidence of low pay refers to the share of workers earning less than two-thirds of median earnings. Data refer to 2003 (instead of 2002) for Chile and Ireland; to 2004 for Austria, Belgium, Greece, Iceland, Portugal and Spain; and to 2005 for Mexico and Poland. They refer to 2010 (instead of 2012) for Switzerland; and to 2011 for Chile and Israel.

c) The incidence of high pay refers to the share of workers earning more than one-and-a-half time median earnings. Data refer to 2003 (instead of 2002) for Chile; to 2004 for Austria,Greece, Iceland, Portugal and Spain; and to 2005 for Mexico and Poland. They refer to 2011 (instead of 2012) for Chile and Israel.

d) For the United Kingdom, there are breaks in series in 1997, 2004 and 2006 and 2011; in each case, data were spliced from *new-to-old* series on 2011 data, then 2006, 2004 and finally 1997.

e) Unweighted average for above countries.

Source: OECD Earnings Distribution Database , www.oecd.org/employment/emp/onlineoecdemploymentdatabase.htm#earndisp.

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Table O. **Relative earnings: gender, age and education gaps**

Percentage

	Gender[a]		Age[b]				Education/Skills[c]			
	Women / Men		15-24 / 25-54		55-64 / 25-54		Low / Medium		High / Medium	
	2002	2012	2002	2012	2002	2012	2002	2012	2002	2012
Australia	15	14	38	39	4	-2	18	17	-34	-35
Austria	24	18	34	36	-57	-37	29	33	-52	-63
Belgium	12	6	34	38	-22	-22	9	9	-32	-29
Canada	24	19	51	50	-1	0	21	16	-35	-34
Chile	..	16	49	40	-12	-11	..	..	..	..
Czech Republic	16	15	34	37	-8	-1	27	27	-82	-76
Denmark	12	8	32	39	-1	-1	12	19	-24	-28
Estonia	24	32	..	..	..	..	..	6	..	-34
Finland	20	19	36	36	-8	-4	5	8	-50	-47
France	15	14	..	..	..	..	16	18	-50	-54
Germany	19	14	39	41	-8	-9	23	17	-43	-70
Greece	14	7	42	36	-23	-23	..	21	..	-52
Hungary	9	11	33	35	-20	-1	26	25	-105	-100
Iceland	19	14	43	42	5	2	..	..	..	..
Ireland	20	8	44	45	-4	-2	24	16	-44	-76
Israel	25	22	54	54	-25	-19	21	29	-51	-52
Italy	11	11	..	..	..	..	22	23	-53	-47
Japan	33	27	44	41	-2	2	..	..	..	..
Korea	40	37	46	44	21	16	29	29	-43	-47
Luxembourg	16	6	..	..	..	..	22	31	-45	-66
Mexico	17	14	29	32	-1	-4	..	..	..	..
Netherlands	19	20	..	..	..	..	16	17	-48	-56
New Zealand	8	6	39	41	5	2	19	20	-23	-19
Norway	11	6	30	36	-3	-6	21	23	-30	-27
Poland	11	11	41	36	-23	-3	19	16	-72	-71
Portugal	13	16	44	34	-16	-33	33	30	-78	-69
Slovak Republic	20	16	..	32	..	4		33		-73
Slovenia	..	..	..	..	..	..	27	22	-98	-80
Spain	13	9	..	38	..	-22	21	20	-28	-41
Sweden	16	15	27	31	-5	-8	13	20	-30	-25
Switzerland	21	19	..	..	..	..	25	24	-55	-57
Turkey	..	..	..	..	..	..	35	37	-41	-91
United Kingdom	24	18	42	45	8	3	32	30	-57	-56
United States	22	19	45	51	-9	-15	34	37	-72	-74
OECD[d]	18	15	40	40	-9	-7	22	23	-51	-55

a) See note to Table N. 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. Data refer to 2003 (instead of 2002) for Ireland; to 2004 for Greece, Iceland, Portugal and Spain; and to 2005 for Mexico. They refer to 2010 (instead of 2012) for Estonia, France, Luxembourg, the Netherlands, Slovenia and Switzerland; and to 2011 for Chile, Iceland and Israel.

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 years and over for Hungary, Korea and Norway. Data refer to 2003 (instead of 2002) for Chile and Ireland; to 2004 for Greece, Iceland and Portugal; to 2005 for Mexico; and to 2011 (instead of 2012) for Chile, Greece, Iceland, Israel, Poland, Portugal, the Slovak Republic, Spain and the United Kingdom.

c) Earnings by skill (or education levels) refer to average/mean annual earnings of full-time full-year 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, 1997). *Low (skills)* corresponds to less than upper secondary ISCED levels 0, 1, 2 and 3C short programmes. *Medium (skills)* corresponds to upper secondary and post-secondary non-tertiary ISCED levels 3A, 3B and 3C long programmes, and ISCED 4. *High (skills)* corresponds to tertiary ISCED levels 5A, 5B and 6. Data refer to 2003 (instead of 2002) for Spain; to 2004 for the Czech Republic, Portugal, Slovenia and Turkey; and to 2005 for Australia, Austria and Israel. They refer to 2010 (instead of 2012) for France, Italy and the Netherlands; and to 2011 for Belgium, Canada, the Czech Republic, Finland, Ireland, Norway, Portugal and Spain.

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 (2013), *Education at a Glance 2013: OECD Indicators*, OECD Publishing, Paris, http://dx.doi.org/10.1787/eag-2013-en for earnings gaps by skills or education levels.

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Table P. **Public expenditure and participant stocks in labour market programmes in OECD countries, 2011 and 2012**

	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	
	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012
Australia	0.80	..	0.29	..	0.14	..	0.51	..	2.29	..	5.33	..
Austria	2.04	2.04	0.75	0.75	0.57	0.57	1.29	1.29	3.59	3.67	6.30	6.48
Belgium	2.96	2.89	0.86	0.81	0.65	0.60	2.09	2.08	6.74	6.90	16.69	16.75
Canada	0.91	0.83	0.26	0.24	0.15	0.14	0.65	0.59	0.54	0.47	3.17	2.85
Chile	0.30	0.33	0.10	0.10	0.07	0.08	0.21	0.23	..	..	1.69	1.77
Czech Republic	0.56	0.50	0.27	0.26	0.18	0.15	0.28	0.24	1.11	..	2.52	1.99
Denmark	3.86	3.80	2.21	2.10	1.85	1.74	1.65	1.70	6.56	5.99	6.10	6.24
Estonia	0.72	0.73	0.23	0.29	0.15	0.20	0.49	0.44	0.87	1.01	2.58	2.33
Finland	2.50	2.48	1.02	1.03	0.86	0.87	1.47	1.45	4.41	4.35	9.14	9.17
France	2.33	2.35	0.93	0.90	0.67	0.64	1.40	1.45	5.19	5.10	9.32	9.63
Germany	1.82	1.68	0.80	0.69	0.45	0.35	1.02	0.98	3.74	3.32	6.97	6.71
Greece	..	..	..	..	..	..	..	..	..	..	..	..
Hungary	1.04	1.15	0.37	0.73	0.35	0.61	0.67	0.42	3.82	7.40	7.96	6.23
Ireland	3.55	..	0.91	..	0.76	..	2.64	..	3.95	..	19.80	..
Israel	0.74	..	0.17	..	0.15	..	0.57	..	4.52	..	5.32	..
Italy	1.78	2.07	0.42	0.45	0.31	0.35	1.36	1.61	4.85	4.58	5.95	6.54
Japan	0.62	0.55	0.27	0.21	0.21	0.16	0.35	0.34	..	..	..	..
Korea	0.59	0.61	0.28	0.32	0.26	0.29	0.31	0.30	..	..	..	..
Luxembourg	1.27	..	0.62	..	0.56	..	0.65	..	7.93	..	4.23	..
Mexico	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	..	..	..	..
Netherlands	2.78	2.90	1.13	0.98	0.73	0.65	1.64	1.92	4.35	4.14	7.67	8.62
New Zealand	0.68	0.65	0.28	0.29	0.20	0.19	0.40	0.37	1.71	2.29	2.13	2.15
Norway	0.98	0.89	0.57	0.54	0.45	0.41	0.41	0.35	2.26	2.18	2.27	1.98
Poland	0.72	..	0.42	..	0.33	..	0.30	..	3.39	..	2.77	..
Portugal	1.91	2.15	0.59	0.49	0.46	0.38	1.32	1.66	3.37	3.14	5.85	7.28
Slovak Republic	0.79	0.69	0.30	0.26	0.22	0.19	0.50	0.44	2.70	2.79	2.73	2.47
Slovenia	1.23	1.11	0.36	0.27	0.25	0.18	0.87	0.84	2.03	1.14	3.50	3.26
Spain	3.77	..	0.89	..	0.74	..	2.88	..	11.44	..	12.32	..
Sweden	1.85	1.99	1.22	1.33	0.93	1.02	0.63	0.66	4.66	4.97	5.35	5.46
Switzerland	1.12	1.16	0.59	0.57	0.47	0.46	0.54	0.59	1.21	1.15	2.32	2.51
United Kingdom	..	..	..	..	..	..	..	..	..	..	..	..
United States	0.69	0.53	0.14	0.12	0.10	0.09	0.55	0.40	..	..	..	..
OECD	1.47	1.42	0.56	0.57	0.43	0.43	0.90	0.85	3.89	3.59	6.15	5.52

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. 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.

Source: For European Union countries and Norway, European Commission (2014), Labour Market Policy (http://epp.eurostat.ec.europa.eu/portal/page/portal/labour_market/labour_market_policy) and detailed underlying data supplied to 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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OECD Employment Outlook 2014

The 2014 edition of the *OECD Employment Outlook* provides an in-depth review of recent labour market trends and short-term prospects in OECD countries. It zooms in on how the crisis has affected earnings, showing that the low paid have not been spared from a substantial slowdown in real wage growth. While more subdued earnings growth can help to restore competitiveness and employment growth, which is essential to drive down unemployment, the quality of the jobs being created also matters. The complexity of job quality can be captured through three dimensions: earnings; labour market security; and quality of the work environment. There are large differences across countries in each of these dimensions, but there is no need to trade off job quality for quantity: some countries manage to do well on both counts. Non-regular employment can have an adverse impact on job quality, especially in terms of employment security and the difficulties of moving to a job with a permanent contract. Reform to employment protection legislation is necessary in some countries to reduce high levels of non-regular jobs. Skills are a key determinant of a person's chances of working in a high-quality job, as new results from the OECD's international Survey of Adult Skills show. This depends not just on the skills workers already have, but also on how these skills are used in the workplace, which in turn reflects countries' labour market institutions and policies.

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