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OECD Employment Outlook

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The *OECD Employment Outlook*

Provides an annual assessment of labour market developments and prospects in member countries. Each issue contains an overall analysis of the latest labour market trends and short-term forecasts, and examines key labour market developments. Reference statistics are also included.

This year's edition of the *OECD Employment Outlook* is the joint work of staff of the Directorate for Employment, Labour and Social Affairs. It has benefited from contributions from national government delegates. It is published on the responsibility of the Secretary-General of the OECD.

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ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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Editorial

Addressing the globalisation paradox

Globalisation holds the promise of better living standards, but is sometimes perceived as a threat

The debate about the social impact of globalisation is characterised by a paradox. On the one hand, most economists highlight the lessons from economic history, namely that more open markets tend to be associated with greater prosperity. Indeed, freer trade and foreign direct investment (FDI) help realise the welfare gains associated with exploiting comparative advantage. They also intensify competitive pressures, thereby encouraging firms to innovate and adopt new technology – which, in turn, spurs economic growth and supports job creation. In sum, globalisation is a win-win process for OECD and non-OECD trading partners alike. On the other hand, however, there is concern in the public opinion in many OECD countries about the risks that globalisation may entail in terms of jobs and wages.

This paradox reflects the unprecedented scale of globalisation...

This paradox can be explained, first of all, by the unprecedented scale of globalisation. The range of countries which participate in globalisation is much broader than was the case in earlier episodes of international economic integration. In particular, Brazil, the Russian Federation, India and China (the so-called BRICs) are becoming major trade and investment partners. For instance, over the past 15 years, total trade grew by over 50% as a proportion of GDP in the Russia, it nearly doubled in China and more than doubled in Brazil and India. This has entailed a major increase in the number of workers whose outputs compete on world markets – as shown in Chapter 1, the BRICs account for 45% of the world labour supply, compared with less than one fifth for OECD countries as a whole.

More fundamentally, a unique feature of the ongoing process of globalisation is that it concerns many labour-intensive services as well – and not just primarily industry as in the past. This is because globalisation goes hand-in-hand with the rapid adoption of information and communications technology. New technology and declining transportation costs, facilitate the fragmentation of the production of both goods and services, and offshoring of certain tasks to other countries. In short, most firms and workers are directly or indirectly competing in today's world economy.

... and coincidences with wider earnings inequality and perceptions of job insecurity

A second factor explaining the globalisation paradox is that economic integration is occurring in the context of wider earnings inequality and perceptions of job insecurity. Over the past two decades, the share of wages in national income has tended to fall in the

majority of OECD countries. Also, in 16 of the 19 OECD countries for which data are available, the earnings of workers at the top of the wage distribution have risen relative to those of workers at the bottom since the early 1990s. As to job insecurity, so-called "objective" indicators do not show any clear trend. Nevertheless, workers in a number of OECD countries are increasingly worried about their ability to keep their current jobs.

Globalisation is not the major factor behind these concerns, which still need to be addressed to avoid a backlash

Chapter 3 shows that trade deepening and offshoring is indeed a potential source of vulnerability for workers. An analysis covering trade and labour market developments since 1980 shows that jobs and wages have become more vulnerable to external shocks. This might have reduced the bargaining power of workers, especially low-skilled ones, which may therefore contribute to explain the falling share of wages in national income. There is also some evidence that offshoring, or the threat of it, may be one of the driving forces behind the increase in the vulnerability of jobs and wages. This is because offshoring allows firms to respond more flexibly to shocks via changes in the mix of production at home and abroad.

True, the consensus in the empirical literature is that the contribution of globalisation to increased earnings inequality or job insecurity is quite modest compared with other drivers such as technological change. Nevertheless, it is crucial to address these concerns: Public support for furthering international economic integration (and the structural reform agenda more broadly) could wane if the perception that many workers do not benefit from it takes root.

Well-designed domestic policies are crucial, encompassing...

In this respect, it is crucial for policy makers to realise that they can play a major role in making the most from globalisation and reducing workforce adjustment difficulties. Countries with similar trade and FDI patterns – even members of a regional trading area – have widely different employment and unemployment rates and wage disparities. And this reflects different policy settings among countries.

The Restated OECD Jobs Strategy of 2006, highlighted in last year's *Employment Outlook*, provides an effective policy benchmark to help create more and better jobs in a globalising world. The findings of Chapter 2 suggest that pro-employment reforms in line with the Strategy may help realise the growth potential associated with globalisation.

...first, removing barriers to the expansion of sectors where comparative advantage lies...

Maintaining barriers to the creation of new businesses or to the expansion of sectors where comparative advantage lies will significantly limit the gains from globalisation. Reducing these barriers will help unleash the considerable potential of the service sector as a source of job creation. OECD work provides robust evidence that measures in this area stimulate

job creation, while also boosting productivity and real incomes – to the extent that greater competition puts downward pressure on consumer prices, raising the purchasing power of wages.

... second supporting the mobility of workers
rather than protecting jobs which have no future...

Globalisation requires mobility to ensure that workers are not trapped in jobs which have no future. In this regard, tying dismissal regulations to existing jobs will tend to weaken workers' mobility opportunities. This is especially problematic when these jobs are located in declining sectors, while new jobs are available elsewhere in the economy. However, a degree of employment protection, like advance notification of plant closing or other large-scale layoffs, may reduce adjustment costs by providing all interested parties time to plan and implement the necessary adjustments. The OECD Jobs Strategy provides several examples of innovations on how to provide adequate workers' protection against dismissal, while at the same time reducing some of the drawbacks of traditional severance pay systems – *e.g.* the so-called "flexicurity" approach.

...third, ensuring adequate social protection and
making it employment-oriented...

It is essential to compensate job losers through social protection systems which are employment-friendly. Reintegrating displaced workers is a task which requires efforts to ensure sufficient job opportunities and hiring incentives, as well as employability. While time-limited targeted policies might be envisaged in some cases, particularly in the face of adverse trade shocks that affect disproportionately certain low-skilled groups or are concentrated in particular localities, the overriding need is to aim for good *general* policies to cope with adjustment difficulties.

In this regard, one way of ensuring high re-employment incentives for job losers is to provide them with low benefits. Another approach, however, is to provide adequate benefits hand-in-hand with "activation" policies which increase the re-employment opportunities. As documented in Chapter 5, such activation policies include, in particular, effective job-search assistance and compulsory participation in a labour market programme after a period of unemployment, backed by moderate benefit sanctions, if necessary. Experience shows that such policies, if well-designed, work.

...and finally, supporting the low-skilled through
make-work-pay policies and lifelong learning

The low-skilled are a particularly disadvantaged group in the face of globalisation. In OECD countries, freer trade and FDI, combined with skill-biased technological change, tend to reduce the demand for unskilled labour relative to that for skilled labour. This requires renewed efforts to improve workers' skills, notably by taking steps to improve the functioning of training markets and enhancing incentives for both firms and workers to invest in lifelong learning. This needs to be complemented with well-targeted public

support to improve learning opportunities of the low-skilled who, in all countries, have less access to on-the-job training than skilled workers.

Meanwhile, make-work-pay policies will help not only those who otherwise would not be able to find a job, because of globalisation or any other reason, but also those on low-paid jobs. Many countries that have introduced make-work-pay policies also have a minimum wage that, set at an appropriate level, acts as a floor to reduce the risk that the provision of in-work benefits leads to lower pay. Finally, Chapter 4 shows that low-skilled employment can also be supported by making the funding of social protection more "progressive" and by shifting from social contributions to tax bases which fall on broader population groups, and not just wage earners.

The bottom line is that well-designed domestic policies are instrumental for enhancing the benefits from globalisation while addressing the adjustment and inequality concerns. These policies would also help strengthen public support for freer trade and investment policies, and promote perceptions that globalisation is an opportunity for all.

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Chapter 1

Labour Markets in Brazil, China, India and Russia

and Recent Labour Market Developments and Prospects in OECD countries

This chapter reviews recent labour market trends and short-term projections. It then focuses on labour market developments in Brazil, the Russian Federation, India and China (so-called BRICs). The BRICs make for over 45% of the world labour supply, compared with 19% for the OECD area as a whole. These countries are also expanding rapidly, permitting significant net employment gains and falling poverty rates. However, the chapter finds that the employment content of economic growth in the four countries except Brazil is low. Moreover, economic growth and rapid job creation have gone hand-in-hand with stubbornly high wage inequalities in Brazil and the Russian Federation, and wider wage inequalities in China and India. The incidence of informal employment has also tended to grow or remained high in the BRICs. This complicates the task of extending the reach of social protection in these countries which is especially important in view of the rapid population ageing in some of them. Though improving educational attainment – especially in China and the Russian Federation – will undoubtedly help meet these challenges, policy action to promote transitions to formal employment will also be needed.

Introduction

A rebalancing of economic growth is underway in the OECD area, with growth slowing down in the United States and gaining strength in the majority of other OECD countries. Overall, employment trends have continued to improve. Projections suggest that 32 million persons would be unemployed in 2007, down from 33.6 million in 2006. Despite these favourable developments and tighter labour markets, real wages would continue to grow in line or even below productivity gains in the majority of OECD countries. Section 1 of this chapter reviews current economic growth and labour market developments in OECD countries as well as short-term projections. Section 2 focuses on labour market performance in Brazil, China, India and the Russian Federation – four large economies which have tended to support economic growth in the OECD area.

1. Recent labour market developments and prospects in OECD countries

Economic expansion in the OECD area continued to gather pace in 2006, despite high and volatile oil and commodity prices, current account imbalances and adjustments in housing markets (Table 1.1). At the same time, a rebalancing of economic growth has been underway, with growth slowing down in the United States, and gaining strength in OECD Europe, Japan and Mexico. Elsewhere, Australia, Canada, Korea and New Zealand witnessed a slowing in economic activity after several years of strong growth.

Robust expansion in emerging Asian economies, notably China and India, has continued to support OECD economies. Economic growth in China has exceeded 10%, mainly driven by exports and investments and despite tighter monetary conditions. Similarly, the pace of economic growth in India has accelerated to above 9%, supported by broad-based demand expansion. Other emerging Asian economies are also expanding rapidly. In the Russian Federation, economic growth reached close to 7% in 2006, mainly driven by investment despite reduced household consumption and a smaller contribution of net exports. Activity in Brazil also gathered pace in 2006.

Economic outlook to the year 2008

Economic growth in both 2007 and 2008 is expected to be below the outcomes achieved in 2006, mainly reflecting the deceleration in economic activity in the United States. Indeed, in OECD Europe, economic growth is projected to remain relatively strong. Likewise, in Japan, GDP would continue to grow above 2% in both 2007 and 2008, supported by business investment and a rapid expansion of trade with other Asian economies. Elsewhere, in Canada, activity is projected to re-accelerate after the slump in residential construction comes to an end. Activity is projected to remain strong in Korea, Mexico and Turkey, albeit at a reduced pace, while it is expected to strengthen in Australia.

In emerging large economies, economic expansion would remain robust in China – with economic growth again exceeding 10% in 2007 and 2008. In India, tighter macroeconomic policies might result in a moderate slowing of GDP growth to 8% in 2008. Activity is projected to moderate somewhat in the Russian Federation, while stronger, domestic-led growth would be achieved in Brazil.

Table 1.1. **Growth of real GDP in OECD countries**[a, b]

Percentage change from previous period

	Share in total OECD GDP 2000	Average 1994-2004	2005	2006	Projections	
					2007	2008
North America						
Canada	3.2	3.3	2.9	2.7	2.5	3.0
Mexico	3.3	2.7	2.8	4.8	3.4	3.7
United States	35.9	3.2	3.2	3.3	2.1	2.5
Asia						
Japan	11.9	1.1	1.9	2.2	2.4	2.1
Korea	2.8	5.0	4.2	5.0	4.3	4.8
Europe						
Austria	0.8	2.2	2.6	3.4	3.2	2.6
Belgium	1.0	2.2	1.4	3.0	2.5	2.3
Czech Republic	0.6	2.6	6.1	6.1	5.5	5.0
Denmark	0.6	2.1	3.1	3.2	2.2	1.7
Finland	0.5	3.8	3.0	5.5	3.0	2.7
France	5.8	2.1	1.2	2.1	2.2	2.2
Germany	7.7	1.4	1.1	3.0	2.9	2.2
Greece	0.8	3.7	3.7	4.2	3.9	3.8
Hungary	0.5	3.9	4.2	3.9	2.5	3.1
Iceland	0.0	3.9	7.2	2.6	0.8	0.8
Ireland	0.4	7.8	5.5	6.0	5.5	4.1
Italy	5.4	1.6	0.2	1.9	2.0	1.7
Luxembourg	0.1	4.3	3.9	6.2	4.8	5.2
Netherlands	1.7	2.7	1.5	2.9	2.9	2.9
Norway	0.6	3.1	2.7	2.9	3.1	2.6
Poland	1.5	4.6	3.6	6.1	6.7	5.5
Portugal	0.7	2.8	0.5	1.3	1.8	2.0
Slovak Republic	0.2	4.0	6.0	8.3	8.7	7.6
Spain	3.1	3.6	3.5	3.9	3.6	2.7
Sweden	0.9	2.9	2.9	4.7	4.3	3.5
Switzerland	0.8	1.4	1.9	2.7	2.1	2.2
Turkey	1.7	4.1	7.4	6.0	5.7	6.2
United Kingdom	5.5	2.9	1.9	2.8	2.7	2.5
Oceania						
Australia	1.9	3.8	3.0	2.4	3.3	3.3
New Zealand	0.3	3.5	2.5	1.7	2.1	1.6
OECD Europe	**40.8**	**2.5**	**2.1**	**3.1**	**3.0**	**2.7**
EU15	**34.9**	**2.2**	**1.5**	**2.7**	**2.6**	**2.2**
EU19	**37.6**	**2.4**	**1.8**	**3.0**	**2.9**	**2.5**
Total OECD	**100.0**	**2.7**	**2.6**	**3.2**	**2.7**	**2.7**

a) The OECD Secretariat's projection methods and underlying statistical concepts and sources are described in detail in "Sources and Methods: OECD Economic Outlook" which can be downloaded from the OECD Internet site (*www.oecd.org/dataoecd/47/9/36462096.pdf*).

b) Aggregates are computed on the basis of 2000 GDP weights expressed in 2000 purchasing power parities.

Source: OECD (2007b), *OECD Economic Outlook*, No. 81, May, Paris.

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Employment and unemployment

The employment record improved significantly in 2006 in the OECD area as a whole (Table 1.2). Employment growth accelerated in the OECD area, up from 1.1% in 2005 to 1.6% in 2006. The acceleration in employment growth was especially strong in OECD Europe. Remarkably, in practically all European countries, employment grew faster in 2006 than in the previous year (the only exceptions were the Czech Republic, Ireland, Spain and the United Kingdom – but these countries already enjoyed high employment growth in previous years). In the United States, the slowdown in activity did not affect the labour market, as employment grew at a slightly greater pace than in 2005. Employment also grew rapidly in Canada and Mexico. In Japan, employment growth has still been modest at 0.4%, despite faster economic growth, while employment growth remained unchanged in Korea.

Employment growth outpaced labour force growth in most OECD countries, thereby leading to a fall in unemployment rates in 2006. The number of unemployed persons in the OECD area declined by over 2.5 million in 2006, much more sharply than in the previous year. There were 33.6 million job seekers, or 5.9% of the labour force, in 2006 – down from 6.5% in 2005 (Table 1.3). Interestingly, the unemployment rate fell in all OECD countries except Hungary, Iceland, Mexico, New Zealand and the United Kingdom – in the latter four countries, the increase in unemployment was small and from low levels – while the unemployment rate stabilised in Ireland and Portugal. Sharp falls in unemployment rates of one percentage point or more occurred in Germany, Greece, Italy, Norway, Poland and the Slovak Republic.

On average in the OECD area, employment growth is projected to fall gradually to 1.3% in 2007 and 1.0% in 2008. Reflecting expected patterns for economic growth, employment growth would decelerate markedly in the United States and much less in most other OECD countries. However, in Japan, employment growth is projected to fall in absolute terms in 2008, reflecting negative labour force growth – more workers reaching retirement age than new entrants. In contrast, in Australia, Canada and Mexico employment growth is projected to accelerate in 2007.

Unemployment is projected to continue declining during 2007 and 2008 in the OECD area, producing a cumulative decline of close to two million persons and bringing the unemployment rate down to 5.5% in 2008. In OECD Europe, unemployment rates are projected to fall during the next two years by more than one percentage point, to reach 6.6% in 2008. While still remaining more than one percentage above OECD average, the gap is gradually closing. One exception to this European trend is Hungary, where the unemployment rate is projected to rise in 2007 due to a slowdown in economic and employment performances. The decline in unemployment rates would continue in 2007 and 2008 in Australia, Canada and Japan. By contrast, the unemployment rate is expected to rise somewhat in Mexico, the United States and more so in Iceland and New Zealand, albeit from low levels.

Real compensation

Despite lower unemployment rates in the OECD area, there are no significant upward pressures on real wage gains. Average real compensation per employee in the business sector (henceforth real compensation) has risen from 0.6% in 2005 to 1.2% in 2006, but it remains well below overall labour productivity growth – of around 1½ per cent. This growth rate is also on par with the average growth during the 1994-2004 period, a decade of wage moderation (Table 1.4).

Table 1.2. **Employment and labour force growth in OECD countries**[a]

Percentage change from previous period

	Employment						Labour force					
	Level 2005 (000s)	Average 1994-2004	2005	2006	Projections 2007	2008	Level 2005 (000s)	Average 1994-2004	2005	2006	Projections 2007	2008
North America												
Canada	16 169	2.0	1.4	2.0	2.2	1.6	17 341	1.7	0.9	1.4	2.0	1.5
Mexico	40 978	2.4	−0.7	2.1	2.2	2.4	42 463	2.4	−0.2	2.1	2.7	2.2
United States	141 715	1.2	1.8	1.9	1.1	0.6	149 296	1.2	1.3	1.4	1.3	0.9
Asia												
Japan	63 561	−0.2	0.4	0.4	0.2	−0.3	66 505	0.0	0.1	0.1	0.0	−0.6
Korea	22 856	1.3	1.3	1.3	1.0	1.0	23 743	1.4	1.4	1.0	1.0	1.0
Europe												
Austria	4 118	0.5	0.3	1.0	0.9	0.7	4 370	0.5	0.4	0.6	0.7	0.7
Belgium	4 251	0.8	1.0	1.1	1.1	0.9	4 643	0.7	0.9	0.8	0.4	0.4
Czech Republic	4 749	−0.4	1.4	1.3	1.5	0.8	5 159	0.1	1.0	0.4	0.7	0.4
Denmark	2 767	0.5	0.7	1.9	1.2	−0.2	2 907	0.3	0.0	0.7	0.5	0.1
Finland	2 392	1.6	1.5	1.8	1.4	0.4	2 612	0.5	1.1	1.0	0.6	0.1
France	24 848	1.1	0.5	0.9	0.9	0.9	27 559	0.9	0.4	−0.1	0.2	0.5
Germany	38 823	0.4	−0.1	0.7	1.2	0.8	42 716	0.6	−0.2	−0.4	0.1	0.1
Greece	4 625	0.9	1.6	2.4	1.6	1.4	5 103	1.1	0.9	1.3	1.2	1.2
Hungary	3 856	0.6	0.0	0.8	0.3	0.5	4 160	0.0	1.2	1.0	0.8	0.4
Iceland	161	1.3	3.3	5.1	1.1	0.0	166	1.0	2.8	5.4	−0.1	0.9
Ireland	1 952	4.1	4.7	4.4	3.4	2.4	2 041	2.9	4.6	4.5	3.3	2.4
Italy	22 306	1.0	0.7	2.2	1.6	0.9	24 189	0.7	0.4	1.2	1.0	0.6
Luxembourg	202	1.8	1.8	1.9	1.6	2.3	212	2.0	2.3	1.7	1.4	1.8
Netherlands	8 191	1.6	0.0	0.9	1.4	1.2	8 618	1.4	0.1	0.5	0.5	0.3
Norway	2 289	1.1	0.6	3.2	2.3	0.8	2 399	1.0	0.7	2.0	1.5	0.8
Poland	14 116	−0.6	2.3	3.4	3.0	2.0	17 161	−0.1	0.8	−1.3	−0.1	0.3
Portugal	5 094	1.0	0.1	0.7	0.7	1.0	5 516	1.0	1.2	0.7	0.6	0.5
Slovak Republic	2 216	0.3	2.1	3.8	3.1	2.3	2 643	0.8	−0.3	0.4	0.9	1.0
Spain	18 973	3.9	4.8	4.1	3.4	2.6	20 886	2.9	3.2	3.3	3.0	2.7
Sweden	4 254	0.7	1.0	2.0	2.2	1.3	4 516	0.4	1.3	1.5	1.6	0.7
Switzerland	4 196	0.5	0.4	2.2	1.4	1.0	4 383	0.6	0.5	1.7	0.9	0.6
Turkey	22 546	0.8	1.1	1.2	1.3	1.4	25 065	1.0	1.1	1.0	1.2	1.3
United Kingdom	28 730	1.1	0.9	0.8	1.0	1.1	30 192	0.6	1.0	1.4	1.0	1.1
Oceania												
Australia	10 014	2.0	3.3	2.0	2.3	1.4	10 550	1.6	2.8	1.8	2.0	1.5
New Zealand	2 073	2.2	2.8	2.1	1.2	0.1	2 152	1.7	2.5	2.2	0.1	0.7
OECD Europe[b]	**203 110**	**1.0**	**1.1**	**1.7**	**1.5**	**1.2**	**222 152**	**0.8**	**0.8**	**0.7**	**0.8**	**0.7**
EU15[b]	**171 527**	**1.2**	**1.0**	**1.5**	**1.4**	**1.2**	**186 080**	**0.9**	**0.8**	**0.9**	**0.9**	**0.8**
EU19[b]	**196 464**	**1.0**	**1.1**	**1.6**	**1.5**	**1.2**	**215 204**	**0.8**	**0.8**	**0.7**	**0.8**	**0.7**
Total OECD[b]	**523 021**	**1.1**	**1.1**	**1.6**	**1.3**	**1.0**	**559 266**	**1.0**	**0.8**	**1.0**	**1.1**	**0.8**

a) See note a) to Table 1.1.
b) Aggregates are computed using employment and labour force weights respectively.
Source: OECD (2007b), *OECD Economic Outlook*, No. 81, May, Paris.

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Table 1.3. **Unemployment in OECD countries**[a]

	Percentage of labour force					Millions				
	Average 1994-2004	2005	2006	Projections		Average 1994-2004	2005	2006	Projections	
				2007	2008				2007	2008
North America										
Canada	8.2	6.8	6.3	6.1	6.0	1.3	1.2	1.1	1.1	1.1
Mexico	3.1	3.5	3.6	3.9	3.7	1.2	1.5	1.5	1.8	1.8
United States	5.2	5.1	4.6	4.6	4.8	7.2	7.6	7.0	7.1	7.5
Asia										
Japan	4.2	4.4	4.1	3.8	3.6	2.9	2.9	2.8	2.5	2.4
Korea	3.8	3.7	3.5	3.4	3.4	0.8	0.9	0.8	0.9	0.9
Europe										
Austria	5.3	5.8	5.5	5.3	5.3	0.2	0.3	0.2	0.2	0.2
Belgium	8.5	8.4	8.2	7.4	7.1	0.4	0.4	0.4	0.4	0.3
Czech Republic	6.6	8.0	7.2	6.5	6.1	0.3	0.4	0.4	0.3	0.3
Denmark	5.4	4.8	3.9	3.4	3.5	0.2	0.1	0.1	0.1	0.1
Finland	11.8	8.4	7.7	7.0	6.8	0.3	0.2	0.2	0.2	0.2
France	10.6	9.8	9.0	8.4	8.0	2.8	2.7	2.5	2.3	2.2
Germany	7.8	9.1	8.1	6.9	6.3	3.2	3.9	3.4	3.1	2.8
Greece	9.6	9.4	8.4	8.1	7.9	0.5	0.5	0.4	0.4	0.4
Hungary	7.8	7.3	7.5	7.6	7.5	0.3	0.3	0.3	0.3	0.3
Iceland	3.3	2.6	2.9	2.9	3.8	0.0	0.0	0.0	0.0	0.0
Ireland	7.4	4.4	4.4	4.3	4.3	0.1	0.1	0.1	0.1	0.1
Italy	10.2	7.8	6.9	6.3	6.0	2.4	1.9	1.7	1.6	1.5
Luxembourg	3.2	4.6	4.4	4.2	3.7	0.0	0.0	0.0	0.0	0.0
Netherlands	4.6	5.0	4.5	3.7	2.8	0.4	0.4	0.4	0.3	0.2
Norway	4.1	4.6	3.4	2.7	2.7	0.1	0.1	0.1	0.1	0.1
Poland	15.3	17.7	13.8	11.2	9.7	2.6	3.0	2.3	1.9	1.6
Portugal	5.8	7.7	7.7	7.6	7.1	0.3	0.4	0.4	0.4	0.4
Slovak Republic	15.6	16.2	13.3	11.5	10.3	0.4	0.4	0.4	0.3	0.3
Spain	13.6	9.2	8.5	8.2	8.1	2.3	1.9	1.8	1.8	1.8
Sweden	6.1	5.8	5.3	4.8	4.3	0.3	0.3	0.2	0.2	0.2
Switzerland	3.4	4.3	3.8	3.3	2.9	0.1	0.2	0.2	0.2	0.1
Turkey	8.0	10.0	9.8	9.7	9.6	1.9	2.5	2.5	2.5	2.5
United Kingdom	6.4	4.8	5.5	5.5	5.5	1.9	1.5	1.7	1.7	1.7
Oceania										
Australia	7.2	5.1	4.9	4.6	4.6	0.7	0.5	0.5	0.5	0.5
New Zealand	6.0	3.7	3.7	3.9	4.4	0.1	0.1	0.1	0.1	0.1
OECD Europe[b]	**9.0**	**8.6**	**7.7**	**7.1**	**6.6**	**19.1**	**19.0**	**17.3**	**16.0**	**15.1**
EU15[b]	**8.6**	**7.8**	**7.3**	**6.8**	**6.4**	**15.2**	**14.6**	**13.6**	**12.9**	**12.3**
EU19[b]	**9.2**	**8.7**	**7.9**	**7.2**	**6.8**	**18.8**	**18.7**	**17.0**	**15.7**	**14.9**
Total OECD[b]	**6.6**	**6.5**	**5.9**	**5.6**	**5.5**	**35.1**	**36.2**	**33.6**	**32.4**	**31.8**

a) See note a) to Table 1.1.
b) Unemployment rates aggregates are computed using labour force weights.
Source: OECD (2007b), *OECD Economic Outlook*, No. 81, May, Paris.

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Table 1.4. **Real compensation per employee in the business sector in OECD countries**[a, b]

Percentage change from previous period

	Average 1994-2004	2005	2006	Projections	
				2007	2008
North America					
Canada	1.5	3.0	2.3	2.0	1.7
Mexico	−3.3	1.6	1.0	0.2	0.4
United States	2.0	0.7	1.8	1.5	2.2
Asia					
Japan	−0.2	0.9	0.4	0.8	1.5
Korea	1.4	0.1	2.2	1.8	2.0
Europe					
Austria	0.5	−0.1	1.3	0.8	1.1
Belgium	0.6	−1.1	0.3	0.5	0.7
Czech Republic	. .	2.0	4.6	4.5	3.7
Denmark	1.6	1.4	0.7	2.1	2.0
Finland	1.6	2.9	1.2	1.3	1.8
France	0.9	0.6	2.4	2.1	1.6
Germany	0.2	−1.4	−0.7	−0.4	0.8
Greece	3.3	1.0	2.8	3.0	3.1
Hungary	1.6	2.5	4.3	−0.3	2.2
Iceland	3.3	11.0	2.1	5.9	2.4
Ireland	1.6	4.2	1.3	1.9	1.5
Italy	−0.5	−0.1	−0.8	1.1	0.6
Luxembourg	0.7	0.0	−1.1	1.9	0.3
Netherlands	0.9	−0.9	−0.9	0.6	0.7
Norway	2.3	3.6	3.6	4.4	3.1
Poland	. .	−1.0	3.3	4.0	4.1
Portugal	1.2	0.8	−0.7	0.3	0.2
Slovak Republic	2.3	3.4	0.4	5.1	4.3
Spain	−0.1	−1.6	−0.5	1.0	0.3
Sweden	2.4	2.0	0.4	2.0	1.7
Switzerland	0.7	−0.4	−0.4	1.0	0.7
Turkey	. .	. .	. .	. .	. .
United Kingdom	2.0	1.9	1.3	2.2	2.2
Oceania					
Australia	1.6	2.3	2.2	2.7	2.5
New Zealand	1.3	3.3	2.2	2.3	2.0
OECD Europe[c]	**0.8**	**0.1**	**0.6**	**1.3**	**1.4**
EU15	**0.7**	**0.0**	**0.3**	**1.1**	**1.1**
EU19[c]	**0.8**	**0.1**	**0.6**	**1.4**	**1.4**
Total OECD less high-inflation countries[c, d]	**1.1**	**0.6**	**1.1**	**1.3**	**1.6**
Total OECD[c]	**1.0**	**0.6**	**1.2**	**1.4**	**1.7**

. .: Data not available.

a) See note a) to Table 1.1.

b) Compensation per employee in the business sector is deflated by a price deflator for private final consumption expenditures and aggregates are computed on the basis of 2000 GDP weights expressed in 2000 purchasing power parities.

c) Countries shown.

d) High-inflation countries are defined as countries which had 10% or more inflation in terms of GDP deflator on average between 1994 and 2004 on the basis of historical data. Consequently, Hungary, Mexico and Poland are excluded from the aggregate.

Source: OECD (2007b), *OECD Economic Outlook*, No. 81, May, Paris.

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OECD projections indicate that average real compensation growth is projected to rise gradually to 1.4% in 2007 and 1.7% in 2008, as labour markets tighten. In the United States, average real compensation has accelerated somewhat in 2006, and is set to continue growing quickly over the next two years, broadly above labour productivity gains. In OECD Europe, real compensation has grown moderately in 2006 and its pace is expected to quicken somewhat in 2007 and 2008 – rising on par with labour productivity growth. But, the situation is quite varied across European countries, with Germany, Italy, Luxembourg, the Netherlands, Portugal, Spain and Switzerland suffering cuts in real compensation in 2006, and real compensation growing at more than 2% in the Czech Republic, France, Greece, Hungary, Iceland, Norway and Poland. Real compensation is set to grow at a faster pace in all European countries over the next two years – broadly in line with labour productivity growth, and in response to improving labour market conditions. One exception is Germany, where real compensation would continue to fall in 2007.

In Japan, real compensation has grown more moderately in 2006. It will gather pace over the next two years as the labour market tightens further, but will remain below labour productivity growth. The tightening of the labour market has started to put upward pressure on wages for some groups. However, at the aggregate level such tendencies tend to offset each other, with the retirement of well-paid regular workers and the entry of younger, lower-paid workers.

Elsewhere, real compensation has continued to grow above 2% in 2006 in Australia, Canada, Korea and New Zealand and is projected to remain significant during 2007 and 2008 – which is above labour productivity growth, except in Korea. Real compensation growth has slowed in Mexico in 2006 and will slowdown further in 2007, before picking up somewhat at the end of the projection period.

2. Labour markets in Brazil, China, India and the Russian Federation

Introduction

One of the most important recent developments in the world economy is the increasing economic integration of large non-OECD countries, in particular Brazil, China, India and the Russian Federation – the so-called BRICs. Already, the BRICs represent over one fourth of world GDP (measured in purchasing power parities), up from 17% in 1990 (Figure 1.1, Panel A) and rank among the ten largest world economies. And this is likely to rise further in coming years, if the ongoing strong economic performance currently enjoyed by most of these countries continues, as many commentators expect.

Increased prosperity in the BRICs is a major achievement for these countries, while also creating new growth opportunities for OECD economies. Indeed, the BRICs have become much more open to international trade and investment (Figure 1.1, Panel B). Total trade in goods and services represented in 2004 two thirds of GDP in China, 56% in the Russian Federation, 40% in India and 31% in Brazil – compared with 42%, on average, in the OECD. The BRICs also absorb a significant share of OECD foreign direct investment outflows.

Therefore, it has become crucial for OECD economies that the BRICs maintain a sustained growth path. Sound labour markets are of paramount importance in this respect. As discussed in Chapter 2, economic growth depends to a large extent on the functioning of the labour market, as well as improvements in job quality and productivity. The purpose of this section is to show how the labour markets in the BRICs compare with those of

Figure 1.1. **World GDP shares and openness to foreign trade and investment in BRICs and selected OECD areas since 1980**

Panel A. **BRICs represent a growing share of world GDP**[a]
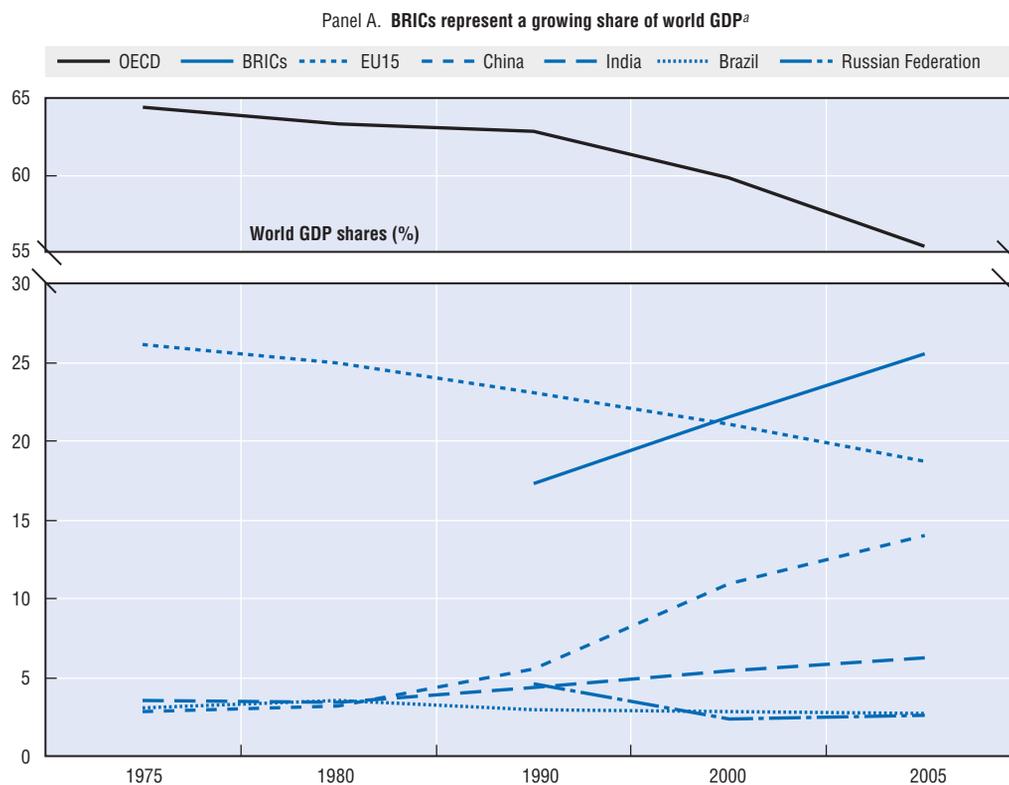
Panel B. **BRIC countries have increased their international trade exposure…**

… while foreign direct investment has risen in Brazil, China and the Russian Federation and to a lesser extent in India
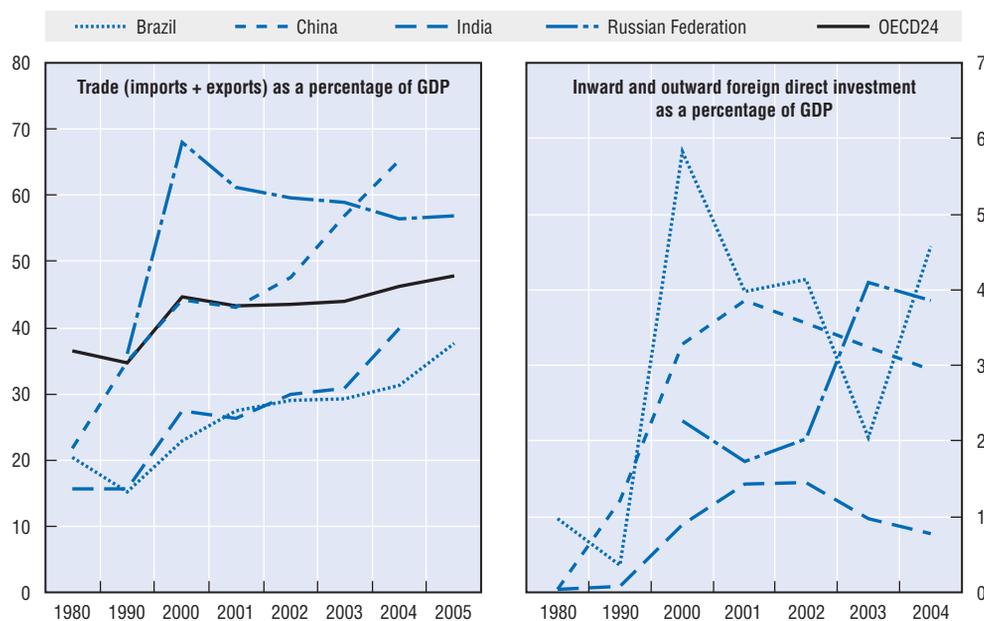
a) GDP in 2000 prices and USD PPPs.

Source: World Bank (2006), *World Development Indicators*; and OECD (2006c), *OECD Economic Outlook*, No. 80.

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OECD countries and to highlight areas where the functioning of labour markets in the BRICs may need to be improved. This analysis takes into account the fact that the labour markets in the BRICs have a number of distinguishing features from those of the OECD countries, as well as significant differences between them.

The section starts by looking at how employment and unemployment rates in the BRICs have responded to the recent economic record in these countries. It is notoriously difficult to assess the international comparability of employment data in the BRICs. Nevertheless, for the purposes of this chapter, comparable employment data have been estimated on the basis of both national and international sources. The section then focuses on key qualitative aspects of employment – notably the incidence of employment informality – as well as trends in wages and incomes. The section finally examines key labour supply developments.

Main findings

- *The rapid recent economic expansion in the BRICs has led to significant employment gains in these countries.* Over the 2000-05 period, the four countries taken together created over 22 million net new jobs, on average, per year. This is more than five times the net employment gains recorded in the OECD area as a whole over the same period. As a result, employment rates have risen in Brazil, India and the Russian Federation and remained high in China. Estimated employment rates in Brazil and China (urban areas), at about 70%, are higher than OECD average. The estimated employment rate in the Russian Federation is close to the OECD average, while it is well below that average in India (urban areas). These estimates are very similar to the employment rates estimated by either the World Bank or ILO, with the exception of China. For the latter country, the estimated employment rate is derived from the population census and is lower than the World Bank and ILO estimates – these are based on registration data, which reduces the scope for international comparability.

- *Despite these achievements, there is still significant under-employment in all four countries.* First, unemployment rates, at 8-9%, are relatively high in Brazil, the Russian Federation and urban China – moreover, in the latter country, many laid-off workers from state enterprises are seeking jobs and should be counted as unemployed, although they are not registered as such in Chinese statistics. In the absence of a benefit system for most jobseekers in urban India, the open unemployment figures for this country are of limited relevance to assess the degree of labour market slack. Second, there is significant under-employment among women in Brazil and India and among older workers in the Russian Federation. Third, in China and India, the rural sector is characterised by excess labour and remains large: despite significant rural-urban migration, almost two-thirds of Chinese workers are employed in rural areas and 79% in the case of India. Estimates carried out for the purposes of this chapter suggest that the labour surplus in rural areas may be around 170 million workers in China and 130 million workers in India.

- *Another major employment challenge in the BRICs lies in the significant incidence of employment informality in most of these countries.* Employment in the informal sector represents about 45% of total employment in Brazil, 53% in China and over 90% in India. Importantly, despite faster economic growth, the incidence of informal-sector employment remains stubbornly high in the three countries, which shows that the phenomenon reflects pervasive structural barriers to transitions to formal employment. Available estimates suggest that informal employment in the Russian Federation is much lower than in Brazil, China and India, coming closer to values observed in OECD central and eastern European countries.

● *High employment growth has gone hand-in-hand with falling poverty rates in the BRICs, especially in China.* However, wage inequalities widened over the past decade in China and India and remained persistently high in Brazil and the Russian Federation. This suggests that, in contrast with predictions from standard trade theory, the international integration of Brazil, China and India (unskilled-labour abundant countries) has not been associated with higher relative wages of unskilled workers in these countries.

● *Looking at medium-term challenges, the BRICs will undergo significant population ageing over the next two decades, reflecting both lower fertility rates and improved longevity.* Over the next 15 years, and on the assumption of constant participation rates, labour force growth will slow somewhat in India. In Brazil, labour force growth over the next 15 years will be cut by half compared with the past 15 years. In China, it will practically stagnate and in the Russian Federation, the size of the labour force could even contract in the near future.

● *Another key medium-term trend is the significant improvement in educational attainment in the BRICs.* At present, workers in Brazil, China and India have much lower educational attainment than in the majority of OECD countries – while the opposite holds true in the Russian Federation, a country where educated labour is more abundant than in the average OECD country. However, educational attainment is improving rapidly in all three countries, especially in China.

A. How have employment and unemployment reacted to the expansion in the BRICs?

The BRICs have recorded significant net employment gains since 2000

Over the period 2000-05, India generated 11.3 million net new jobs per year, on average. The figure was 7 million in China, 2.7 million in Brazil and 0.7 million jobs in the Russian Federation, compared with an average of 3.7 million net new jobs generated in the OECD area as a whole each year over the same period.

These significant net employment gains have translated into higher employment rates in the BRICs (according to estimates made for the purposes of this chapter – see Box 1.1). Since 2000, employment rates increased in Brazil, India and the Russian Federation and remained high in China (Figure 1.2 below and Table 1.A1.1). It should be noted that data for Brazil and the Russian Federation are in principle more comparable to those for OECD countries than data for China and India. Thus, data for the latter two countries are presented for urban areas only. More generally, as will be discussed below, employment and unemployment statistics need to be complemented with other data in order to grasp the real extent of labour market slack in the BRICs.

Despite strong job creation, the employment content of economic growth is low (except in Brazil)…

In China, India and the Russian Federation, the elasticity of employment to economic growth is relatively low (Table 1.5). This means that the Chinese and Indian economies need to grow rapidly in order to be able to absorb the relatively high number of young people who will enter the labour market over the next few years. Though the employment elasticity in the Russian Federation is also low, this is less of a problem because the demographics in this country are less dynamic than in China and India. Finally, the employment content of economic growth in Brazil is much larger than in the other three countries. This might reflect the fact that services employment has followed a steep upward trend in Brazil – possibly as a result of structural reform in that sector.[1]

Box 1.1. **Are employment statistics in the BRICs comparable internationally?**

This box examines the conformity of the employment and unemployment estimates used in this chapter *vis-à-vis* ILO guidelines. For China and India, data on employment and unemployment are shown for urban areas only. Indeed, in these two countries, estimates of employment and unemployment are not comparable with data for OECD countries. This reflects considerable under-employment in rural areas in both China and India – to an extent which is difficult to gauge.

Brazil and the Russian Federation

Data for Brazil and the Russian Federation are from national household labour force surveys, which are designed to be consistent with ILO recommendations in this area.

India

Data reported in the tables and figures are from successive five-yearly rounds of the National Sample Survey – a country-wide survey of households – covering the months of July to June, for the following years: 1987/88, 1993/94, 1999/2000 and 2004/05.

The National Sample Survey allows estimating employment and unemployment figures according to three concepts:

Usual status is based on self-reported activity status during the year preceding the date of the survey. This takes into account the main activity as well as any "subsidiary" or occasional activity performed during the reference year. It covers the vast majority of seasonal employment generated by the agriculture sector, as well as female casual work and part-time employment. The concept is used in different official publications and by the Indian Economic Planning Commission to assess the evolution of employment and wages for different segments of the workforce. Employment estimates according to usual status are reported in Table 1.A1.3.

Current weekly status provides the activity status of a person in the seven days preceding the survey and comes closer to the ILO methodology for measuring employment and unemployment. According to this classification, a person's working status is determined based on a criterion of one or more hours worked at least one day in the seven days of the reference week. This definition of employment allows for temporary absence from work due to sickness and other reasons. Further, persons not working who are seeking a job or are available to start working during the reference week are considered as unemployed. This definition considers that those actively seeking a job are available for work, while those available for work and not seeking work are also considered as unemployed. The latter category is a departure from the standard ILO definition of unemployment and would rather be categorised as discouraged workers. Thus, unemployment as measured by the currently weekly status is somewhat over-estimated. Employment and unemployment estimates according to current weekly status are shown in Tables 1.A1.1 and 1.A1.2, and in Figures 1.2 and 1.3.

Comparing unemployment according to usual status and current weekly status provides an estimate of seasonal employment and other types of part-year work.

Current daily status is a time use approach to classify interviewed persons according to activities undertaken during each of the seven reference days preceding the date of the survey. The activity status in the reference week is determined on the basis of the major time criterion.[a] Data based on current daily status are quoted by Indian labour market experts as to fully capture open unemployment, and unemployment rates based on this concept are used in *The Economist* scoreboard. However, data based on the current daily status are not internationally comparable. This is why this chapter uses mainly current weekly status – which is the closest to ILO concept – in order to compare India with other countries.

Box 1.1. **Are employment statistics in the BRICs comparable internationally?** *(cont.)*

China

Data for China refer to mainland China, excluding the Special Administrative Regions of Hong Kong, China and Macao. Estimates reported in the *China Statistical Yearbook* and the World Bank, World Development Indicators are based on *registration data*. Employment data cover mainly registered enterprises, *i.e.* state-owned and collectively-owned units – the traditional formal sector; private units; foreign-funded firms; self-employed in urban areas; township and village enterprises; private enterprises and self-employment in rural areas. Official statistics also report data on unknown sectors which are considered in this chapter to correspond to "informal" employment. Irregular or informal employment is composed of: *i)* rural migrant workers who cannot work in registered enterprises (at least until recently) due to *the hukou* system of registration; and *ii)* workers laid-off from state enterprises who take informal employment on a temporary basis while still remaining nominally attached to their previous work units for welfare benefits and re-employment opportunities.[b]

The fact that a large proportion of laid-off workers from state enterprises are unemployed suggests that registration data under-estimate unemployment and over-estimate employment. Similarly, some workers forced into early retirement before the age of official retirement – 60 for men and 58 for women – may be seeking work but are denied registration at public employment offices. And rural migrants, school-leavers and first market entrants looking for jobs are not allowed to appear on unemployment registers (Knight and Xue, 2006).

This is why, for the purpose of this chapter, the 2000 *population census* (rather than registration data) is used to estimate urban employment and unemployment (Figures 1.2 and 1.3, and Tables 1.A1.1 and 1.A1.2). Such data are closer in line with ILO concepts and allow in particular a classification of laid-off workers as unemployed or inactive, based on job-search and work-availability criteria. The results from the latest census serve as a benchmark for the data reported in this chapter. Data for the longer period are obtained from applying annual growth rates from employment, labour force and population data from successive editions of the *China Statistical Yearbook*. Unemployment figures are derived as residuals from labour force and employment estimates.

Registration data are, however, used in Table 1.A1.3 to describe the levels and changes in the employment structure in rural and urban areas by type of enterprise unit and jobs.

a) Activities are classified according to half-day units for each activity in a day and are aggregated to generate estimates of person-days in employment or unemployment. Labour force estimates in person-days are obtained as the sum of person-days in employment and unemployment, which are used to calculate employment and unemployment rates.

b) Registered employment data are likely to include laid-off workers from state enterprises as part of the labour retrenchment scheme (*i.e.* the xiagang scheme). These laid-off workers maintain their relationship with their previous employers who continue to pay them subsistence subsidies and ensure their social protection – housing, health coverage and old-age pension – until they are re-employed. The xiagang scheme introduced in 1993 to facilitate shedding of surplus labour from state enterprises was phased out in 2004.

Figure 1.2. **Employment and unemployment rates in BRICs
and selected OECD areas**

Percentages
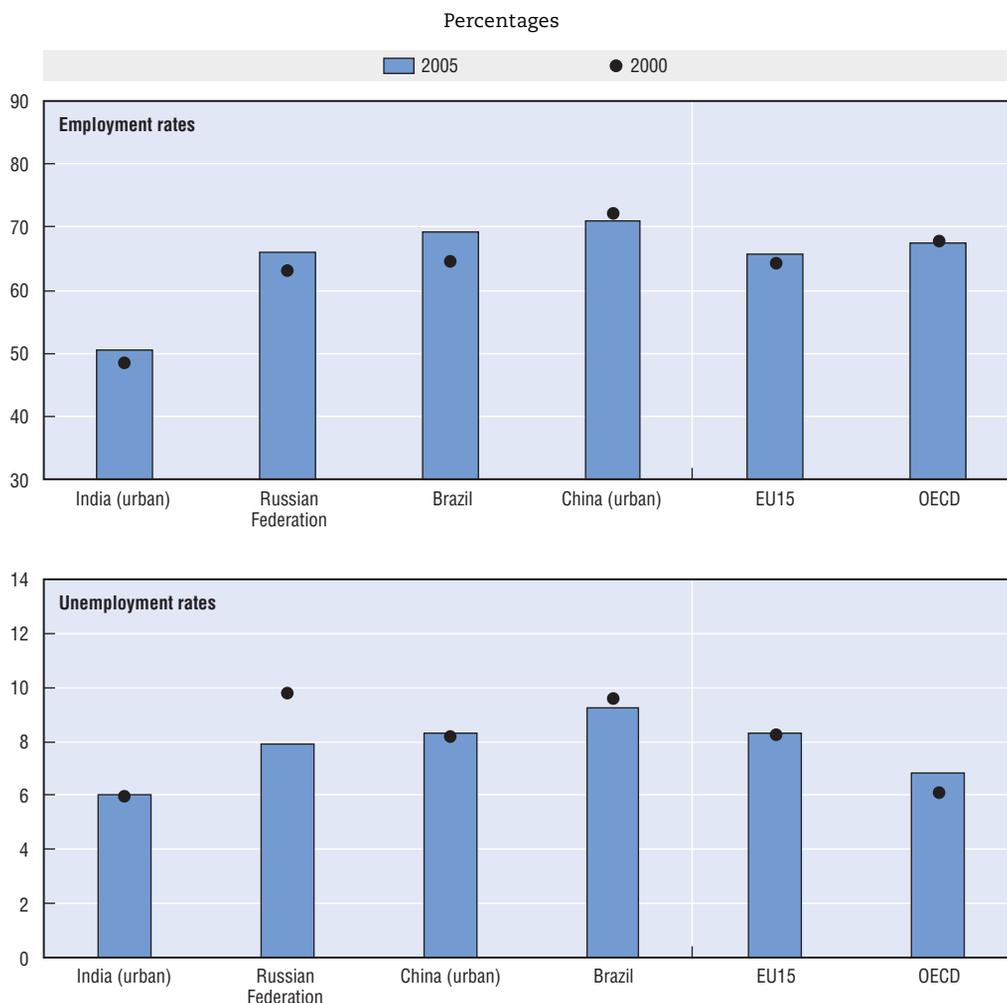
Source: Table 1.A1.1.

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... and, in all the BRICs, under-employment remains significant

Despite the rapid net employment gains recorded in recent years, under-employment is still sizeable in the BRICs.

First, some groups are significantly under-represented in the labour market. In China, while the urban employment rate among men is higher than in 19 OECD countries, the urban employment rate among women is relatively low (Figure 1.3). Below OECD employment rates are visible for female workers in India, youth in India and the Russian Federation and older workers in all the BRICs except Brazil.

Second, unemployment rates in Brazil and the Russian Federation, as well as in urban China, are relatively high. In 2005, unemployment rates were close to 9% in Brazil and 8% in the Russian Federation, two countries which have an unemployment benefit system (Figure 1.2 above and Table 1.A1.1). According to official estimates, registered unemployment rates in China are around 4% in urban areas, where workers are entitled to a limited unemployment registration system since the mid-1990s. However, official

Figure 1.3. **Employment and unemployment rates for various groups in BRICs and OECD**

Percentages

Panel A. **Employment rates**

Panel B. **Unemployment rates: women and youth unemployment rates are high in the BRICs**
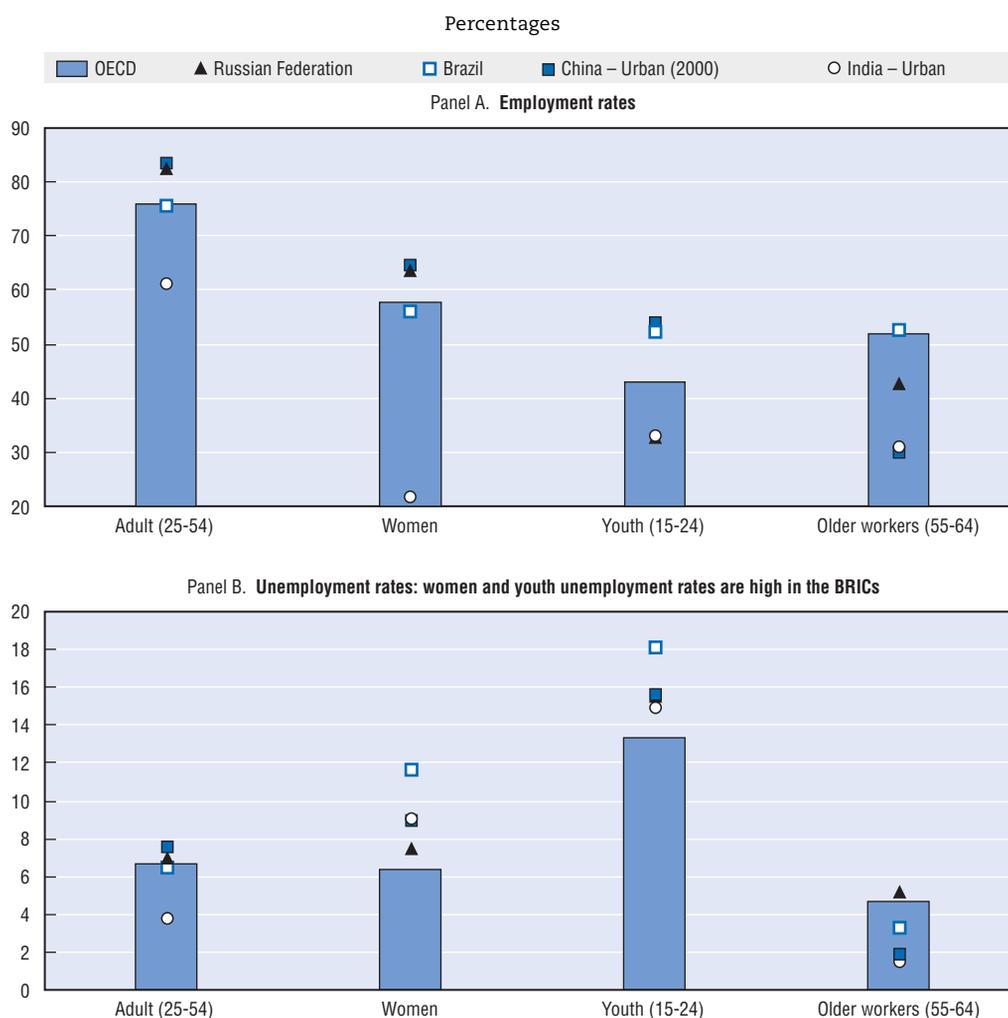
Source: Table 1.A1.2.

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Table 1.5. **Employment elasticities, 1992-2004**

Relative to GDP growth

	1992-96	1996-2000	2000-04	1992-2004
Brazil	0.4	1.0	1.2	0.9
China	0.1	0.1	0.1	0.1
India	0.3	0.3	0.3	0.3
Russian Federation	0.3	0.3	0.1	0.2
OECD	0.3	0.4	0.3	0.3

Source: ILO, Global Employment Trends Model.

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estimates do not properly reflect unemployment of rural-urban migrants or workers laid-off[2] from state- and collectively-owned units[3] who are seeking work (Box 1.1). OECD estimates based on population census suggest that the urban unemployment rate is probably higher than officially estimated. Indeed, the unemployment rate in urban areas

estimated for the purposes of this chapter was 8.3% in 2005, in line with other studies (Knight and Xue, 2003; and Giles, Park and Zhang, 2004). In India, the urban unemployment rate is estimated at 6% in 2004/05 (according current weekly status of surveyed population in the five-yearly National Sample Survey of households). This rate is the closest to the ILO definition[4] and its low level is explained by the absence of a compensation system for job loss, with the main exception of workers in the organised formal sector.

The Russian unemployment rate peaked at close to 10% in 2000 and has fallen by two percentage points since then. Since 1990, unemployment rates almost tripled in Brazil, more for women than for men, and have slightly declined since 2000, but remained stable for women. Most of the increase occurred in the mid-to late 1990s, notably in metropolitan areas (Corseuil and Ramos, 2007). In China, urban unemployment rates rose markedly in the late 1990s. Unemployment rates have increased slightly for urban women in India.

In all the BRICs, youth are disproportionately affected by unemployment, a feature in common with many OECD countries (Figure 1.3). In Brazil, unemployment is particularly high among young women, while in China, unemployment is more pervasive among urban young men. In the Russian Federation, there is no specific gender dimension in terms of unemployment (see also Table 1.A1.2).

Third, in China and India, the incidence of rural areas and agriculture in total employment remains high, despite a gradual fall in the share of farm employment. This suggests significant under-employment, since productivity in rural areas of these countries is very low. In China and India, labour productivity in agriculture is around 80% lower than labour productivity in industry – compared with 72% and 60%, respectively, in Brazil and the Russian Federation and around 50% in OECD countries which experienced a profound structural transformation in recent decades like Korea and Spain. Bringing relative labour productivity in agriculture in China and India to the average levels observed in Korea and Spain would lead to surplus labour to the tune of around 170 million workers in China and 130 million workers in India. The estimate for China comes close to the estimates for surplus labour reported in Tao (2006).

B. Is better economic performance improving the "quality" of employment, wages and incomes?

The purpose of this section is to examine whether employment conditions, wages and incomes are moving in line with better economic performance and the significant net employment gains described in the previous section.[5]

The incidence of undeclared work and employment in the informal sector has tended to rise

Despite the above-mentioned fall in agricultural employment (where the incidence of informality tends to be high), little progress has been made in reducing either the incidence of informal employment or employment in the informal sector (see Table 1.6 as well as Box 1.2 for a discussion of these concepts).[6]

In Brazil, 85% of the population live in urban areas. Therefore, non-agricultural employment is the main driver of employment growth. The urban informal sector recorded major gains as its share rose from almost 41% in 1990 to nearly 45% in 2003. The period has seen a surge in the share of domestic service workers, mostly women, as well as self-employed (Table 1.A1.3).

Table 1.6. **Informal employment and employment in the informal sector**

Percentage of total employment

		Informal employment			Informal-sector employment
		Total	Rural	Urban	
Brazil[a] (urban-salaried workers)	1990	26.0	. .	26.0	40.6
	1995	33.5	. .	33.5	46.5
	2003	30.8	. .	30.8	44.6
Brazil[b]	1996	49.0	12.0	38.0	. .
	2004	50.0	9.6	39.4	. .
China	1990	12.9	9.3	3.6	51.0
	2005	13.5	0.5	13.0	52.8
India	1993/94	86.3	73.1	13.2	92.7
	2004/05	85.6	72.2	13.4	94.1
Russian Federation	2001	13.0	5.6	6.9	. .

. .: Data not available.

a) Workers contributing to social security.

b) Informal employment includes own account workers. Data refer to agriculture and non-agriculture sectors instead of rural and urban areas.

Source: Table 1.A1.3; and national sources for informal employment in Brazil and the Russian Federation.

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Over the past two decades, several reforms have led to a diversification in the forms of employment in China.[7] Since the mid-1990s, efforts have been made to reduce surplus labour in state- and collectively-owned enterprises (which have traditionally been major sources of stable employment). At the same time, it has become easier to set up private enterprises, in both urban and rural areas. This followed reforms adopted in the late 1980s which authorised enterprises to recruit labour on fixed-term contracts. And, as noted above, the rules on rural-urban migration have been relaxed.

As Table 1.A1.3 shows, these reforms are reflected in a significant change in Chinese employment patterns:

● the share of urban employment climbed from 26% in 1990 to 36% in 2005 – growth in urban employment accelerated in the second half of the 1990s, following reforms relaxing restrictions on rural-urban migration, while the share of agricultural workers reduced from 48% in 1990 to 39% in 2005;

● employment in the informal sector and "irregular" (*i.e.* informal) employment – mainly undeclared rural migrants and workers laid-off from urban state and collective enterprises – has risen significantly. By contrast, employment in state- and collectively-owned enterprises has declined by 4.2% per year since 1990. Overall irregular employment is estimated at 13-14% in 2005, while employment in the informal sector accounts for just over half of total employment.

Most of the jobs are so-called "irregular" or informal in India. Irregular (or informal) employment represented 86% of total employment in 2004/05, just under 1 percentage point less than in 1993/94. The remaining 14% of workers are in regular salaried employment, among which 6% work in the formal organised[8] sector dominated by the public sector and the private sector with registered enterprises of 10 or more employees. Irregular employment is highly concentrated among self-employed businesses and among casual employment.[9] Economic expansion since 2000 has translated into employment growth only in the informal sector – in farming, in individual businesses and in private sector wage employment including casual employment – and not in the organised and protected public and private sector.[10]

Box 1.2. **Informal employment**

Table 1.1 provides some estimates on informal employment and informal-sector employment in the BRICs.

Informal employment refers to informal jobs performed in formal- and informal-sector enterprises and households. According to ILO guidelines, informal jobs are jobs which do not comply with "national labour legislation, income taxation, social protection or entitlement to certain employment benefits like advance notice, severance pay, paid annual or sick leave, etc.".[a] In practice, informal jobs involve workers not covered by social protection, while in the case of Brazil the data refer to workers not contributing to social protection or without a work card (*carteira de trabalho*) because access to publicly-funded health-care services is universal.

On the other hand, **informal-sector employment** refers to the legal/registration status of the enterprise unit and covers employment in unregistered enterprises which are "private unincorporated enterprises (excluding quasi-corporations), producing and selling legal goods and services, and employing up to five paid employees" (OECD, 2004). In practice, informal-sector employment includes a broader set of jobs located in small farms, with less than five or ten employees depending on countries, self-employed, unpaid family workers and domestic household workers irrespective of the registration statuses of enterprises. However, it should be noted that it is always difficult to produce a comprehensive estimate of informal-sector employment from registers and survey instruments. OECD (2004) reminds that informal-sector employment can take many other forms, such as hidden employment (*i.e.* enterprises under-declaring the number of employees), under-declared work (in terms of hours worked, work in second jobs), illegal work (by illegal immigrants, work in second jobs by government employees, etc.).

Table 1.A1.3 shows the underlying data used to estimate informal employment and informal-sector employment, as presented in Table 1.6. This allows the following comments to be made:

● In Brazil, informal jobs are concentrated, by decreasing order of importance, in agriculture, construction, domestic services, hotels and restaurants, and wholesale and retail trade. In Brazil, informal jobs are of shorter tenure – labour turnover is high – lower paid and more unstable than formal jobs, which are three times longer and a passage in informal jobs can be detrimental for subsequent formal employment prospect (OECD, 2006a). Accumulation of human capital is lower, less than one third is contributing to social security and one third of informal workers earn less than the minimum wage. Informal workers have no rights to unemployment insurance.

● In India, registrations of the public sector and firms employing 25 or more workers are compulsory for the organised sector, while registrations for enterprises employing 10-24 employees are on a voluntary basis. This contains a potential source of under-declaration of formal employment as reported in the administrative data of the Directorate General of Employment and Training (DGE&T). Table 1.A1.3 classifies regular salaried workers reported in the NSS survey rounds as representing formal employment (*i.e.* employees covered by the Employee's provident fund among others[b]), which allows to overcome the deficiencies of administrative registers and may also include some workers in the informal sector.[c] Informal employment and employment in the informal sector includes a disproportionate number of women, home-based workers, outworkers sub-contracted by formal units, domestic workers – maids, gardeners and security staff – and street vendors (ILO, 2002).

Box 1.2. **Informal employment** (*cont.*)

● The low levels of informal employment according to official estimates for the Russian Federation (13%) and Secretariat estimates for China (13%) most probably under-report the extent of the phenomenon. The reform process undertaken in the 1990s in China and successive economic and exchange rate crisis in the Russian Federation (*i.e.* in 1992 and 1998) following the break up of the Soviet Union have transformed the structure of employment, albeit at a slower pace in state enterprises in China and in traditional industries in the Russian Federation. The latter have ended up concentrating the bulk of surplus labour in the form of hidden unemployment or underemployment. This is particularly the case of laid-off workers in China in state enterprises who are likely to engage in informal employment, while maintaining their registration with their former employers or RSCs providing various benefits, as mentioned in the text. In the Russian Federation, according to Tchetvernina *et al.* (2001), large and medium-sized enterprises, mainly in manufacturing and construction, responded to slowdown in demand by encouraging workers to take (mostly unpaid) administrative leaves, work shorter hours and delay or non-payment of wages. Tchetvernina *et al.* (2001) reports that, as a consequence, many underemployed workers might have engaged in different types of informal employment either in an additional job, after or during work hours, in the formal or informal sectors. This can take the form of unregistered additional employment at the place of the main job, informal employment in unincorporated enterprises, self-employment in unregistered business activities – such as in services and trade – subsistence farming, employment in unregistered enterprises. As a result, in the absence of adequate statistical instruments, estimates of informal employment range from 9 million workers (or 14% of workers), in 1998, according to official data from the Ministry of Interior to 30 million workers (47% of workers) on the basis of independent surveys – mainly in construction, trade and services and across all occupations. The report underlines that, however, these practices were reduced in the second half of the nineties leading to a surge in open unemployment.

Undeclared workers and workers in the informal sector often do not have social security coverage. In Brazil, the overall coverage of wage and salaried workers has dropped from 74% in 1990 to 69% in 2003 due to a combined increase in wage employment in small establishments in the informal sector and lower coverage in those establishments over time, falling from 48% in 1990 to 36% in 2003. In China, since the 1990s, social security coverage is being extended from state-owned enterprises to all urban formal sector employees and, since 2003, rural migrants (Reutersward, 2005). In urban areas, the work-unit based system is gradually being replaced by an urban social security system with a joint financing of employers, employees and the Government. In India, only workers in the organised sectors (6% of the total workforce) are covered mostly for retirement pensions, sickness and work accidents.

a) These definitions are based on the conceptual framework on informal employment statistics issued by the 17th International Conference of Labour Statisticians (ICLS) in 2003, which complements earlier resolution adopted by the 15th ICLS resolution on statistics of employment in the informal sector (1995) and the SNA 1993 definition of informal sectors. According to the 17th ICLS a distinction is made between employment in the informal sector, on the basis of registration statuses of work units, and informal employment, on the basis of undeclared jobs for legal, social contributions and tax purposes.

b) The Employee's provident fund is one of the most common social security schemes in India for the organised public and private sectors and provides coverage for: pension, medical care, housing, education of children, life insurance policies. Employer's contributions depend on the size and legal status of firms and type of industries. The statutory contribution is 12% of earnings (*i.e.* basic wages and salaries plus other allowances) for establishments with 20 or more employees and in 180 industries (and 10% otherwise) of which 8.33% are deposited in pension funds (*www.epfindia.com/for_employers.htm*).

c) In contrast, casual and contract workers in the organised sector seldom benefit from social protection and should normally be excluded from formal job counts (Shaktivel and Joddar, 2006). In sum, the informal (sector) employment forms the bulk of the workforce largely concentrated in agriculture representing over 90% of the farm workforce. In sum, informal employment represented 86% of the overall workforce in 2005: 93% and 60% in rural and urban workforce, respectively (Table 1.A1.3). According to Shaktivel and Joddar (2006), informal employment is over 95% in agriculture, construction, and trade, hotels and restaurants. Income groups expressed in quintiles, informal employment is pervasive across all income groups in the farm sector whereas the share of workforce informality declines gradually across the income ladder: from above 90% for the first quintile to close to 60% of informal employment in the fifth richest quintile.

In the Russian Federation, informal employment represented 13% of the workforce in 2001 according to national estimates, similar to the incidence of informal employment in many OECD countries. More than 90% of workers are in wage employment. However, Box 1.2 suggests that official statistics are likely to understate the real incidence of informal employment. Indeed, according to Kapeliouchnikov (1999), informal work arrangements like undeclared wages and payments in kind grew significantly during the economic transition in the 1990s. Stronger economic growth during the 2000s (and therefore, greater ability of firms to declare workers' earnings) might have reversed this trend in informal employment.

Wages have increased fast in recent years in China and the Russian Federation

Since 2000, real wages have grown strongly in China and the Russian Federation. In China, real urban manufacturing earnings have surged since 1990 (Figure 1.4). In 2005, they were three times higher than in 1990, with half of the gain made in the first ten years and the other half in just five years. But, these trends are suspected to be somewhat overestimated, as informal industries and low-wage migrant workers are not covered in official wage statistics. It is therefore difficult to gauge the extent to which real wages have matched rapid productivity gains or not. In the Russian Federation, real wages grew by 1.2% on average per year between 1995 and 2000, and by as much as 12% between 2000 and 2005. According to OECD (2006b), wage growth matched labour productivity since the mid-1990s.

Real wage developments have been more moderate in Brazil and India. In Brazil, real wages in metropolitan areas fell during 1995-2005. In India, average wages in rural and urban areas grew by 2.7% per year during the same period – below productivity growth of about 4½ per cent per year. It should be stressed, however, that questions have been raised about the reliability of wage data in China and India.[11]

Figure 1.4. **Real wage growth in manufacturing industries in BRICs**

1990 constant prices[a]
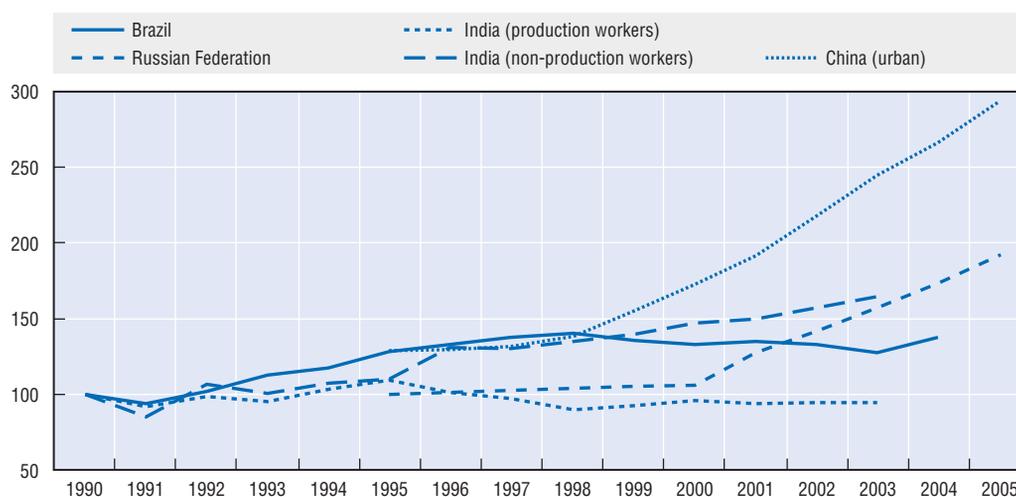
a) For the Russian Federation, 1995 constant prices; data interpolated between 1995 and 2000.

Source: ILO, *2005 Labour Overview – Latin America and the Caribbean*; estimates based on National Household Sample Survey (PNAD), for Brazil; Annual Survey of Industries, for India; BLS/MLR, November 2006, and *China Statistical Yearbook 2006* for China; and National Accounts for the Russian Federation.

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Wage inequalities remained high or tended to increase

Earnings inequality increased in China and India and remained persistently high in Brazil and the Russian Federation. Due to the unavailability of systematic evidence for the BRICs, wage dispersion is assessed separately for each country.

In Brazil, the Gini coefficient of hourly wages fell somewhat from 0.557 in 1995 to 0.521 in 2005 – still a high level – for the following two reasons. First, the steady increase in the real minimum wage, which was 45% higher in 2005 than in 1995, contributed to the moderate fall of the Gini coefficient (Berg, Ernst and Auer, 2006). Second, during 1995-2005, real earnings of skilled workers fell more sharply than those of unskilled workers.

Figure 1.5 presents real wage growth in China since 1985 for workers in different enterprise units. Urban real annual earnings have sharply increased, especially since 2000 (11.6% per year), driven by higher wage growth in state-owned enterprises and private enterprises, including foreign-funded units. In contrast, wages in village enterprises have grown moderately, while rural net income has hardly increased. According to Park *et al.* (2003), rising returns to skills and education and regional wage disparities explain rising overall wage inequality. The Gini coefficient rose from 0.25 in 1990 to 0.36 in 1999 in urban areas and was driven by rapid wage growth in the top half of the wage distribution, in particular for highly educated. Further, Galbraith, Krytynskaia and Wang (2004) note that inter-regional wage disparities contributed more to rising wage inequality than wage disparities between economic activities. The concentration of high wages in just three populated areas – the manufacturing export region of Guangdong province and the municipalities of Beijing and Shangai – and rising inter-regional wage inequality create strong incentives for internal migration.

In India, the Gini coefficient of average hourly wages increased between 1993/94 and 1999/2000 survey rounds, especially in urban areas (Table 1.A1.4 in OECD, 2007c). According to the

Figure 1.5. **Real wages and rural income in China**

2002 constant prices in Yuan
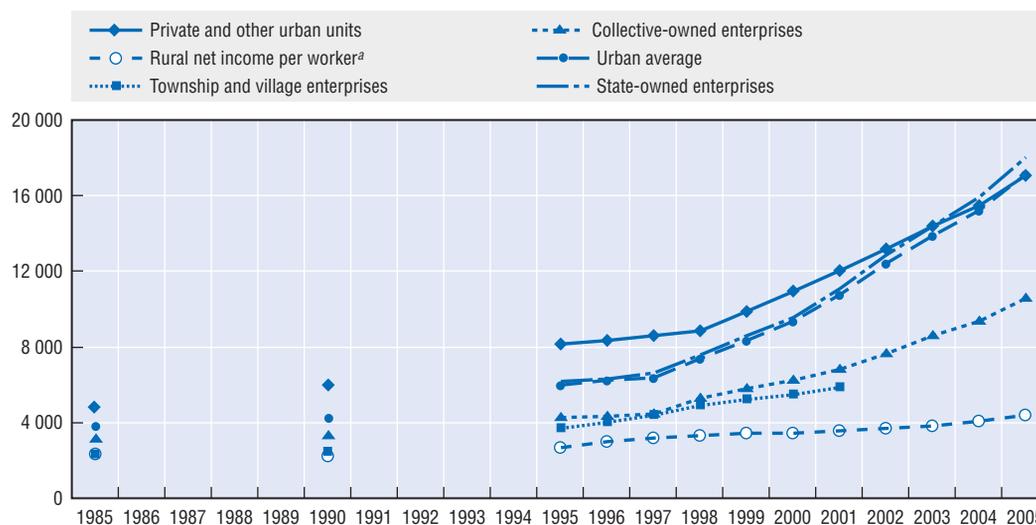
a) Rural net income per capita (including farmers) (see Table 10-2 in *China Statistical Yearbook 2006*) adjusted by the number of dependents per labourer in rural households (see Table 10-18, *ibid.*).

Source: Reutersward (2005), and *China Statistical Yearbook 2006*.

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2004/05 large survey results, only urban college educated workers and casual workers in rural areas enjoyed a real wage increase since 2000 (Anant *et al.*, 2006; and OECD updates).

Wage inequalities have remained high in the Russian Federation since the sharp increase of the Gini coefficient during the transition period in the 1990s. According to UNICEF's Transmonee database, earnings based Gini coefficient first increased sharply after the 1992 crisis – 0.33 in 1992 to 0.47 in 1993 – and a second time after the 1998 financial crisis – 0.50 in 1998 to 0.53 in 2000. Furthermore, Luckyanova (2006) shows, using the Russian Longitudinal Monitoring Survey (RLMS) data, that earnings' dispersion, measured by the ratio of the 9th to 1st decile remained above 8 during the 1990s to culminate at 8.6 in 2000. This may be partly related to the significant reduction of the minimum wage as a per cent of the average wage (see Box 1.3 and Luckyanova, 2006). The Gini coefficient and the upper-to-lower deciles ratio declined somewhat since 2000 to 0.47 and to 7.6, respectively, in 2003, in response to strong economic growth since 2000.

Box 1.3. **Minimum wages in BRICs**

Statutory minimum wage rates are in place since the 1940s in Brazil (1940) and India (1948) and since the early 1990s in the Russian Federation (1993) and China[a] (1994).[b]

There are differences among BRICs regarding how minimum wages are set. The national minimum wage rate is set by law by the Federal government, with the possibility allowed in the Russian Federation for state governments to fix regional rates at higher levels following tripartite consultations. In Brazil minimum wage floors for occupational categories are negotiated through collective agreements.

In China, minimum wage rates – monthly and hourly rates – are issued by the Ministry of Labour and Social Affairs (MOLSS) for 31 provinces, autonomous regions and municipalities, which may vary by geographical location and industries. Minimum wage rates are proposed by local governments after tripartite consultation for approval by the State Council. The rates apply to all work units and worker categories including piece-rate, part-time and temporary workers in traditional and non-traditional industries.[c]

In India, minimum wage rates are set through a dual system. They are set by the central and state governments for a list of unorganised[d] occupations requiring wage protection and by collective agreements for workers in the organised sector. Currently, the central government determines minimum wage rates for 45 occupations and state governments for 1 232 occupations (including piece-rate workers and excluding family workers) in rural and urban areas – the list of occupations is subject to circumstantial revision by central and state governments. Minimum wages are fixed following recommendations from an advisory board, composed by employer and worker organisations, and proposals from central and local governments. Since 1991, there is, however, a National Floor Level of Minimum Wages fixed by the Ministry of Labour which was set at INR 66 per day since February 2004.[e] Specific minimum wage rates apply for youth under 18 years and trainees.

Minimum wages are revised on a regular basis in Brazil (every year in May since 1995) and China (every two years) while they are revised occasionally in India (based on state-level cost-of-living index) and the Russian Federation.[f] The revisions take into account the cost of living and social security benefits in Brazil and a set of parameters in China such as local prices, wages, economy, labour productivity, social premiums and housing funds.

The figure below shows minimum wages relative to average manufacturing wages and a comparison with selected OECD countries. In Brazil, this ratio increased significantly since January 2000 from 0.19 to 0.32 in May 2005, putting it at the same level as the ratio in China. This ratio in India is somewhat lower at 0.28 in 2004, while minimum wages in the Russian Federation represented around 10% of average manufacturing wages in 2005 and only 30% of the subsistence minimum level.[g] The figure below shows that relative minimum wages in Brazil, China and India are roughly similar to those in Japan, Mexico and the United States, while they are below those in Korea and Turkey.

Box 1.3. **Minimum wages in BRICs** (*cont.*)

Relative gross minimum wages in BRICs and selected OECD countries, 2005

Ratio relative to gross average manufacturing wages[a]
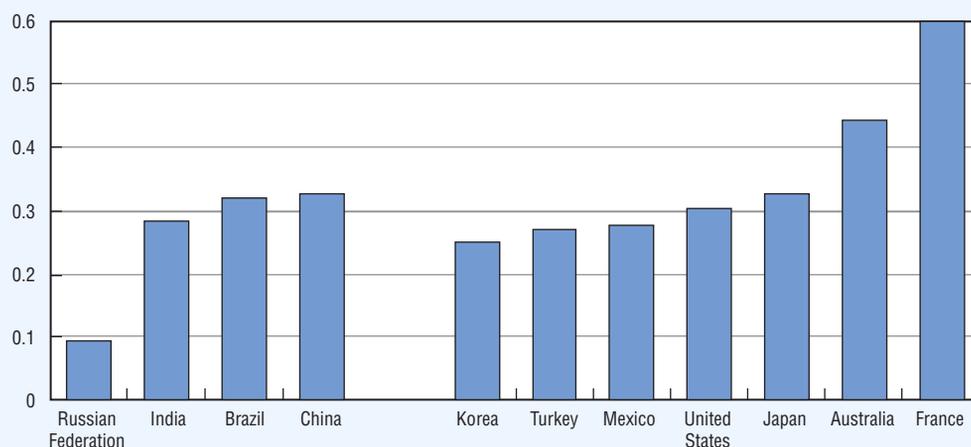
a) Relative minimum wages are expressed as a proportion of average wages for the total economy in Brazil and average manufacturing wages in China and the Russian Federation, while they are relative to manufacturing wages for production workers in India and for selected OECD countries.

Source: National sources for BRIC countries and OECD minimum wage and average wage databases. Annual average manufacturing wages are from *China Statistical Yearbook 2006*, and from National Accounts for the Russian Federation. For India, average manufacturing wages are daily wages for production workers taken from the Annual Survey of Industries in the organised sector, while, for Brazil, wages are nominal average wages from the Monthly Employment Survey (PME).

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a) China introduced a revised regulation on minimum wages in July 2004, which proposes a new method of calculation taking into account local living expenses, local cost of living, and social premium payments to the new social security system set up by the government. Coverage is extended to temporary workers in non-traditional businesses.

b) Social benefits are dependent on the level of minimum wages (Brazil and the Russian Federation), while minimum wages also serve as a benchmark for the overall wage structure in Brazil.

c) In general, in all three countries hourly minimum rates apply to part-time employees, daily minimum to piece-rate workers and monthly minimum wages to full-time employees within statutory working hours limit.

d) Unorganised workers are non-unionised workers or with limited bargaining power.

e) National Floor Levels of Minimum Wages were INR 35 per day in 1996, INR 45 in 1998, INR 50 in December 2002 and INR 66 in February 2004. (See Minimum Wage Act 1948, *http://labour.nic.in/wagecell/welcome.html*.)

f) In Brazil, monthly minimum wage rates were BRL 260 from May 2004 to April 2005 and BRL 300 from May 2005 to April 2006. In China, monthly minimum wage rates varied in 2006 from CNY 270 in Jianxi province to CNY 810 in Shenzhen city in Guandong province. In India, daily minimum wages varied from INR 39.87 in Arunachal Pradesh to INR 203.86 in West Bengal, while in the Russian Federation monthly minimum wages were RUB 720 prior to September 2005, RUB 800 until March 2006 then RUB 1 100 since April 2006.

g) The subsistence minimum level is defined in accordance with a Federal decree and approved method of calculation for the consumption of a basket of goods and services, including payments and dues, which are deemed necessary for minimal living conditions.

Poverty rates have fallen somewhat

Poverty has been reduced quite markedly in China, but also in Brazil and in the Russian Federation, while the reduction has been less pronounced in India.

Figure 1.6 examines whether there is an association between the evolution in the levels of GDP per capita and two poverty measures, defined as the percentage of people living with income below USD 1 and USD 2 a day in purchasing power parities. The figure reveals two

Figure 1.6. **GDP per capita[a] and poverty headcount ratio, 1987 to 2003**

- ●- Poverty headcount ratio at USD 1 PPPs a day (% of population)
- ◆- Poverty headcount ratio at USD 2 PPPs a day (% of population)
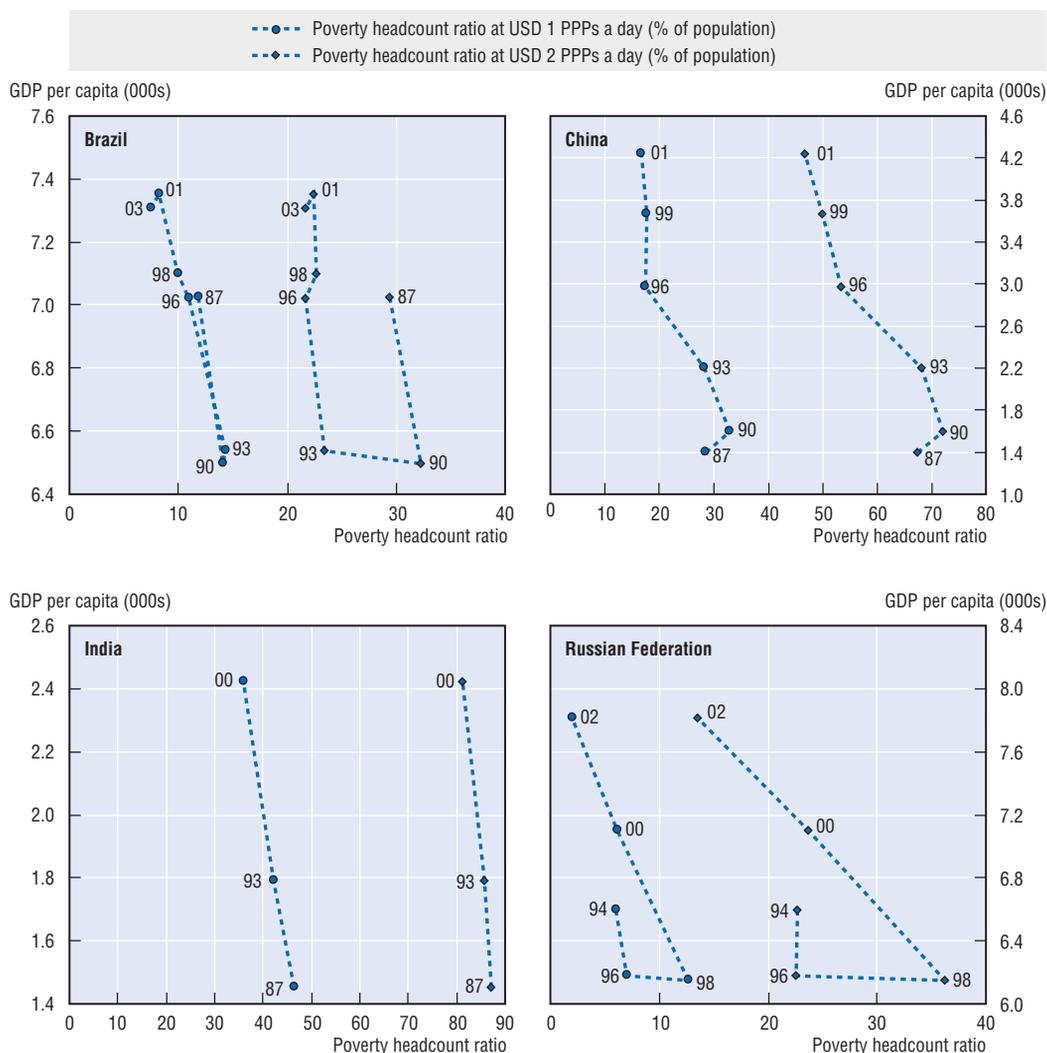
a) At 2000 constant prices, in USD PPPs.

Source: World Bank (2006), *World Development Indicators.*

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distinct patterns. In Brazil and the Russian Federation, the reduction in poverty, according to the two measures, happened without a substantial rise in per capita income. In Brazil, the percentage of poor people dropped by 4% and 3% per year, respectively, according to the USD 1 and USD 2 a day income measures. The reduction was even stronger in the Russian Federation at 8% and 5% per year, respectively. By contrast, in China, though per capita income tripled over the past 15 years, poverty rates fell by 5% and 3% per year only. In India, per capita income grew only half as much as in China over the past 15 years and poverty rates fell by 1.7% and 0.5% per year only.

C. Key supply changes: a trend towards an older and better qualified workforce

Beyond the dynamics created by the ongoing strong economic performance, the labour markets of the BRICs will be strongly shaped in coming years by two major developments, namely population ageing and improved education attainment.

The labour force in the BRICs is over twice as large as the labour force in the OECD area as a whole…

In 2005, the BRICs hosted 42% of world population and represented 45% of world labour force, while corresponding shares in the OECD area were 19% for both population and labour force.

There are major differences regarding the demographic situation among the BRICs (Figure 1.7). Brazil and India have much younger populations than is the case in both China and the Russian Federation and the majority of OECD countries. In Brazil and, especially, India, the child dependency ratio (children aged less than 14 as a proportion of working-age population) is well above the OECD average. Conversely, the old-age dependency ratio in Brazil and India, at around 10%, is almost half that of the OECD average. In China, the child dependency ratio is close to the OECD average, while the old-age dependency ratio is still relatively low. The Russian Federation combines a low child dependency ratio with a high old-age dependency ratio.

… but labour supply growth in the BRICs is falling significantly as a result of population ageing

Despite these differences, the four countries will undergo significant population ageing over the next two decades, reflecting both lower fertility rates and improved longevity. In Brazil and India, child dependency ratios are projected to fall and could drop by 2030 to levels presently observed in OECD countries (Figure 1.7). In China, the child dependency ratio could continue to fall to reach the OECD average projected for 2030, and the Russian Federation could keep below-OECD child dependency ratios over the projection period.

Importantly, all four countries are projected to experience a dramatic increase in old-age dependency ratios. This is especially the case in China, which, by 2030, could account for one fourth of the world population of individuals over age 65, compared with one fifth today.

These trends will have a significant repercussion on projected labour force growth (Table 1.A1.5 in OECD, 2007c). Over the next 15 years, and on the assumption of constant participation rates, labour force growth will slow down somewhat in India. In Brazil, labour force growth over the next 15 years will be cut by half compared with the past 15 years. In China, it will practically stagnate and in the Russian Federation, the size of the labour force could even contract.

Workers in Brazil, China and India are less skilled on average than their OECD counterparts and the opposite holds true in the Russian Federation

The educational attainment of the working-age population of Brazil, China and India is, on average, much lower than in OECD countries (Figure 1.8, Panel A). In Brazil, most of the effort is placed in youth completing upper-secondary education – in 2003, 41% of youth aged 20-24 years had completed upper-secondary education. By contrast, only 7% of youth aged 25-34 completed tertiary-level education. In the case of India, the bulk of young people do not seem to progress beyond primary education as only 21% of youth aged 20-24 years had completed secondary education. About 8% of youngsters complete a tertiary level of education, compared with 6% a decade ago, as a result of greater emphasis put on tertiary education by successive Indian governments. Indeed, in 2000, per student expenditure in tertiary education as a share of GDP per capita is 60 percentage points higher than that for primary education, while these spending ratios are more or less equally distributed in China[12] (Kochhar *et al.*, 2006). In China, nearly one third of youth of a typical age graduate from upper-secondary education, but only 5% graduate from tertiary colleges and universities.

Figure 1.7. **Population structure in BRICs and selected OECD areas, 1990 to 2030**

Panel A. **Evolution of the share of the working-age population (15-64) in the total population**

Panel B. **Child dependancy ratio** (ratio of children aged 0-14 years to the working-age population)

Panel C. **Old-age dependancy ratio** (ratio of persons 65 years or more to the working-age population)

Source: World Bank (2006), *World Development Indicators.*

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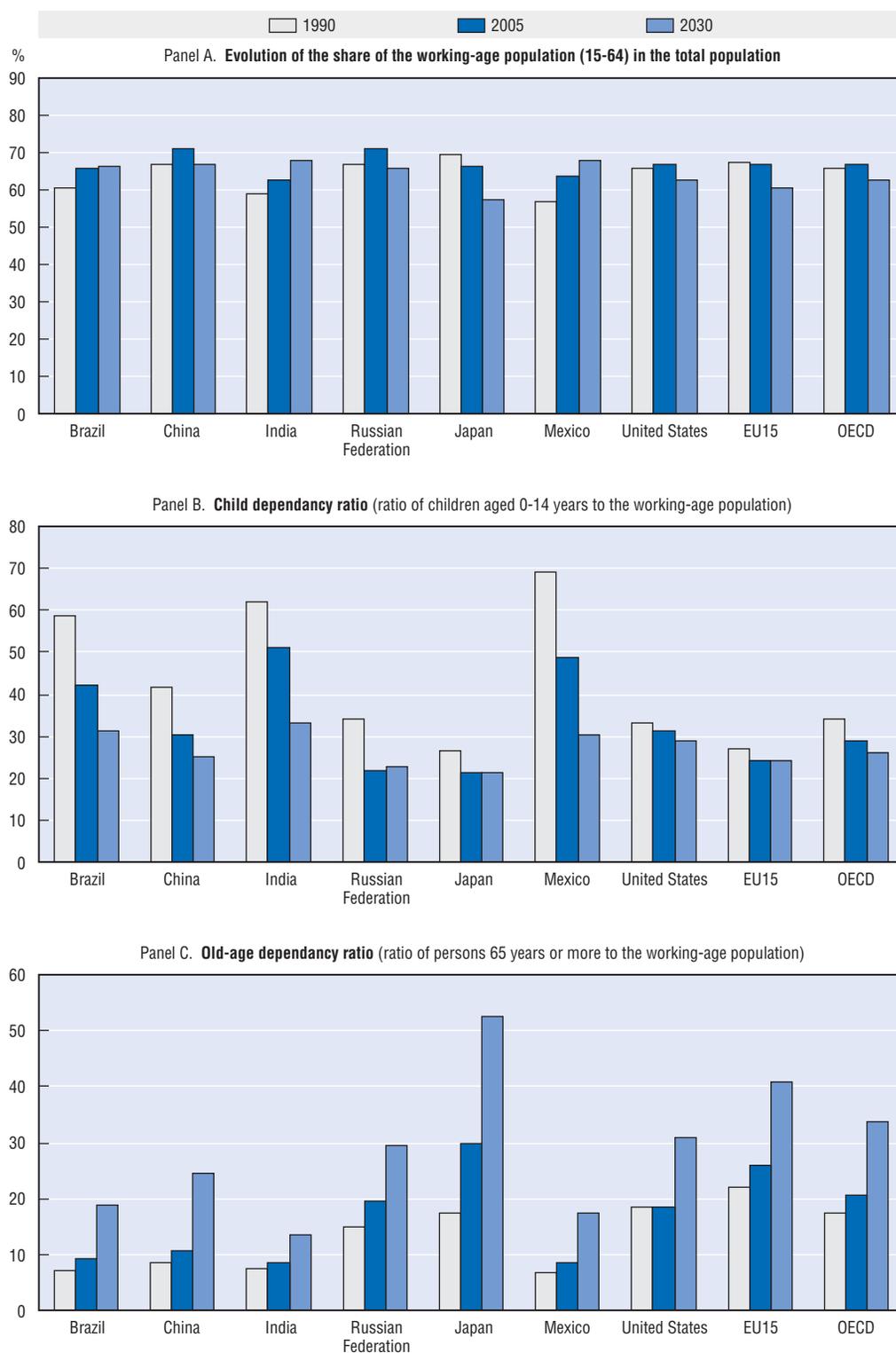
Figure 1.8. **Skill developments in BRICs and selected OECD countries**

Panel A. **Educational attainment of the population and graduation rate**[a]

Brazil (2003)   China (2005)   India (2004/05)   Russian Federation (2003)   OECD average (2003)

Adult population with at least upper-secondary educational attainment:
- 30.0
- 18.0
- 11.9
- 88.0
- 66.0

Tertiary graduation rates:
- 14.9
- 4.9
- 34.4
- 33.5

Panel B. **Educational attainment by age group, percentage of people who completed at least upper-secondary or tertiary level of education, 2003**[b]

Brazil   China   India   Russian Federation   Average OECD

Upper secondary — age groups: 20-24, 25-34, 35-44, 45-54, 55-64

Tertiary — age groups: 20-24, 25-34, 35-44, 45-54, 55-64

Panel C. **Graduates by broad field of education in tertiary education, 2004**

Others   Engineering, manufacturing and construction
Science   Humanities, business, social sciences and law

	Russian Federation	Turkey	Japan	Brazil	Germany	United Kingdom	United States
Others	16.8	16.9	30.9	22.8	31.7	21.3	18.0
Engineering, manufacturing and construction	19.7	19.3	5.4		8.1	8.1	7.7
Science	5.9	9.5	18.6	7.2	16.8	14.6	8.8
			3.0		10.1		
Humanities, business, social sciences and law	57.7	54.3	47.6	64.7	41.4	56.1	65.6

a) Educational attainment is reported for population aged 25-64 in Brazil, the Russian Federation and OECD, 15 years and over in China, and 25 years and over in India.

b) Data refer to 2000 for China, 2003 for Brazil, the Russian Federation and OECD, and 2004/05 for India.

Source: Data are taken from the UNESCO World Education Indicators database for Brazil, the Russian Federation and OECD; *China Statistical Yearbook 2005* for China; and the 61st NSS Round for India.

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By contrast, the Russian Federation outperforms the majority of OECD countries in terms of educational attainment of the working-age population. Close to 90% of the Russian Federation youth had completed at least upper-secondary education in 2003, compared with an OECD average of 73% (Figure 1.8, Panel B), and 55% of 25 to 34 years old had completed tertiary level of education compared with an OECD average of 29 %.

Educational attainment is improving much faster in Brazil, China and India than in OECD countries

In all four countries, the average level of educational attainment is increasing and given the share of youth population, in particular in Brazil and India, this will likely transform the skill content of the future adult population. Panel B of Figure 1.8 shows the percentage of different age cohorts having completed upper-secondary and tertiary levels of education. It 2003, it appears that, with the exception of the Russian Federation, young cohorts aged 20-24 and 25-34 years are better educated than their older counterparts.

Graduation rates in tertiary education by broad field of study indicate that the bulk of tertiary education degrees is in humanities, business, social science and law, which together accounted in 2004 for 65% of certification and diplomas in Brazil, 58% in the Russian Federation and 66% in the United States (Figure 1.8, Panel C). On the other hand, science and engineering graduates accounted for 13% of all graduates in Brazil, 26% in the Russian Federation and 17% in the United States. Engineering graduates are, however, mixed together with manufacturing and construction engineers, most probably at technician level. They represent 20% of tertiary graduates in the Russian Federation – *i.e.* 190 000 graduates in 2004 – similar to Germany (17%), Japan and Turkey (19%), while this share is 5% in Brazil and 8% in the United States. A recent study, which compared the number of graduates in engineering, computer science and information technology in China, India and the United States (Gereffi and Wadhwa, 2005), provided comparable estimates of the yearly production of engineers, defined as dynamic engineers with four-year engineering degrees from national accredited institutions and capable "of abstract thinking and high-level problem solving using scientific knowledge". These engineers are typically those giving a competitive edge to the companies and firms where they work. Gereffi and Wadhwa (2005) found that, in 2004, 112 000 engineers graduated from India, 352 000 from China, and 137 000 engineers from the United States. The Chinese numbers are, however, suspected to be overestimated as they may include three-year course engineering degrees, degrees from other fields of study – like motor mechanics and industrial technicians. The report concludes that the United States still have a competitive edge on the ground that the production of "dynamic" engineers per million of inhabitant is higher: 500 engineers in China, 200 in India, and 750 in the United States.

Conclusion

The chapter has highlighted certain similarities between labour markets of the BRICs. However, the country specificities should be taken into account for any further work in this area. In particular, the causes of informal employment are different among the four countries. In Brazil and India, there is concern that badly designed employment regulations may make it difficult for certain employers to create formal jobs. In Brazil and the Russian Federation, onerous social contributions on low-paid formal employment are a major factor behind informal work. And, in China, migrant workers and laid-off workers from state enterprises have difficulty obtaining regular jobs in urban areas and thus tend to accept undeclared jobs.

More fundamentally, promoting transitions to formal employment is of vital importance for strengthening longer term growth prospects in the BRICs. The Restated OECD Jobs Strategy provides some general guidelines on how to approach the issue. However more research is needed to identify the policies that work and those that do not work in this area. An examination of the reform approaches and outcomes in the BRICs would be especially relevant in this regard.

Notes

1. The elasticity of services employment to services output is 1.3 in Brazil, compared with 0.3-0.4 in China, India and the Russian Federation, and 0.6 in the OECD average.

2. At the peak of state enterprises restructuring in the late 1990s, there were 11 million laid-off workers (not re-employed) in urban areas in 2000 against 6 million officially registered urban unemployed. Laid-off workers were mainly male workers aged 40 years and over with low educational attainment levels. However, the number of laid-off workers had fallen sharply by 2002 (around 3 million persons), while registered unemployment recorded a gain of 1.7 million job seekers announcing the end of transitional arrangements for the management of mass lay-offs in state enterprises.

3. In the late 1990s, the Chinese government promoted transitional institutional arrangements to shift welfare benefit payments from state enterprises to sector-based Reemployment Service Centres (RSC) before phasing out RSCs from the end of 2004 onwards, to be replaced by an unemployment insurance system (Gu, 2003). The RSCs "trusteeship of laid-off workers" ensured the delivery of social protection, job-placement and job-training services over a three-year period after which laid-off workers would become unemployed. The RSCs were based on the success of the Shanghaï RSCs "trusteeship of laid-off workers", which enabled in 1996 the reemployment of more than 80% of laid-off workers in less than three years from job loss in the booming service and private sectors or in their original enterprises after restructuring. According to regulations from the Central government, it is compulsory for laid-off workers to join RSCs at the risk of losing their basic living allowances and other benefits. In addition, administrative restrictions do not allow registration of laid-off workers at employment offices.

4. In India, the results of NSS large survey rounds allow the estimation of unemployment rates according to usual, current weekly and current daily status (Box 1.1). Unemployment rates according to current weekly status are closer to ILO guidelines and gives the average level of unemployment on a week of the survey year, while the current daily status unemployment rate (in persons-days) gives the average level of unemployment on a day of the survey year and is the most inclusive measure. Compared to usual unemployment rates, current weekly unemployment rates highlight the degree of hidden unemployment in the form of intermittent employment and part-year work, such as in seasonal employment in rural areas. On the other hand, current daily unemployment rates compared to weekly unemployment rates provide some insights on underemployment, in other words unemployed days of those employed on a weekly basis. Unemployment rates according to daily status are the highest, with 8.2% and 8.3% in rural and urban areas in 2004/05 compared to 4% and 6% according to current weekly status, and 1.7% and 4.5% according to usual status. These rates reveal a great deal of intermittent and part-week employment in both rural areas and urban areas. Daily unemployment rates are higher for women living in urban areas (11.6% against 8% in rural areas). In general, underemployment is pervasive among female workers.

5. Regional employment patterns will not be addressed in this section, while non-agricultural employment is concentrated in a few states and provinces in India and China, and higher income in just a few places in the Russian Federation, mainly oil and gas-producing and exporting regions. Around 50% of non-agricultural employment is concentrated mostly in the dynamic southern peninsula in India based on the 2004/05 61st NSS survey round. Likewise, half of the urban employment is concentrated in the municipalities of Beijing and Shanghaï and the populated Guangdong province, "the growing export manufacturing centre in China" (Galbraith, Krytynskaia and Wang, 2004). In the Russian Federation, the latter study reports higher and rapidly rising above-average income in three places: Moscow and in two "lightly populated oil and gas West Siberian regions – Khanty-Mansy and Tiumen district".

6. According to the resolution adopted by the 15th ILO/International Conference of Labour Statisticians (ICLS, 1993), the informal-sector employment refers to own-account workers and employers and employees in firms with fewer than five (or ten) employees including (unpaid) family workers. Later refinements of the definition by the 17th ICLS include domestic workers engaged by households. Employment in the informal economy (or informal employment), defined by workers without social protection coverage for practical reasons, is mainly located in informal sectors, but also occurs in formal sectors (Box 1.2).

7. Following the methodology developed in Ghose (2005), workers are classified in regular (formal) employment if they are engaged in registered formal and informal sectors defined as follows. In urban areas, apart from the traditional formal state- and collectively-owned enterprises, a variety of formal enterprises have appeared: collective enterprises, joint ownership enterprises, limited liability corporations, shareholding corporations and foreign enterprises funded by residents of Hong Kong, China and Macao and other foreign funds. In rural areas, the formal sector refers to township and village enterprises (TVE). The urban informal sector regroups registered small-scale private enterprises and self-employed individual businesses while the rural informal sector includes in addition small family farms under the "responsibility system". Workers engaged in those registered formal and informal sectors are considered as in regular employment. The difference between the official total employment figures and regular (formal) employment in urban and rural areas is considered here as irregular (informal) employment. The latter is assumed to be composed mainly by rural migrants and laid-off workers in urban state and collective enterprises and rural township village enterprises.

8. Employment in the organised (formal) sector is reported by the Ministry of Labour (DGET) and includes all establishments in the public sector and non-agricultural establishments in the private sector with 10 or more employees and with 20 or more employees without power (*http://labour.nic.in/ss/ INFORMALSECTORININDIA-ApproachesforSocialSecurity.pdf*). The organised sector refers to enterprises whose activities and collection of data are regulated by legal provisions for which there is a national accounting. However, these numbers have been criticised (Sundaram, 2004; and Anant *et al.*, 2006) for their inability to correctly capture the rapidly growing organised private sector. The unorganised (informal) sector comprises unincorporated and partnership enterprises, co-operative societies, trust, private and limited companies, other individual businesses, subsistence farming, etc.

9. During 1994-2005, employment growth (1.8%) was mainly driven by self-employment growth in individual businesses (2.2%), which gathered momentum after 2000 (4.3%) (Table 1.A1.3). This pattern is visible both in urban and rural areas. However, self-employment growth in rural areas first declined in the mid-to-late 1990s (–0.9%) before strengthening after 2000 (5.8%). Since 1994, regular salaried employment recorded an annual growth rate of 2.7%, which gathered pace after 2000, while sluggish growth in the organised sector employment (–0.1%) is due to a contraction in the public sector (–0.2%) and in the private sector (–1%) after 2000.

10. The forthcoming *OECD Economic Survey of India* (OECD, 2007a) indicates that the strong employment growth over the 1998-2005 period is due to net employment gains in industries (5.4% per year) and services (4.1%) including manufacturing (4.6%), while the pace of job growth in agriculture has reduced dramatically (0.5%), which is an indication of workers moving to non-agriculture jobs. However, most employment gains have occurred in the least productive unorganised (informal) sector: unorganised manufacturing employment grew by 5.4% per year while manufacturing in the organised sector has recorded negative growth.

11. Earnings (and compensation) data for China were subject to a thorough review in Banister (2005), of the United States' Bureau of Labor Statistics (BLS), in an attempt to produce comparable estimates of hourly compensation costs for production workers to be compared with 33 economies for which these data are available at *www.bls.gov/news.release/ichcc.toc.htm*. The paper notes that national urban manufacturing annual earnings estimates reported in the Chinese National Bureau of Statistics (NBS) and used in this Chapter are actually limited to China's cities and do not even include city suburbs. In addition, official estimates of city manufacturing employment and earnings suffer from an incomplete coverage of low-paid migrant workers. This incomplete coverage suggests that rising average manufacturing earnings are likely to be upward biased. Further, the study concludes that taking into account earnings in Town and Village Enterprises (TVEs) in "rural" or non-city manufacturing units reduces considerably hourly compensation costs from 1.19 USD, at official nominal exchange rates, in cities in 2004 to 0.67 USD in China in general (Banister, 2005). The paper does not however compute estimates on manufacturing earnings for China as a whole, as the aim was to produce estimates on compensation costs. For India, data on annual earnings in manufacturing for production and non-production workers are limited to the organised sector covered in the Annual Survey of Industries (ASI). Besides, the overall large NSS survey based wage data shown in Table 1.A1.4 in OECD (2007c) are those used in official documents and by researchers to gauge wage developments in India. It should be noted that wage developments that some researchers consider the upswing in wages in the 1999/2000 large sample survey results to be exaggerated and call for caution when interpreting the results.

12. "India spent 86% of per capita GDP on each student in tertiary education in 2000 while it spent 14% of per capita GDP per student in primary education. By contrast, China spent 10.7% and 12.1% respectively, of per capita GDP per student in tertiary and primary education" (Kochhar *et al.*, 2006). According to World Education Indicators, in 2003 these numbers for India were 77% for tertiary education and 13% for primary education respectively, while the spending imbalance was even more pronounced in Brazil where the corresponding figures were 127% and 11%.

ANNEX 1.A1

Supplementary Tables

Table 1.A1.1. **Labour force participation, employment, unemployment rates in BRICs and selected OECD areas, 1990 to 2005**

Percentages

	Both sexes				Men				Women			
	1990	1994	2000	2005	1990	1994	2000	2005	1990	1994	2000	2005
Labour force participation rates												
Brazil[a]	70.5	72.1	71.4	76.4	93.6	88.4	86.1	88.8	48.8	56.9	57.7	64.9
China (urban)	79.2	77.9	78.7	77.2	. .	. .	85.9	. .	. .	. .	70.9	. .
India[b] (urban)	54.1	52.8	51.6	53.8	81.9	81.5	80.4	81.2	22.6	21.0	20.1	23.8
Russian Federation	77.7	73.4	69.9	72.3	82.8	78.6	74.9	76.2	72.9	68.5	65.3	68.0
Euro area	65.3	66.1	68.3	70.7	79.0	77.9	78.3	79.2	51.7	54.3	58.3	62.1
EU15	68.0	68.3	70.1	72.1	80.7	79.4	79.6	80.2	55.2	57.1	60.7	64.0
OECD	71.9	71.5	72.2	72.3	84.4	83.9	83.7	83.2	59.5	59.3	60.9	62.1
Employment (15 years and over)/population (15-64 years) ratios												
Brazil[a]	67.9	67.8	64.6	69.3	90.0	83.9	79.3	82.5	47.1	52.8	50.7	56.9
China (urban)	73.9	72.7	72.2	70.8	. .	. .	79.4	. .	. .	. .	64.6	. .
India[b] (urban)	. .	49.8	48.5	50.5	. .	77.6	75.9	77.0	. .	19.5	18.6	21.7
Russian Federation	. .	67.5	63.2	66.0	. .	72.1	67.3	69.8	. .	63.1	59.2	62.5
Euro area	68.2	67.5	70.1	70.2	79.2	77.2	79.1	78.1	56.3	57.2	60.9	62.1
EU15	62.3	60.7	64.4	65.7	75.4	71.5	74.0	73.8	49.3	49.9	54.8	57.5
OECD	67.5	66.0	67.8	67.4	79.7	77.8	79.0	77.6	55.4	54.4	56.8	57.3
Unemployment rates												
Brazil[a]	3.7	6.0	9.6	9.3	3.8	5.1	7.8	7.1	3.5	7.2	12.1	12.2
China (urban)	5.7	5.9	8.2	8.3	. .	. .	7.6	. .	. .	. .	9.0	. .
India[b] (urban)	. .	5.1	6.0	6.0	. .	4.6	5.6	5.2	. .	7.1	7.5	9.0
Russian Federation	. .	8.1	9.8	7.9	. .	8.3	10.2	7.8	. .	7.9	9.4	8.0
Euro area	6.2	7.6	5.9	6.4	5.5	7.2	5.5	6.2	7.0	8.1	6.4	6.6
EU15	8.3	11.1	8.2	8.3	6.6	9.9	7.1	7.5	10.8	12.6	9.7	9.2
OECD	6.2	7.7	6.1	6.8	5.6	7.3	5.7	6.6	7.0	8.3	6.7	7.1

. .: Data not available.

a) For Brazil, data for 1994 and 2000 are for 1995 and 1999 respectively and data for 2005 are OECD estimates.

b) For India, estimates are according to current weekly status.

Source: World Bank (2006), *World Development Indicators*; ILO Laborsta database and national estimates for Brazil, India and the Russian Federation (see Table 1.A1.3). For China, OECD estimates benchmarked on the 5th population census in 2000; and OECD Labour Force Statistics database, for EU15 and OECD areas.

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Table 1.A1.2. **Labour force participation, employment, unemployment rates by age groups[a] and gender in BRICs and selected OECD areas, latest year available[b]**

Percentages

	Brazil	China (urban)	India[c] (urban)	Russian Federation	EU15	OECD	Brazil	China (urban)	India[c] (urban)	Russian Federation	EU15	OECD	Brazil	China (urban)	India[c] (urban)	Russian Federation	EU15	OECD
	Both sexes						Men						Women					
	Labour force participation rates																	
15-19	50.7	36.6	26.5	16.5	28.7	31.4	59.4	33.6	37.6	18.5	31.2	34.4	41.7	39.8	13.1	14.5	26.0	28.3
20-24	77.7	93.4	51.8	60.5	64.9	66.2	88.5	92.1	76.5	65.2	69.3	72.6	67.2	94.7	23.8	55.7	60.4	59.8
25-29	82.1	99.0	61.4	85.0	82.1	79.4	94.2	100.0	95.1	90.8	88.3	90.3	70.6	92.7	24.3	79.1	75.7	68.5
30-34	83.2	93.2	64.2	87.2	85.1	80.4	95.5	100.0	98.6	91.2	94.1	94.2	72.0	85.5	29.0	83.2	76.0	66.7
35-39	83.6	97.9	65.9	91.3	85.6	81.7	95.2	100.0	98.3	93.8	94.8	94.6	72.9	89.1	32.4	88.9	76.3	69.1
40-44	82.0	96.4	65.6	98.0	86.0	82.9	93.8	100.0	98.1	99.1	94.3	93.8	71.0	87.3	30.0	96.9	77.7	72.2
45-49	78.1	78.5	63.3	87.1	84.5	81.7	92.1	91.9	97.2	87.8	93.0	91.5	65.4	64.3	25.3	86.6	76.1	72.1
50-54	70.8	58.0	61.2	81.1	79.1	76.9	85.8	76.3	93.4	84.5	89.0	87.4	57.3	38.3	24.6	78.3	69.4	66.7
55-59	60.6	39.2	51.7	50.7	62.4	65.2	77.6	54.8	81.1	61.4	72.4	76.9	45.5	22.3	20.7	42.4	52.5	54.1
60-64	46.7	21.3	30.1	35.5	30.0	41.1	64.9	28.2	40.7	46.7	38.9	51.6	30.9	13.8	19.7	27.9	21.5	31.4
65+	23.1	8.2	17.4	11.8	3.8	11.3	35.1	12.0	32.5	15.8	6.0	16.6	14.1	4.7	3.9	9.5	2.3	7.4
15-24	63.9	63.8	39.0	39.1	47.7	49.5	73.5	61.4	56.5	42.3	51.1	54.0	54.4	66.2	18.4	35.7	44.2	44.9
25-54	80.6	89.7	63.7	88.2	83.9	80.6	93.3	99.1	97.0	91.2	92.4	92.1	69.0	79.7	27.9	85.5	75.3	69.3
55-64	54.3	30.7	31.3	45.5	47.6	54.5	71.9	42.2	53.1	56.7	57.2	65.7	38.9	18.2	10.4	37.3	38.3	43.9
15-64	73.1	77.8	52.7	71.0	71.1	70.2	85.3	84.8	79.9	75.0	78.9	80.3	61.7	70.4	23.1	67.4	63.3	60.3
15+	75.4	78.7	53.8	72.3	72.1	72.5	88.4	85.9	81.2	76.2	80.2	83.2	63.3	70.9	23.8	68.6	64.0	62.1
	Employment/population ratios																	
15-19	39.4	28.7	22.7	11.9	23.2	26.6	48.9	24.9	32.1	13.7	25.3	29.0	29.6	32.7	11.4	10.0	20.9	24.0
20-24	65.9	81.3	43.9	53.0	54.8	58.0	78.1	80.1	66.5	56.5	58.6	63.3	54.1	82.5	18.2	49.4	50.8	52.7
25-29	74.3	91.3	56.0	78.8	73.4	72.7	88.2	98.0	88.3	84.3	79.6	83.0	61.2	84.2	20.5	73.3	67.1	62.3
30-34	77.3	87.0	61.7	81.4	78.4	75.3	91.1	94.6	96.0	84.9	87.6	88.8	64.6	78.9	26.6	78.0	69.1	61.9
35-39	78.5	90.9	64.3	86.0	79.5	77.2	91.2	99.4	96.6	88.3	89.1	89.9	67.0	81.9	30.9	83.8	69.8	64.6
40-44	77.7	89.1	64.6	92.6	80.4	78.6	90.4	97.6	96.9	92.9	89.0	89.4	66.1	79.8	29.3	92.4	71.8	68.1
45-49	74.4	73.9	62.1	82.1	79.4	77.6	88.5	86.6	95.4	82.4	87.8	87.2	61.7	60.4	24.7	81.9	71.0	68.3
50-54	67.9	55.8	59.7	76.7	74.1	73.1	82.6	72.6	91.1	79.8	83.7	83.1	54.8	37.6	24.0	74.2	64.7	63.4
55-59	58.5	38.2	50.8	48.5	58.1	62.1	75.0	53.2	79.9	58.3	67.5	72.9	43.9	22.0	20.2	40.9	48.9	51.7
60-64	45.2	21.1	29.7	32.7	28.2	39.3	62.7	27.9	40.2	43.4	36.5	49.1	30.0	13.6	19.3	25.3	20.4	30.3
65+	22.8	8.1	17.2	11.8	3.8	11.1	34.6	11.9	32.1	15.8	5.9	16.2	14.0	4.7	3.9	9.5	2.2	7.3
15-24	52.4	53.8	33.2	33.0	39.8	42.9	63.0	51.1	48.8	35.6	42.8	46.6	41.7	56.7	14.8	30.3	36.7	39.1
25-54	75.4	83.6	61.3	82.9	77.7	75.8	89.0	93.0	94.0	85.4	86.4	87.0	63.0	73.5	26.1	80.6	69.1	64.8
55-64	52.5	30.1	30.8	43.1	44.5	52.0	69.5	41.2	52.3	53.5	53.4	62.5	37.6	18.1	10.2	35.4	35.8	42.0
15-64	66.4	71.4	49.5	65.9	65.2	65.5	79.3	78.3	75.7	69.3	72.9	75.0	54.3	64.1	21.0	62.8	58.2	56.1
15+	68.7	72.2	50.5	67.1	66.1	67.7	82.4	79.4	77.0	70.5	74.1	77.9	55.9	64.6	21.7	64.0	57.5	57.8

Table 1.A1.2. **Labour force participation, employment, unemployment rates by age groups[a] and gender in BRICs and selected OECD areas, latest year available[b]** (cont.)

Percentages

	Brazil	China (urban)	India[c] (urban)	Russian Federation	EU15	OECD	Brazil	China (urban)	India[c] (urban)	Russian Federation	EU15	OECD	Brazil	China (urban)	India[c] (urban)	Russian Federation	EU15	OECD
	Both sexes						Men						Women					
	Unemployment rates																	
15-19	22.3	21.8	14.2	28.0	19.1	15.5	17.6	26.0	14.6	25.9	18.7	15.8	29.2	18.0	12.9	30.9	19.8	15.2
20-24	15.2	13.0	15.3	12.4	15.6	12.4	11.8	13.1	13.1	13.4	15.3	12.8	19.6	12.8	23.4	11.3	15.9	11.9
25-29	9.5	7.8	8.7	7.2	10.5	8.5	6.4	6.6	7.1	7.1	9.9	8.1	13.4	9.1	15.5	7.4	11.4	8.9
30-34	7.2	6.7	3.9	6.6	7.9	6.3	4.6	5.8	2.6	6.9	6.9	5.7	10.3	7.8	8.2	6.2	9.1	7.2
35-39	6.0	7.1	2.4	5.8	7.1	5.6	4.3	6.3	1.7	5.8	6.0	5.0	8.1	8.1	4.6	5.7	8.5	6.5
40-44	5.2	7.6	1.5	5.4	6.5	5.1	3.7	6.9	1.2	6.3	5.6	4.7	6.9	8.6	2.3	4.6	7.6	5.7
45-49	4.7	5.9	1.9	5.8	6.1	5.0	3.9	5.8	1.9	6.1	5.6	4.7	5.8	6.1	2.4	5.5	6.8	5.3
50-54	4.1	3.8	2.5	5.4	6.3	4.9	3.8	4.8	2.5	5.6	5.9	4.9	4.4	1.8	2.4	5.3	6.8	5.0
55-59	3.4	2.4	1.7	4.3	6.8	4.8	3.3	2.9	1.5	5.0	6.8	5.1	3.4	1.1	2.4	3.5	6.9	4.5
60-64	3.2	1.0	1.5	8.0	5.8	4.2	3.4	1.0	1.4	7.1	6.2	4.7	2.7	1.0	1.7	9.2	5.1	3.5
65+	1.2	0.8	1.2	0.0	1.1	2.1	1.5	0.6	1.4	0.0	1.0	2.3	0.7	1.2	0.0	0.0	1.2	1.8
15-24	18.1	15.6	14.9	15.6	16.6	13.3	14.2	16.8	13.6	16.0	16.3	13.7	23.3	14.4	19.7	15.1	17.0	12.8
25-54	6.4	6.9	3.8	6.0	7.4	5.9	4.6	6.2	3.1	6.3	6.6	5.5	8.7	7.8	6.5	5.7	8.3	6.4
55-64	3.3	1.9	1.5	5.3	6.5	4.6	3.4	2.3	1.4	5.5	6.6	5.0	3.2	1.0	1.7	5.0	6.4	4.2
15-64	9.1	8.3	6.1	7.2	8.4	6.8	7.0	7.7	5.2	7.6	7.7	6.5	11.9	9.0	9.3	6.8	9.2	7.1
15+	8.9	8.2	6.0	7.1	8.3	6.6	6.8	7.6	5.2	7.5	7.6	6.4	11.7	9.0	9.0	6.7	9.1	6.9

a) For China, 15-19 refers to 16-19, 15-24 to 16-24, 15-64 to 16-64 and 15+ to 16 and over; and for the Russian Federation, 65+ refers to 60-72.

b) Data refer to 2004 for Brazil, to 2000 for China, to 2004/05 for India, and to 2005 for the Russian Federation, EU15 and OECD.

c) For India, estimates are according to current weekly status.

Source: National Household Survey – *Pesquisa Nacional por Amostra de Domicílios* (PNAD), for Brazil. For China, OECD estimates based on the 5th population census in 2000. National Sample (large) Survey (NSS) 61st Round, 2004/05, for India. Federal Service for State Statistics (*Goskomstat*) for the Russian Federation. ILO Laborsta database; and OECD, Labour Force Statistics database, for EU15 and OECD areas.

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Table 1.A1.3. **Employment levels and growth by type of employment, 1990 to 2005**

Panel A. **China**

	Employment (millions)			Average annual growth (%)			Percentage of total employment		
	1990	2000	2005	1990-2005	1990-2000	2000-05	1990	2000	2005
Urban and rural employment	**647.5**	**720.9**	**758.3**	**1.1**	**1.1**	**1.0**	**100.0**	**100.0**	**100.0**
Rural employment	**477.1**	**489.3**	**484.9**	**0.1**	**0.3**	**−0.2**	**73.7**	**67.9**	**64.0**
Formal employment	**416.7**	**480.0**	**481.0**	**1.0**	**1.4**	**0.0**	**64.4**	**66.6**	**63.4**
Formal sector	*92.7*	*128.2*	*142.7*	*2.9*	*3.3*	*2.2*	*14.3*	*17.8*	*18.8*
Township and village enterprises (TVEs)	92.7	128.2	142.7	2.9	3.3	2.2	14.3	17.8	18.8
Informal sector	*324.0*	*351.8*	*338.3*	*0.3*	*0.8*	*−0.8*	*50.0*	*48.8*	*44.6*
Registered private enterprises	1.1	11.4	23.7	22.5	26.0	15.8	0.2	1.6	3.1
Self-employed – individual businesses	14.9	29.3	21.2	2.4	7.0	−6.3	2.3	4.1	2.8
Small farms	308.0	311.1	293.4	−0.3	0.1	−1.2	47.6	43.2	38.7
Informal employment	**60.4**	**9.3**	**3.9**	**−16.7**	**−17.0**	**−16.0**	**9.3**	**1.3**	**0.5**
Urban employment	**170.4**	**231.5**	**273.3**	**3.2**	**3.1**	**3.4**	**26.3**	**32.1**	**36.0**
Formal employment	**147.3**	**149.9**	**174.6**	**1.1**	**0.2**	**3.1**	**22.7**	**20.8**	**23.0**
Formal sector	*140.6*	*115.9*	*112.3*	*−1.5*	*−1.9*	*−0.6*	*21.7*	*16.1*	*14.8*
Traditional formal enterprises[a]	139.0	96.0	73.0	−4.2	−3.6	−5.3	21.5	13.3	9.6
Emerging formal enterprises[b]	1.6	19.8	39.3	23.7	28.5	14.6	0.3	2.8	5.2
Informal sector	*6.7*	*34.0*	*62.4*	*16.0*	*17.6*	*12.9*	*1.0*	*4.7*	*8.2*
Registered private enterprises	0.6	12.7	34.6	31.5	36.4	22.2	0.1	1.8	4.6
Self-employed – individual businesses	6.1	21.4	27.8	10.6	13.3	5.4	0.9	3.0	3.7
Informal employment	**23.1**	**81.6**	**98.7**	**10.2**	**13.4**	**3.9**	**3.6**	**11.3**	**13.0**

Panel B. **India**[c]

	Levels (millions)			Average annual growth (%)				Percentage of total employment		
	1993/94	1999/2000	2004/05	1983-94	1994-2005	1994-2000	2000-05	1993/94	1999/2000	2004/05
Population	**895.1**	**1 004.1**	**1 087.2**	**2.0**	**1.8**	**1.9**	**1.6**			
Labour force	**391.9**	**406.1**	**467.4**	**2.2**	**1.6**	**0.6**	**2.9**			
Total employment	**374.5**	**397.0**	**456.7**	**2.0**	**1.8**	**1.0**	**2.8**	**100.0**	**100.0**	**100.0**
Formal salaried workers	**49.0**	**55.0**	**65.7**	**1.4**	**2.7**	**1.9**	**3.6**	**13.1**	**13.9**	**14.4**
Informal employment	**325.0**	**342.0**	**391.0**	**2.0**	**1.7**	**0.9**	**2.7**	**86.8**	**86.1**	**85.6**
Self-employed	205.0	210.0	259.1	1.5	2.2	0.4	4.3	54.7	52.9	56.7
Casual workers	120.0	132.0	131.8	3.0	0.9	1.6	0.0	32.0	33.2	28.9
Organised sector employment	27.4	28.1	27.1	1.2	−0.1	0.4	−0.7	7.3	7.1	5.9
Public sector	19.0	19.0	18.6	1.6	−0.2	0.0	−0.5	5.1	4.8	4.1
Private sector	8.0	9.0	8.6	0.0	0.6	2.0	−1.0	2.1	2.3	1.9
Rural employment	**292.5**	**303.6**	**355.5**	**1.7**	**1.8**	**0.6**	**3.2**	**78.1**	**76.5**	**77.8**
Formal salaried workers	**18.9**	**21.0**	**25.3**	**0.2**	**2.7**	**1.8**	**3.8**	**5.0**	**5.3**	**5.5**
Informal employment	**273.6**	**275.5**	**329.9**	**1.8**	**1.7**	**0.1**	**3.7**	**73.1**	**69.4**	**72.2**
Self-employed	169.6	160.9	213.3	1.2	2.1	−0.9	5.8	45.3	40.5	46.7
Casual workers	104.0	114.6	116.6	2.8	1.0	1.6	0.4	27.8	28.9	25.5
Urban employment	**81.8**	**93.6**	**101.2**	**3.0**	**2.0**	**2.3**	**1.6**	**21.8**	**23.6**	**22.2**
Formal salaried workers	**32.2**	**37.4**	**40.4**	**2.9**	**2.1**	**2.5**	**1.5**	**8.6**	**9.4**	**8.8**
Informal employment	**49.5**	**56.2**	**61.0**	**3.1**	**1.9**	**2.1**	**1.7**	**13.2**	**14.2**	**13.4**
Self-employed	34.6	39.3	45.8	3.1	2.6	2.2	3.1	9.2	9.9	10.0
Casual workers	15.0	16.9	15.2	3.2	0.2	2.1	−2.1	4.0	4.3	3.3

Table 1.A1.3. **Employment levels and growth by type of employment, 1990 to 2005** (cont.)

Panel C. **Brazil**[d]

	Levels (milions)				Average annual growth (%)	Percentage of total employment			
	2001	2002	2003	2004	2001-04	2001	2002	2003	2004
Employment by status (millions)	**76.1**	**79.0**	**80.2**	**84.6**	**3.6**	**100.0**	**100.0**	**100.0**	**100.0**
Wage earners	41.3	42.8	43.6	46.7	4.2	54.3	54.3	54.4	55.2
Domestic workers	5.9	6.1	6.2	6.5	2.9	7.8	7.7	7.7	7.7
Own account workers	17.0	17.6	17.9	18.6	3.1	22.3	22.3	22.3	22.0
Employers	3.2	3.4	3.4	3.5	2.7	4.2	4.2	4.2	4.1
Unpaid family workers	5.6	5.8	5.7	5.9	1.5	7.4	7.4	7.1	7.0
Others	3.1	3.3	3.5	3.5	4.5	4.0	4.1	4.3	4.1

	Total		Men		Women	
	1990	2003	1990	2003	1990	2003
Non-agricultural employment by type of employment (%)						
Informal sector	*40.6*	*44.6*	*36.1*	*40.5*	*47.6*	*49.8*
Self-employed	20.3	21.0	19.6	22.7	21.3	18.8
Domestic service	6.9	9.3	0.5	0.9	16.7	20.1
Micro-enterprises (less than six employees)	13.5	14.3	16.0	16.9	9.6	10.9
Formal sector	*59.4*	*55.4*	*63.9*	*59.5*	*52.4*	*50.2*
Public sector	11.0	13.8	. .	11.0	. .	17.3
Firms with more than five employees	48.4	41.7	. .	48.5	. .	32.9

Table 1.A1.3. **Employment levels and growth by type of employment, 1990 to 2005** *(cont.)*

Panel D. **Russian Federation**

	Millions			Average annual growth (%)			Percentages		
	1994	2000	2004	1994-2004	1994-2000	2000-04	1994	2000	2004
	Both sexes								
Total employment	**64.8**	**64.5**	**67.1**	**0.4**	**−0.1**	**1.0**	**100.0**	**100.0**	**100.0**
Wage and salaried workers (employees)	60.4	58.5	62.6	0.4	−0.5	1.7	93.2	90.7	93.2
Self-employed	4.3	5.9	4.5	0.4	5.4	−6.6	6.6	9.2	6.7
Employers	0.2	0.5	0.9	14.4	14.6	14.0	0.4	0.8	1.4
Own-account workers	1.0	4.6	3.4	13.4	30.0	−7.6	1.5	7.1	5.0
Members of producer's co-operatives	3.1	0.8	0.2	−23.7	−20.9	−27.7	4.8	1.2	0.3
Unpaid family workers	0.1	0.1	0.1	−3.9	−0.9	−8.3	0.1	0.1	0.1
	Men								
Total employment	**34.1**	**33.4**	**34.2**	**0.0**	**−0.4**	**0.6**	**34.1**	**33.4**	**34.2**
Wage and salaried workers (employees)	31.4	30.1	31.6	0.0	−0.7	1.2	92.1	90.3	92.4
Self-employed	2.6	3.2	2.6	−0.2	3.2	−5.2	7.7	9.6	7.5
Employers	0.2	0.4	0.6	11.5	12.9	9.4	0.6	1.2	1.7
Own-account workers	0.6	2.3	1.9	11.1	23.6	−5.2	1.9	6.9	5.5
Members of producer's co-operatives	1.8	0.5	0.1	−23.0	−19.9	−27.4	5.3	1.4	0.4
Unpaid family workers	0.0	0.0	0.0	−1.6	0.0	−4.0	0.1	0.1	0.1
	Women								
Total employment	**30.7**	**31.1**	**33.0**	**0.7**	**0.2**	**1.5**	**30.7**	**31.1**	**33.0**
Wage and salaried workers (employees)	29.0	28.3	31.0	0.7	−0.4	2.3	94.5	91.1	94.1
Self-employed	1.7	2.7	1.9	1.4	8.5	−8.4	5.4	8.8	5.8
Employers	0.0	0.1	0.3	22.1	20.4	24.6	0.2	0.5	1.0
Own-account workers	0.3	2.3	1.5	17.3	40.1	−10.1	1.0	7.4	4.5
Members of producer's co-operatives	1.3	0.3	0.1	−24.7	−22.4	−28.1	4.3	0.9	0.2
Unpaid family workers	0.0	0.0	0.0	−8.8	−2.4	−17.6	0.1	0.1	0.0

. .: Data not available.

a) State-owned and collective-owned enterprise units.

b) Co-operative enterprises, joint-ownership enterprises, limited liability corporations, shareholding corporations and foreign-fundedenterprises including those funded by residents of Hong Kong, China and Macao.

c) Employment and unemployment figures are according to usual principal and subsidiary status, and include workers aged five years or more as reported in official statistics.

d) Employment and unemployment figures cover persons aged 10 years or more.

Source: China Statistical Yearbook 2006 and Ghose (2005), for China. Planning Commission (2001), Sundaram (2004) and Secretariat estimates for 2004/05, for India. ILO Regional Database for Latin America and the Caribbean for urban employment by type of employment; and National Household Sample Survey (PNAD) for employment by status, for Brazil. ILO (2005), *Key Indicators of the Labour Market* (KILM); and Sample Survey on Employment from the Federal State Statistics Service (*Goskomstat*) for the Russian Federation.

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Chapter 2

More Jobs but Less Productive? The Impact of Labour Market Policies on Productivity

The Restated OECD Jobs Strategy identifies a number of different policy packages that can generate higher employment. But what impact do these policies have on productivity? Is a market-reliant labour market the only way to achieve high employment and strong productivity growth simultaneously? Labour market policies can increase productivity by encouraging training, enabling the movement of resources into emerging, high-productivity activities, improving the quality of job matches and increasing the spread of technological change. However, pro-employment policies can depress measured productivity by, among other things, increasing the proportion of low-skilled workers employed. The bottom line is that both the employment and productivity impacts of policy reforms should be taken into account when evaluating their success.

Introduction

Achieving higher GDP per capita is one of the primary economic policy objectives of OECD countries. Higher GDP per capita brings in its train better living standards through higher consumption levels and also creates more room for investing in other factors that improve the quality of life, such as health, education and the environment.

Growth in GDP per capita can be decomposed into the growth of two components: labour utilisation and labour productivity. The OECD Growth Study found that labour productivity growth is particularly important in promoting GDP per capita growth (OECD, 2003a). During the 1990s, labour productivity growth accounted for at least half of GDP per capita growth in most OECD countries, and a considerably higher proportion in many of them. As the populations of OECD countries age and the proportion of the population of working age falls, continued growth in productivity, along with increased labour force participation among currently underrepresented groups, will be crucial to improve living standards.

Both labour utilisation and labour productivity depend to some extent on labour market policies. The effect of such policies on labour utilisation is well established. Thus, the Restated OECD Jobs Strategy (OECD, 2006a, 2006b) identifies policy packages that reduce unemployment and increase employment, potentially raising GDP per capita. It has been argued, however, that certain labour market reforms that increase labour utilisation may at the same time reduce productivity growth and therefore have ambiguous overall effects on living standards, at least as measured by GDP per capita. For instance, Heckman, Ljunge and Ragan (2006) argue that some of the employment-enhancing policy packages that were praised in the Restated OECD Jobs Strategy are productivity-depressing, and that only rigorously market-oriented economies have managed to sustain employment *and* productivity growth simultaneously.

In order to improve our understanding of this issue, this chapter examines the impact of various labour market policies on productivity levels and growth rates (both labour productivity and multi-factor productivity are considered in this chapter). Key channels through which labour market policies affect productivity are identified and assessed empirically.

Section 1 examines the productivity performance of OECD countries over the past decade and briefly discusses the main determinants of productivity growth. Section 2 looks at the possible linkages between labour market policies and productivity and estimates the impact of selected policies. The chapter concludes with a discussion of the overall productivity impact of the recommendations put forward in the Restated OECD Jobs Strategy and provides some suggestions for further research.

Main findings

- *Employment growth tends to be associated with lower average measured labour productivity growth – but this does not mean that higher employment causes productivity of individual workers to fall.* This result arises because, other things being equal, policy reforms which

increase employment can promote job opportunities for low-skilled workers, generate diminishing returns to labour input or expand labour-intensive activities, thereby exerting downward pressure on average measured labour productivity. However, this does not mean that policies that raise employment will lead to lower productivity growth of individual workers. Indeed, pro-employment policies may exert a direct effect on individuals' productivity – which may either offset the negative aggregate productivity effect associated with employment gains or aggravate it, depending on the policy. As a consequence, *when evaluating the impact of labour market reforms on GDP per capita, it is crucial to examine both the employment and labour productivity effects of reforms.*

- It has been claimed by some that only countries which emphasise market-oriented policies (characterised by limited welfare benefits and light regulation) may enjoy both successful employment performance and strong labour productivity growth simultaneously, unambiguously improving GDP per capita. This claim is not supported by the evidence in this chapter, however. Indeed the chapter finds that *other successful employment performers* (which combine strong work incentives with generous welfare protection and well-designed regulation) *had, on average over the past decade, similar GDP per capita growth to that recorded in more market-reliant countries.* However, within-group differences in GDP per capita growth trends are larger than between-group differences.

- Over and above their employment effects, *labour market reforms can have a sizeable impact on productivity levels and growth rates through multiple channels,* including: i) by creating incentives for employers or workers to invest in *training* (a 10% increase in the stock of human capital accumulated through job-related training is found to be associated with an increase of 1.5 percentage points in the level of productivity); *ii)* by facilitating *reallocation of resources* into activities where productivity is above-average or grows more rapidly; *and iii)* by generating or maintaining high-quality *job matches.* More specifically, the chapter examines the productivity impact of four types of policy, for which data needed to perform empirical analysis exist.

- *First, stringent employment protection for regular contracts has a small negative impact on long-run productivity growth,* most likely by restricting the movement of labour into emerging, high-productivity activities, firms or industries. The estimated impact is small but statistically significant. Conservative estimates suggest that if OECD countries liberalised provisions for regular contracts to reflect those of the United States, labour productivity growth would increase, on average, by about 0.04 percentage points per year. The effect is larger and more robust in the case of multi-factor productivity growth, which measures efficiency gains and technological change.

- *Second, increases in the ratio of minimum to median wages appear to have a positive impact on the aggregate level of measured productivity.* In the long-run, increasing this ratio by 10 percentage points could increase average labour productivity by almost 2 percentage points. The favourable effect of the minimum wage on productivity may be due to improved incentives for investing in training, or come as a result of substitution of skilled labour for unskilled labour. The relative importance of the two interpretations is key for policy purposes but could not be assessed empirically in the chapter.

- *Third, reforms that reduce the generosity of unemployment benefits are likely to reduce the aggregate level of measured productivity.* There are three reasons for this. First, reducing the generosity of unemployment benefits can adversely affect productivity by limiting the time and/or resources available to the unemployed to find a well-matched job vacancy.

Second, by discouraging workers from searching for high-risk, high-productivity jobs, lower benefits may dissuade firms from creating such jobs. Third, lower benefits improve work incentives among job seekers, who are disproportionately low-skilled. If these jobseekers move to employment, the skill composition of the workforce will be altered and average measured productivity reduced. *However, the overall long-run impact* of lowering unemployment benefits *on the level of GDP per capita* (incorporating both the positive employment effect and the negative productivity effect) *appears to be negligible.*

● *Finally, additional parental leave appears to increase the level of productivity, in part by allowing workers with family responsibilities to maintain their links to the workforce* and capitalise on prior investments in firm- or industry-specific human capital. The magnitude of this effect is, however, small and not always statistically robust. While the results reported in this chapter focus on parental leave, it is possible that other policies that encourage sustained workforce participation by parents, such as child care or family-friendly working arrangements, could have a similar positive impact on productivity.

● Previous empirical evidence on the negative growth impact of excessive tax burdens and anti-competitive product market regulation together with the results presented in this chapter suggest that, overall, the *reforms advocated in the Restated OECD Jobs Strategy are likely to have a beneficial impact on GDP per capita.* In addition, even where policies appear to have a negligible overall impact on GDP per capita the long-term social and economic benefits of higher employment and lower welfare dependency for individuals and society as a whole should be considered as part of a thorough evaluation of their success.

1. Economic growth in OECD countries

1.1. *Decomposing GDP per capita growth*

OECD countries grew at very different rates over the past decade. Figure 2.1 shows that trend annual growth rates ranged from above 5% a year for Ireland to below 1% a year for Switzerland, with a cross-country average of 2.4% a year (see OECD, 2007a, for a more detailed overview of broad trends in growth performance).

Labour productivity performance over the past decade has been mixed

GDP per capita growth can be decomposed into the growth of labour productivity and the growth of labour utilisation. Figure 2.1 shows that growth of labour productivity (GDP per hour worked) was particularly important in driving economic growth over the past decade. It is therefore not surprising that the wide cross-country variation in GDP per capita growth is mirrored by similar variability in labour productivity growth. In fact, trend growth of labour productivity ranged from over 4% per year in Ireland, Korea, Poland and the Slovak Republic, and to less than 1% per year in Mexico, the Netherlands and Spain.[1]

Decomposition of labour productivity growth by industry highlights the disparate patterns of growth across OECD countries. In the United States, productivity growth during the 1990s was concentrated in high- and medium-high-technology manufacturing industries and in low-skilled service industries such as retail. In contrast, productivity growth in Europe and Japan was concentrated in medium- and low-technology manufacturing industries and high-skilled service industries such as communication and financial services (Nicoletti and Scarpetta, 2003). Productivity growth within existing firms and industries has contributed more to overall growth than inter-industry or inter-firm movement of resources. Entry of new, highly productive firms was an important driver of growth in European countries in the 1990s, but exit of older, less productive firms played a larger role in the United States (OECD, 2003a).

Figure 2.1. **There were large cross-country differences in economic growth in the past decade**

Average annual trend growth rate of GDP per capita and its components in percentage, 1995 to 2005[a]
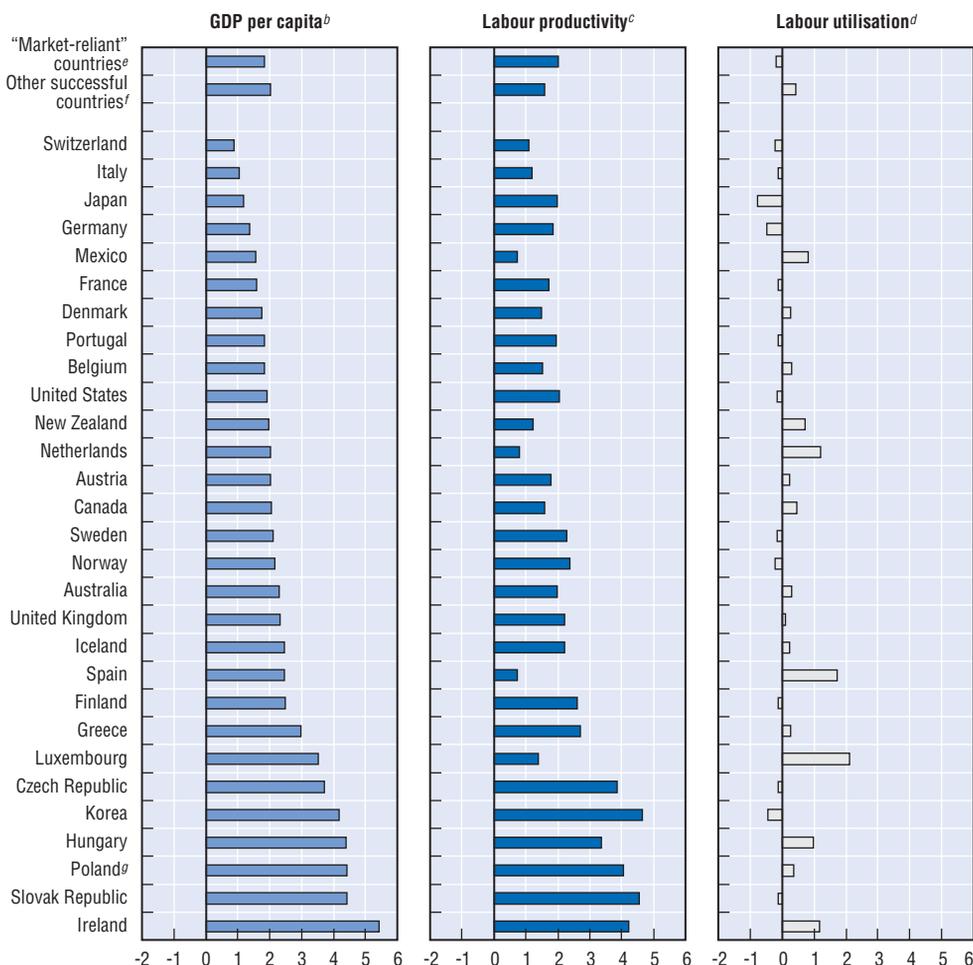
a) Countries ordered from top to bottom by increasing average annual growth rate of GDP per capita.
b) GDP divided by total population.
c) GDP per hour worked.
d) Total hours worked divided by total population.
e) GDP-weighted average of Australia, Canada, Japan, New Zealand, Switzerland, the United Kingdom and the United States.
f) GDP-weighted average of Austria, Denmark, the Netherlands, Norway and Sweden.
g) 2000-05.
While Korea was included in the "market-reliant countries" grouping in OECD (2006a, 2006b) and Ireland in the "other successful countries" group, they were excluded here because GDP per capita growth in these countries were extreme values and possibly the result of very specific national experiences that are unlikely to be exportable to other OECD countries.

Source: OECD (2007a).

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1.2. *The statistical relationship between employment growth and aggregate productivity growth*

Employment growth and aggregate productivity growth are negatively correlated…

Perhaps of greater consequence when examining the impact of labour market policies, Figure 2.2 shows that there is a negative correlation between the growth rates of labour utilisation and measured average labour productivity. Over the period 1970-2005, the

Figure 2.2. **Labour utilisation growth**[a] **and labour productivity growth**[b]
are negatively correlated

Average annual growth rates in percentage, 1970-2005
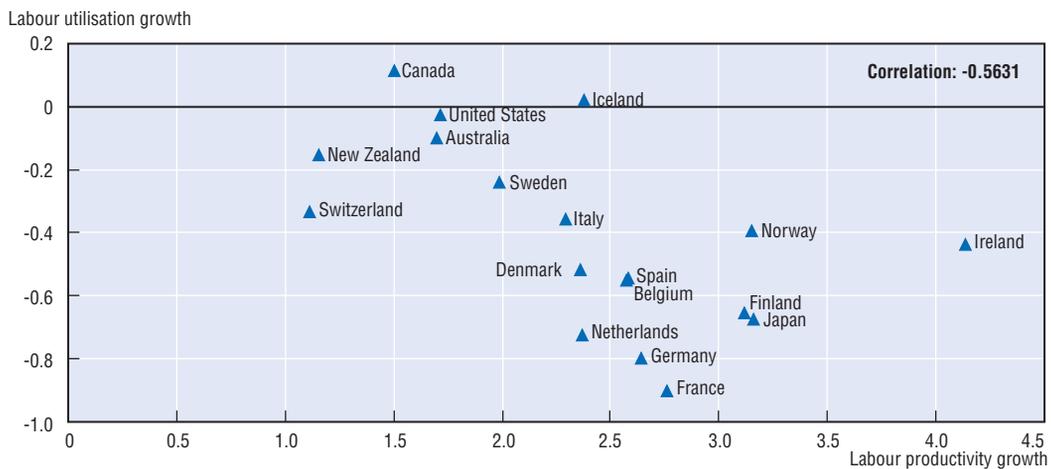
a) Growth of total hours worked divided by total population.
b) Growth of GDP per hour worked.
Source: OECD Productivity database.

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cross-country correlation coefficient between growth of hours per capita and labour productivity growth was –0.56 (statistically significant at the 5% level). This negative correlation appears to be a long-term phenomenon rather than simply reflecting opposing movements of employment and productivity over the business cycle.

The negative relationship between employment growth and average measured labour productivity growth has been highlighted in previous studies (see *e.g.* OECD, 2007a) and has a number of explanations. First, it arises, in part, because conventional measures of labour productivity do not adequately control for changes in the quality of labour.[2] Aggregate employment growth is usually associated with faster employment growth for the low-educated than for the highly-educated, so reduces the average level of skills and productivity among the employed (see *e.g.* Nickell and Bell, 1996; Belorgey, Lecat and Maury, 2006). Thus, an increase in employment with no change in the average productivity per unit of skilled labour and/or individual productivity for those already in employment would lead to a reduction in average measured labour productivity. Second, if employment increases as a result of greater labour supply, labour-intensive (low-productivity) activities are likely to expand. While the productivity of individual firms or industries could remain unchanged, an expansion of low-productivity production will depress aggregate productivity levels (McGuckin and van Ark, 2004; Dew-Becker and Gordon, 2006). Finally, other things being equal, diminishing returns to labour inputs imply that the marginal impact of higher employment rates (or longer hours of work per employee) on output will be smaller (see *e.g.* Bourlès and Cette, 2005).

In other words, if no other link existed between structural reforms and productivity, a policy reform that increased employment would have a less-than-proportionate impact on GDP per capita because of its dampening effect on average measured labour productivity, even with no reduction in the output of workers already in employment before the reform. A number of authors have argued that this dampening effect can be large. For instance,

Dew-Becker and Gordon (2006) estimate that, other things being equal, an increase in total hours per capita of 1% will reduce labour productivity by 0.7% and result in an overall increase in GDP per capita of only 0.3%. Similar results are found by Belorgey, Lecat and Maury (2006), Bourlès and Cette (2005, 2007), Gust and Marquez (2004) and McGuckin and van Ark (2004), although the latter argue that employment growth has a productivity-depressing effect only in the short-run. The impact of labour market policies on average measured productivity resulting solely from their effect on employment is referred to in the remainder of this chapter as a "composition effect".

... therefore evaluating the success of structural reforms by measuring aggregate labour productivity growth can be misleading

Although more research is needed on this issue, the negative correlation between employment growth and average measured labour productivity growth suggests that evaluating the success of employment-enhancing structural reforms by measuring labour productivity growth can be misleading. Policy reforms that boost employment but do not have an independent impact on technological change or efficiency could have a negative impact on average measured labour productivity growth simply by increasing the proportion of low-skilled workers employed (thereby reducing the average quality of the labour input), creating opportunities for labour-intensive activities and generating decreasing returns to labour input (for a given capital stock). However, any slowdown in average measured productivity resulting directly from a change in employment is, to a large extent, a *statistical artefact* and does not imply that individual productivity has fallen. Its implications for policy evaluation, therefore, are not immediately obvious.[3]

A comparison of the growth and productivity performance of so-called "market-reliant countries" and "other countries with successful employment performance" (the two country groups with successful labour market packages as identified in the Restated OECD Jobs Strategy, see OECD 2006a, 2006b) shows how misleading an assessment based only on productivity might be. Trend annual labour productivity growth was 0.4 percentage points faster in market-reliant countries than in other successful performers over the past decade (Figure 2.1). But, labour utilisation growth was 0.6 percentage points lower in market-reliant countries. As a result, average GDP per capita growth in market-reliant countries was 0.2 percentage points slower than in the other successful countries.[4] This comparison must, however, be made with great caution: Figure 2.1 also shows that there is much more variation in GDP per capita growth within groups than between groups, thereby making it difficult to draw general inferences about policy packages.

1.3. Sources of labour productivity growth in OECD countries

Over and above composition effects due to changes in labour utilisation, cross-country differences in labour productivity growth are the result of a range of factors, including among others labour market policies and institutions. A full analysis of these factors goes beyond the scope of this chapter. However, a brief summary of the main sources of labour productivity growth, other than labour market policies, is presented below, drawing heavily on the results from previous OECD research on economic growth (OECD, 2003a, 2007a). The potential influence of labour market policies on these factors, and subsequently on productivity growth, is examined in more detail in Section 2.

Capital deepening and multi-factor productivity

Historically, capital deepening (or growth of the capital-to-labour ratio) is one of the major determinants of labour productivity growth. Reliable estimates attribute about half of aggregate output growth in the last 40 years of the 20th century to physical capital accumulation (de la Fuente and Ciccone, 2002). Figure 2.3 shows that, with the exception of Finland, most OECD countries experienced capital deepening since 1995. Capital deepening accounted for, on average, 45% of labour productivity growth in the past decade, with the remainder explained by multi-factor productivity (MFP) growth, which measures average efficiency gains and technological change.[5] Yet, cross-country differences in labour productivity growth were essentially due to cross-country differences in MFP growth.[6] MFP growth was particularly high in Ireland, Finland and Greece, close to zero in Denmark and negative in Italy and Spain. Therefore, factors influencing MFP growth will also be key determinants of labour productivity and GDP per capita growth.

Figure 2.3. **Cross-country differences in labour productivity growth are mainly due to MFP growth patterns**

Decomposition of average annual growth rate of GDP per hour worked into average annual growth rate of MFP and average annual growth rate of capital input, 1995 to 2005[a, b]
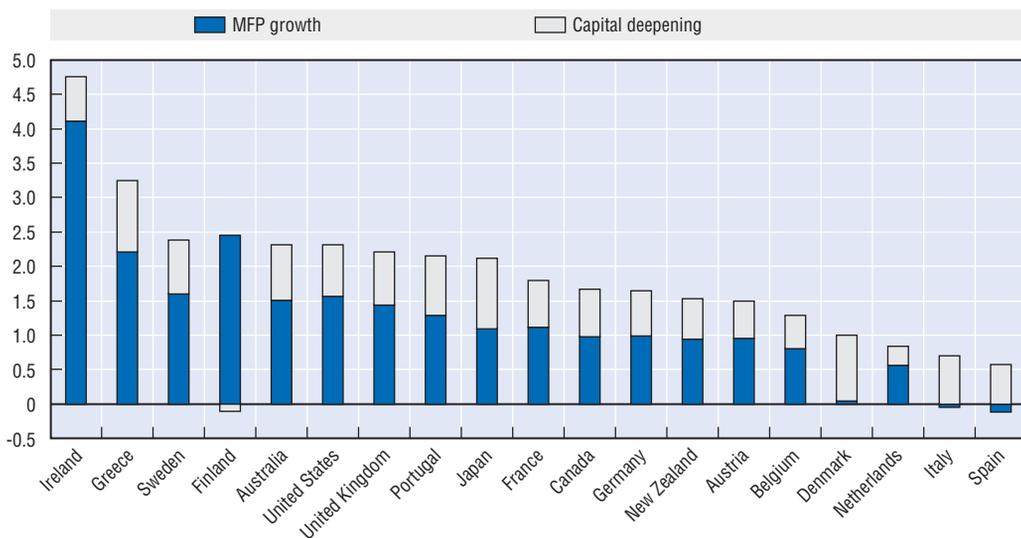
MFP: Multi-factor productivity.
a) Calculated using 1995-2004 data for Australia, Japan and Spain and 1995-2003 for Austria, Belgium, Denmark, Finland, Greece, Ireland, Italy, the Netherlands, Portugal, Sweden and the United Kingdom.
b) Countries ordered from left to right by decreasing average annual growth rate of labour productivity.
Source: OECD Productivity database.

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Human capital

There is broad consensus that human capital is a key determinant of GDP per capita growth. Recent macroeconomic estimates suggest that one additional year of schooling may raise GDP per capita in OECD countries by over 5% (Bassanini and Scarpetta, 2002a; Cohen and Soto, 2007; de la Fuente and Domenéch, 2006; OECD, 2003b), which is broadly consistent with estimates from microeconomic studies (Temple, 2001; Krueger and Lindahl, 2001). Less than half of this effect can be attributed to the fact that better skills support labour market participation and employment, thereby enhancing the potential for growth (OECD, 2004).

Better skills also help to speed up the pace of technological change, thus contributing directly to economic growth.[7] Some researchers estimate that one additional year of education can increase the annual growth rate of MFP by as much as 0.9 percentage points through this channel (de la Fuente and Ciccone, 2002).

Macroeconomic studies of the impact of human capital on productivity typically focus on the impact of initial education (see Sianesi and van Reenen, 2003, for a survey). However, continuous job-related training also affects the overall level of human capital in the workforce, and could therefore influence productivity. Due to measurement problems, however, there are relatively few studies on the productivity effects of training.[8] Available studies typically estimate production functions using industry- or firm-level data and find that a 10% increase in the stock of human capital due to job-related training leads to an increase in MFP of between 0.5% and 1.5% (see Box 2.1). While smaller than estimates of the impact of initial education on productivity, these results indicate that job-related training, and policies that affect its provision, are likely to be an important driver of productivity.

Catching up

At least some of the observed cross-country variation in labour productivity and MFP growth is likely to be the result of low-productivity countries "catching up" to countries that are closer to the technology frontier. Catching up played a major role in OECD growth patterns until the end of the 1970s, but its importance has decreased since then. Nonetheless, during the past ten years catch-up continued to be important for a number of countries, such as the Czech Republic, Hungary, Korea and the Slovak Republic, which experienced relatively fast growth of labour productivity from a low base. By contrast, Mexico began at a low level and also experienced below-average labour productivity growth (OECD, 2003a).

Innovation and adoption of new technologies

Innovation is a major determinant of MFP growth. For instance, a 1% increase in domestic business research and development (R&D) is estimated to increase MFP growth by 0.13 percentage points (Guellec and van Pottelsberghe de la Potterie, 2001). The elasticity of MFP growth to R&D has increased over the past few decades with the emergence of new technologies. Similarly, adoption of new technologies, particularly information and communications technologies (ICT), over the past few decades has had a major impact on productivity growth.[9]

Institutions and policies

Institutions and policies are likely to have an impact on labour productivity either by influencing capital deepening and human capital accumulation or by directly affecting efficiency and technological change. In particular, the impact of macroeconomic and fiscal policies and financial development on growth has been widely studied, with results generally showing that macroeconomic volatility and tax pressure reduce growth, although indirect taxes tend to have a less negative impact than direct taxes (OECD, 2003a). Anti-competitive product market regulation also appears to hinder MFP growth (see Nicoletti and Scarpetta, 2003, and references cited therein). By contrast, the empirical literature linking labour and social policies and growth is surprisingly small and usually focuses only on overall social expenditure, with controversial results (see Arjona, Ladaique and Pearson, 2002, and references cited therein). In an attempt to bridge this gap, the remainder of this chapter is devoted to shedding some light on this issue.

Box 2.1. **Estimates of the impact of workplace training on productivity**

There are two main types of quantitative studies of the effect of training on productivity: survey-based studies; and case studies – sometimes company-sponsored. Survey-based studies have the advantage that the findings can be generalised to other firms if the survey is sufficiently representative. However, they typically lack information on the cost of training, so it is generally not possible to estimate rates of return to training using survey data. Case studies have the advantage that they more often have information on costs, but their results are difficult to generalise and often suffer from selectivity bias (see Bartel, 2000).

Most survey-based studies of the link between training and productivity estimate production functions at the industry or firm level using data from a single country. They typically find elasticities of MFP levels with respect to training between 0.05 and 0.15, although the comparison of results across different studies is hampered by differences in training definitions and methodologies. Dearden, Reed and van Reenen (2006) find an elasticity of 0.14 for the United Kingdom at the sample average. Ballot, Fakhfakh and Taymaz (2006) find elasticities of 0.18 for France and 0.07 for Sweden. Conti (2005) finds an elasticity between 0.03 and 0.09 for Italy, depending on the estimation method, while Brunello (2004) find an elasticity of 0.13 for the same country. Barrett and O'Connell (2001) find an elasticity of 0.04 for Ireland. Kurosawa, Ohtake and Ariga (2007) find an elasticity between 0.06 and 0.34, depending on the estimation method, for off-the-job training in Japan but no effect for on-the-job training. By contrast, a few studies for the United States, such as Black and Lynch (2001), find no significant effect of training on productivity. Yet, one should be cautious before drawing conclusions from US studies because they typically lack the time dimension for the training variables.

Consistent with this literature, the figure below presents estimates obtained for the purpose of this chapter from pooled, cross-country comparable data from selected European countries suggesting that increasing the stock of human capital accumulated through workplace training by 10% would yield 1.4% higher MFP in the long-run (see OECD, 2007b for a description of data and methods used to obtain these estimates).

Workplace training has a positive impact on the level of productivity

Percentage impact on conventionally measured MFP level of a 10% increase in the stock of human capital accumulated through workplace training
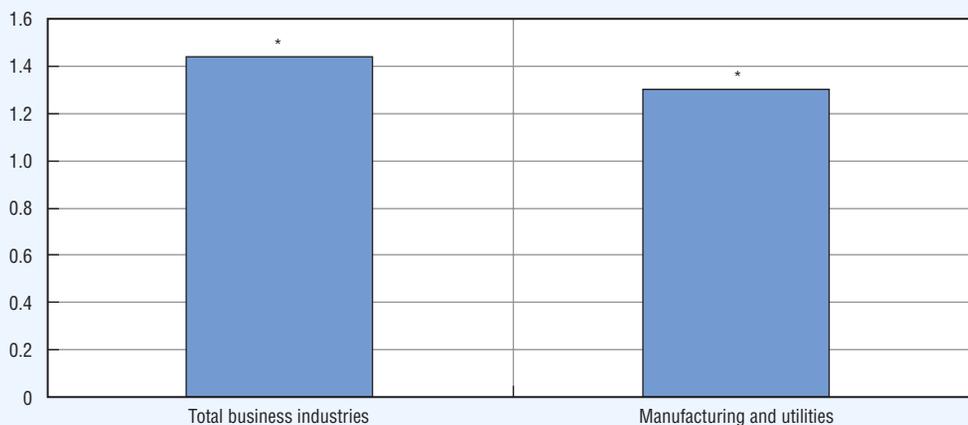
MFP: Multi-factor productivity.
* significant at 10%.
Derived from GMM estimates. See OECD (2007b) for more details.
Source: OECD estimates.

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2. What role for labour market policies?

2.1. Main channels through which labour market policies may influence productivity

The discussion in Section 1.2 highlights the negative correlation between employment growth and average productivity growth: labour market policies that increase the employment rate or hours worked will tend to depress average measured productivity due to diminishing returns to labour inputs or by increasing the proportion of low-skilled workers or labour-intensive industries (referred to above as the composition effect). In addition, pro-employment policy reforms may indirectly affect aggregate productivity by reducing social spending and make room for more public or private spending on education, R&D or other productivity-enhancing activities. Labour market policies can also directly affect productivity through a number of channels:

- policies that influence incentives for workers or firms to invest in training or education can affect productivity by altering the stock of human capital;
- policies that encourage the movement of resources between declining and emerging firms, industries or activities can enhance productivity by helping firms respond quickly to changes in technology or product demand;
- policies that improve the quality of job matches or maintain high-quality job matches for longer might increase the efficiency of labour resource allocation, increasing the level of productivity;
- policies that make labour more expensive might affect the direction and pace of technological change; and
- policies that reduce social conflict might condition workers' effort and their willingness to align their behaviours with their employer's objectives.

Table 2.1 outlines the possible relationships between various labour market policies and productivity as proposed in the existing theoretical literature. In general, it is difficult to establish, *a priori*, whether policies are likely to affect the level of productivity, its growth rate, or both.

From a policy perspective, it is important to be able to estimate both the independent impact of labour market policies on productivity and, whenever productivity effects due to changes in employment (composition effects) are likely to be large, the overall impact on GDP per capita. In this section, the productivity effects of four specific labour market policies (employment protection legislation, minimum wages, unemployment benefits and family-friendly policies) will be analysed in detail, their selection being dictated by data availability and feasibility of the implementation of the empirical methodology, outlined in Box 2.2.

A number of labour market policies that could be expected to have an impact on productivity were not assessed in this chapter, primarily due to data limitations. As outlined in Table 2.1, active labour market programmes (ALMPs) and wage-bargaining arrangements could have both negative and positive impacts on productivity and GDP per capita, with the overall effect unclear. Unfortunately, data series for both policies are either too short or not sufficiently detailed to enable accurate estimation of their impact on GDP per capita, as described in Box 2.2. Neither are there clear reasons to believe that such policies would have a greater impact on productivity in some industries than others, making it difficult to justify using a difference-in-differences specification of the type described in Box 2.2. It is possible that the operation of these policies could also influence

Table 2.1. **Possible links between labour market policies and productivity, over and above composition effects**

Possible positive impact on productivity	Possible negative impact on productivity
Strict statutory or contractual employment protection for regular workers	
• Acts as a signalling device to workers about firm commitment, increasing worker effort and incentives to invest in firm-specific human capital and to cooperate with the implementation of productivity-enhancing work practices or new technologies.	• Increases the costs of firing and therefore, increases the cost of adapting quickly to the emergence of new technologies (particularly in times of diffusion of new general-purpose technologies and/or low-technology industries where adoption often translates into downsizing). • Impedes flexibility and slows the movement of labour resources into new high-productivity activities. • Encourages shirking by employees by making it more difficult for them to be dismissed for poor performance.
Restrictions on temporary contracts	
• By reducing opportunities to substitute temporary for permanent workers, increase incentives for firms that typically hire temporary workers to train their employees, and increase incentives for workers to invest in firm-specific human capital.	• Reduce firms' ability to adapt quickly to changes in technology or product demand by moving labour resources into emerging, higher productivity activities. • By reducing temporary employment, reduce workers' incentives to invest in human capital to escape job insecurity.
Training programs for the unemployed	
• Assist the unemployed to get higher skilled (higher productivity) jobs that have longer duration than otherwise. • Directly increase stock of human capital.	• Crowd out other training programs, reducing incentives for workers and firms to invest in skills.
Subsidised employment and work experience programs	
• Increase job duration and therefore the stock of human capital acquired on-the-job.	• Reduce the wage differential between low and high-skilled jobs, reducing incentives for workers to invest in skills.
Employment placement programs and public employment services	
• Increase the quality of matches between unemployed and job vacancies, resulting in a more efficient allocation of labour resources.	
Generous unemployment benefits	
• Increase the time spent looking for work and improve the quality of matches, increasing the efficiency of resource allocation. • Encourage workers to look for higher productivity jobs in more volatile industries and encourage firms to create such jobs.	• Encourage shirking by existing employees as there is a lower cost of being fired, reducing productivity. • Increase the length of unemployment spells, leading to depreciation of human capital.
Centralised wage-setting arrangements	
• Compress wage relativities and reduce poaching, giving employers incentives to invest in training. • Speed the process of structural adjustment by making declining industries relatively less profitable and emerging industries relatively more profitable than under decentralised wage-fixing arrangements.	• Discourage workers from investing in skills, because they may be unable to capitalise on their investments through higher wages. • Weaken the links between productivity gains and wage growth, reducing incentives for workers to implement productivity-enhancing work practices.
High minimum wages	
• Compress wage relativities and reduce poaching, giving employers incentives to invest in training. • Substitute high- for low-productivity jobs, increasing aggregate productivity levels. • Reduce demand for low-skilled jobs, giving employees incentives to invest in skills.	• Lead to downward wage rigidity, increasing separations, and reducing incentives for firms to invest in training. • Compress wage relativities, thereby reducing the returns to education and incentives to invest in skills. • Increase the shadow price of labour, leading firms to over-invest in labour-saving innovation at the cost of productivity-enhancing innovation.
Family-friendly policies	
• Assist workers with family responsibilities to maintain high-quality job matches, increasing incentives to invest in training.	• Induce gender discrimination in hiring processes, leading to sub-optimal allocation of labour resources (for example, concentration of highly skilled women in low-skilled jobs).

Source: Acemoglu and Pischke (1999a, 1999b); Acemoglu and Shimer (1999, 2000); Agell (1999); Arulampalam, Booth and Bryan (2004); Bartelsman *et al.* (2004); Belot, Boon and van Ours (2002); Bertola (1994); Boone (2000); Boone and van Ours (2004); Buchele and Christiansen (1999); Cahuc and Michel (1996); Calmfors, Forslund and Hemstrom (2001); Dowrick (1993); Draca and Green (2004); Hopenhayn and Rogerson (1993); Marimon and Zilibotti (1999); Moene and Wallerstein (1997); Saint-Paul (1997, 2002); Shapiro and Stiglitz (1984); Soskice (1997).

Box 2.2. **Model specification**

Estimating the impact of policies on GDP per capita

The overall impact of labour market policies on GDP per capita can be estimated by fitting structural convergence equations of GDP per capita, as done in OECD (2003a), based on augmented-Solow or Lucas models. Assume that the aggregate technology can be described by the production function:

$$y_{it} = A_{it} k_{it}^{\alpha} h_{it}^{\beta}$$

where i and t index country and time; y, k and h are output, physical capital and human capital per capita (or unit of labour), respectively; α and β are the partial elasticities of output with respect to physical and human capital; and A is the level of technological and economic efficiency. A is the product of two components: economic efficiency dependent on institutions and economic policy; and the level of technology, which grows at an exogenous rate. As economies are not in the steady state, structural estimation of this model implies modelling appropriately adjustment to the steady state. It can be shown that, independently of whether the underlying model implies diminishing or constant returns to variable factors ($\alpha + \beta$ less than or equal to 1), this leads to an error-correction model of the following type (Bassanini and Scarpetta, 2002a; Arnold, Bassanini and Scarpetta, 2004):

$$\Delta \ln y_{it} = -\phi_i \left(\ln y_{it-1} - \theta_1 \ln s_{it}^K - \theta_2 \ln h_{it} + \theta_3 n_{it} - \sum_{j=1}^{m} \gamma_j \ln V_{it}^j - \chi_{it} \right)$$

$$+ b_{1i} \Delta \ln s_{it}^K + b_{2i} \Delta \ln h_{it} + b_{3i} \Delta n_{it} + \sum_{j=1}^{m} c_{ji} \Delta \ln V_{it}^j + \varepsilon_{it}$$

where s^K is the investment rate, n is the growth rate of the working-age population, Vs denote policies affecting efficiency, χ_{it} are country-by-period (say: five-year) dummies, ϕ_i are country-specific convergence parameters and γ_j and θ_j capture the long-run effects of policies and other factors on GDP per capita. This model can be consistently estimated by maximum likelihood through pooled mean group estimators, provided that the time dimension is sufficiently greater than the number of countries (Pesaran, Shin and Smith, 1999). As a result, long time series are necessary to estimate this type of model. Unfortunately, long time series were not available for most of the policy variables examined in this chapter. As a result, it was only possible to use this estimation technique to examine the impact of unemployment benefits on GDP per capita.

Estimating the impact of policies on productivity

Alternatively, one can try to estimate directly the impact of policies on labour productivity. However, labour market policies may exert conflicting effects on average measured labour productivity. For instance, they may increase employment and thereby reduce average measured labour productivity through composition effects discussed in Section 1.2. But they may also stimulate economic efficiency and thus, exert upward pressure on labour productivity (so-called "independent" effects). Identifying independent effects is crucial for policy purposes.

As shown in OECD (2007b), however, within-industry composition effects, if any, appear to be negligible. Therefore, one way to isolate the "independent" effects of policies on productivity is to look at the within-industry variation of productivity while, at the same time, controlling for aggregate effects through time-by-country dummies. Therefore, analyses of within-industry productivity developments can meaningfully shed light on the independent impact of selected labour market policies on productivity. However, the presence of country-by-time dummies makes the identification of the productivity effect of labour market policy variables more complex, insofar as they are typically defined only at the aggregate level.

Box 2.2. **Model specification** (*cont.*)

For the purposes of this chapter, the effects of employment protection legislation (EPL), minimum wages and parental leave on productivity have been estimated at an industry-level using a reduced-form difference-in-differences model (see Bassanini and Venn, 2007, for full details). This approach is based on the assumption that the effect of particular policies on productivity is greater in industries where the policy is more likely to be binding – hereafter called "policy-binding industries". For example, EPL is likely to be binding in industries where layoff rates are high. If firms need to lay off workers to restructure their operations in response to changes in technologies or product demand, high firing costs are likely to slow the pace of reallocation of resources. By contrast, in industries where firms can restructure through internal adjustments or by relying on natural attrition of staff, changes in EPL can be expected to have little impact on labour reallocation, and subsequently productivity.

This difference-in-differences estimation strategy has the advantage that it controls for policies or institutions that influence productivity in the same way in all industries. More precisely, all factors and policies that can be assumed to have, on average, the same effect on productivity in policy-binding industries as in other industries can be controlled for by country-by-time dummies. Assuming that a particular policy only affects the growth of productivity, the long-run impact of the policy on MFP growth in policy-binding industries can be estimated using the following specification:

$$\log y_{ijt} = \delta \log k_{ijt} + \gamma I_{bj} \sum_{\tau=0}^{t} POL_{i\tau} + \mu_{ij} + \chi_{it} + \varsigma_{jt} + \varepsilon_{ijt}$$

where *i* indicates countries, *j* indicates industries, *t* indicates years, *y* is labour productivity (*Y/L*), *k* is the capital-to-labour ratio (*K/L*), *I* is an indicator equal to one for policy-binding industries and zero otherwise, *POL* is a country-level measure of the policy in question, and Greek letters represent coefficients or disturbances. To the extent that available capital stock data are not adjusted for quality changes, the relevant concept of MFP used here incorporates both disembodied and embodied technological change. The same classification of policy-binding industries is used for *all* countries to prevent problems of endogeneity between the policy variable and the policy-binding indicator. The impact of the policy on labour productivity can be estimated using the same specification but omitting the capital-to-labour ratio. If the policy is assumed to affect only the level of productivity, the empirical specification is:

$$\log y_{ijt} = \delta \log k_{ijt} + \beta I_{bj} POL_{it} + \mu_{ij} + \chi_{it} + \varsigma_{jt} + \varepsilon_{ijt}$$

As a sensitivity test, the baseline specification can be augmented to include controls for other factors and policies that might have a different average effect on productivity in policy-binding industries and in other industries.

Since a number of policies are likely to influence *both* the level of productivity (efficiency) and its growth rate, one would ideally like to estimate a productivity growth model where both level and growth effects are accommodated. However, there are technical problems associated with estimating a structural or dynamic model incorporating these effects jointly.* For this reason, in the difference-in-differences specifications used in this chapter, labour market policies are assumed to permanently affect either the level of productivity or its growth rate, but not both. However, in some cases both level and growth effects were included in the same equation for model selection purposes only, where the theoretical literature was unable to provide clear guidance on this issue.

Box 2.2. **Model specification** (*cont.*)

As stressed in OECD (2006a), policy changes have distributional consequences. Therefore, certain groups are likely to lobby in their favour, while other will attempt to resist change. The size and influence of different lobby groups are likely to be affected by economic conditions. As a consequence, policies may not be exogenous, as is assumed in the estimation of difference-in-differences specifications in this chapter. It is not obvious what impact this assumption has on the results, given that the aggregate correlation between policies and performance is controlled for by country-by-year dummies. Yet, the reader should keep this potential limitation in mind when interpreting the results.

The aggregate impact of the policy on productivity growth is calculated by multiplying the estimated effect in policy-binding industries by the share of these industries in total GDP. This assumes that there is zero impact of the policy in other industries (and in all industries that are not included in the sample used in the analysis). As such, the estimates represent a lower bound of the aggregate impact of the policy on productivity.

Estimated aggregate impacts represent the average effect of policy changes on productivity across OECD countries. The actual outcome of policy reforms in individual countries could vary, however, depending on the particular economic and institutional situation. Where data availability allows, interactions between policies and institutions have been examined. However, the simplified models with interaction terms considered here pose the risk of misspecification due to omitted interactions, so the results of the interaction experiments should be interpreted with caution (see Bassanini and Duval, 2006).

* Incorporating both growth and level effects would require estimating a dynamic model, in which minor specification errors would lead to serious inconsistency problems. It is therefore not recommendable in reduced-form models.

the degree to which the policies examined in the following sections affect productivity. Where data availability allows, interactions between policies have been examined to paint a fuller picture of the complex relationship between policies and productivity. Yet, the analysis of these interactions remains exploratory (see Box 2.2).

2.2. Employment protection legislation

Employment protection legislation could affect production efficiency and productivity growth through multiple channels…

Stringent layoff regulations increase the cost of firing workers, making firms reluctant to hire new workers, particularly if they expect to make significant employment changes in the future. As such, EPL could impede flexibility, making it more difficult for firms to react quickly to changes in technology or product demand that require reallocation of staff or downsizing, and slowing the flow of labour resources into emerging high-productivity firms, industries or activities (Hopenhayn and Rogerson, 1993; Saint-Paul, 1997, 2002). In addition, stringent EPL might discourage firms from experimenting with new technologies, characterised by potentially higher returns but also greater risk (Bartelsman *et al.*, 2004). Layoff protection might also reduce worker effort (thus productivity) because there is a lower threat of layoff in response to poor work performance or absenteeism (Ichino and Riphahn, 2001).

Alternatively, layoff regulations could provide additional job security for workers, increasing job tenure and work commitment and making firms and workers more likely to invest in firm- or job-specific human capital (Soskice, 1997; Belot, Boon and van Ours, 2002).[10]

Stringent layoff regulations might also spur productivity-enhancing investments by incumbent firms in order to avoid downsizing (Koeniger, 2005).

... but available literature is inconclusive about the direction of the overall effect

The existing cross-country evidence on the relationship between EPL and productivity growth is inconclusive. DeFreitas and Marshall (1998) find that strict EPL has a negative impact on labour productivity growth in the manufacturing industries of a sample of Latin American and Asian countries. Nickell and Layard (1999) and Koeniger (2005) find a weak positive relationship between EPL strictness and both MFP and labour productivity growth for samples of OECD countries.[11] Autor, Kerr and Kugler (2007) study the impact of exceptions to the employment-at-will doctrine in the United States on several performance variables by using cross-state differences in the date of their adoption. They find that some of the restrictions have a positive effect on capital deepening, a negative effect on MFP and no effect on labour productivity. Using a difference-in-differences estimator on industry-level data for several OECD and non-OECD countries, Micco and Pages (2006) find a negative relationship between layoff costs and the level of labour productivity. Yet, this effect appears to depend entirely on the presence of Nigeria in the sample. Ichino and Riphahn (2001) and Riphahn (2004) find that EPL in Germany significantly increases absenteeism, probably reducing productivity.

There is some support for the argument that EPL slows the speed at which displaced workers find new jobs in expanding industries. Burgess, Knetter and Michelacci (2000) find that countries with stricter EPL have slower rates of adjustment of productivity to long-run levels, although they point out that the direction of causality could run from productivity growth to EPL strictness.[12] More recent evidence suggests that strict layoff regulations reduce job turnover and, particularly, job destruction (Boeri and Jimeno, 2005; Micco and Pages, 2006; Haltiwanger, Scarpetta and Schweiger, 2006). Messina and Vallanti (2007) find that the negative impact of EPL on job turnover, job creation and job destruction is greater in industries where total employment is contracting and where firms cannot achieve substantial reductions in employment levels by purely relying on voluntary quits. However, the impact of EPL on firm growth appears to be, at best, small (Boeri and Jimeno, 2005; Schivardi and Torrini, 2003).

Firing restrictions are estimated to have a small negative impact on productivity growth...

For the purpose of this chapter, the impact of EPL for regular contracts on productivity growth is estimated using the difference-in-differences procedure described in Box 2.2 for a sample of 18 OECD countries over the period 1982-2003. Following previous OECD research (see *e.g.* OECD, 2004), EPL is measured here using a cardinal index varying from 0 to 6 from least to most stringent. The estimation procedure is based on the assumption that the effect of EPL on productivity is stronger in industries with greater layoff propensity. In order to reduce bias due to the possible relationship between EPL stringency and the cross-industry distribution of layoffs, EPL-binding industries are identified based on layoff rates by industry in the United States, that is the least regulated country (see Annex 2.A1 for more details on data and Bassanini and Venn, 2007, for a full description of estimation methods and detailed results).[13]

Figure 2.4 shows that EPL on regular contracts is estimated to have a small but statistically significant negative effect on aggregate productivity growth.[14] Following the lower bound approach described in Box 2.2, a one point increase in the index of EPL stringency – roughly corresponding to half of the difference between the OECD average and the country with the

Figure 2.4. **EPL has a negative effect on productivity growth**

Percentage-point impact on labour productivity growth and MFP growth of a one-point increase
in the EPL index for regular contracts
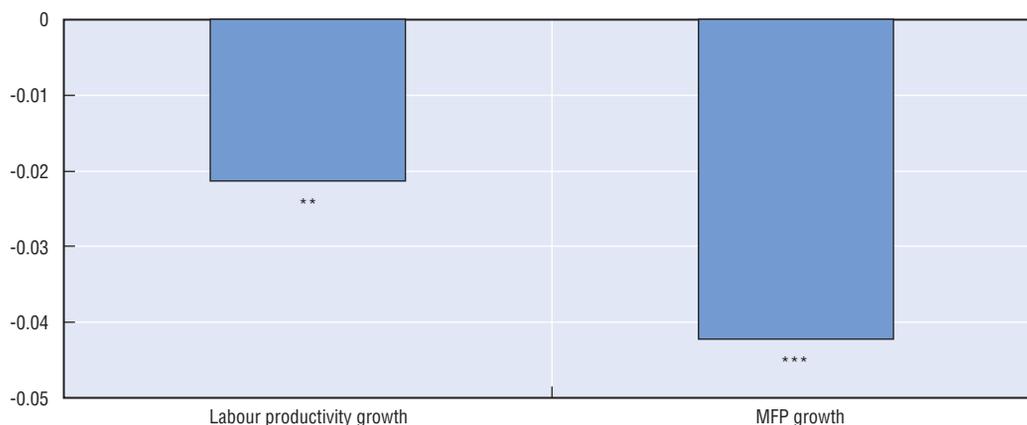
EPL: Employment protection legislation; MFP: Multi-factor productivity.
** significant at 5%; *** significant at 1%.
Derived from difference-in-differences OLS estimates. The estimates in this figure are calculated by multiplying the estimated effect of EPL in EPL-binding industries by the share of EPL-binding industries in total GDP. This assumes that there is zero impact of the policy in other industries (and in all industries that are not included in the sample used in the analysis). Therefore, the estimates represent a lower bound of the aggregate impact of EPL on productivity growth.
Source: OECD estimates.

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lowest value of the EPL index (United States)[15] – appears to reduce the annual growth rate of labour productivity by at least 0.02 percentage points and the annual growth rate of MFP by at least 0.04 percentage points.[16] The result is remarkably robust to various robustness checks for the inclusion of possible confounding factors and changes in the sample of countries used in the estimation.

Although this estimated effect is small, it is not negligible from a policy perspective, since it cumulates over time. For instance, if in the mid-1980s Portugal, the country in the sample with the highest value of the EPL index, had liberalised provisions for regular contracts to reflect those of the United States, its labour productivity would be more than 1.5 percentage points higher than is presently the case.

If stringent EPL slows productivity growth by impeding the flow of resources into high productivity activities, it might be expected that the dampening effect of EPL on productivity growth is smaller where institutions depress firm incentives to improve productivity. Insofar as lack of product market competition can dampen these incentives (see *e.g.* Nicoletti and Scarpetta, 2003 and references therein), the effect of EPL on productivity might be smaller when product market regulation is strongly anti-competitive. However, no evidence could be found that the negative impact of EPL on productivity is less important in countries with strongly anti-competitive product market regulation.

… but no clear conclusion can be drawn about the impact of EPL for temporary contracts

Partial EPL reforms, whereby regulations on temporary contracts are weakened while maintaining strict EPL on regular contracts, have been shown to be associated with increasing labour market duality in OECD countries (OECD, 2004). An expansion in temporary work could have opposing effects on productivity. On the one hand, temporary contracts

could increase flexibility so that firms can adapt quickly to changes in technology or product demand and move resources easily into emerging, high productivity activities. Temporary workers might also display greater work effort than other workers if they perceive that good performance could lead to contract renewal or a permanent job offer (Engellandt and Riphahn, 2004). On the other hand, there is some evidence that temporary workers are less likely to participate in job-related training (OECD, 2002; Albert, Garcia-Serrano and Hernanz, 2005; Bassanini *et al.*, 2007; Draca and Green, 2004), or even are more prone to workplace accidents (Guadalupe, 2003).

The analysis undertaken for this chapter does not shed further light on the productivity effects of partial EPL reform. While a decrease in the level of the overall EPL index (incorporating measures of both EPL on regular and temporary contracts) is associated with an increase in productivity growth, the results are unclear on whether relaxing rules on temporary contracts while leaving EPL on regular contracts unchanged would have any impact on productivity.[17]

2.3. Minimum wages

Minimum wages can affect average productivity through the substitution of skilled for unskilled workers…

While there is no clear-cut evidence that minimum wages affect aggregate unemployment (see OECD, 2006a for a survey of recent literature), available evidence suggests that high minimum wages can reduce demand for unskilled labour, relative to skilled labour, thereby leading to substitution of skilled for unskilled workers, without any overall change in the employment level (Neumark and Wascher, 2006; Aaronson and French, 2007). If more skilled labour is employed and more unskilled labour is excluded from employment, the aggregate skill level of the workforce will increase, thereby raising average measured productivity.[18]

… or by influencing training or innovation decisions

Minimum wages also compress the lower tail of the wage distribution without necessarily affecting individual productivity, thereby increasing employers' incentives to pay for training as they can reap the difference between productivity and wage growth after training (see *e.g.* Acemoglu and Pischke, 1999b; Acemoglu and Pischke, 2003). Moreover, unskilled workers could have a greater incentive to invest in human capital to avoid unemployment (Cahuc and Michel, 1996; Agell and Lommerud, 1997; Agell, 1999). On the other hand, by compressing wage relativities between skilled and unskilled jobs, minimum wages could reduce incentives for the unskilled to invest in training. More importantly, high minimum wages prevent low-wage workers from accepting wage cuts to finance training (Rosen, 1972).

Minimum wages may also influence firms' innovation decisions. Boone (2000) argues that if the level of the minimum wage exceeds workers' productivity, firms will over-invest in labour-saving innovation. This reduces investment in innovations that improve the quality of products and enhance long-run growth.

There is very little existing empirical evidence on the impact of minimum wages on productivity. Kahn (2006) finds that the ratio of the minimum to median wage is negatively related to MFP growth in French manufacturing industries. But when the unemployment benefit replacement rate is taken into account, the coefficients on both variables become statistically insignificant. Research is more abundant on the effect of minimum wages on training, but no consensus emerges as to the overall effect of minimum wages.[19]

Minimum wages are estimated to have a positive effect on average measured productivity…

The impact of statutory minimum wages on measured average productivity was estimated using the difference-in-differences technique described in Box 2.2 for a sample of 11 OECD countries over the period 1979-2003. The estimation is based on the assumption that changes in minimum wages have a greater impact on productivity in industries that are more heavily reliant on low-wage labour. In order to reduce bias due to the possible relationship between minimum wages and the distribution of low-wage employment, low-wage industries are identified based on the incidence of low-wage workers by industry in the United Kingdom prior to the introduction of statutory minimum wages in that country in 1999.[20] Minimum wages are measured as the economy-wide ratio of the gross statutory minimum wage to the median wage (see Annex 2.A1 for more details on data and Bassanini and Venn, 2007, for a full description of estimation methods and detailed results).[21, 22]

Figure 2.5 shows that an increase of 10 percentage points in the ratio of the statutory minimum wage to median wages (approximately equal to the cross-country standard deviation in minimum wages) is associated with an increase of between 1.7 and 2.0 percentage points in the long-run level of both measured labour productivity and MFP.[23] The estimated effects are relatively robust to changes in the sample of countries used in the estimation.

Figure 2.5. **An increase in the minimum wage has a positive effect
on average measured productivity**

Percentage-point impact on labour productivity and MFP levels of a 10 percentage-point increase in the ratio
of the minimum wage to median earnings
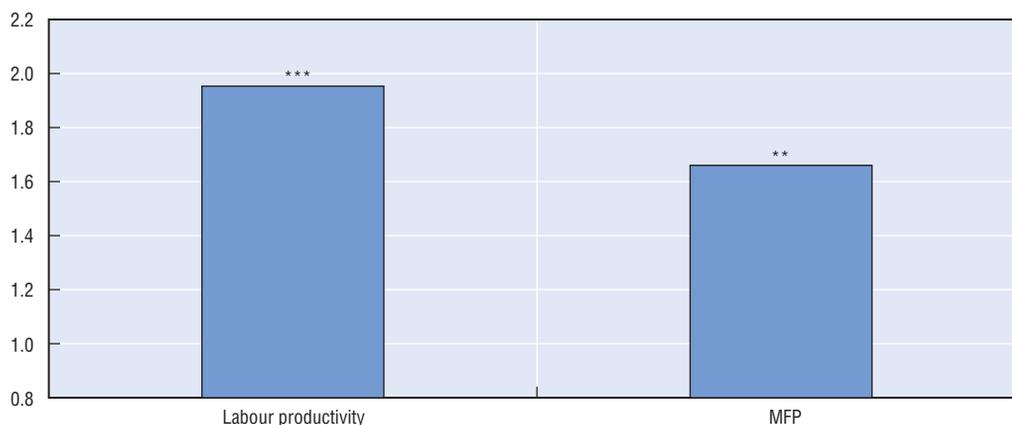
MFP: Multi-factor productivity; IV: Instrumental variables.
** significant at 5%; *** significant at 1%.
Derived from difference-in-differences IV estimates where the logarithm of the real minimum wage in 2000 US dollars PPP is used as an instrument for the ratio of the minimum wage to median earnings. The estimates in this figure are calculated by multiplying the estimated effect of minimum wages in low-wage industries by the share of low-wage industries in total GDP. This assumes that there is zero impact of the policy in non-low-wage industries (and in all industries that are not included in the sample used in the analysis). Therefore, the estimates represent a lower bound of the aggregate impact of minimum wages on productivity growth.
Source: OECD estimates.

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… but this might simply reflect substitution of skilled for unskilled workers

It is not clear, however, to what extent the positive impact of minimum wages on productivity is simply due to substitution of skilled for unskilled workers, increasing the

aggregate level of skills and productivity, rather than as the result of improved incentives to invest in training. Although the specification provides no conclusive way of disentangling these effects, further analysis with alternative specifications suggests that minimum wages have a more significant impact on the level of productivity than on its growth rate. Insofar as the training channel would likely affect the growth rate as well as the level of productivity, this result provides some, albeit weak, evidence that substitution of skilled for unskilled workers explains at least part of the story.[24]

Competing explanations – that is, training *vs.* skilled/unskilled substitution effects – however, have very different policy implications. In fact, while the training story would imply a virtuous link, the substitution story would suggest that the positive productivity effect is purely a statistical artefact and point to undesirable distributional consequences of excessive minimum wages. The possibility that a large proportion of the productivity effect of minimum wages is due to reduced demand for unskilled workers should be kept in mind when drawing policy implications from these results.

The effect of minimum wages on productivity reported in Figure 2.5 is estimated assuming that factors other than minimum wages have the same impact on productivity in both low-wage and other industries. Overall, the baseline results are robust to the inclusion of control variables. A number of interactions between minimum wages and other policy variables were tested to determine whether the impact of minimum wages on productivity depends, at least in part, on the broader policy settings in a particular country. Previous OECD research (OECD, 2006a) shows that minimum wages can influence the way in which the tax wedge affects unemployment. The explanation for this may be that higher minimum wages make it more difficult for employers to pass on tax increases to workers, reducing demand for labour. If minimum wages intensify the negative effect of taxes on employment, the lower employment rates that result could induce higher levels of productivity through a composition effect. In this way, the estimated positive impact of minimum wages on productivity could simply be a result of their amplifying the effect of taxes on employment. However, controlling for an interaction between the tax wedge and the minimum wage had little impact on the baseline results, indicating that minimum wages have an effect on productivity that is independent of any interaction with taxes.

Generous unemployment benefits may reduce the impact of minimum wages on productivity

There is some qualified evidence that generous unemployment benefits may reduce the positive impact of minimum wages on productivity in low-wage industries.[25] The higher the minimum wage relative to the unemployment benefit replacement rate, the greater the opportunity cost of remaining unemployed. If minimum wages increase productivity by reducing demand for unskilled labour and providing incentives for unskilled workers to invest in training to avoid unemployment, high replacement rates could dull this effect by reducing the opportunity cost of remaining unemployed.[26]

2.4. Unemployment benefits

Unemployment benefits could increase average measured productivity through their impact on employment,…

There are a number of channels through which unemployment benefits could affect productivity. First, generous unemployment benefits have been shown to reduce employment rates, so could have a positive impact on productivity through the so-called composition effect

discussed in Section 1.2.[27] In particular, by increasing the reservation wage, generous unemployment benefits tend to price low-productivity workers out of jobs in imperfect labour markets (Lagos, 2006), increasing the proportion of high-skilled workers employed and therefore the average productivity level of the workforce.

... by providing a buffer for the unemployed to find a suitable job,...

Second, generous unemployment benefits (in terms of either duration, replacement rate or both) may provide a buffer of time and resources to allow the unemployed to find a job that suits their skills and experience, resulting in higher quality matches between the unemployed and available job vacancies (Marimon and Zilibotti, 1999).[28] Higher quality job matches should increase productivity levels as resources are used more efficiently. If higher quality job matches last longer, there could also be an impact on human capital accumulation. For example, workers with longer tenure might be more likely to receive training from their employer, or have greater incentives to themselves invest in training.

... or by encouraging firms to create risky, high-productivity jobs

Furthermore, it is possible that the provision of generous unemployment benefits also encourages the creation of higher productivity jobs (Acemoglu and Shimer, 1999, 2000). Higher productivity jobs might carry with them a higher risk of layoff to the extent that they are located in more volatile, innovative activities, or require workers with more specific skills so carry greater risk of job mismatch. For example, there is some evidence that there are higher rates of involuntary turnover in high-technology industries (as proxied by technology use, R&D investment or use of skilled labour – Givord and Maurin, 2004; Zavodny, 2004). If this is the case, in the absence of unemployment benefits, the unemployed will have an incentive to apply for low-productivity jobs with a corresponding low risk of future layoff and firms will find it more difficult to fill higher-productivity positions. In this context, generous unemployment benefits could allow the unemployed to risk future layoff by taking a higher productivity job (and also increase the quality of matches), knowing that, if they were laid off in the future, they would be supported by a safety net. Firms might therefore be more likely to offer such jobs, increasing the share of high-productivity jobs and the aggregate level of productivity.

Unemployment benefits can also have some negative effects on productivity...

Unemployment benefits may also have some adverse effects on productivity. It is well established that generous unemployment benefits can increase the duration of unemployment spells and the overall level of unemployment (see OECD, 2006a, for a survey of recent literature). This could have a negative impact on productivity through inefficient use of resources and depreciation of human capital during long spells of unemployment. In addition, by reducing the opportunity cost of unemployment, generous unemployment benefits may lead existing employees to reduce their work effort, thereby lowering productivity (see *e.g.* Shapiro and Stiglitz, 1984; Albrecht and Vroman, 1996).

... so their net effect on GDP per capita is a priori ambiguous

Given the range of possible impacts of unemployment benefits on productivity and their unambiguous negative effect on labour utilisation, the net effect on GDP per capita is, *a priori*, ambiguous. In contrast with EPL, minimum wages and parental leave (see Section 2.5 below), there is a long time series of data on unemployment benefit replacement rates, allowing the

impact of unemployment benefits on GDP per capita to be estimated using the structural model discussed in Box 2.2. Since more generous unemployment benefits are associated with lower aggregate employment rates, the overall effect of higher unemployment benefits on GDP per capita will be negative unless a positive productivity effect compensates fully for the negative employment effect.

Empirical evidence shows no overall impact on GDP per capita of unemployment benefits, suggesting the possibility of a positive productivity impact…

Figure 2.6 shows that the generosity of unemployment benefits (as measured by an average of gross replacement rates across various earnings levels, family situations and durations of unemployment) appears to have no significant impact, in the long-run, on the level of GDP per capita.[29] Moreover, a robustness exercise shows no significant differences in the magnitude of this effect between countries characterised by high and low ALMP spending.[30] These results suggest that any negative impact of unemployment benefits on employment is offset fully by a net positive impact of unemployment benefits on average measured productivity. Furthermore, although point estimates are negative, the long-run elasticity of GDP per capita to changes in benefit generosity appears to be much smaller than the corresponding elasticity of the employment rate.[31] This cautiously suggests that a reduction in the generosity of unemployment benefits is likely to have a positive effect on productivity over and above composition effects.

Figure 2.6. **Unemployment benefits have little overall impact on the level of GDP per capita**

Percentage-point impact on the steady-state level of GDP per capita of a 10% increase in average replacement rate, unemployment benefit duration and initial unemployment benefit replacement rate
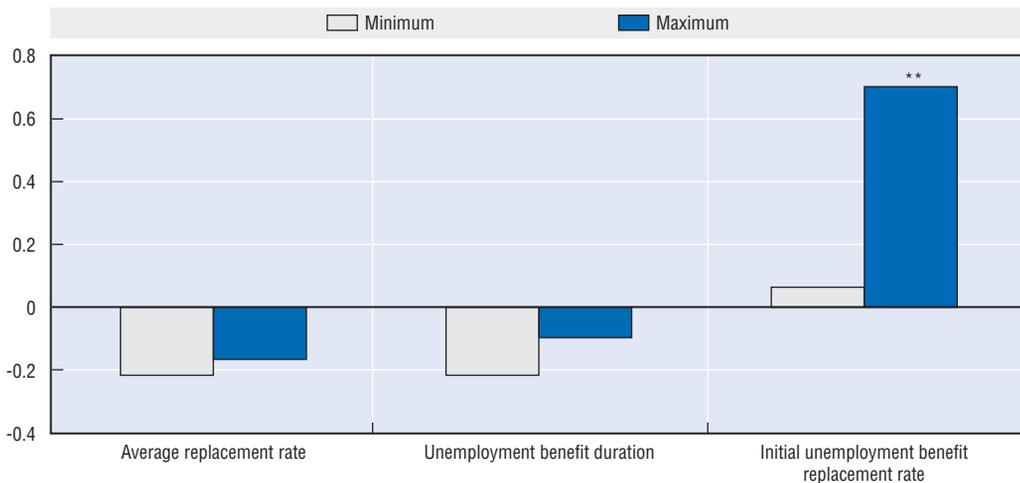
** significant at 5%.
Derived from Pooled Mean Group (PMG) estimates. For each policy, minimum and maximum indicate the smallest and greatest estimate obtained in the specifications reported in OECD (2007b).
Source: OECD estimates.

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Both of the channels through which unemployment benefits can potentially have a positive influence on productivity over and above composition effects – by improving job-match quality and by encouraging the creation of high-productivity, high-risk jobs – seem to receive some support from the empirical evidence.

… possibly as a result of higher quality job matches…

Generous unemployment benefits appear to be associated with higher quality job matches, although the effects are relatively small. In an attempt to directly examine job matches, Pollmann-Schult and Buchel (2005) find that receipt of unemployment benefits delays exits from unemployment into mismatched jobs (*i.e.* jobs for which the worker is over-educated), but not exits from unemployment into matched jobs (*i.e.* where the education level of the worker matches that of the position). A number of studies use post-unemployment job duration as a measure of job-match quality, on the assumption that better quality matches last longer. An increase in either the replacement rate (Centeno, 2004) or the duration of unemployment benefits (Belzil, 2001) is associated with a small, but statistically significant, increase in post-unemployment job duration. An alternative way of measuring job-match quality is to examine post-unemployment wages: better quality matches should result in higher productivity, and therefore be rewarded with higher wages. The limited recent evidence on the wage effects of unemployment benefits suggests, again, that there is a weak positive relationship between unemployment benefits (as measured by the replacement rate or expenditure on unemployment benefits as a percentage of GDP) and post-unemployment wages (Addison and Blackburn, 2000; Polachek and Xiang, 2005).

… or through the creation of risky, higher productivity jobs

Evidence on the relationship between unemployment benefits and the creation of high-productivity/high-risk jobs is less clear. Acemoglu (1997) looks at US state-level replacement rates between 1983 and 1993 and finds that an increase of 10 percentage points induces an increase in the number of high-wage occupations by 1.3%, despite the decline in overall employment. A number of studies suggest that unemployment benefits increase the desirability of high-risk jobs. Topel (1984) shows that high-risk jobs pay higher wages in the United States, but this compensating differential is dampened by generous unemployment benefits. Similarly, Barlevy (2001) shows that even though workers who change jobs during booms tend to be hired in high-risk industries where they receive higher wages, unemployment benefits reduce the pro-cyclicality of their wages. From a cross-country perspective, there is some evidence that the generosity of unemployment benefits has a positive effect on relative levels of MFP and labour productivity in high-risk industries compared to low-risk industries (see Box 2.3).

Overall, the net impact of unemployment benefits on average measured productivity appears to be positive. How much of this positive effect is due to changes in the composition of the labour force as a result of the impact of unemployment benefits on employment remains unclear. Unemployment benefits seem to have some independent positive impact on productivity, by supporting higher quality job matches and facilitating the creation of riskier, higher productivity jobs by providing insurance against future job loss. Yet, the net impact on GDP per capita appears to be small.

These findings, however, do not mean that reforms to reduce the disincentive effects of generous unemployment benefits will be ineffective at improving living standards. The social benefits of increasing employment rates are well known. In addition, some of the productivity benefits associated with generous unemployment benefits, such as better job matches, could be replicated through effective active labour market programmes.

Box 2.3. **Analysing the role of unemployment benefits in encouraging the creation of high-risk jobs**

One of the channels through which unemployment benefits could affect productivity is by providing security for workers to search for, and accept, high-productivity jobs that have a high risk of future layoff, in turn increasing the number of high-productivity jobs offered by employers. Under somewhat restrictive assumptions, a difference-in-differences experiment of the type discussed in Box 2.2 has been carried out for the purposes of this chapter. If high-risk/high-productive jobs are more likely to be created in risky industries and effects of unemployment benefits through other channels are assumed to affect both risky and non-risky industries equally, the difference between changes in productivity in risky industries and changes in productivity in non-risky industries can be modelled as a function of unemployment benefits. Risky industries are defined as those where the employment share of entering firms surviving for one year or more is below the average for all industries. Yet, the identification assumptions are very restrictive; therefore, this analysis must be viewed as somewhat tentative.

The estimation uses a sample of 18 OECD countries over the period 1979-2003. Risky industries are identified based on the likelihood of new firms surviving for more than one year. The same classification of risky industries is used for all countries in the sample (see Annex 2.A1 for more details on data and Bassanini and Venn, 2007, for a full description of estimation methods and results).*

Higher average replacement rates are found to be associated with significantly higher measured average MFP and labour productivity levels in risky industries compared with non-risky industries. The figure below shows that a 10% increase in the average replacement rate is associated with a 1.7% larger increase in both MFP and labour productivity in risky industries than in non-risky industries. The results are relatively robust to the inclusion of control variables. Of course, all or part of this increase could be offset by any negative impacts of lower employment rates on productivity. In addition, the estimated effect might be in part due to substitution of skilled for unskilled workers.

Unemployment benefits have a positive effect on productivity in risky industries

Percentage-point impact on labour productivity and MFP levels of a 10% increase in the average replacement rate from the sample mean
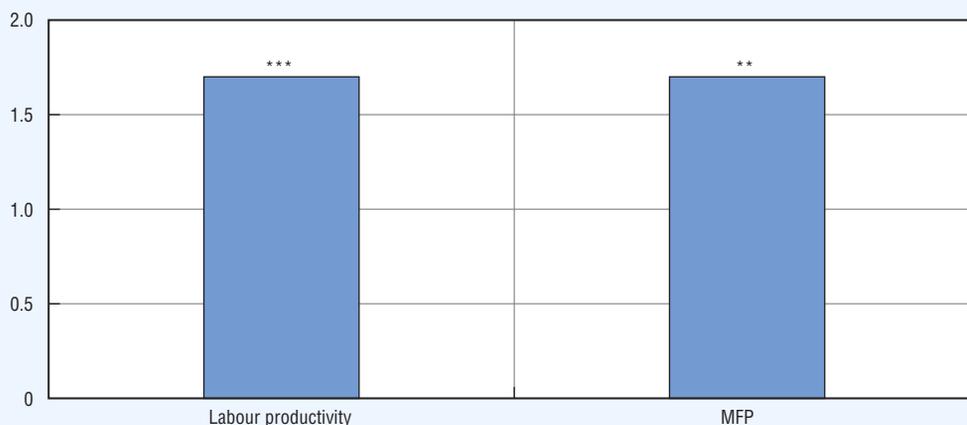
MFP: Multi-factor productivity.
** significant at 5%; *** significant at 1%.
Derived from difference-in-differences OLS estimates.
Source: OECD estimates.

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* In the United States, the unemployment insurance system is experience-rated with premia dependent, at least in part, on the risk of layoff. However, removing the United States from the estimation sample has almost no effect on the baseline results.

2.5. Parental leave

Family-friendly policies, such as parental leave, employer provision of child-care, flexible working hours or leave to care for sick family members, may help improve parents' morale and work commitment. This, in turn, may have a positive impact on productivity by making it easier for parents to balance paid work with family responsibilities. In the absence of family-friendly working arrangements, working parents, particularly women, might leave the workforce completely for extended periods of time, reducing their total work experience and accumulated job-specific human capital. Firms and workers who are assured of an ongoing employment relationship might also be more likely to invest in training. Alternatively, policies such as leave or part-time work that reduce the amount of time parents spend working could impede productivity by reducing access to training and leading to human capital depreciation. Policies that increase the cost to employers of employing parents could lead to discriminatory and inefficient hiring outcomes, whereby highly-skilled women are concentrated in low-skilled jobs. In addition, if new workers lacking in job-specific skills are hired to replace employees taking parental leave, productivity could fall, at least temporarily.

Existing studies of the impact of family-friendly working arrangements on productivity tend to be based on relatively small-scale surveys of managers' perceptions of productivity or turnover. The results are mixed and difficult to generalise (Baughman, Holtz-Eakin and DiNardi, 2003; Gray, 2002; Bloom and Van Reenen, 2006). One of the reasons for the lack of cross-country comparisons of the productivity effects of family-friendly working arrangements is that cross-country data on the use or provision of family-friendly working arrangements are scarce. Some family-friendly working arrangements are mandated by national or regional governments, but in many cases, responsibility for the provision of family-friendly working arrangements is left to employers, making it difficult to determine levels of coverage. A notable exception is parental leave. Most OECD countries have mandated parental leave arrangements, with compulsory maternity leave around the time of childbirth, and additional (paid or unpaid) leave after the birth. Because comparable cross-country data are available over a reasonably long period of time, parental leave will be the focus of the analysis in this section.

Parental leave can reduce the negative effect of child-rearing breaks on women's wages…

There is very little existing empirical evidence on the direct productivity impact of parental leave. Gray (2002) finds that the provision of paid parental leave has no significant impact on manager-reported measures of labour productivity, financial performance, turnover or absenteeism. But paid parental leave increases significantly employee-reported satisfaction with pay.

To the extent that higher productivity is reflected in higher wages, the literature examining the impact of parental leave on wages provides more evidence on the expected relationship between parental leave and productivity.[32] Time spent out of the workforce after childbirth can have a negative impact on subsequent wages for women. Much of this negative impact is due to human capital depreciation or loss of opportunities to accumulate human capital while away from work (see *e.g.* Datta Gupta and Smith, 2002). However, a number of studies have shown that the availability and use of parental leave mitigates the negative effects of children on women's wages. There are two reasons for this.

... by reducing the length of breaks and increasing the chances that women return to their pre-birth job...

First, access to parental leave seems to reduce the length of career breaks following the birth of a child. For example, Ronsen and Sundstrom (1996) find that women in Sweden and Norway who have access to paid maternity leave are more likely to return to work after child birth and return two to three times faster than other women. Similar results are found for women in the United States (Berger and Waldfogel, 2004) and the United Kingdom (Dex *et al.*, 1998; Burgess *et al.*, 2007). The negative impact of career breaks on wages tends to increase with the length of the break. Joshi, Paci and Waldfogel (1999) find that women who took a break of less than one year after childbirth had similar wages to women who had never had children, and significantly higher wages than women who took a longer break.

Second, women with access to parental leave are more likely to return to the job they held before the birth of their child (Baker and Milligan, 2005; Waldfogel, 1998; Waldfogel, Higuchi and Abe, 1999). Returning to the pre-birth job has a positive impact on wages compared with returning to a new job, so that the overall negative effect of taking a birth-related career break on wages is small or eliminated altogether (Waldfogel, 1995, 1998; Baum, 2002; Phipps, Burton and Lethbridge, 2001). Returning to the pre-birth job appears to allow women to capitalise on the benefits of accumulated tenure with their existing employer, such as seniority, training and access to internal labour markets.

... but very long periods of leave could result in human capital depreciation

Most existing studies of the wage impact of parental leave use an indicator variable for access to or use of parental leave, rather than examining differences in the length of leave available. They suggest that the availability of leave can play a role in helping women remain attached to the labour force and their previous job. However, the effect of the length of leave available is not clear. It is possible that the positive impact of parental leave on productivity occurs only for relatively short periods of leave, whereas long periods of leave lead to substantial depreciation of human capital, even if women eventually return to their pre-birth job. Ruhm (1998) finds some evidence of a non-linear relationship between the length of parental leave and wages in nine European countries. Rights to short periods of paid leave (three months) have little effect on wages, while long periods of paid leave (nine months) are associated with a decrease in hourly earnings by around 3%.

Unpaid parental leave has a small, positive impact on average measured productivity

The impact of parental leave on productivity has been estimated using the difference-in-differences technique described in Box 2.2 for a sample of 18 OECD countries over the period 1980-99. The estimation is based on the assumption that the availability of parental leave has a greater impact on productivity in industries where employment is female-dominated. Two variables for parental leave are used in this analysis: total weeks of legislated unpaid parental leave, including child-care leave; and total weeks of legislated paid maternity leave, estimated at average manufacturing worker wages (see Annex 2.A1 for more details on data and Bassanini and Venn, 2007, for a full description of estimation methods and detailed results).

The results suggest that longer unpaid parental leave is associated with somewhat higher productivity levels. Assuming that there is no impact of unpaid parental leave on productivity in non-female-dominated industries, Figure 2.7 shows that a one-week increase in the length of available leave is associated with an increase in the level of aggregate labour productivity and MFP of between 0.005 and 0.01 percentage points.

Figure 2.7. **Parental leave has a positive effect on average measured productivity**

Percentage-point impact on labour productivity and MFP levels of a one-week increase in unpaid parental leave or paid maternity leave from the sample means[a]
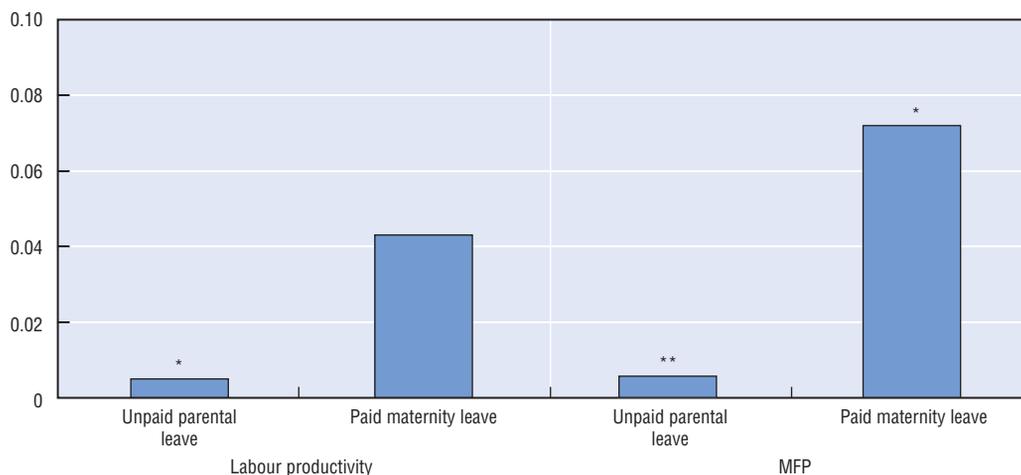
MFP: Multi-factor productivity.
* significant at 10%; ** significant at 5%.
Derived from difference-in-differences OLS estimates. The estimates in this figure are calculated by multiplying the estimated effect of parental leave in female-dominated industries by the share of female-dominated industries in total GDP. This assumes that there is zero impact of the policy in other industries (and in all industries that are not included in the sample used in the analysis) and as such, represents a lower bound of the aggregate impact of parental leave on productivity growth.
a) The sample means are 64 weeks of unpaid parental leave and 15 weeks of paid maternity leave.
Source: OECD estimates.

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Paid maternity leave has a somewhat larger positive impact on average productivity than unpaid parental leave…

The results for paid maternity leave are more ambiguous: longer periods of available paid maternity leave are associated with higher productivity levels, but the effects are only statistically significant for MFP.[33] Nevertheless, the estimates suggest that the productivity effect of additional paid maternity leave is larger than that for unpaid parental leave. These results suggest that if countries with no paid maternity leave (such as the United States) introduced it at the average OECD level (15 weeks), they could increase their MFP by about 1.1% in the long-run. The statistical significance of the results for both unpaid parental leave and paid maternity leave is sensitive, however, to changes in the sample of countries included in the analysis.[34]

A number of alternative specifications were tested to determine whether the positive productivity impact of parental leave declines with very long periods of leave and whether the productivity effect of an increase in paid maternity leave is influenced by the provision of unpaid parental leave, and *vice versa*. The results are inconclusive, but suggest that the impact of additional weeks of leave on productivity is greater in countries with relatively short periods of leave than in countries that already have generous leave entitlements. Increases in the length of unpaid parental leave only appear to be associated with higher productivity in countries where paid maternity leave is short or non-existent. In countries where women already have access to ten weeks or more of paid maternity leave, changes in unpaid parental leave have no significant impact on productivity.

... but at least part of the effect is due to changes in employment

It is possible that at least part of the increase in average measured productivity resulting from an increase in the length of parental leave is due to changes in the level of employment rather than changes in individual productivity. For example, if firms believe that an extension of parental leave will impose additional costs on employing parents (such as hiring and training replacement workers), they could reduce total employment, which could lead to higher productivity through the composition effects discussed in Section 1.2. Over the longer term, firms might substitute capital for labour in order to reduce the potential cost of parental leave, increasing the capital-to-labour ratio and raising labour productivity. Additional analysis suggests that employment and composition effects could explain up to half of the productivity effect of paid maternity leave (and a smaller proportion for unpaid parental leave), although this result varies substantially between countries.

The results presented in Figure 2.7 are based on the assumption that parental leave is the only factor that affects productivity in female-dominated industries more than in non-female-dominated industries. In reality, a range of other policy and demographic factors that influence women's labour force participation could have a similar impact on productivity to parental leave if they promote continuous labour force participation and preserve high-quality job matches. Including controls for tax incentives (labour tax wedge, tax incentives for part-time work and the relative marginal tax rate for second earners), women's education level, public expenditures on childcare and other policies that are known to affect women's employment rates (product market regulation and the average unemployment benefit replacement rate) had little effect on the size or significance of the estimated effect of unpaid parental leave on productivity.[35] The impact of paid maternity leave on productivity was somewhat more sensitive to the inclusion of control variables. Including controls increased the size and significance of the estimated effect of paid maternity leave on labour productivity, but, in some specifications, reduced the impact on MFP. It is possible that at least part of the impact of paid maternity leave on productivity operates through its effect on incentives for capital accumulation. Increases in paid maternity leave entitlements might prompt employers to invest in capital as a means of replacing workers on maternity leave, increasing the capital-to-labour ratio and labour productivity without affecting MFP.

The finding that parental leave has a positive impact on productivity suggests that there could be a business case for firms in countries with little or no legislated parental leave to introduce parental leave at the firm-level. However, there are a number of reasons why such an interpretation should be made with caution. First, higher productivity does not necessarily translate into higher profits for firms – for example, higher productivity could result in higher wages for parents returning from leave, leaving profits unchanged. Second, even if parental leave was found to increase firm profits, it is unclear whether the benefits accruing to firms would exceed the cost of providing firm-level parental leave. Third, there are likely to be external benefits to society as a whole from helping parents maintain their links to the workforce, such as higher tax revenues, reduced dependence on welfare and lower rates of child poverty. This would suggest that there is a role for government in financing at least part of the cost of providing parental leave.

Conclusion

The Restated OECD Jobs Strategy advocates a range of labour market policies, assembled into coherent policy packages, with the aim of improving labour market outcomes, primarily

increasing employment. Assessing the impact of such policies on productivity is important to the extent that policy reforms that boost labour utilisation but reduce productivity could have a negligible or even negative overall impact on GDP per capita.

The main finding of this chapter is that pro-employment policies are unlikely to lower productivity among existing workers. Moreover, even taking into account a temporary reduction in aggregate productivity due to the fact that pro-employment policies will help more low-skilled get a job – thus depressing aggregate measured productivity – pro-employment policies will often raise GDP per capita.

It has been reasonably well established that tax reforms and pro-competitive product market regulation can enhance productivity and GDP per capita growth. However, evidence on the productivity effects of other labour market reforms advocated in the Restated OECD Jobs Strategy does not loom large in the existing empirical literature. The results of the industry-level analysis presented in this chapter partially fill this gap.

The clearest result emerging from the analysis is that too strict statutory employment protection for regular contracts appears to dampen productivity growth, most likely by restricting the movement of labour into emerging, high-productivity activities, firms or industries. However, it is not clear whether partial reforms to EPL, whereby rules on temporary contracts are relaxed while leaving EPL on regular contracts unchanged, would have any impact on productivity.

Results for other policies are more tentative and the policy implications of these findings are less clear:

- Higher minimum wages appear to be associated with higher average productivity levels, but it is unclear to what extent this reflects improved incentives to invest in training or substitution of skilled for unskilled workers. Clearly, more research is needed on the channels through which minimum wages affect productivity. In the absence of more clear-cut findings, the results presented in this chapter cannot be taken as an endorsement of using higher minimum wages as a means to improve productivity performance, particularly given the possible adverse distributional consequences of reducing employment opportunities for unskilled workers.

- Parental leave also appears to increase average productivity, in part by allowing workers with family responsibilities to maintain their links to the workforce in general, and to their existing jobs in particular, around the time of childbirth. However, these results are somewhat sensitive to the empirical specification used and at least some of the productivity impact of parental leave in some countries can be explained by composition effects.

- There is also some scattered evidence that reforms that reduce the generosity of unemployment benefits tend to depress productivity, by reducing the time and/or resources available to the unemployed to find a well-matched job vacancy and by discouraging firms from creating high-risk, high-productivity jobs. This is offset by a positive employment effect, so that the overall long-run impact of lowering unemployment benefits on GDP per capita appears to be either negligible or positive. In addition, a well-designed activation policy for job-seekers could potentially replicate some of the positive productivity impacts associated with generous unemployment benefits, such as improving the quality of job matches, while also promoting employment.

The productivity impact of the other policy reforms considered in the Restated OECD Jobs Strategy could not be analysed within the context of this chapter due to insufficient cross-country comparable data. These include notably wage-bargaining arrangements,

activation policies and efficiency of public employment services as well as training policies and policies to facilitate the school-to-work transition. More research on the productivity effects of these policies is needed.

This chapter also sheds light on a critical methodological issue, namely the importance of taking into account the composition effects associated with pro-employment policies. Policy reforms that boost employment will likely have a negative impact on average measured productivity growth simply by increasing the proportion of unskilled workers employed, generating decreasing returns to labour input and creating opportunities for labour-intensive activities. Yet, this effect occurs in part because of shortcomings in the measurement of productivity, and does not generally reflect lower productivity of individual workers. Any actual slowdown in productivity growth resulting from composition effects will be temporary, coming to a halt when the employment rate reaches post-reform equilibrium level. Furthermore, lower productivity levels arising from this channel are likely to be outweighed by higher labour utilisation, leading to a small but positive increase in GDP per capita. Policy reforms that increase both the overall level of employment and GDP per capita should be encouraged, regardless of whether or not they lower average measured labour productivity.

Finally, looking at the impact of labour market reforms on GDP per capita is only one of a number of ways to evaluate their success. Policies that encourage people to move into work are likely to have social benefits in excess of their impact on GDP per capita, particularly in the longer term. These include higher household incomes and reduced reliance on welfare, allowing public revenue formerly used for welfare payments to be redirected to other social programmes or used to lower taxes.

Notes

1. Low labour productivity growth in the Netherlands and Spain could reflect progress in these countries in increasing labour utilisation, whereby less productive workers have entered the workforce, reducing the average level of measured labour productivity (see Section 1.2).

2. Schwerdt and Turunen (2006) estimate that around one third of traditionally-measured euro-area labour productivity growth over the period 1984-2004 was due to improvements in labour quality.

3. In addition, policies that lead to an expansion in employment for low-skilled workers could have significant social benefits. Any resulting productivity slowdown, therefore, should be considered in a broader context when evaluating the impact of policy changes.

4. Although Korea and Ireland were classified in the former and latter group, respectively, in OECD (2006a, 2006b) they were excluded from the groups in Figure 2.1 because GDP per capita growth rates in these countries between 1995 and 2005 were extreme values among the sample of countries considered, possibly dependent on very specific national experiences that are unlikely to be exportable elsewhere. If Korea and Ireland are included in their respective groups, the market-reliant countries had trend average annual labour productivity growth 0.3 percentage points higher, labour utilisation growth 0.7 percentage points lower and GDP per capita growth 0.4 percentage points lower than the other successful countries.

5. MFP measures the components of output and labour productivity that are not accounted for by factor inputs.

6. The cross-country coefficient of variation of MFP growth over the period was 0.78, against 0.40 for capital deepening and 0.52 for labour productivity.

7. Up-to-date international measures of productivity do not control for labour "quality". Indeed, existing human-capital-adjusted measures of aggregate MFP growth that can be compared across countries are available only until the late 1990s (Bassanini and Scarpetta, 2002b). For this reason, they are not used here.

8. A number of studies try to proxy productivity with wages (see Leuven, 2005, for a survey). However, to the extent that labour markets are not perfectly competitive, estimates of training wage premia cannot fully capture the effect of training on productivity (see Bassanini *et al.*, 2007).

9. Oliner and Sichel (2000) estimate that two-thirds of the acceleration in labour productivity growth in the United States between the early 1990s and late 1990s can be attributed to ICT. It increased productivity growth through a number of channels. Innovation in ICT-producing industries increased MFP growth in those industries. Accompanying rapid price declines for ICT goods spurred investment in ICT goods by ICT-using industries. Capital-deepening increased labour productivity growth, but not MFP growth, in these industries. In some cases, investments in ICT goods have been accompanied by changes in work processes or organisational structures that have also led to MFP improvements in ICT-using industries (OECD, 2003a; van Ark, Inklaar and McGuckin, 2003; Jorgenson and Stiroh, 2000; Oliner and Sichel, 2000).

10. Yet, stringent EPL might induce substitution of *specific* for *general* skills. As the former are of little or no use if workers need to change industry or occupation in the aftermath of major shocks, this might have a negative effect on productivity, particularly in times of diffusion of radical new technological paradigms (Wasmer, 2006).

11. In Nickell and Layard (1999), the relationship between labour productivity growth and EPL is not statistically significant once the productivity gap to the United States is included in regressions, but the relationship between MFP growth and EPL continues to hold.

12. For example, countries that have a comparative advantage in volatile, high-productivity industries might implement stricter EPL in response to political pressure to ease the social costs of labour adjustment.

13. However, the structure of layoffs in the United States might be distored by the fact that the unemployment insurance system is experience-rated with premia dependent, at least in part, on the risk of layoff. For this reason, turnover rates are also used in a sensitivity analysis. While turnover rates are quite variable across industries, the ranking of industries by turnover has been shown to be extremely stable across countries (Haltiwanger, Scarpetta and Schweiger, 2006).

14. Theory does not unambiguously predict whether EPL is more likely to affect productivity levels or growth rates. A model selection exercise, however, suggests that EPL for regular contracts is more likely to have a growth effect than an efficiency effect as the estimated level effect of EPL on productivity is not statistically significant once a growth effect is included in the specification. The results presented in this chapter are based on a model where EPL affects growth only.

15. One point corresponds also to one standard deviation in the cross-country distribution of the EPL index for regular contracts.

16. The fact that EPL appears to have a stronger effect on MFP growth than labour productivity might reflect a positive impact on capital deepening.

17. When indices for both temporary and permanent contracts are included in the empirical specification, the coefficient on the index for temporary contracts is sometimes insignificant and never significantly greater than the coefficient on the index for permanent contracts.

18. This effect should be distinguished from the composition effect discussed in Section 1.2 because the substitution of skilled for unskilled labour is not necessarily accompanied by a change in the overall level of employment or hours.

19. See Grossberg and Sicilian (1998), Neumark and Wascher (2001), and Acemoglu and Pischke (2003) for the United States, and Arulampalam, Booth and Bryan (2004) for the United Kingdom. There are several possible reasons why this strand of research is inconclusive. For instance, in countries where the minimum wage is high, it might be difficult to find a group which is not directly or indirectly affected by the minimum wage and qualifies as a genuine control. Conversely, in countries where the minimum wage is particularly low, the incidence of training in the treatment group is likely to be extremely small, since the incidence of training is relatively infrequent at the bottom of the wage distribution. Indirect evidence suggesting a positive impact of minimum wages on training is provided by empirical studies of the relationship between wage compression and training that seem to lead to less ambiguous conclusions (Almeida-Santos and Mumford, 2005; Bassanini and Brunello, 2007).

20. It is possible that the distribution of low-wage workers in the United Kingdom prior to the introduction of the minimum wage reflected economic conditions of the time period examined, rather than an underlying propensity for employing low-wage workers. However, the baseline results appear to be relatively robust to the use of alternative indicators based on the average distribution of low-wage workers by industry across a number of European countries (see Bassanini and Venn, 2007).

21. To the extent that changes in minimum wages affect productivity through their impact on firms' decisions, statutory minimum labour costs might be a more appropriate measure of minimum wages. However, compiling the data requires the use of detailed tax models for each country and year and data are available only since 2000 (Immervöll, 2007).

22. The ratio of the minimum wage to median earnings used in the analysis could be endogenous, due to the correlation between productivity and median wages. The baseline specification was initially estimated using both OLS and instrumental variables (IV) approaches, using the logarithm of the real minimum wage in 2000 US dollars PPP as an instrument for the ratio of the minimum wage to median earnings. For the baseline specification, a Hausman test for endogeneity (see *e.g.* Wooldridge, 2002) rejected the hypothesis that the ratio of the minimum wage to median earnings is exogenous, so IV estimation is used throughout to control for endogeneity.

23. As explained in Box 2.2, the estimates represent a lower bound of the effect of minimum wages on productivity. Yet, to the extent that the value added attributable to low-wage industries included in the sample accounts for over one quarter of total GDP, estimates in Figure 2.5 are less likely to heavily underestimate the aggregate impact of minimum wages on productivity than for other labour market policies examined in this chapter. Taken at face value, these estimates imply that if Spain – the country with the lowest ratio of minimum to median wages (30% in 2002) – had the same policy as France – the country with the highest ratio of minimum to median wages (61% in 2002) – its average measured labour productivity would be, other things being equal, about 6 percentage points greater than it actually is. While minimum wages appear to have a greater impact on labour productivity than MFP, the difference between the effects is not statistically significant.

24. Despite a lack of empirical evidence on a link between minimum wages and overall employment, an alternative specification – including employment as an explanatory variable – was tested to rule out the possibility that the observed positive relationship between minimum wages and productivity is purely the result of a composition effect due to lower employment. The results suggest that very little of the productivity impact of minimum wages can be attributed to changes in overall employment. This does not, however, rule out a substitution effect, whereby the skill composition, but not the overall level, of employment is altered.

25. The average unemployment benefit replacement rate was included as a control variable both individually and interacted with minimum wages. However, the results are somewhat sensitive to the sample used.

26. Alternatively, this result could indicate that in low-wage industries, higher minimum wages reduce the positive impact of unemployment benefits on productivity (see Section 2.4 for a full discussion of the possible effects of unemployment benefits on productivity). In short, if unemployment benefits increase productivity by giving the unemployed a buffer of time or resources to find a well-matched job, higher minimum wages will dampen this effect by increasing the opportunity cost for unskilled workers of remaining unemployed and creating an incentive for the unemployed to move quickly into any available job vacancy.

27. For instance OECD (2006a) reports that a 10% increase in average benefit replacement rates would, on average, reduce employment rates by 1%, that is an elasticity of –0.1. Bigger elasticities are typically found in the microeconomic literature, but they are calculated using different measures of the generosity of unemployment benefits to the measure used in this chapter.

28. Active labour market programmes (ALMPs), such as job-search assistance, training and work experience programmes, can also improve match quality by improving information about skills and vacancies, adapting the skills of jobseekers to the available vacancies or reducing the uncertainty associated with hiring for firms (see Calmfors, 1994; Martin and Grubb, 2001; Boone and van Ours, 2004; and OECD, 2005 for an overview). However, the lack of a long time series of data on ALMPs precludes a rigorous examination of their impact on GDP per capita. In addition, it is hard to conceive of a reason that ALMPs would affect productivity more in some industries than others, so the difference-in-differences methodology described in Box 2.2 cannot be applied to estimate the impact of ALMPs on productivity. For this reason, this impact is not estimated in this chapter.

29. These estimates are obtained by fitting the aggregate structural model described in Box 2.2, which was made possible by the availability of long time series for average gross replacement rates. The sample covers 18 OECD countries over the period 1970-2002. The countries included in the sample are Australia, Austria, Belgium, Canada, Denmark, France, Greece, Ireland, Italy, Japan, the Netherlands, Norway, New Zealand, Portugal, Spain, Switzerland, the United Kingdom and the United States. Canadian data on gross replacement rates refer only to the Province of Ontario. Yet, eliminating Canada from the sample yields an even less negative point-estimate, thus reinforcing the results. See Annex 2.A1 for more details on data and OECD (2007b) for detailed results.

30. Results from this robustness exercise are not shown in Figure 2.6 but are available upon request. For the purposes of this exercise, high-spending countries are Denmark, Ireland and the Netherlands. According to the estimates presented in Bassanini and Duval (2006), in these countries, ALMP spending is sufficiently high to make statistically insignificant the impact of unemployment benefit generosity on the unemployment rate (OECD, 2006a, Figure 7.4).

31. As shown in Figure 2.6, at the sample average, a 10% increase in average replacement rates would imply a fall in GDP per capita of about 0.15-0.2%, implying an elasticity no greater than –0.02. Such a low elasticity cannot be entirely explained through composition effects (see Section 1.2).

32. Almost all of the research in this area focuses on women's wages, primarily because women are far more likely than men to take parental leave. An exception is Albrecht *et al.* (1999), who find that the wage penalty for taking parental leave is much higher for men than women.

33. The same model was estimated for a more disaggregated sample of industries for labour productivity only (due to a lack of disaggregated data on capital stock) and the results showed a positive and significant effect of paid maternity leave on labour productivity, of a similar magnitude to that shown in Figure 2.7.

34. The statistical significance of the results is quite sensitive to the countries used in the sample. However, the point estimates are always positive, indicating that parental leave has either no impact or a positive impact on productivity. Thus, it can be concluded that there is no evidence that parental leave has a negative impact on average productivity. The difference-in-differences specification involves using a complete system of two-dimensional dummy variables, so the results are identified by changes in policy variables within a particular country over time. In some countries there is very little across-time variation in parental leave variables, making it difficult to identify a result.

35. There are also other unobservable factors that could affect productivity in female-dominated industries more than in non-female-dominated industries, such as employer provision of family-friendly working arrangements. There is some evidence that employer provision of family-friendly working arrangements is likely to be more prevalent in female-dominated industries (Bardoel *et al.*, 1999). Therefore, its omission from the empirical specification might bias estimates of the impact of parental leave on productivity in these industries.

ANNEX 2.A1

Data Sources

General notes on country coverage

Following Bassanini and Duval (2006), data for Finland and Sweden in 1991 and 1992 were removed from the sample, and different country fixed effects used for both countries over the two sub-periods 1970-90 and 1993-2003. Data for Germany are only included for the period from 1993 to 2003. This is to control for highly country-specific factors – including the collapse of the Soviet Union for Finland, unification of Germany and the Swedish banking crises – that are likely to have had an impact on productivity in the early 1990s and that cannot be captured using the policy control variables or other controls included in the analyses. Insofar as long time series are necessary for reliable pooled mean group (PMG) estimates, Finland, Germany and Sweden were excluded from the country sample whenever PMG estimators are used.

Variables common to aggregate and industry-level analyses

Average unemployment benefit replacement rate

Definition: Average unemployment benefit replacement rate across two income situations (100% and 67% of APW earnings), three family situations (single, with dependent spouse, with spouse in work) and three different unemployment durations (first year, second and third years, and fourth and fifth years of unemployment).

Source: OECD Benefits and Wages database.

Data adjustments: Original data are available only for odd years. Data for even years are obtained by linear interpolation.

Product market regulation

Definition: OECD summary indicator of regulatory impediments to product market competition in seven non-manufacturing industries. The data used in this paper cover regulations and market conditions in seven energy and service industries: gas, electricity, post, telecommunications (mobile and fixed services), passenger air transport, railways (passenger and freight services) and road freight.

Source: Conway *et al*. (2006).

Data adjustments: Following Bassanini and Duval (2006), data are assumed to be constant between 1970 and 1974.

Aggregate analysis

GDP per capita

Definition: GDP in volume terms.

Source: OECD Productivity database.

Initial (first year) unemployment benefit replacement rate

Definition: Average unemployment benefit replacement rate during the first year of unemployment across two income situations (100% and 67% of APW earnings) and three family situations (single, with dependent spouse, with spouse in work).

Source: OECD Benefits and Wages database.

Data adjustments: Original data are available only for odd years. Data for even years are obtained by linear interpolation.

Unemployment benefit duration

Definition: Ratio of average to initial unemployment benefit replacement rate (see above).

Source: OECD Benefits and Wages database.

Data adjustments: Data are multiplied by five in order to provide a measure in term of years.

Human capital

Definition: Average years of education of the population aged between 25 and 64 years.

Source: Conway *et al.* (2006).

Population growth

Definition: Growth rate of the population aged between 15 and 64 years.

Source: OECD Economic Outlook database.

Investment rate

Definition: Ratio of gross fixed capital formation to GDP.

Source: OECD Economic Outlook database.

Tax revenue to GDP

Definition: Tax revenue as a percentage of GDP.

Source: OECD Revenue Statistics database.

Industry-level analysis

The main sources of data for all the industry-level analyses are the 60-Industry database of the Groningen Growth and Development Centre (*www.ggdc.net*) and the OECD STAN database. These two databases are based on similar construction principles and are, therefore, roughly comparable. The 60-Industry Groningen database contains balanced country samples for value added, deflators, employment and hours and is therefore preferred to STAN for these variables.

The sample used for the analysis in this section covers at most 18 OECD countries and 16 industries over the years 1979-2003. The countries included in the sample are Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, the Netherlands, Norway, Portugal, Spain, Sweden, the United Kingdom and the United States. The industries included are listed in Table 2.A1.1. Industries excluded from the analysis are agriculture, hunting, forestry and fishing, mining and quarrying, business services, public administration and defence, education, health and social work and other community, social and personal services. These industries were excluded because they include sizeable public sector employment or because it is difficult to measure their productivity accurately. The impact on the results of excluding these sectors is unknown. Such an approach, common in empirical research using industry-level data to analyse productivity, is likely to have an increasing bias on results as the share of output produced in service industries such as health and community services increases. However, at this time, updated national accounts data that accurately measure productivity in these sectors over a long time period are not available. Selection of countries and years is due to availability of reliable data. Not all observations are included in each model, due to data availability.

Table 2.A1.1. **Industries used for industry-level analysis**

International Standard Industry Classification (ISIC, Revision 3) 2-digit code

ISIC Rev. 3	Description
15-16	Food products, beverages and tobacco manufacturing
17-19	Textiles, textile products, leather and footwear manufacturing
20	Wood and wood/cork products manufacturing
21-22	Pulp, paper and paper products manufacturing, printing and publishing
23-25	Chemical, rubber, plastics and fuel products manufacturing
26	Other non-metallic minerals manufacturing
27-28	Basic metals and fabricated metal products manufacturing
29-33	Machinery and equipment manufacturing
34-35	Transport equipment manufacturing
36-37	Manufacturing not elsewhere classified
40-41	Electricity, gas and water supply
45	Construction
50-52	Wholesale and retail trade and repairs
55	Hotels and restaurants
60-64	Transport, storage and communications services
65-67	Financial intermediation

Labour productivity

Definition: Value added in volume terms (base 100 in 2000) divided by the product of average hours worked and total persons engaged.

Source: OECD calculation using Groningen Growth and Development Centre 60-Industry database.

Employment

Definition: Total persons engaged.

Source: OECD calculation using Groningen Growth and Development Centre 60-Industry database.

Total hours worked

Definition: Product of average hours worked and total persons engaged.

Source: OECD calculation using Groningen Growth and Development Centre 60-Industry database.

Gross fixed capital formation

Definition: Gross fixed capital formation in volume terms.

Source: OECD STAN database (current and previous editions).

Capital stock

Definition: Gross capital stock in volume terms.

Source: OECD STAN database (current and previous editions).

Data adjustments: For countries for which the capital stock was not available or industry coverage was insufficient, capital stocks were reconstructed from gross fixed capital formation using a perpetual inventory method. The iterative process is described below.

STEP 1: For each industry-by-country combination (including countries with non-missing data) it is assumed that $K_t = I_t + (1 - d)K_{t-1}$, where K is the estimate of capital stock to be constructed, I is gross fixed capital formation and d is depreciation. This assumption implies that the capital-to-labour ratio k can be written as a function of the investment-to-labour ratio i, the growth rate of employment g_E, the depreciation rate, and the lagged value of the capital-to-labour ratio, that is: $k_t = i_t + ((1 - d)/(1 + g_{Et}))k_{t-1}$. In the first year, the capital-labour ratio and the investment-to-labour ratio are assumed to be in the steady state and growing at the same rate. Therefore, the capital-to-labour ratio in the first year can be written as $k_0 = (1 + g_E^*)i_1/((1 + g_E^*)g_I^* + d)$, where g_I, is the growth rate of the investment-to-labour ratio and $*$ stands for steady-state values. Steady-state growth rates of the investment-to-labour ratio and employment are computed from country-by-industry averages of investment-to-labour ratio and employment growth over the sample period. Five-year moving averages are used for start and end values in order to smooth the weight of possible outliers in start and end dates. As depreciation rates are unknown, for each industry, a grid of depreciation rates is considered (covering all possible depreciation rates from 0.5% to 10%, with an increment of 0.5%). This step produces therefore 20 possible series of the capital-to-labour ratio.

STEP 2: For countries with non-missing data for capital stock, the growth rate of the observed values was regressed on the growth rate of the step 1 measures without the constant.

STEP 3: The "best" step 1 measure for each industry is selected as the one whose step 2 estimated coefficient is closest to 1, thereby more closely resembling observed series of the capital-to-labour ratio. The distance between each estimated coefficient and 1 is measured by the mean absolute deviation from 1.

STEP 4: The capital-to-labour ratios in the first year are divided by the step 2 estimated coefficient of the selected best measure, thereby increasing all initial values if the coefficient is smaller than one and decreasing them if it is greater than one.

STEP 5: New series of capital-to-labour ratios are obtained from new starting values using the formula $k_t = i_t + ((1 - d)/(1 + g_{Et}))k_t - 1$ and the same grid as before for depreciation rates.

Steps from 2 to 5 are then repeated until the estimated error on growth rates for the best measures becomes smaller than 0.1% – after 50 iterations, convergence is not attained only in the case of one industry (hotels and restaurants); no measure was therefore constructed for that industry. At that point, the best measure of the capital-to-labour ratio is retained for countries for which the capital stock was not available or industry coverage was insufficient. However, its first five years are dropped, in order to reduce sensitivity to potential errors in starting values. Additionally, gross fixed capital formation in the Energy industry was set to missing before 1984 to reduce the influence of the second oil shock.

As a check on the quality of the procedure one can look at derived depreciation rates by industry, which indeed look plausible (Table 2.A1.2).

Table 2.A1.2. **Estimated capital stock depreciation rates**

Estimates of depreciation rates by industry obtained through the iterative procedure used to reconstruct missing capital stocks

ISIC Rev. 3	Description	Depreciation (%)
15-16	Food products, beverages and tobacco manufacturing	4.5
17-19	Textiles, textile products, leather and footwear manufacturing	5
20	Wood and wood/cork products manufacturing	2.5
21-22	Pulp, paper and paper products manufacturing, printing and publishing	4
23-25	Chemical, rubber, plastics and fuel products manufacturing	2.5
26	Other non-metallic minerals manufacturing	3.5
27-28	Basic metals and fabricated metal products manufacturing	2.5
29-33	Machinery and equipment manufacturing	2.5
34-35	Transport equipment manufacturing	3
36-37	Manufacturing not elsewhere classified	2.5
40-41	Electricity, gas and water supply	1
45	Construction	3.5
50-52	Wholesale and retail trade and repairs	7.5
55	Hotels and restaurants	n.a.
60-64	Transport, storage and communications services	3
65-67	Financial intermediation	7.5

n.a.: Not available.
Source: OECD estimates.

Employment growth

Definition: Difference between log of total employment in current year and log of total employment in previous year.

Source: OECD calculation using Groningen Growth and Development Centre 60-Industry database.

Public expenditures on active labour market policies

Definition: Public expenditures on active labour market programmes per unemployed worker as a share of GDP per capita.

Source: Bassanini and Duval (2006).

Tax wedge

Definition: Tax wedge between the labour cost to the employment and the corresponding net take-home pay of the employee for a single-earner couple with two children earning 100% of average production worker earnings. The tax wedge expresses the sum of personal income tax and all social security contributions as a percentage of total labour cost.

Source: OECD, *Taxing Wages*.

Data adjustments: Austria: original data include employers' social security contributions starting from 1997 only, thereby inducing an upward shift in tax wedge from this year; the tax wedge starting from 1997 is therefore recalculated based on the fact that employers' contribution rates to social security remained unchanged between 1996 and 1997. Netherlands: unlike other years, in 2002 and 2003 APW earnings are just above the threshold beyond which employers and employees no longer have to contribute to the national health insurance plan (private medical insurance is typically provided instead), thereby inducing a temporary decline in tax wedge; this issue is addressed by replacing the 2002 and 2003 observations by data obtained by linear interpolation between the 2001 and 2004 observations.

Output gap

Definition: OECD measure of the gap between actual and potential output as a percentage of potential output.

Source: OECD Economic Outlook database.

Training stock

Definition: stock of human capital per worker accumulated through training taken by full-time employees aged between 25 and 60 years.

Source: OECD calculations based on data from the European Union Labour Force Survey from 1992 to 2002.

Data adjustments: Data are reconstructed from participation rates in training in the four weeks preceding the survey using a perpetual inventory method. Training participation rates are computed only for individuals with at least one month of tenure at the moment of the survey to ensure that reported training was taken while working in the same industry. For each country and industry, following Dearden, Reed and Van Reenen (2006), training investments in the first year for which data are available are assumed to be in the steady state. A steady-state annual growth rate of the training stock of 2% and a depreciation rate of 15% is also assumed. Missing data between two observations were reconstructed by assuming that training stocks grew at the steady-state rate in those years. Training stocks were calculated for Austria, Belgium, Denmark, Finland, France, Germany, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom for all available industries. Greece and Portugal were excluded from the estimation because the incidence of training participation rates equal to zero in the sample was deemed to be abnormally high. The assumption of average growth of the training stock equal to 2% could not be rejected within this sample.

EPL for regular contracts

Definition: OECD summary indicator of the stringency of employment protection legislation on regular contracts.

Source: OECD (2004), *OECD Employment Outlook*.

EPL for temporary contracts

Definition: OECD summary indicator of restrictions on the use of temporary contracts by firms.

Source: OECD (2004), *OECD Employment Outlook*.

EPL total

Definition: OECD summary indicator of the stringency of employment protection legislation incorporating both regular contracts and temporary work.

Source: OECD (2004), *OECD Employment Outlook*.

Industry layoff rate

Definition: Employed persons laid off as a result of the plant or company closing down or moving, insufficient work or their position or shift being abolished as a proportion of total employment in each industry. Data refer to the United States, from 2001 to 2003.

Source: OECD calculations based on January 2004 US Current Population Survey and Displaced Worker Supplement and OECD STAN database.

Data adjustments: Layoffs calculated for each of the years 2001, 2002 and 2003. Total employment for each year is estimated for January 2004 from CPS and deflated by employment growth rate between 2004 and each year. Employment growth rates are calculated using STAN database and refer to dependent employment.

Average job turnover rate

Definition: Average gross job turnover rate aggregated from establishment level data (assuming, for continuous firms, that net employment changes are equal to gross employment changes). Data refer to the United States, from 1990 to 1996.

Source: Haltiwanger, Scarpetta and Schweiger (2006).

Average excess job turnover rate

Definition: Difference between the average gross job turnover rate and the absolute value of the difference between job creation and job destruction rates. Data are aggregated from establishment level data (assuming, for continuous firms, that net employment changes are equal to gross employment changes). Data refer to the United States, from 1990 to 1996.

Source: Haltiwanger, Scarpetta and Schweiger (2006).

Ratio of statutory minimum wage to median wage

Definition: Ratio of statutory minimum wage to median wage, in per cent.

Source: OECD Minimum Wages database.

Real minimum wage

Definition: Minimum wage in 2000 US dollars PPP.

Source: OECD Minimum Wages database.

Share of low-wage workers

Definition: UK share of wage and salary employees working at least 30 hours per week with gross monthly wages less than two-thirds of the median wage in total workers, averaged over 1994-99.

Source: British Household Panel Survey module of the European Community Household Panel.

Employment share of entering firms surviving for only one year

Definition: Proportion of total employment in new firms in a given year that exit that same year. This is equal to the product of the ratio of employment in entering firms to total employment and the ratio of employment of firms that do not survive until the following year to total employment in entering firms.

Source: OECD calculations from the OECD Firm-Level database.

Data adjustments: Equal to employment in entry firms that last one year only, divided by total employment. Calculated as an average across countries and years using firm-level data from Germany (1993-2000), Denmark, France, UK, Italy, the Netherlands, Portugal and the United States for the years 1977-2000.

Weeks of unpaid parental leave

Definition: Maximum number of leave weeks that can be taken by a mother for the birth of a first child as maternity leave, parental leave and childcare leave. Focus is on the most generous provisions that can be obtained, even though these may not apply to all women depending on their employment history or income. Only leave provided under national legislation is used (variations in schemes by region, province, *länder*, or canton are not included).

Source: Gauthier and Bortnik (2001).

Weeks of paid maternity leave

Definition: Maximum number of paid leave weeks that can be taken by a mother for the birth of a first child as maternity leave or parental leave. Focus is on the most generous provisions that can be obtained, even though these may not apply to all women depending on their employment history or income. Only leave provided under national legislation is used (variations in schemes by region, province, *länder*, or canton are not included). Does not include lump-sum benefits paid upon birth of a child where these are not connected to a maternity leave scheme.

Source: Gauthier and Bortnik (2001).

Data adjustments: Calculated by multiplying weeks of unpaid maternity leave by the maternity leave replacement rate. Where cash benefits are paid as flat-rate benefits, they were converted into a percentage using data on the average female wage in manufacturing and the average female hours worked in manufacturing published in the ILO Yearbook of Labour Statistics.

Proportion of female employment

Definition: Proportion of women in total employment by industry.

Source: OECD calculations based on data from the European Union Labour Force Survey from 1995 to 2002.

Data adjustments: Total employment of women divided by total employment averaged over years for each country and then over countries for each industry. The countries included in the sample are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Switzerland, Sweden and the United Kingdom.

Tax incentives for part-time work

Definition: Increase in household disposable income between a situation where the husband earns the entire household income (133% of average production worker earnings) and a situation where husband and wife share earnings (100% and 33% of average production worker earnings respectively) for a couple with two children. Denoting the first scenario by A and the second by B, the calculation is:

$$Tax\ incentives\ to\ part\text{-}time\ = \frac{(Household\ net\ income)_A - (Household\ net\ income)_B}{(Household\ net\ income)_A}$$

Source: OECD calculations based on OECD tax models.

Data adjustments: As this series began after 1980 for some countries, missing data prior to the first observation were replaced with the value of the variable in the first year it was available.

Public expenditure on child-care

Definition: Public spending on formal day care and pre-primary school per child in 1995 PPP-USD. Data on formal day care do not include tax expenditures (*i.e.* tax allowances and tax credits for child-care expenses) unless they are refundable. Spending on pre-primary school includes both direct and indirect – *i.e.* transfers and payments to private entities – expenditure.

Source: The main sources for formal day care and pre-primary school spending are the OECD Social Expenditures database and the OECD Education database respectively. The target population of children for formal day care and pre-primary school is calculated using data on age of entry to primary school from the UNESCO Statistical Yearbook (various years) and data on the number of children by age category from national sources for EU countries and from the United Nations World Population Prospects 1950-2050 (the 2000 revision, February 2001) for other countries.

Data adjustments: Country-specific details are provided in Jaumotte (2004). In addition, as this series began after 1980 for some countries, missing data were extrapolated from existing data using the average growth rate of expenditures on child-care for each country over the period for which data were available.

Relative marginal tax rates on second earners

Definition: Ratio of the marginal tax rate on the second earner to the tax wedge for a single-earner couple with two children earning 100% of APW earnings (see definition of the "labour tax wedge" above). The marginal tax rate on the second earner is in turn defined as the share of the wife's earnings which goes into paying additional household taxes:

$$Tax\ 2nd\ earner = 1 - \frac{(Household\ Net\ Income)_B - (Household\ Net\ Income)_A}{(Household\ Gross\ Income)_B - (Household\ Gross\ Income)_A}$$

where A denotes the situation in which the wife does not earn any income and B denotes the situation in which the wife's gross earnings are X% of APW. Two different tax rates are calculated, depending on whether the wife is assumed to work full-time (X = 67%) or part-time (X = 33%). In all cases it is assumed that the husband earns 100% of APW and that the couple has two children. The difference between gross and net income includes income taxes, employee's social security contribution, and universal cash benefits. Means-tested benefits based on household income are not included (apart from some child benefits that vary with income) due to lack of time-series information. However, such benefits are usually less relevant at levels of household income above 100% of APW.

Source: OECD calculations based on OECD tax models.

Data adjustments: As this series began after 1980 for some countries, missing data prior to the first observation were replaced with the value of the variable in the first year it was available.

Female education

Definition: Number of years of education of female population aged 25 years and over.

Source: Barro and Lee (2000).

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Chapter 3

OECD Workers in the Global Economy: Increasingly Vulnerable?

Have OECD workers become increasingly vulnerable due to the impact of globalisation? There is no simple, yes or no, answer to this question. While the expansion of trade and FDI continues to be a powerful force for raising living standards, the evidence presented in this chapter shows that the expansion of trade is a potentially important source of vulnerability for workers. This is particularly true for the labour force groups most exposed to import competition or least prepared to navigate in labour markets characterised by intensive restructuring, rising skill requirements and employers who are increasingly sensitive to differences in labour costs. Despite the potential of trade-deepening to render workers more vulnerable, recent experience shows that good domestic policies can assure that workers receive their fare share of the gains from globalisation, while also allowing firms the flexibility they need to seize new opportunities in the global economy.

Introduction[1]

Trade raises living standards by bringing about a more efficient international division of labour. Although it is difficult to estimate the gains from trade precisely, numerous empirical studies confirm that these gains are sizeable. The OECD Growth Study estimated that a 10 percentage point increase in trade openness translates over time into an increase of around 4% in per capita income in the OECD area (OECD, 2003a).[2] The recent dynamism of China and India demonstrates how trade and investment liberalisation can make a major contribution to raising incomes in developing countries, while also providing new opportunities for further gains from trade for OECD countries (see Chapter 1).

But, even as trade increases aggregate income and welfare, some workers may lose from globalisation. The reallocation of factor inputs toward more productive uses, which underlies the gains from trade, also causes some workers to be displaced from declining sectors, thereby experiencing spells of unemployment or inactivity. Furthermore, the market adjustments that bring about trade specialisation may also drive down the wages of certain groups of workers (*e.g.* low-skill workers). Even after taking account of these costs, the existing research points to substantial net welfare gains from trade.[3] Therefore, the OECD has consistently endorsed open trade and foreign direct investment (FDI) policies, while also recommending reforms to lower worker adjustment costs and upgrade labour force skills (*e.g.* OECD, 2005b).

The overwhelmingly positive judgement of economists towards open trade and investment policies stands in marked contrast to the ambivalence revealed by public opinion polling. For example, a German Marshall Fund (GMF) poll released at the end of 2006 finds that a substantial majority of the respondents in seven OECD countries agree that freer trade yields benefits to business and consumers, but approximately one-half of them also believe that "freer trade costs more jobs than it creates" (GMF, 2006). Similarly, a 2005 Eurobarometer opinion poll showed that more people had a negative than a positive view of globalisation (46% *versus* 37%), while "the relocation of jobs to countries where wages are lower" was the most frequently cited consequence of globalisation (European Commission, 2005). Comparing responses across countries reveals considerable differences in the share of the public who doubt that deepening trade benefits workers. For example, French and American respondents were the most concerned about a negative impact of trade on jobs in the GMF poll, while this concern was less common in Poland, the Slovak Republic and the United Kingdom.[4] Popular doubts about whether workers are getting their fair share of the benefits from globalisation suggest that continuing political support for trade and investment liberalisation cannot be taken for granted.

This chapter reassesses the implications of trade for OECD workers, in light of the wedge between the optimistic assessment of professional economists and the much more sceptical view of the general public.[5] In part, the intention is to provide a reality check against possibly exaggerated fears about how globalisation is affecting OECD labour markets. However, public perceptions may also provide a useful reality check for economic

research and policy making. Accordingly, new empirical evidence is assembled and analysed about how fully workers are sharing in the gains from trade and whether recent changes in foreign competition – for example the rapid increase in Chinese exports or the increased prominence of so-called "offshoring" – are affecting labour-market functioning so as to create new vulnerabilities for workers. The analysis encompasses a number of channels through which trade may affect workers adversely. However, it does not provide a comprehensive assessment of the impact of globalisation, because the benefits from trade for OECD workers are not fully accounted for and important non-trade dimensions of globalisation are not addressed.[6] Nor does the chapter analyse the effects of trade on living standards in developing countries.[7]

The chapter uses cross-country data to assess a range of possible impacts of trade on OECD labour markets, emphasising potentially adverse impacts from import competition. Section 1 sets the stage by providing a descriptive overview of recent trends in trade and labour market outcomes. Section 2 then applies econometric techniques to assess whether increased foreign competition is, in fact, rendering certain groups of workers more vulnerable. New evidence is presented on how trade is shaping the structure of labour demand across industries and skill groups and the broader functioning of labour markets, using both industry-level data and data on individual workers. A concluding section discusses the policy implications of the analysis, suggesting how governments can assure that workers share fully in the benefits from trade.

Main findings

- *International economic integration continues to deepen.* Two key features of this process are: *i)* the rising importance of large emerging economies as trading nations – especially, China, which is now the world's third largest exporter; and *ii)* the increased prominence of international production networks, partly reflecting the growing use of offshoring, which occurs when different stages of a production process are performed at work sites in different countries. Although total trade in services has remained fairly stable at about 20% since 1970, business services represent a growing share of offshoring.

- *These developments have coincided with overall improvements in employment and unemployment rates, and continued real wage growth in the OECD area during the past decade.* However, trade deepening is also occurring in the context of rising earnings inequality and a declining wage share of national income in a large majority of OECD countries. By contrast, there has not been a clear trend in job stability.

- *The chapter provides new evidence about how import competition is changing employment patterns:*

  ❖ Foreign competition – especially, imports from non-OECD countries – tends to reduce employment in the most exposed industries. Since aggregate employment in the economy generally is not affected, this is consistent with globalisation changing the pattern of sectoral specialisation to better exploit comparative advantage.

  ❖ Offshoring has no effect or a positive effect on sectoral employment. While some jobs are lost when production activities are relocated abroad, offshoring also generates a similar number of news jobs because it tends to increase the scale of production by making firms more competitive. However, this does not mean that the jobs created require identical skills as those destroyed.

❖ Offshoring changes the skill structure of labour demand by reducing the demand for low-skill workers relative to medium- and high-skill workers. This suggests that some of the workers displaced by offshoring lack the qualifications required to move into the new jobs being created in the same industries. By raising skill demand, offshoring also contributes to the trend increase in earnings inequality observed in most OECD countries, although the relatively slow increase in the scale of offshoring means that this effect is unlikely to account for a large portion of the overall increase in earnings inequality. Import competition more generally does not appear to have an important impact on the skill composition of labour demand.

● *Rising foreign competition – together with technical change – may also be causing wages and employment to become more responsive to economic shocks* related to, for example, changes in business cycle conditions or foreign exchange rates:

❖ The wage elasticity of labour demand increased from about 0.2 to 0.5 in absolute value during the period 1980-2002, with the evidence for this increase being strongest for manufacturing industries. More elastic labour demand implies greater employment and/or wage volatility everything else equal and might also tend to reduce the ability of workers to bargain for higher wages.

❖ Offshoring may be one of the driving forces behind the increase in the elasticity of labour demand since 1980, because it allows firms to more flexibly respond to shocks via changes in the mix of production at home and abroad. To the extent that globalisation has led to an intensification of product market competition, this may have further reinforced the trend rise in the elasticity of labour demand. However, more research on the specific role of offshoring as well as that of other potentially important factors in increasing the elasticity of labour demand is needed.

❖ Foreign competition disproportionately affects low-skill workers by raising the probability of involuntary job loss and by making earnings of workers that stay in their jobs more sensitive to changing conditions in the external labour market. This suggests that foreign competition may induce qualitative changes in the employer-employee relationship by eroding the ability of firms to stabilise employment and wages. There is some evidence that increased foreign competition also stimulates higher job-to-job mobility among medium-skill workers, which may indicate that they can find comparable jobs more easily than other workers, when their employer experiences financial difficulties or they are displaced.

● *Overall, the chapter's analysis suggests that trade deepening – particularly, the rapid increase of imports from non-OECD countries and the expansion of international production networks – is a potentially important source of vulnerability for workers.* However, the actual impacts appear to have been quite modest to date. Most importantly, national policy settings and institutions continue to have a decisive influence on labour market performance, including the way globalisation affects labour markets.

● *A comprehensive policy strategy is required which enhances the benefits from globalisation while addressing some of the adjustment and distributional concerns.* There is no single correct policy recipe for governments to implement, but several broad priorities can be identified. In particular, the labour-market impacts of globalisation increase the urgency of implementing coherent packages of regulatory, employment and social protection policies that reconcile flexibility for firms, to respond to new opportunities and competitive pressures, with security for workers, even as they construct their careers in

highly dynamic labour markets. The Restated OECD Jobs Strategy provides a benchmark on how to achieve this (OECD, 2006a). Such a policy stance should also help maintain broad public support for open trade and investment policies.

1. Descriptive overview of recent trends in trade and labour market performance

This section sets the stage for the econometric analysis of the labour market impact of globalisation in Section 2, using descriptive statistics to highlight several recent developments in OECD trading patterns and labour market outcomes. The section concludes by presenting several hypotheses about how globalisation is affecting workers which are suggested by these data and the recent research literature.

1.1. Trends in the magnitude and composition of OECD trade

Aggregate trade flows

United Nations data on the direction of OECD trade indicate a continued deepening of international integration, with total goods trade rising from 31% of OECD GDP in 1980 to 35% in 2005, with trade between OECD countries continuing to represent the largest part of overall trade (Figure 3.1). After being relatively flat during the 1980s, intra-OECD goods trade has increased quite rapidly more recently. By contrast, OECD trade with the rest of the world trended downward during the 1980s (as a share of OECD GDP), in part due to the declining relative price of oil. More recently, OECD imports from non-OECD countries have risen rapidly, while OECD exports to these countries have been considerably less dynamic.

Figure 3.1. **Intra-OECD goods trade and OECD goods trade with the rest of the world, 1980-2005**

Percentage of OECD GDP

Source: United Nations, COMTRADE database.

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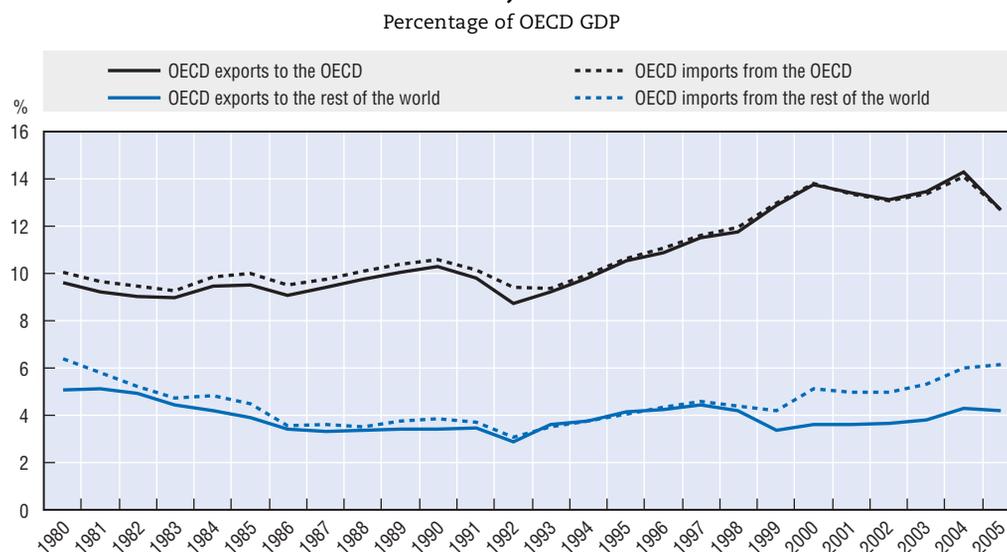
Sectors and trading partners

These aggregate measures of globalisation mask large differences across countries and sectors. Data from the World Bank indicate that OECD merchandise trade increased from 71

to 118% of value added in OECD goods-producing sectors since 1980. Contrary to popular perception, services trade is not more dynamic than merchandise trade. Indeed, the services share of total trade has remained fairly stable at about 20% since the 1970s, even as the services share of output and employment has steadily expanded. However, the ICT-enabled business services associated with offshoring have grown strongly since 1990, whereas transportation and tourism have declined as a share of total services trade.

The rapid rise of goods and services exports from large emerging economies has attracted much attention in recent years – in particular, Chinese manufactured goods and Indian business services.[8] Figure 3.2 shows the evolution of OECD goods trade with India and China over the past 25 years. In 1980, trade between the OECD and India and China was relatively small, representing in total only 2% of total OECD trade. These shares followed a relatively flat growth trajectory until the early 1990s. Since then, trade with China, has grown strongly, especially OECD imports from China. China's share of total OECD goods imports grew from 2% in 1990 to 10% in 2005, with more than half of that growth occurring since 2001.[9]

Figure 3.2. **OECD goods trade with China and India as a share of total OECD goods trade, 1980-2005**

Percentage

Source: United Nations, COMTRADE database.

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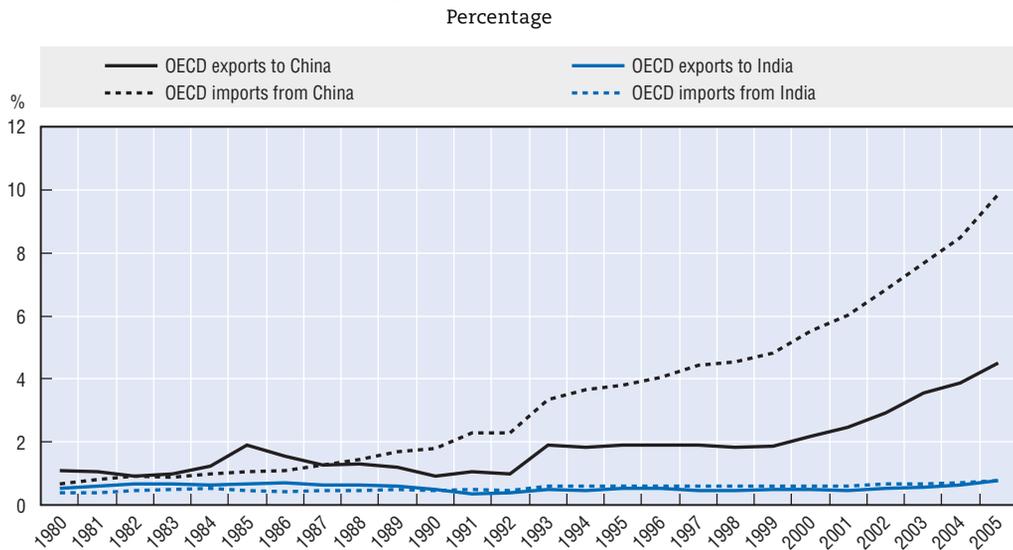
Goods trade with India has also increased since 1980, but its growth has been much more muted (Figure 3.2). However, to evaluate properly the impact of India on OECD trade patterns it is important to consider changes in services trade. India's services trade has grown at a rapid rate since 1995, albeit from a very low base, and India's share of world services exports was still only 2.3% in 2005. This is slightly less than half of China's share and much smaller that the 15% US export share. Furthermore, India's share of services imports nearly equals its export share. Even though the OECD share of world services trade fell from 78 to 75% between 1995 and 2005, OECD countries are still by far the largest exporters (and importers) of services.

International production networks and trade in intermediates

One of the distinguishing characteristics of the current stage of globalisation is the development of international production networks which distribute sequential stages in the production of a final good or service across production sites in different countries and reflects, in part, the growing practice of offshoring. These vertical trading chains can take many forms, involving both the foreign affiliates of multinational corporations and arms-length relationships with foreign suppliers (Antràs, 2003). The trend in the level of trade in intermediates (*e.g.* the importing of electronic components for assembly and the offshoring of call-centre operations) provides a useful summary indicator of the overall importance of offshoring.[10]

There is considerable evidence that offshoring has been increasing for several decades. Campa and Goldberg (1997) document offshoring, or more precisely, the foreign content of production using the ratio of imported intermediates to sales in manufacturing. They show that this measure of offshoring rose from 4% in 1974 to 8% in 1993 in the United States, from 16% to 20% in Canada and from 13% to 22% in the United Kingdom, but fell from 8% to 4% in Japan. Strauss-Kahn (2004) documents an increase from 10% in 1977 to 16% in 1993 for France. Hummels, Ishii and Yi (2001) focus on a narrower concept, which they refer to as "vertical specialisation", measured as the share of imported intermediates in exports. They find that vertical specialisation increased by 28% between 1970 and 1990 in 14 countries and that this increase accounted for 30% of total export growth for these countries.[11] Analogous calculations using OECD input-output tables for 1995 and 2000 for 20 countries (data not shown) suggest that this form of intermediates trade tended to grow somewhat more slowly during the second half of the 1990s than it had in the earlier period analysed by Hummels, Ishii and Yi (2001).

Figure 3.3 presents statistics for the foreign content of production in 1995 and 2000 for 17 OECD countries, applying a similar method as Campa and Goldberg (1997) to OECD Input-Output data.[12] Offshoring estimates are reported separately for materials and business services. The data on materials offshoring confirm that imported manufactured inputs constitute a prominent feature in production in OECD economies, although the degree of material offshoring varies significantly across these countries. Between 1995 and 2000, material offshoring grew in 13 out of 17 of those countries, but often by only a small amount. Although these estimates are not directly comparable to those in the earlier studies discussed above, they suggest that the rate of increase of material offshoring may have tended to slow during the second half of the 1990s in OECD countries.[13, 14] Comparing the two panels of Figure 3.3, it can be seen that intermediate goods continue to account for most of the trade in intermediates. The scale of services offshoring to date remains quite modest, typically at around 2% of sales. However, the data suggest that the growth of offshoring of business services during 1995-2000 was more widespread and somewhat more rapid than the growth of material offshoring. Improvements in IC technologies (*e.g.* the Internet) are making it increasingly feasible and profitable to offshore service activities and it is likely that this form of offshoring has been even more dynamic since 2000 (Van Welsum and Vickery, 2005).

The trade patterns surveyed in this section suggest the following conclusions concerning the recent evolution of globalisation:

● There has been a progressive internationalisation of all OECD countries.

Figure 3.3. **Offshoring in selected OECD countries, 1995 and 2000**[a]

Share of imported intermediates in the total output (percentage)
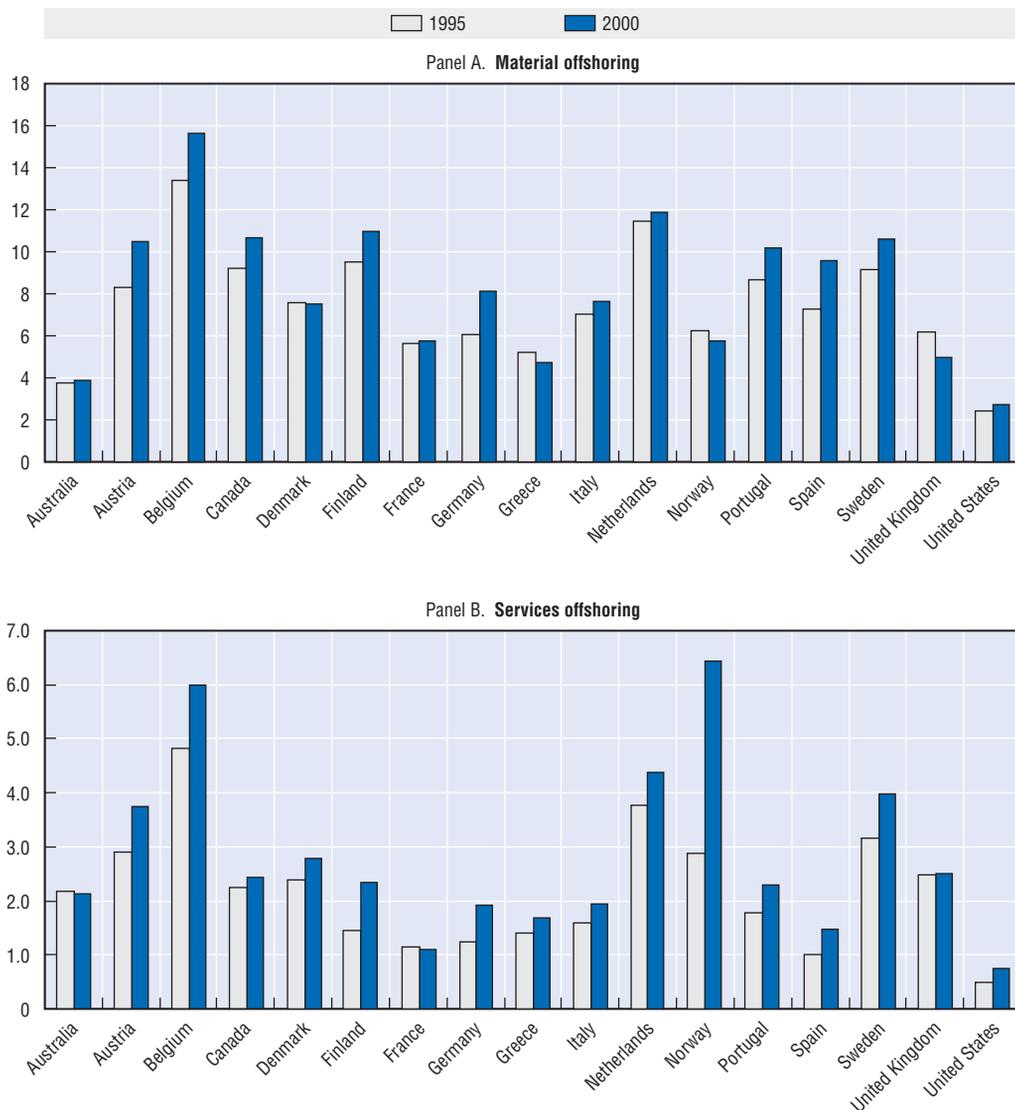
a) 1995 and 1999 for Greece and Portugal; 1997 and 2000 for Canada; and 1997 and 2001 for Norway.

Source: OECD estimates using OECD STAN Input-Output tables.

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- The relative importance of non-OECD countries, especially China, as trading partners for OECD countries is growing, but intra-OECD trade flows are still significantly larger than trade with the rest of the world.

- Intermediates trade is growing as a share of total trade and reflects the growing importance of international production networks, but the available evidence does not indicate a recent acceleration in the growth of offshoring for OECD economies.

- Services trade remains low relative to goods trade.

1.2. Labour market developments in OECD countries

Trends in employment and job security

Are offshoring and increased import competition from low-wage countries reducing employment opportunities in OECD countries, as much of the public appears to believe? Employment data do *not* suggest that globalisation has been a barrier to creating enough jobs to employ the available labour force. The share of the working-age population that is employed is essentially uncorrelated with how intensively countries engage in trade (Figure 3.4, Panel A). Indeed, the employment-population ratio has risen in a strong majority of the OECD countries during the past decade, even as trade openness continued to increase, and the OECD average unemployment rate fell from 7.8% in 1994 to 6.7% in 2005. There has been a weak tendency for employment rates to increase less in countries where trade openness increased most rapidly during the past decade (Figure 3.4, Panel B). However, the fact that countries with similar trade and FDI liberalisation patterns – even members of a common market – have widely different employment and unemployment rates, strongly supports the conclusion that the actual impact of globalisation on overall employment performance depends largely on domestic policy settings, such as those emphasised in the Restated OECD Jobs Strategy (OECD, 2006a).[15]

Even if the volume of employment available in OECD labour markets has not been reduced by foreign competition, it could still be the case that jobs have become less stable. Figure 3.5 presents two commonly-used indicators of labour turnover and job stability (the share of workers with less than a year of job tenure and average job tenure), neither of which indicates a clear trend in job stability during the past decade.[16] These data suggest that globalisation has not resulted in a generalised increase in instability for workers. However, it cannot be excluded that other factors – such as a dampening of business cycle fluctuations due to improved monetary policy (Blanchard and Simon, 2001; Clarida and Gertler, 2000) – have masked the role of deepening trade in increasing labour turnover. Another complication with the interpretation of the data on job stability is that they reflect both voluntary and involuntary turnover. Whereas voluntary separations ("quits") tend to dominate turnover, involuntary separations ("layoffs") are more closely related to concerns about globalisation being a source of insecurity.[17]

Trends in overall earnings and earnings inequality

Another commonly-expressed concern is that globalisation is eroding the bargaining power of workers. Most workers have managed to remain employed, but doing so might have required them to accept lower pay, longer hours or other conditions that they would not have agreed to in the absence of the threat that their employers would otherwise be unable to resist foreign competition or even offshore their jobs. Even if globalisation should have eroded workers' bargaining power, a negative relationship between trade openness and real wage growth need not be implied, because foreign competition and trade specialisation can be expected to raise productivity. Indeed, the aggregate data in Figure 3.6 demonstrate that average real wages continue to grow and that there has not been a systematic association between openness and real wage growth across OECD countries during the past decade.

The wage share of national income provides a potentially more informative indicator of how fully workers are sharing in the gains from globalisation. Figure 3.7 shows that the wage share of national income has declined quite sharply since 1980 in the EU15 and Japan, and more gently in the United States, implying that average wages have failed to keep pace with labour productivity. All of the 16 OECD countries for which this statistic can be

Figure 3.4. **Aggregate employment is not systematically related to trade openness**[a]

Panel A. **Trade openness and the employment-population ratio, 2005 (percentage)**

Panel B. **1995-2005 increases in trade openness and the employment-population ratio (percentage points)**
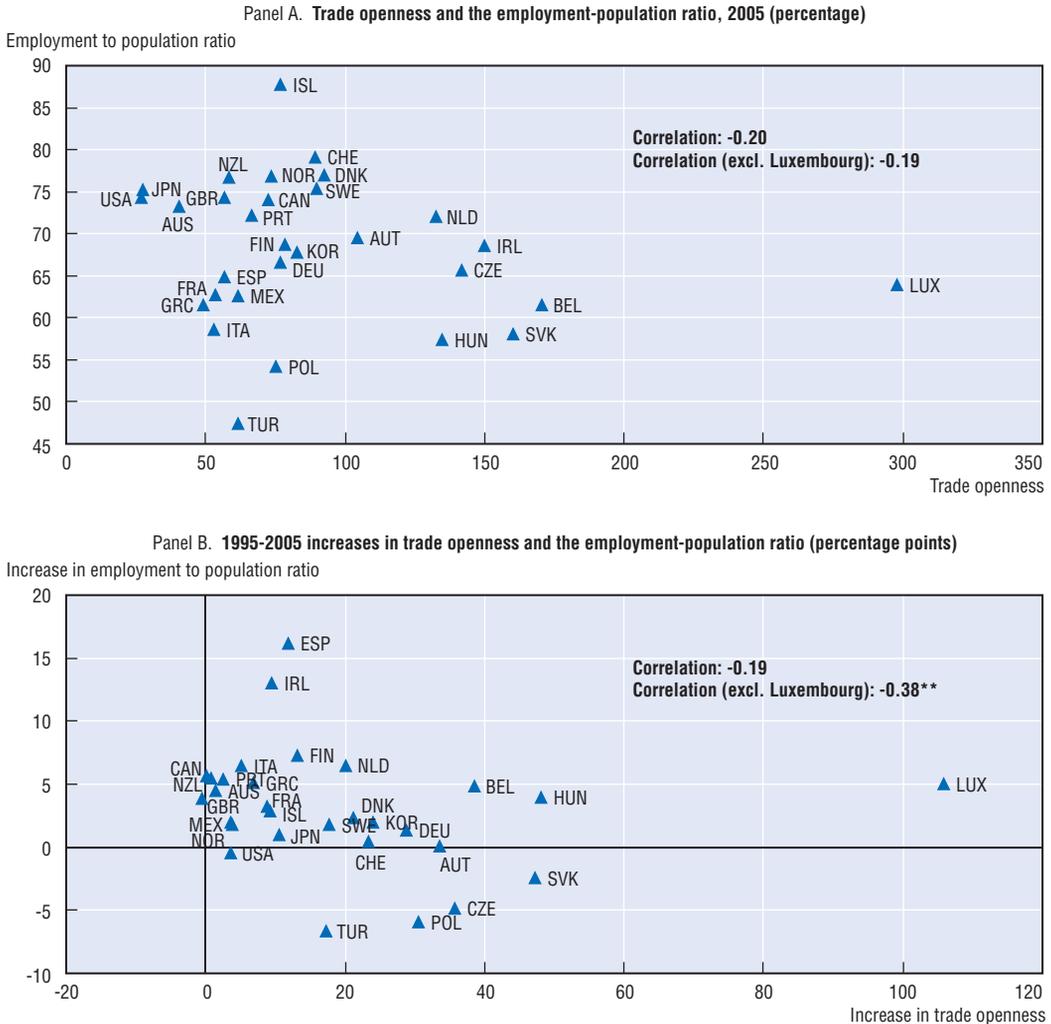
* significant at 10%; ** significant at 5%; *** significant at 1%.
a) Trade openness defined as the sum of exports and imports as a percentage of GDP.
Source: OECD Economic Outlook and Labour Market Statistics databases.

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calculated for the entire post-1990 period show some decline in the wage share, with the decline ranging from being barely perceptible to rather steep. Although the downward trend in wage shares has coincided with rapid growth in trade and FDI, many factors other than a decline in bargaining power caused by globalisation could have played a role. For example, factor-biased technical change, capital-deepening and changes in the industry mix of output can all cause the aggregate wage share to decline with no change in the bargaining power of workers (Bentolila and Saint-Paul, 2003; Serres, Scarpetta and de la Maisonneuve, 2002). However, the multivariate analysis in IMF (2007) suggests that trade and immigration both contributed to lowering wage shares in OECD countries.

There has also been much concern that trade is causing the wage distribution to become more unequal. In 17 of the 20 countries for which data are available, the earnings of workers at the 90th percentile of the earnings distribution have risen relative to those of

Figure 3.5. **Share of employed persons with less than one year of job tenure and average job tenure in OECD countries, 1995 and 2005**[a, b]

Persons aged 15-64

Panel A. **Share of persons with less than one year of job tenure**
Percentage of total employment

Panel B. **Average job tenure**
Number of years
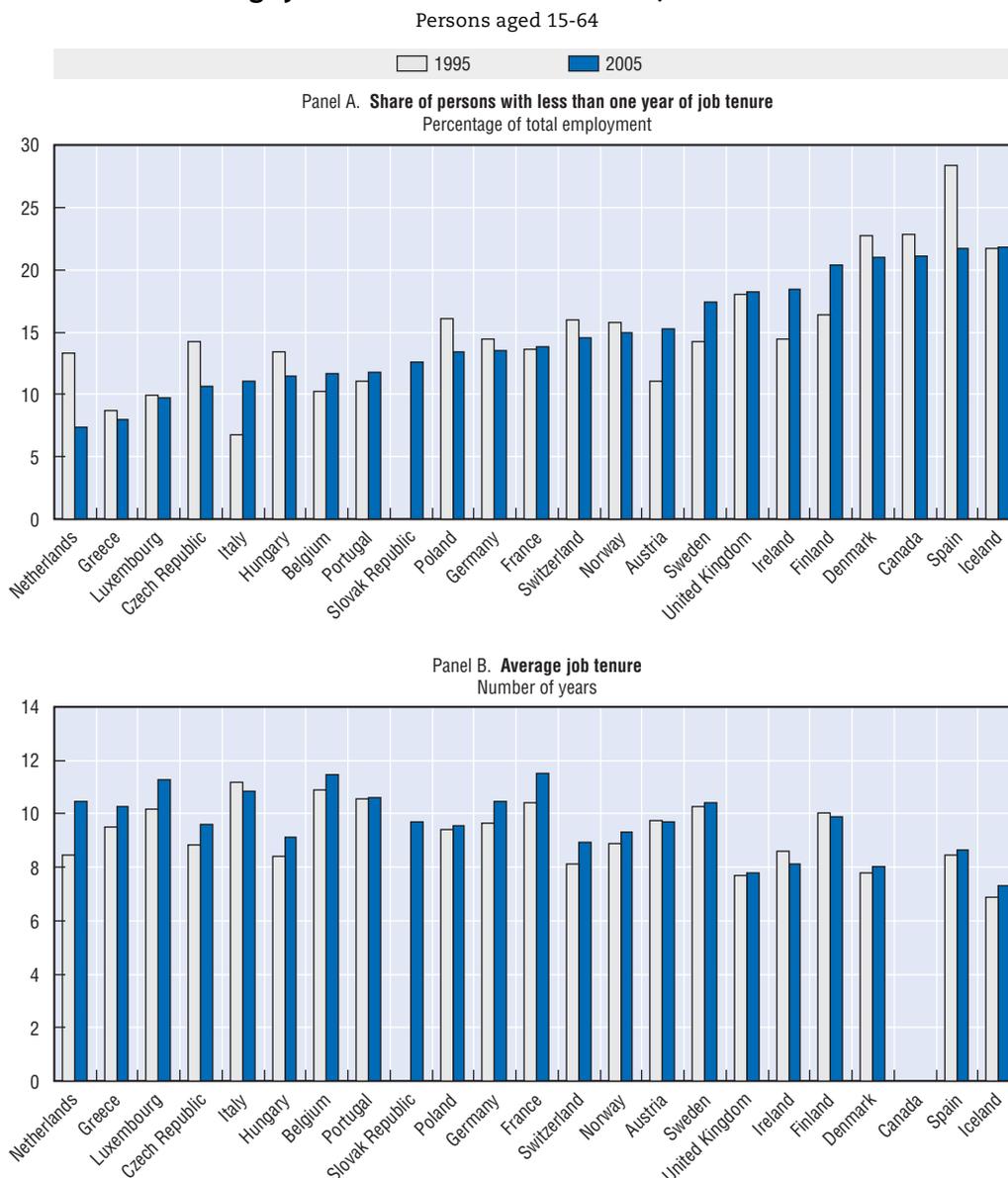
a) 1996 and 2005 for Switzerland; 1997 and 2005 for the Czech Republic, Hungary and Poland.
b) Countries shown in ascending order of the share of employed persons with less than one year of job tenure in 2005.

Source: OECD Job Tenure database.

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workers at the 10th percentile since the early 1990s, although often by only a modest amount (OECD, 2006b). The Heckscher-Ohlin-Samuelson (HOS) trade model suggests that growing trade with developing countries, which have large supplies of low-skill workers, could increase earnings inequality in OECD countries by depressing the wage of low-skill workers. A number of empirical studies conclude that this has happened to some extent, but also emphasise how difficult it is to differentiate between the impacts of trade and other factors on relative wages.[18]

Figure 3.6. **Real wage growth is not systematically related to trade openness,**[a] **1995-2005**

Percentage points

Panel A. **2005**[b]

Panel B. **1995-2005**[c]
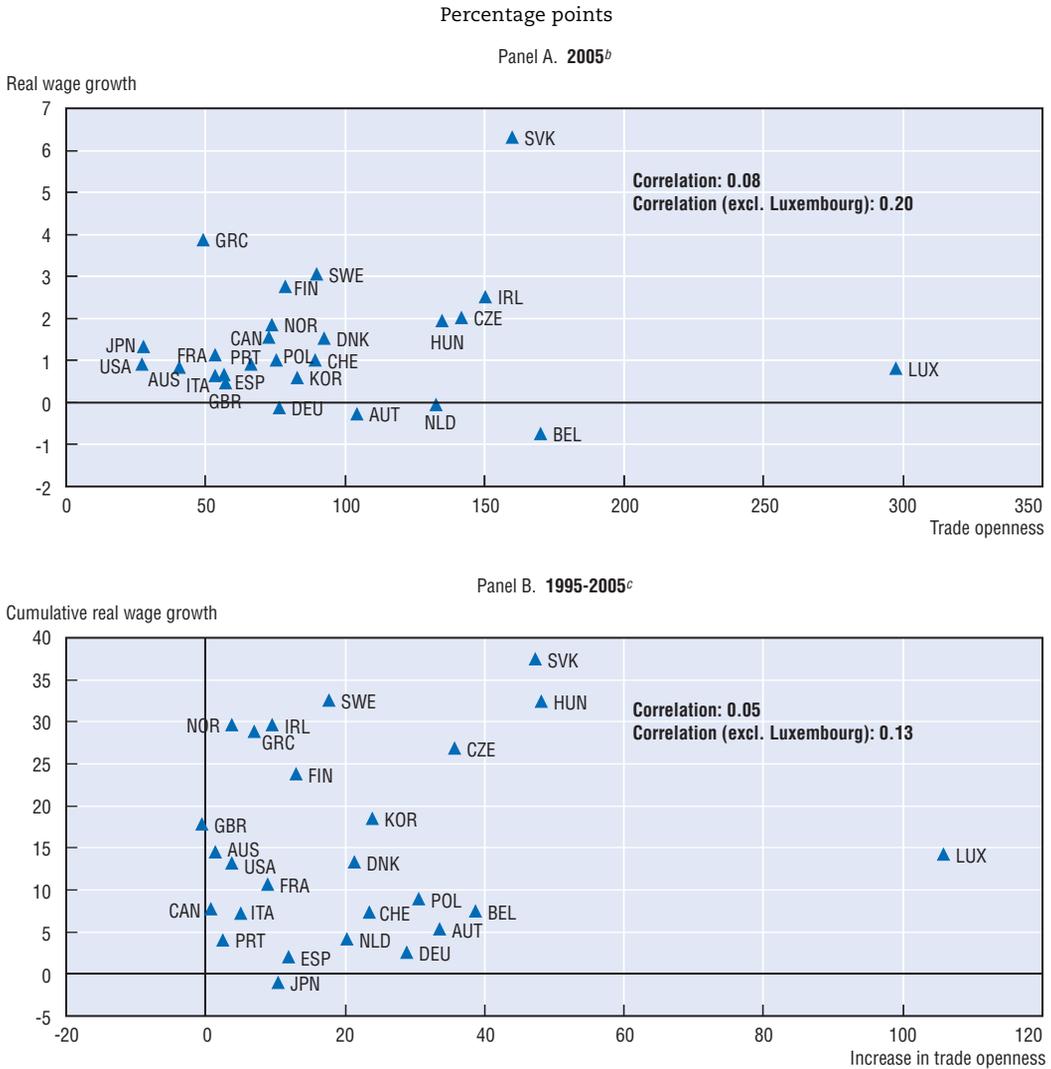
* significant at 10%; ** significant at 5%; *** significant at 1%.

a) Aggregate real wage defined as total wage and salary income of dependent employees per full-time equivalent worker. Trade openness defined as the sum of exports and imports as a percentage of GDP.

b) 2004 for Greece.

c) 1995-2004 for Greece; 1997-2005 for the Czech Republic; 1999-2005 for Portugal; 2000-05 for Hungary, Japan, Poland, Spain and Switzerland.

Source: OECD Economic Outlook and Labour Market Statistics databases.

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Figure 3.8 examines the evolution of earnings inequality for the ten OECD countries for which it is possible to track trends since 1980, decomposing the overall change into the contributions of increased dispersion in the upper and the lower halves of the distribution. As is well known, earnings inequality has tended to increase the past several decades.[19] What is less well known is that essentially all of the cumulative increase in earnings dispersion since 1990 has occurred in the top half of the earnings distribution (see the OECD10 lines in Figure 3.8). Significantly for this chapter's analysis, import competition from developing countries would be more likely to increase dispersion in the bottom half

Figure 3.7. **Wage share of national income in EU15, Japan and the United States, 1970-2005**

Share of total wages and salaries in total value added,[a] percentage
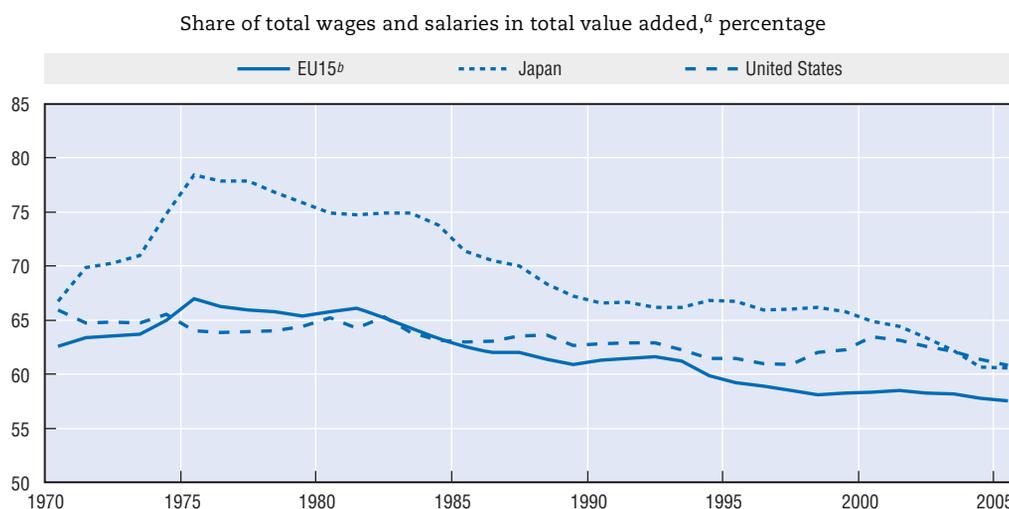
a) Total labour compensation, including employers' social security and pension contributions and imputed labour income for self-employed persons.
b) GDP-weighted average of the following countries: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Spain, Sweden and the United Kingdom.

Source: OECD estimates using the OECD Economic Outlook database.

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of the earnings distribution, than in the top half.[20] In sum, globalisation is occurring in the context of rising earnings inequality in most OECD countries, but much of the increase has taken a form that is not easily attributed to trade.

Increased earnings inequality need not translate into increased income inequality. The two types of inequality can evolve differently because families may pool multiple sources of income (*e.g.* the earnings of multiple workers, self-employment earnings and investment income) and governments may make use of redistributive taxes and benefits to produce a distribution of final incomes that is less unequal than the distribution of market incomes. In fact, OECD income distribution statistics indicate that inequality in the market and final incomes of households has risen about as rapidly as earnings inequality since 1985, with most of the increase occurring before 1995.[21] However, these statistics do not capture developments at the very top of the income range.[22]

Using newly available data from tax records, Piketty and Saez (2006) provide an overview of the evolution of the income share accruing to the top 0.1% of the income distribution over most of the past century in five large OECD countries (Figure 3.9). Most of the 20th century was characterised by a sharp drop in this share, representing a significant reduction in income inequality at the very top. During the past several decades, however, the 0.1% income share has begun to grow again in Canada, the United Kingdom and, especially, the United States. The reasons for this reversal are only beginning to be studied, but this pattern is at least suggestive that globalisation is creating opportunities for a small elite of workers and investors to pull away from everyone else.[23] The fact that no such trend is evident for France and Japan suggests that differences in national policies and institutions also play an important role in determining the income share going to the top 0.1% and how it is affected by international economic integration.

Figure 3.8. **Earnings inequality in ten OECD countries since 1980**

Index, 1985 = 100
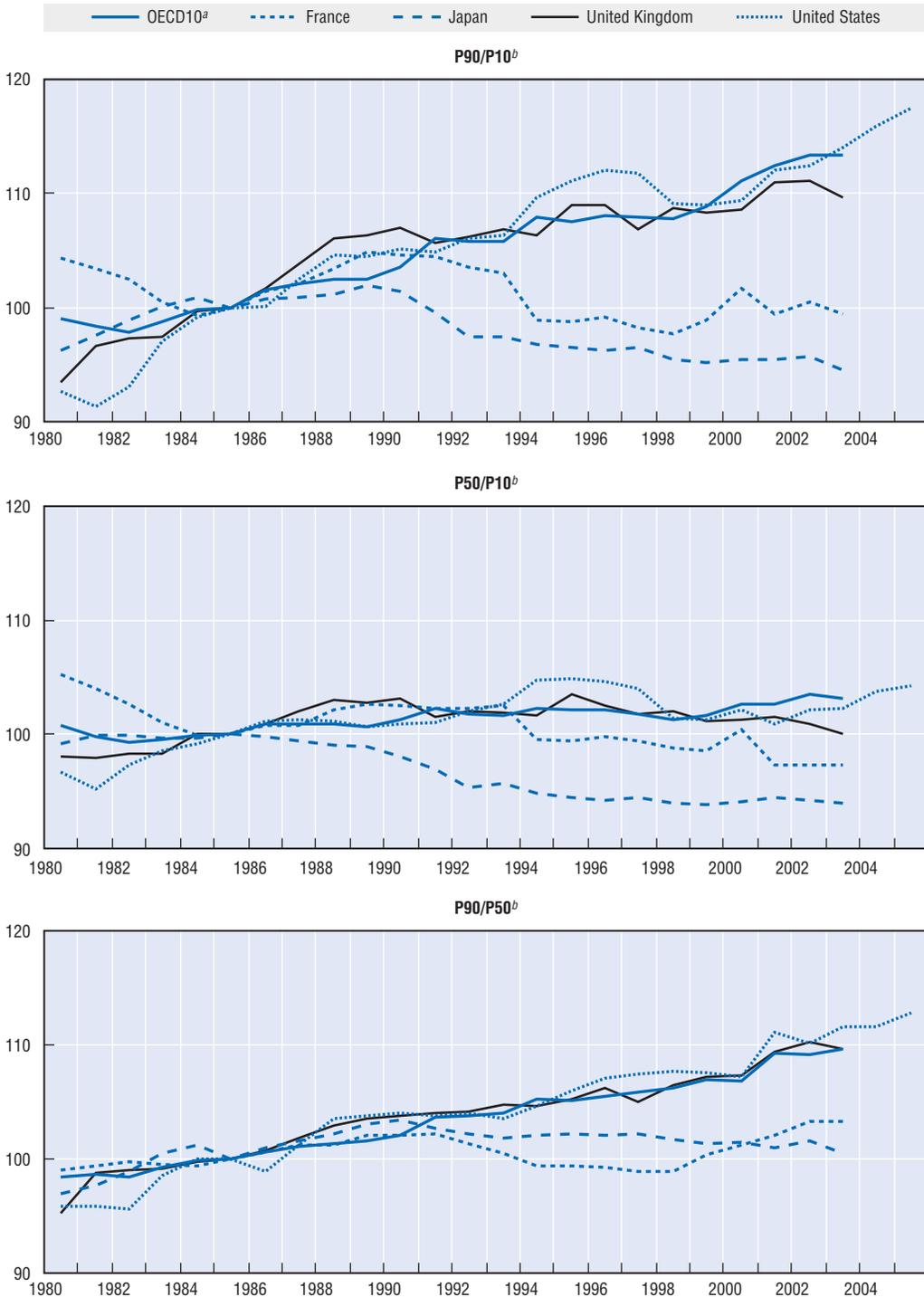
a) Unweighted average of the following countries: Australia, Denmark, Finland, France, Japan, the Netherlands, Poland, Sweden, the United Kingdom and the United States.

b) P90, P50 and P10 denote the 90th, 50th and 10th percentiles of the distribution of earnings for full-time employees.

Source: OECD Earnings Distribution database.

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Figure 3.9. **Top 0.1% income share in five OECD countries, 1913-2005**

Percentages
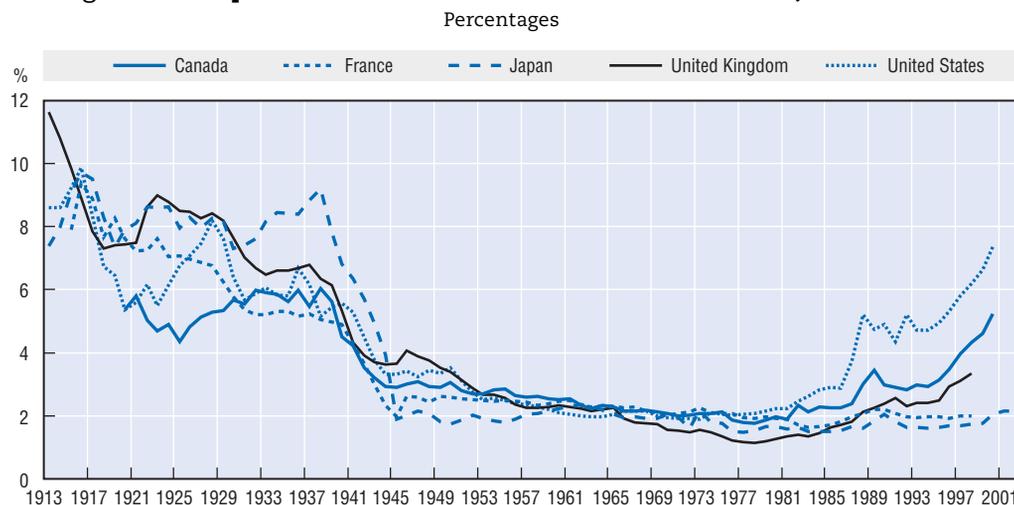
Source: Piketty and Saez (2006).

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In sum, globalisation is proceeding in a context of falling wage shares and rising earnings and income inequality in most OECD countries. However, the strength of these trends varies from country to country and much of the rise in inequality does not take the form of declining wages for low-skill workers.

1.3. *Some hypotheses about how globalisation is affecting OECD labour markets*

The econometric analysis in Section 2 brings together data on trade and labour market outcomes to analyse how globalisation – particularly, import competition – is affecting OECD labour markets, including whether foreign competition increases insecurity and inequality. The stylised facts presented above, together with the recent research literature, suggest several hypotheses about possible links between these two sets of facts which can help to motivate the empirical analysis that follows.

The continued increase in the openness of OECD countries to trade – along with the rising importance of trade with China and other developing economies and the continuing development of international production networks – suggest that there may have been an intensification of several links between trade and labour market outcomes which have already been the object of much research:

● The integration of China and other labour-rich developing countries into the world trading system creates potentially large gains from trade, since these emerging trading partners have very different factor endowments from those of most OECD countries. Similarly, the additional forms of vertical specialisation that have been made possible by the Internet and other technological advances also allow for a more efficient international division of labour (Grossman and Rossi-Hansberg, 2006).[24]

● While these dynamic forms of trade deepening represent potentially large efficiency gains, the reallocation of factor inputs required to exploit new opportunities for specialisation may also have intensified worker displacement due to trade. The rapid expansion of exports from China and other emerging economies may also be intensifying the downward pressure on the wages of low-skill workers, by pushing down the relative prices of products embodying relatively large amounts of low-skill labour.

- As production processes are increasingly fragmented, it is also possible that an ever-increasing share of the labour force, including many medium- and high-skill workers, will face direct competition from workers in developing countries where wages are much lower (Blinder, 2006). That is, an increasing share of the labour force may have reason to view trade as a potential threat to their job security and earnings, even if they have not been much affected by foreign competition in the past.

The econometric analysis of industry-level labour demand in Section 2.1 addresses some of these issues. In particular, it examines how foreign competition is affecting the industrial and skill compositions of labour demand. This analysis uses a number of indicators of foreign competition to clarify whether trade with developing countries or offshoring have different effects than other forms of trade. Similarly, the analysis of worker turnover in Section 2.3 examines whether foreign competition is resulting in higher rates of job loss or lower earnings for different groups within the labour force.

A more novel set of hypotheses concerns whether globalisation is having more pervasive impacts on employment relations, so as to reduce workers' economic security or bargaining power:

- Labour demand volatility could rise as industries become more open, because firms are increasingly exposed to international shocks, such as exchange-rate fluctuations. The result could be greater labour market churning and reduced job security. Any such added volatility would affect workers in industries with a comparative advantage, as well as their counter-parts in industries at a comparative disadvantage.[25]

- Globalisation could also reinforce the propagation of labour demand shocks. Rodrik (1997) argued that international economic integration increases the price elasticity of labour demand and that this has the effect of magnifying the impact of any given distribution of shocks to labour demand on employment and wages. Slaughter (2001) argues that international production networks are particularly likely to increase labour demand elasticities and provides evidence that elasticities have increased in the United States for production workers.

- If globalisation has the effect of permanently increasing the volatility of labour demand, this could make employers less willing or able to insulate the earnings of incumbent workers from changing conditions in the external labour market (Bertrand, 2004).

- Increased labour demand elasticity and intensified foreign competition more generally could tend to reduce workers' bargaining power. Traca (2005b), for example, finds that increased labour demand volatility leads to wage moderation. There is also some evidence that the rents previously accruing to workers are squeezed after trade liberalisation exposes their employers to increased import competition (Traca, 2005b; Boulhol, Dobbelaere and Maioli, 2006; Kramarz, 2006).

- By contrast, some trade theorists have argued that global market integration increases the bargaining power of workers and managers possessing highly-sought talents, so-called "superstars" (Anderson, Tang and Wood, 2006; Cuñat and Guadalupe, 2006; Manasse and Turrini, 2001).

The econometric analysis in this chapter provides an initial examination of some of these hypothesised links between globalisation and the overall functioning of the labour market. The possibility that foreign competition has increased the labour demand elasticity is analysed in Sub-section 2.2, using sectoral data. The extent to which foreign

competition increases job separations and how fully employers shield the earnings of their incumbent workforce from changing conditions in the external labour market is then examined in Sub-section 2.3, using panel data on individual workers.

2. Econometric analysis of the effects of foreign competition on labour markets

This section uses econometric techniques to assess some of the channels through which import competition may create vulnerabilities for workers. For reasons of tractability, a partial equilibrium approach is used to study the impact of globalisation on labour demand. This does not mean that the analysis presented here is inconsistent with general equilibrium models of international trade. In fact, a considerable part of the analysis focuses on measuring changes in sectoral labour demand without evaluating how the labour market adjusts in response to these changes. This analysis is compatible with a particular version of the Heckscher-Ohlin-Viner (HOV) trade model, where capital is assumed to be sector-specific and workers are perfectly mobile across sectors.[26] While such an approach is useful for highlighting potential vulnerabilities, a more comprehensive general equilibrium approach would be required to provide a full accounting of the costs and benefits of deepening global economic integration for workers.

2.1. *The impact of foreign competition on the structure of labour demand*

Import competition can affect industry-level labour demand through two distinct channels:

- *Technology effect*. Foreign competition may induce factor-biased technological change, thereby changing the input mix at the level of the industry, in three ways.[27] First, foreign competition may take the form of offshoring. In recent years, firms have increasingly chosen to move part of their production activities offshore, thereby substituting domestic workers for imported intermediate inputs (Jones and Kierzkowski, 1990; Feenstra and Hanson, 1996). Second, import competition may change the composition of firms in the industry. Recent trade models that account for firm heterogeneity have shown that trade liberalisation will typically induce the reallocation of resources *within* the industry, from less productive to more productive firms. To the extent that firms in the same industry also differ in their relative input requirements, this reallocation will change the average production technology of the industry (Melitz, 2003; Yeaple, 2005). Third, it has been argued that foreign competition may strengthen incentives for domestic firms to upgrade their production technologies and engage in innovative activities (Wood, 1994; Thoenig and Verdier, 2003).

- *Scale effect*. Foreign competition may also change sectoral employment patterns by changing industry output. Trade liberalisation is typically expected to lead to a reduction in the output price in import-competing industries, thus inducing the reallocation of resources from comparative disadvantaged sectors to those with comparative advantage. In the context of trade in intermediates, including offshoring, it is sectoral productivity that matters. As offshoring is normally undertaken in the expectation that it is profitable, the productivity gains from offshoring may be substantial. Increased profits will lead to an expansion in industry output, thereby dampening output prices and stimulating product demand and hence employment.

Since the technology and scale effects work in opposite directions, the overall impact of offshoring on employment is ultimately an empirical question (Amiti and Wei, 2006). This section presents new estimates of the impact of foreign competition on industry-level

labour demand, distinguishing between the technology and scale effects. Box 3.1 sets out the econometric methodology that is used in this section to estimate the impacts of several forms of import competition on sectoral employment.

Earlier studies have used a variety of measures to capture different aspects of how trade affects labour demand. Since the chapter's focus is on potential worker vulnerabilities, the different measures of trade adopted here concentrate on the import-side. Three different measures of foreign competition are used to analyse the technology and scale effects due to imports: *i)* the import penetration rate; *ii)* the share of imports of intermediate inputs in value-added; and *iii)* the industry-specific real exchange rate. Box 3.2 defines these measures of foreign competition, identifies the underlying data sources and discusses their interpretation. While in principle it would also be interesting to analyse the role of exporting on employment, this is not straightforward in practice.[28]

Sectoral labour demand

The estimated impacts of the three measures of globalisation on total sectoral employment are shown in Table 3.1.[29] Panel A presents estimates of the impacts of import penetration and industry-specific real exchange rates that were estimated using annual data for 1987-2003. The following results emerge:

- Most of the estimated coefficients for the control variables have their expected sign and are statistically significant, suggesting that the estimation strategy has been quite successful in identifying the labour demand curve. Nonetheless, estimation results for the unconditional demand curves are somewhat less satisfactory than those for the conditional demand curve and the following discussion emphasises results for conditional demand. Estimation results are also quite similar for the full economy and manufacturing – where the sectoral data are better.

- No significant association between the degree of *import penetration* and industry-level labour demand is indicated by the conditional labour-demand estimates.[30] However, the *composition of imports* by region of origin does appear to play a role, with a higher share of imports from non-OECD countries in total imports being associated with lower sectoral labour demand. This suggests that import competition from emerging economies, such as China and India, represents a stronger force towards structural change than import competition from other developed countries.[31]

- As was expected, an increase in the industry-specific exchange rate has a positive impact on employment in the conditional labour-demand model. In other words, employment tends to rise in industries where output prices fall relative to foreign competitors (industry-specific exchange rate depreciation) and fall in industries where price competitiveness deteriorates.[32]

Panel B of Table 3.1 presents cross-sectional estimates of the impact of offshoring on sectoral labour demand. *A priori*, offshoring should have a negative effect on the labour-intensity in an industry (the "technology effect"), but a positive effect on the level of output, due to the productivity gains from offshoring (the "scale effect"). The effect on labour-intensity is given by the offshoring coefficient in the conditional labour-demand estimates, while the total effect is given by the unconditional labour-demand estimates. The following results emerge:[33]

- In contrast to the panel estimation results in Panel A, both the conditional and unconditional labour demands estimated with the cross-section data and reported in

Box 3.1. **Estimating the effects of foreign competition on sectoral employment**

Two models of labour demand are used here to study the impact of foreign competition on sectoral employment: the conditional and unconditional labour-demand models. In the conditional model, the profit-maximising level of labour demand is determined by minimising the costs of production conditional on output. More specifically, industry i's production costs $C_i (w_i, x_i)$ are a function of factor prices w (for the variable factors), and output x. By Shephard's lemma, the partial derivative of the cost function with respect to the wage gives labour demand.

In the unconditional labour-demand model, it is assumed that firms maximise profits, $\Pi_i (w_i, p_i)$, by choosing the optimal mix of input quantities and the level of output for given input and output prices. The profit-maximising labour demand is the employment level at which the partial derivative of profits with respect to labour equals to zero, which corresponds to adjusting hiring so that the marginal value product of labour equals the wage.

In order to study total sectoral labour demand, the log-linear model of conditional and unconditional labour demand is employed (Hamermesh, 1993).[a] As is common in the literature, capital is treated as quasi-fixed (see for example Berman, Bound and Griliches, 1994). There are at least two reasons for doing so. First, this avoids problems related to the measurement of the user cost of capital. Second, to the extent that in the unconditional labour-demand model one may not be able to effectively control for the location of the labour demand curve, there is a risk of confounding shifts in the labour-demand schedule with changes in its slope. Including the capital stock rather than the cost of capital helps to control for this, while it leaves some scope for changes in output.[b]

Omitting country and time subscripts for ease of presentation, conditional labour demand in industry i is represented by:

$$\ln L_i = \alpha_o + \sum_{j=1}^{J} \alpha_j \ln w_{ij} + \beta_k \ln k_i + \beta_y \ln y_i + \sum_{i=l}^{L} \gamma_l z_{il} \qquad [3.1]$$

where L corresponds to industry-level labour demand; w to the nominal price of variable factors (i.e. the wage and the price of materials); k to the capital stock and y to gross output. The core model is augmented by a set of demand shifters, z, which are intended to capture factor-biased technological change (FBTC). These include a measure for the intensity of research and development and, most importantly for this chapter's analysis, various measures of foreign competition.

Similarly, unconditional (or "capital-constrained") labour demand in industry i is represented by:

$$\ln L_i = \alpha_o + \sum_{j=1}^{J} \alpha_j \ln w_{ij} + \beta_k \ln k_i + \beta_p \ln p_i + \sum_{i=l}^{L} \gamma_l z_{il} \qquad [3.2]$$

where L corresponds to industry-level labour demand; w to the price of variable factors; k to the capital stock, and p to the price of gross output. As in the conditional model, the core model is augmented with a set of variables z, which in addition to the capital stock, are intended to control for shifts in labour demand. Given the homogeneity properties of the cost and profit functions one ought to impose homogeneity in the empirical model. Clark and Freeman (1980) however argue that this may aggravate bias in the estimation when measurement error is important. Homogeneity was therefore only imposed when this could not be rejected by the data.

Box 3.1. **Estimating the effects of foreign competition on sectoral employment** (cont.)

Three measures of foreign competition are used when estimating these models (see Box 3.2 for detailed variable definitions and data sources). Due to the uneven availability of the different measures of foreign competition, two different datasets are used to estimate these labour-demand models. The first dataset represents a panel dataset of sectoral production data for the period 1987 to 2003. The dataset is complemented with two different measures of foreign competition: import penetration and industry-specific real exchange rates. The second dataset combines sectoral production data with input-output tables to study the impact of offshoring, the third measure of foreign competition used in this study, on labour demand. Due to the limited availability of the input-output tables, this dataset only covers the years 1995 and 2000.

The various labour-demand models are estimated using five-year differences. Differencing takes account of any time-invariant fixed effects. Long differences are used to account for lags in the adjustment of labour demand to shocks. Moreover, estimates based on long differences are less sensitive to bias due to measurement error than either fixed effects or first-differences (Griliches and Hausman, 1986). Where possible, a full set of time dummies is included to control for common trends in employment across countries and industries.

a) This has the advantage that the coefficients can be interpreted as elasticities.
b) This thus represents a compromise solution between identification of the labour-demand curve and the ability to capture scale effects in the unconditional labour-demand model. As such, one may alternatively like to refer to it as the capital-constrained model.

Panel B appear to be well identified. In particular, the unconditional elasticities are considerably larger than the conditional elasticities of labour demand, as predicted by economic theory. Measurement error may be less of a problem for the latter estimates, because a full set of input-output tables are available to impute the price of materials and output.[34]

- The *conditional* demand estimates indicate that there is a significant negative correlation between offshoring within the same industry (narrow offshoring) and labour-intensity (employment at given output). Given the actual increase in narrow offshoring during 1995-2000, the estimated coefficients imply that increased narrow offshoring was associated with a reduction in labour intensity of 0.12% (0.19% in manufacturing).[35] The coefficient for services offshoring is also negative and significant in manufacturing, but this form of offshoring did not increase during the period 1995-2000.[36] There is no association between total offshoring or offshoring of materials and labour intensity.[37]

- The *unconditional* labour demand-estimates do not indicate any impact of narrow offshoring on the level of sectoral employment, once the scale effect is taken into account. The difference between the conditional and unconditional estimates suggests that the productivity gains from offshoring in the same industry are sufficiently large for the jobs created by higher sales to completely offset the jobs lost by relocating certain production stages to foreign production sites. Consistent with this interpretation, total offshoring and offshoring from other industries – for which the employment losses in the offshoring industry are expected to be more limited, but the productivity gains similar – are found to increase industry-level labour demand.[38]

Box 3.2. **Measuring foreign competition**

Three measures of import competition are used to estimate the impact of trade on labour demand: *i)* the import penetration rate; *ii)* the share of imports of intermediate inputs in value-added; and *iii)* the industry-specific real exchange rate.

Import penetration

Import penetration is defined as the ratio of imports over domestic absorption in industry *i* and country *k*:

$$m_{ikt} = \frac{M_{ikt}}{Y_{ikt} + M_{ikt} - X_{ikt}}$$ [3.3]

where *M* refers to the value of imports of industry *i* by country *k*, *X* to the value of exports of industry *i* in country *k* and *Y* to gross output. Import penetration provides an overall index of foreign competition in an industry.

Source: COMTRADE, OECD, WTO.

Offshoring

Total or "broad" offshoring is defined as the ratio of total imported intermediate purchases by industry *i* in country *k* to industry value added:

$$o_{ikt} = \frac{\sum_{j=1}^{J} O_{ijkt}}{V_{ikt}}$$ [3.4]

where *O* refers to the imports of intermediates from industry *j* by industry *i*, and *V* refers to value-added in industry *i*. Given the recent interest in the offshoring of services specifically, a distinction is made between materials and services offshoring. Materials offshoring is calculated in a similar manner to broad offshoring, but only takes account of intermediate purchases from the manufacturing sector. Similarly, services offshoring represents the ratio of imported business services to value-added.[a] Intra-industry or "narrow" offshoring only takes account of imported intermediate purchases from the same industry *(i = j)*. Narrow offshoring may be more closely related to concerns about "delocalisation" and the jobs being "sent abroad" since it reflects activities that are closely related to the firm's core production process. Offshoring from other industries or "difference" offshoring is defined as the difference between broad and narrow offshoring.

Source: OECD STAN database and OECD Input-Output database.

Industry-specific real exchange rate

The industry-specific real exchange rate is defined as the import-weighted real exchange rate:

$$x_{ikt} = \sum_{i=1}^{I} \sum_{l=1}^{L} m_{iklt_0} e_{klt} p_{lt} / p_{kt}$$ [3.5]

where *m* refers to the import share from country *l* in industry *i* of country *k* at the beginning of the sample at *t = 0*. The import weights thus vary across industries and countries but are constant in time. *e* refers to the nominal bilateral exchange rate between countries *k* and *l* at time *t*, which varies across partner countries and time, but not across industries. The *p* variables refer to price levels, as approximated by the GDP deflator, in countries *l* and *k* respectively. Within a country in a given year, the variation in industry-specific real exchange rates derives entirely from differences in the import pattern across industries. An increase in the industry-specific exchange rate represents a real depreciation in the price of output produced in industry *i* of country *k* relative to its trading partners (weighted by import

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Box 3.2. **Measuring foreign competition** *(cont.)*

shares). Put differently, an increase in the industry-specific exchange rate represents an improvement in the terms of trade in industry *i* for country *k*. A depreciation is expected to have a positive effect on sectoral employment through: *i)* the technology effect, which involves substituting foreign inputs for domestic value-added; and *ii)* the scale effect due to reduced foreign competition in output markets.

The industry-specific real exchange rate may be more appropriate for the analysis of the causal impact of foreign competition on employment, than the import penetration and offshoring measures, because it is less subject to endogeneity bias. The industry-specific exchange rate is unlikely to be correlated with the unexplained components of changes in labour market outcomes, conditional on including time dummies (Bertrand, 2004). By contrast, the two globalisation measures based on import quantities are likely to be endogenous to changes in foreign and domestic demand conditions.[b] A second advantage of real exchange rates as a measure of foreign competition is that they are important determinants of cross-industry differences in how the relative intensity of foreign competition changes. Since trade patterns differ markedly across industries the impact of changes in the bilateral real exchange rate differs also importantly. Compared to tariff information – another proxy for foreign competition that may be considered exogenous – industry-specific exchange rates have the advantage of exhibiting substantially greater variation across time. Note that while changes in the industry-specific exchange rates *per se* do not provide an index of trade openness, the sensitivity of industries with respect to changes in industry-specific exchange rates depends crucially on it.

Source: COMTRADE, OECD, WTO, IMF's International Financial Statistics (IFS).

a) Business services include wholesale and retail trade; repairs; transportation services, post and communication services, financial services, real estate, rental, computer, R&D and other business services.
b) This has two important implications. First, estimation results will be biased. To the extent that imports and employment are positively correlated to unobserved changes in sectoral productivity this is likely to induce an upward bias of the estimated coefficient. Second, associations between these two measures of foreign competition and domestic employment are more appropriately interpreted as being correlations, rather than causal relationships.

- Even though offshoring does not appear to reduce sectoral employment, it does not follow that there are no adjustment costs for workers. The skill requirements for the jobs destroyed need not be the same as those for the jobs created.[39]

The results presented above for offshoring are robust to the exclusion of outliers and the way technological change is controlled for. The results consistently indicate that offshoring has a negative impact on employment conditional on output and no effect or a small positive effect on industry employment when allowing for both scale and technology effects. See OECD (2007b) for more details.

The skill structure of sectoral labour demand

The analysis of total industry employment is now extended by distinguishing between low-, medium- and high-skill workers, defined in terms of educational attainment. The aim of this exercise is to estimate how foreign competition has affected the skill composition of labour demand. The econometric methodology is described in Box 3.3. The main estimation results are reported in Table 3.2, in which Panel A reports the complete set of elasticities for the baseline model and Panel B estimated elasticities with respect to various

Table 3.1. **Foreign competition and sectoral labour demand**[a]

	Conditional			Unconditional		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. **Panel data, five-year difference variables, 1987-2003**						
All industries						
Log of wage/price of materials	−0.173***	−0.186***	−0.193***	−0.008**	−0.007*	−0.007
Log of capital stock	0.094	0.076	0.082	0.135	0.125	0.131
Log of price of output/price of materials				−0.011	−0.017	−0.031
Log of output	0.178***	0.192***	0.199***			
R&D intensity	−0.111	−0.110**	−0.126**	−0.127*	−0.128*	−0.174**
Import penetration	−0.002	−0.002		−0.006**	−0.006**	
Share of imports from non-OECD countries in total imports		−0.051**			−0.054**	
Log industry-specific exchange rate			0.034**			0.003
Observations	1 934	1 906	1 927	1 934	1 906	1 927
R-squared	0.22	0.23	0.23	0.10	0.10	0.09
Manufacturing industries						
Log of wage/price of materials	−0.187***	−0.187***	−0.192***	−0.007*	−0.007*	−0.006
Log of capital stock	0.075	0.082	0.068	0.124	0.131	0.119
Log of price of output/price of materials				−0.016	−0.015	−0.037
Log of output	0.193***	0.192***	0.198***			
R&D intensity	−0.112**	−0.113**	−0.128**	−0.130*	−0.131*	−0.177**
Import penetration	−0.002	−0.002		−0.006*	−0.006*	
Share of imports from non-OECD countries in total imports		−0.048			−0.050*	
Log industry-specific exchange rate			0.042**			0.006
Observations	1 770	1 768	1 770	1 770	1 768	1 770
R-squared	0.23	0.23	0.23	0.10	0.10	0.09
Panel B. **Cross-section data, five-year difference variables, 1995 and 2000**						
All industries						
Log of wage/price of materials	−0.396***	−0.242**	−0.372***	−0.543***	−0.420***	−0.542***
Log of capital stock	0.260***	0.202**	0.263***	0.297***	0.256***	0.297***
Log of price of output/price of materials				0.233	0.326	0.233
Log of output	0.159***	0.180***	0.191***			
R&D intensity	0.540*	0.500*	0.599**	0.349	0.321	0.348
Offshoring (broad)	0.006			0.039*		
Offshoring (narrow)		−0.082*			0.013	
Offshoring (difference)		−0.034			0.034*	
Materials offshoring			0.006			0.039
Services offshoring			−2.180			0.102
Observations	240	238	240	240	238	240
R-squared	0.44	0.47	0.45	0.39	0.41	0.39
Manufacturing industries						
Log of wage/price of materials	−0.440***	−0.222	−0.402***	−0.559***	−0.397***	−0.557***
Log of capital stock	0.169**	0.110*	0.177**	0.196**	0.157**	0.192**
Log of price of output/price of materials				0.157	0.110	0.143
Log of output	0.127***	0.150***	0.177***			
R&D intensity	0.950*	0.560	1.027**	0.690	0.243	0.694
Offshoring (broad)	0.000			0.029		
Offshoring (narrow)		−0.094**			−0.012	
Offshoring (difference)		−0.039			0.023	
Materials offshoring			0.001			0.027
Services offshoring			−3.598*			0.816
Observations	182	181	182	182	181	182
R-squared	0.42	0.50	0.43	0.37	0.44	0.38

* significant at 10%; ** significant at 5%; *** significant at 1%.
a) OLS estimates in five-year differences of conditional and unconditional labour demands.
Source: OECD estimates. See Annex 3.A1 for detailed information on data sources, variable definitions and sample coverage.

StatLink ⌐ð *http://dx.doi.org/10.1787/023683284718*

Box 3.3. **Estimating the effects of globalisation on the skill structure of labour demand**

In order to analyse the effects of globalisation on the demand for workers in different skill groups, it is assumed that the industry-level variable cost functions can be approximated by a translog function, which is twice differentiable, linearly homogenous and concave in factor prices:[a]

$$\ln C_i(w,x,z) = \alpha_0 + \sum_{j=1}^{J} \alpha_j \ln w_{ij} + \sum_{k=1}^{K} \beta_k \ln x_{ik} + \sum_{l=1}^{L} \gamma_l z_{il} + \frac{1}{2}\sum_{j=1}^{J}\sum_{q=1}^{J} \alpha_{jq} \ln w_{ij} \ln w_{iq}$$

$$+ \frac{1}{2}\sum_{k=1}^{K}\sum_{r=1}^{K} \beta_{kr} \ln x_{ik} \ln x_{ir} + + \frac{1}{2}\sum_{l=1}^{L}\sum_{s=1}^{L} \gamma_{ls} z_{il} z_{is} + \frac{1}{2}\sum_{j=1}^{J}\sum_{k=1}^{K} \delta_{jk} \ln w_{ij} \ln x_{ik} + \frac{1}{2}\sum_{j=1}^{J}\sum_{l=1}^{L} \delta_{jl} \ln w_{ij} z_{il} \quad [3.6]$$

$$+ \frac{1}{2}\sum_{k=1}^{K}\sum_{l=1}^{L} \delta_{kl} \ln x_{ik} z_{il}$$

where C represents total variable cost, which is a function of factor prices w for variable inputs, quantities x for fixed inputs and output, and technological change z.[b] Country and time subscripts are omitted for ease of presentation.

Symmetry implies that $\alpha_{jq} = \alpha_{qj}$, while constant returns to scale require that the variable cost function is linearly homogenous in variable factor prices:

$$\sum_{j=1}^{J} \alpha_j = 1 \text{ and } \sum_{j=1}^{J} \alpha_{jq} = \sum_{q=1}^{J} \alpha_{qj} = \sum_{j=1}^{J} \delta_{jk} = \sum_{j=1}^{J} \delta_{jl} = 0$$

Differentiating the translog cost function with respect to factor prices yields the cost share of factor j in total variable costs:

$$S_{ij} = \alpha_j + \sum_{q=1}^{J} \alpha_{jq} \ln w_{iq} + \sum_{k=1}^{K} \delta_{jk} \ln x_{ik} + \sum_{l=1}^{L} \delta_{jr} z_{il}, j = 1,..,q,.,J \quad [3.7]$$

where $S_{ij} = \dfrac{\partial \ln C_i}{\partial \ln w_{ij}} = \dfrac{w_{ij} x_{ij}}{C_i}$ and $\sum_{j=1}^{J} S_{ij} = 1$

The complete system of share equations is estimated using iterated seemingly unrelated regression equations (ISUR).[c] The discussion of the results is based on the estimated elasticities (see OECD, 2007b, for details).

a) See Hijzen, Görg and Hine (2005), and Ekholm and Hakkala (2007) for studies that use a similar approach.
b) Since the output level is fixed, the estimation results for the analysis of the skill composition of labour demand are most comparable to the estimates for the conditional models of sectoral labour demand in Table 3.1.
c) Due to the adding up condition of the variable cost shares, the disturbance covariance matrix of the system will be singular and one equation needs to be dropped. The SUR estimates will normally not be invariant to the equation deleted. Invariance can be obtained by iterating SUR until the parameter estimates and residual covariance matrix converge.

measures of foreign competition, which were included (one or two at a time) in a series of alternative regression models. The following findings emerge:

● Consistent with economic theory, the own-price elasticities are negative and statistically significant for all three skill groups. An increase in the capital stock tends to increase the relative demand for medium-skill labour, whilst R&D intensity raises the relative demand for skilled labour. An increase in output has a negative effect on the demand for all skill groups relative to material inputs. However, the negative effect is considerably larger for unskilled workers than more skilled workers which suggests that output expansion tends to be associated with skill upgrading.

Table 3.2. **Foreign competition and the skill structure of sectoral labour demand, 1993-2003**

	Input demand[a]			
	Low-skill employees	Medium-skill employees	High-skill employees	Materials
	Panel A. **Elasticity estimates of baseline regression**[b]			
Input price				
Log low-skill employees	**−0.758*****	0.247**	0.073**	0.438***
Log medium-skill employees	0.115***	**−0.264*****	−0.043**	0.193***
Log high-skill employees	0.055**	−0.703**	**−0.413*****	0.428***
Log Materials	0.058***	0.055***	0.074***	**−0.187*****
Log capital stock	−0.004	0.078**	−0.043	−0.014
Log output	−0.523***	−0.194***	−0.096**	0.141***
R&D intensity	0.213	−0.006	0.186*	−0.059***
Import penetration	−0.046**	0.001	−0.030**	0.011***
Number of observations	670	670	670	n.a.
R-squared	0.198	0.485	0.143	n.a.
	Panel B. **Selected elasticities**			
Import penetration[b]	−0.046**	0.001	−0.030**	0.011***
Imports from non-OECD countries over total imports[b]	−0.032	0.038	0.018	−0.010
Offshoring (broad)[c]	0.021	0.001	0.012	−0.007
Offshoring (narrow)[c]	−0.214***	−0.025**	−0.065***	0.061***
Materials offshoring[c]	0.042	0.001	−0.194	−0.003
Services offshoring[c]	11.105***	−3.816***	−7.491**	1.114

n.a.: Not applicable.
* significant at 10%; ** significant at 5%; *** significant at 1%.
a) Panel data estimates using average annual differences. Regressions include time dummies, approximately 670 observations.
b) Factor demand system derived from translog cost function and estimated with iterated seemingly unrelated regression (SUR).
c) Cross-sectional estimates using five year differences, approximately 85 observations.
Source: OECD estimates. See Annex 3.A1 for detailed information on data sources, variable definitions and sample coverage.

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● Import penetration has a negative effect on the relative demand for low- and high-skill workers – albeit, more strongly for low-skilled workers – and no effect on the demand for medium-skill workers. The composition of imports, defined as the share of non-OECD imports in total imports, has no impact on the skill structure of labour demand. These findings are somewhat at odds with those for aggregate labour demand in Table 3.1, which indicate that the composition of imports, rather than import penetration *per se*, is a significant determinant of sectoral labour demand.[40]

● Narrow offshoring has a negative effect on the relative demand for all skill groups, in favour of material inputs. However, the estimated impact is considerably larger for low-skill workers than for medium- and high-skill workers. Thus, narrow offshoring appears to shift relative labour demand away from low-skill workers.[41]

● By contrast, services offshoring has a tendency to shift relative labour demand away from medium- and high-skill workers and towards low-skill workers.[42] While services offshoring is still very small compared to the offshoring of materials, its bias against

relatively skilled workers may help explain some of the concerns expressed in the public debate.[43] This finding suggests that high-skill workers, heretofore a major beneficiary of globalisation, could be disadvantaged should services offshoring greatly expand as some have predicted.

● Total offshoring and the offshoring of materials are not associated with any changes in the skill structure of labour demand, similar to the results for aggregate labour demand.

The evidence presented in this section suggests that foreign competition has discernable impacts on sectoral employment patterns and the skill structure of labour demand in the OECD. These estimated impacts are largely consistent with the predictions of conventional trade theory and numerous previous empirical studies. Imports from non-OECD countries – including developing countries, such as China – tend to reduce overall employment in an industry, whereas the productivity effects from offshoring tend to offset the potentially negative impact on employment. While offshoring within the same industry has a moderate effect on shifting relative demand away from low-skill workers, services offshoring has a small effect in the opposite direction.

2.2. Globalisation and the functioning of the labour market

Globalisation may affect the vulnerability of workers through its impact on labour demand elasticity

Rodrik (1997) hypothesised that globalisation increases the responsiveness of employment and wages to economic shocks, by increasing the own-price elasticity of labour demand. As is explained in Box 3.4, the wage and employment effects of a given trade shock are amplified by an increase in the labour demand elasticity. A more elastic labour demand would also tend to reduce the bargaining power of workers relative to employers, which could help to explain falling wage shares (*cf.* Section 1). Increased labour demand elasticity might also reduce the scope for risk-sharing arrangements between workers and firms, for example when firms stabilise the earnings of long-term workers, insulating them from much of the fluctuation in external labour market conditions (Bertrand, 2004; Rosen, 1985). Finally, an increase in the elasticity of labour demand will make the wage and employment effects of non-wage costs more pronounced (Andersen, 2003), which can have important implications for the financing of social protection schemes (see Chapter 4 of this publication).

Globalisation may affect the elasticity of labour demand through two channels (see Box 3.4 for more details). First, it may do so by enhancing the substitutability of domestic labour with value-added abroad through offshoring. International production networks – in the form of either multinationals and/or arm's-length trading arrangements – allow firms to respond more flexibly to changes in relative factor prices by changing the mix of domestic and foreign value-added. Second, the elasticity of labour demand may further increase as a result of the pro-competitive effect of globalisation on output markets.

The analysis proceeds in three stages. First, the trend in labour demand elasticity is analysed and it is shown to have increased. Attention then turns to analysing whether offshoring has been a factor behind this increase. Some evidence is found for this having been the case, but this evidence is somewhat weaker than that for the increase in labour demand elasticity. The third stage of the analysis illustrates the potential contribution of offshoring to increased employment and wage volatility using simple numerical simulations.

Box 3.4. **Globalisation and the elasticity of labour demand**

Formally, the price elasticity of labour demand η_{LL} is defined as the weighted average of two components: *i)* the constant-output elasticity of substitution, σ; and *ii)* the price elasticity of product demand, η (Hamermesh, 1993):

$$\eta_{LL} = -(1 - s)\sigma - s\eta \qquad \qquad [3.8]$$

The first component captures the substitution effect, which reflects the extent to which a firm substitutes away from labour when faced with an increase in its price, for a given level of output. The second component captures the scale effect, which represents the reduction in employment due to the reduction in output that occurs to the extent that the increase in labour costs leads to higher output prices and therefore lower sales. For a given change in wages, the scale and substitution effects work in the same direction. The cost share of labour (*s*) acts as a weighting factor when combining the substitution and scale effects into the total elasticity of labour demand.

Globalisation may affect the elasticity of labour demand through both the substitution and the scale effect. Globalisation may increase the constant-output elasticity of substitution between labour and other factors (σ) by enhancing the substitutability of domestic labour with value-added abroad. The establishment of international production networks – in the form of either multinationals and/or arm's-length trading arrangements – allows firms to respond more flexibly to changes in relative factor prices by changing the mix of domestic and foreign value-added. To the extent that these practices also reduce the cost share of domestic labour (*s*) this will generally reinforce the elasticity of substitution.

The elasticity of labour demand may further increase as a result of the pro-competitive effect of globalisation on imperfectly competitive output markets.* Trade liberalisation in markets characterised by imperfect competition may increase the elasticity of product and therefore labour demand by increasing the number of available varieties (Slaughter, 2001; Hasan, Mitra and Ramaswamy, 2007) and reducing mark-ups (Bernard *et al.*, 2003; Melitz and Ottaviano, 2005).

A standard diagram of labour demand and supply can be used to explain the effects of an increased demand elasticity on employment and wage volatility (see figure below). Under initial labour demand and supply, the labour market clears in point 1. An increase in the elasticity of labour demand rotates the labour-demand curve anti-clockwise, making the labour-demand curve flatter without changing the labour market equilibrium.

Labour demand shocks and the elasticity of labour demand
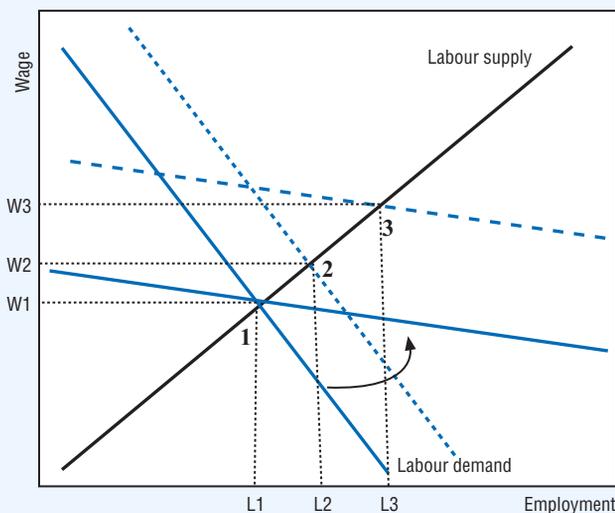
Box 3.4. **Globalisation and the elasticity of labour demand** (*cont.*)

When labour demand is relatively inelastic, *i.e.* the labour demand curve is relatively steep, a given trade shock (shown as a vertical shift in labour demand) shifts labour market equilibrium from point 1 to point 2. When labour demand is more elastic, the same trade shock shifts labour market equilibrium to point 3. Thus, both the wage and employments responses to a given (trade) shock tend to be larger, the more elastic is labour demand.

The relative magnitude of employment and wage changes depends on the elasticity of labour supply (*i.e.* the slope of the labour supply curve). When labour supply is perfectly elastic, *i.e.* the labour supply curve is horizontal, as is commonly assumed in firm-based theories, a more elastic labour demand results in higher employment volatility, but has no impact on wages. When labour supply is perfectly inelastic, labour demand shocks only affect the wage and an increase in demand elasticity does not affect the volatility of either employment or wages. However, this is an unlikely case for firm or industry-level analysis. Intermediate values for the labour supply elasticity imply that an increase in labour demand elasticity increases both employment and wage volatility for a given distribution of demand shocks, as illustrated in the figure above.

The elasticity of labour demand defined here applies for a single firm. Assuming all firms in an industry are identical, aggregating individual firm responses to the level of the industry does not affect the estimation of the elasticity of labour demand (Hasan, Mitra and Ramaswamy, 2007). Note further that the elasticity of labour demand at the industry-level, which is analysed here, is very different from the national labour demand elasticity in a general equilibrium trade model: the former is explicitly defined over a single sector and the latter over multiple sectors (Slaughter, 1999). As a result of general equilibrium effects, the former cannot be easily aggregated to obtain the national labour demand elasticity, except under very restrictive conditions.

* In perfectly competitive markets, product demand at the firm level is infinitely elastic.

Prior evidence is mixed

Evidence that globalisation has increased the elasticity of labour demand in OECD countries is mixed. Similar to the analysis in this chapter, most studies have used industry-level data to address this question. Slaughter (2001) finds limited evidence for the United States, while Bruno, Falzoni and Helg (2004), who estimate dynamic labour demands for a set of major OECD countries for the period 1976-96, find that import penetration raised the elasticity of labour demand in the United Kingdom, but had no such impact elsewhere. Molnar, Pain and Taglioni (2007) estimate similar models for a number of OECD countries and find that outward foreign direct investment appears to have increased labour demand elasticity in the manufacturing sector, but that the opposite may have happened in the services sector.[44]

A number of recent studies have used firm-level data. Fabbri, Haskel and Slaughter (2003) look at the probability of plant shutdown across domestic and multinational firms providing some evidence that multinationals have a higher elasticity of labour demand than domestic firms. Similarly, Görg *et al.* (2006) find that multinationals in Ireland have more elastic labour demands than domestic firms, although that this difference narrows the more integrated multinationals are in the local economy through supplier linkages. By contrast, Barba-Navaretti (2003) provides evidence for a number of European countries that multinationals have less elastic labour demands than domestic firms in the long-run. He explains this finding by pointing out that multinationals tend to have higher levels of skill-intensity and that the elasticity of labour demand declines in the average level of

skills (due to the greater importance of firm-specific human capital).[45] Finally, Senses (2006) looks at the effects of offshoring on the elasticity of labour demand and finds that offshoring initially increases the elasticity of labour demand but may decrease it when offshoring surpasses a certain threshold. Overall, these findings provide some evidence that international economic integration may increase the substitutability of domestic workers by foreign factors, but also suggest that the relationship is complex.

New evidence suggests that the elasticity of labour demand increased significantly during 1980-2002

This section analyses whether the elasticity of labour demand changed during 1980-2002 using data for 11 OECD countries and 20 industries.[46] Since many of the countries under consideration witnessed significant development of international production networks during this period (*cf.* Section 1), a second stage of the analysis examines whether higher offshoring is associated with more elastic labour demand. In the light of the debate on services offshoring, both manufacturing and services industries are included in the analysis.

Figure 3.10 shows that the estimated conditional wage elasticities of labour demand have significantly increased (in absolute values) since 1980.[47] The estimated elasticities range from about 0.2, in absolute value, at the beginning of the sample to around 0.5 towards the end of the period, *i.e.* close to the usual range found in other studies of between 0.15 and 0.7 (Hamermesh, 1993).[48] When the elasticity of labour demand is estimated separately for the manufacturing and the services sector, a very similar pattern is found for the manufacturing sector, as for the overall economy, but there is no clear evidence of an increase in the elasticity of labour demand in the services sector.[49]

Figure 3.10. **Labour demand has become more responsive to shocks**

Trend in the conditional wage elasticity of labour demand,[a] 1980-2002
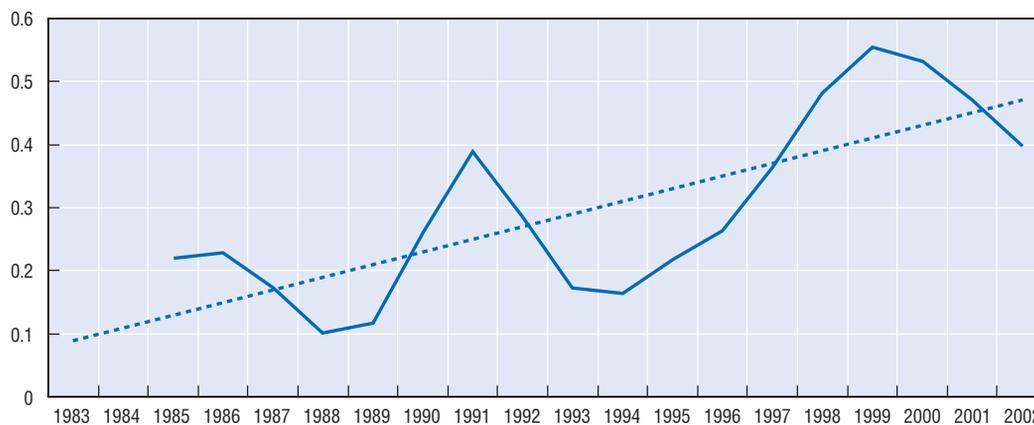
a) OLS estimates using five-year differences. See OECD (2007b) for the full regression results and results obtained using alternative estimation methods.

Source: OECD estimates. See Annex 3.A1 for detailed information on data sources, variable definitions and sample coverage.

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The available data do not provide a sufficiently long time-series to analyse how the elasticity of labour demand has changed for different skill groups, but they do allow the average elasticity of labour demand during 1993-2003 to be compared across the three skill groups (see Table 3.2). The results suggest that the elasticity of labour demand is considerably

higher in absolute value for low-skill workers (0.76) than for either medium- or high-skill workers (0.26 and 0.41 respectively). This may reflect the greater relative importance of firm-specific skills for more skilled workers.[50]

The elasticities of labour demand displayed in Figure 3.10 correspond to conditional (or "constant output") elasticities, and therefore do not capture the effect of any increase in market competition on the elasticity of labour demand. In order to estimate the total elasticity of labour demand, which takes account of both substitution and scale effects, unconditional labour-demand models were also estimated over time. These results suggest that the unconditional labour demand has also become more elastic, but the estimated elasticities are typically smaller in absolute value than those obtained from the conditional model (see OECD, 2007b, for more details), which is inconsistent with the theory of labour demand set out in Box 3.4.[51] For this reason, the focus in the remainder of this section will be on conditional elasticities, rather than the total elasticity of labour demand. The estimates of the conditional elasticity of labour demand should be interpreted as providing a lower bound of the total elasticity of labour demand. However, it need not follow that the trend increase in the total elasticity of labour demand would also be understated.

The estimated increase in labour demand elasticity does not appear to be spurious

An important question is whether the upward trend in the estimated elasticity of labour demand in Figure 3.10 could result from problems with the empirical specification that was used and thus be spurious. Two key identifying assumptions were relied upon in estimating these elasticities: i) that the data on sectoral employment reflect the long-term level of labour demand; and ii) that labour supply responds very strongly to changes in wages. Since it is not possible to directly verify the validity of either of these assumptions, it is important to assess the robustness of the estimation results to alternative estimation strategies.

In terms of the first identifying assumption, one worry would be that Figure 3.10 is picking up an increase in the speed with which labour demand reacts to changes in wages, rather than an increase in the total response, once a new equilibrium level of employment is reached. In recent decades, many OECD governments have implemented structural reforms, such as relaxing employment protection legislation or encouraging more vigorous product market competition, which may have had the effect of speeding up the response of employment to changes in the economic environment (OECD, 2006b). In order to ensure that the estimated trend in the labour-demand elasticity captures the long-term relationship between wages and labour demand, the estimations were conducted in five-year differences, thereby removing much of the variation due to changes in short-term dynamics. As a robustness check, a dynamic model of labour was also specified to explicitly account for short-term dynamics. The results suggest that structural reform may have contributed, but is unlikely to fully account for the increase presented in Figure 3.10. The specification of the dynamic model, the various estimations methods used, and the results, are discussed in detail in OECD (2007b).

As is standard in the trade literature, the labour demand elasticity was estimated on the assumption that labour supply is perfectly elastic.[52] While such an assumption may be reasonable when using firm-level data, it is of questionable validity at the industry level.[53] To the extent that this identifying assumption is violated, the elasticity of labour demand will be upward biased due to the positive correlation between wages and labour supply. However, the extent to which such an assumption affects the estimated change in demand elasticity *over time* is unclear. Should the correlation between the wage variable and labour supply have increased over time, then the estimation results probably would be biased towards finding a

spurious increase in the (absolute) elasticity of labour demand. The trend increase in the labour market participation of women or the rising proportion of immigrants may have tended to raise labour supply elasticity, and created such a bias. The results presented in Figure 3.10 account for this kind of bias to the extent that it only concerns the correlation in the wage variable and the *time-invariant* component of the error term. As a robustness check, a dynamic model with difference GMM was estimated, which treats the wage variable as endogenous. The qualitative results are not affected (see OECD, 2007b, for details).[54]

In sum, it appears unlikely that changes in the speed of labour demand adjustment or the composition of labour supply can fully account for the observed increase in the elasticity of labour demand.

The spreading practice of offshoring may have contributed to the rise in the elasticity of labour demand by making it easier to substitute between domestic workers and their foreign counterparts

Has higher labour demand elasticity resulted, at least in part, from the fact that substitution opportunities between domestic labour and imported intermediates have increased? Panel A of Figure 3.10 shows that there is positive association across sectors between the labour demand elasticity and the share of imported intermediate inputs in value added: the larger the recourse to offshoring, the greater the (absolute) elasticity.[55] For instance, the textiles industry, which is known for the relative importance of offshoring, has the most elastic labour demand. By contrast, labour demand is relatively inelastic in most services industries, where offshoring is more limited and often difficult or even impossible.

Increased product market competition – the second main channel through which globalisation may have contributed to the observed increase in the absolute elasticity of labour demand – does not appear to play as important of a role. Panel B of Figure 3.11 suggests that the labour demand elasticity is greater in industries where mark-ups are lower, but this correlation is not statistically significant.[56]

These findings are confirmed by econometric estimates of augmented labour demand models containing interaction terms between the wage variable and a binary indicator variable measuring exposure to foreign competition (Table 3.3). Three different indicator variables are used: *i)* high *versus* low import penetration; *ii)* high *versus* low offshoring intensity (two indicators based, respectively on narrow and broad offshoring); and *iii)* depreciating *versus* appreciating industry-specific exchange rates.[57]

Consistent with the descriptive statistics presented in Figure 3.11 greater offshoring is associated with more elastic labour-demand. In the full sample, industries characterised by relatively high levels of offshoring (broad or narrow) have significantly more elastic labour demand than industries where offshoring is less prevalent, as indicated by the positive and significant values reported in the columns labelled "difference". The differential effect between high and low offshoring industries is weaker when services industries are dropped from the sample, with the differential effect falling from 0.41 to 0.20 for narrow offshoring, but remains statistically significant, while the differential effect for broad offshoring becomes insignificant. This suggests that greater offshoring intensity, particularly intra-industry offshoring, may help to account for the growing wedge in labour demand elasticity between services and manufacturing industries, and that differences in offshoring intensity may also explain some of the differences in the elasticity of labour demand across manufacturing industries.[58] By contrast, the results for import penetration and the industry-specific exchange rates are mixed and statistically insignificant in most cases.[59]

Figure 3.11. **Globalisation and the elasticity of labour demand:
the role of substitution and scale effects**

Panel A. **Substitution effect**

Panel B. **Scale effect**
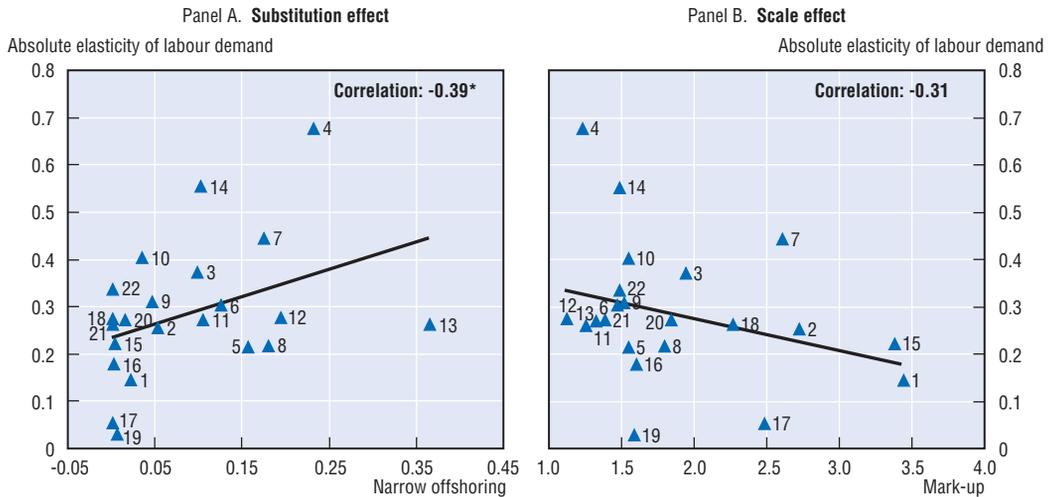
* significant at 10%.
  1. Agriculture, hunting, forestry and fishing (01-05).
  2. Mining and quarrying (10-14).
  3. Food products, beverages and tobacco (15-16).
  4. Textiles, textile products, leather and footwear (17-19).
  5. Wood and products of wood and cork (20).
  6. Pulp, paper, paper products, printing and publishing (21-22).
  7. Coke, refined petroleum products and nuclear fuel (23).
  8. Chemicals (24).
  9. Rubber and plastics products (25).
 10. Other non-metallic mineral products (26).
 11. Basic metals and fabricated metal products (27-28).
 12. Machinery and equipment (29-33).
 13. Transport equipment (34-35).
 14. Manufacturing nec; recycling (36-37).
 15. Electricity, gas and water supply (40-41).
 16. Construction (45).
 17. Wholesale and retail trade; repairs; real estate and business activities; excl. computer and related activities
     (50-52; 70-71; 73-74).
 18. Hotels and restaurants (55).
 19. Transport and communication (60-64).
 20. Finance and insurance (65-67).
 21. Public admin. and defence; compulsory social security (75).
 22. Education; health and social work; other community and personal services (80-99).

Source: OECD estimates. See Annex 3.A1 for detailed information on data sources, variable definitions and sample coverage.

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In sum, the evidence suggests that the establishment of international production networks may indeed have expanded the flexibility of firms and, thereby, have contributed to the trend increase in the elasticity of labour demand. Increased product market competition due to rising trade exposure may also have tended to increase labour demand elasticity, but it was not possible to obtain robust estimates of that possible channel.

Easier offshoring of production may have significantly raised the volatility of employment and wages

This section presents simple numerical simulations illustrating the potential impact of higher offshoring on the volatility of employment and wages, via its effect in raising labour demand elasticity and, thus, magnifying the propagation of labour demand shocks. Two sets

Table 3.3. **Globalisation and the absolute elasticity of labour demand**

Differences in absolute elasticities between industries facing high and low levels of foreign competition, 1987-2003[a]

	Import penetration			Industry-specific exchange rate		
	Low	High	Difference	Depreciation	Appreciation	Difference
All industries	0.264***	0.110**	−0.154**	0.218***	0.254***	0.035
Manufacturing	0.306***	0.211***	−0.095	0.219***	0.228***	0.008

	Narrow offshoring			Broad offshoring		
	Low	High	Difference	Low	High	Difference
All industries	0.198	0.611***	0.413***	0.259*	0.475***	0.216*
Manufacturing	0.188	0.384**	0.196**	0.488**	0.353*	−0.135

* significant at 10%; ** significant at 5%; *** significant at 1%.

a) OLS estimates of conditional labour demand models which include an interaction term between an indicator variable of foreign competition, which equals one if competition is high and zero otherwise, and the wage variable (see main text for further details).

Source: OECD estimates. See Annex 3.A1 for detailed information on data sources, variable definitions and sample coverage.

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of wage and employment responses are calculated for a hypothetical trade shock that shifts the labour demand curve down by 1%: one for industries characterised with low levels of narrow offshoring and one for industries with high levels of narrow offshoring, using the estimated labour demand elasticities reported in Table 3.3 (0.20 and 0.61 respectively).[60] These hypothetical shocks and the two estimated labour demand elasticities are combined with four possible values for the elasticity of labour supply, in order to obtain an overview of the range of possibilities.[61]

As presented in Table 3.4, the main results from this exercise are as follows:

- Under the assumption of perfectly elastic labour supply ($\eta^S = \infty$), wages are exogenous and a demand shock only affects employment. In a low-offshoring industry, a 1% negative trade shock reduces employment approximately 0.2%, whereas the response is three times larger in a high-offshoring industry (0.6%).

- When the labour supply elasticity is finite, the negative demand shock lowers both employment and wages, with the decline in wages dampening the fall in employment. Taking the example of a unitary labour supply elasticity, the employment losses become 0.17% in a low-outsourcing industry and 0.38% in a high-outsourcing industry, with wages falling by an equal amount in both cases.

In sum, labour demand shocks lead to considerably more volatility of both wages and employment when labour demand is more elastic. Furthermore, the estimated impact of offshoring on labour demand elasticity is large enough to suggest that a further expansion of international production networks might contribute to significantly increasing employment and earnings volatility. However, this analysis represents a first cut at a complex issue and further research is required to clarify whether offshoring is, in fact, having a magnification effect on the propagation of labour demand shocks by raising the elasticity of labour demand and what other factors play a role.

2.3. *The impact of foreign competition on individual workers*

In this section, the effects of foreign competition on individual workers are studied using individual panel data for 1994-2001 in 13 European countries.[62] The data used are

Table 3.4. **Implications of offshoring for employment and wage volatility**

Simulated impacts of a negative shock to labour demand[a]

| Elasticities of labour supply | Labour-demand elasticities[b] | | | |
| | Low offshoring *(0.20)* | | High offshoring *(0.61)* | |
	dlnW/dlnA	dlnL/dlnA	dlnW/dlnA	dlnL/dlnA
0	−1.000	0.000	−1.000	0.000
1	−0.165	−0.165	−0.379	−0.379
2	−0.071	−0.180	−0.137	−0.468
∞	0.000	−0.198	0.000	−0.611

a) Data values shown are estimates of the percentage changes in wages (W) and employment (L) from a trade shock (A) shifting labour demand down by 1%.

b) The price elasticities of labour demand in parentheses correspond to the elasticity estimates in Table 3.3 for narrow offshoring.

Source: OECD estimates. See Annex 3.A1 for detailed information on data sources, variable definitions and sample coverage.

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from the European Community Household Panel (ECHP). This is a harmonised longitudinal survey of households and individuals conducted by Eurostat, which allows individual workers to be tracked through time.[63]

The analysis proceeds in two stages. In the first stage of the analysis, the impact of foreign competition on individual job separations (worker movements) is analysed using quarterly data. The analysis distinguishes three types of separations which differ in terms of the worker's economic status directly after leaving his or her job: a worker can be employed (in another job), unemployed or inactive (out of the labour force). These three types of transitions provide an indication of the nature of the separation and its consequences for the worker. It is likely that job-to-job transitions predominantly reflect voluntary movements, while transitions into unemployment are predominantly involuntary. Transitions out of the labour force are not so easily classified as being either voluntary or involuntary. The analysis of job separations can thus shed light on the effect of foreign competition on overall job stability (*i.e.* the rate at which workers separate from their jobs) as well as on job security (*i.e.* the risk of involuntary job loss).[64]

In the second stage of the analysis, the impact of foreign competition on individual wages is analysed using annual data.[65] Foreign competition may affect the wages of both job stayers and job changers, but the present analysis focuses exclusively on workers who stay in the same job.[66] In a competitive labour market, the earnings of all workers, job changers and stayers alike, adjust instantaneously to changes in market conditions, so as to equal marginal revenue product. However, workers frequently stay with the same employer for many years and, in that context, there can be good reasons for employers to stabilise the wages of incumbent workers. For example, these types of "implicit contracts" may help to share risks more efficiently or ameliorate hold-up problems associated with firm-specific human capital (Bils, 1985; Malcolmson, 1999). The finding in the previous sub-section, that labour demand elasticity has increased raises the question whether employers are becoming either less able or less willing to invest in long-run employment relations, including by shielding incumbent workers from earnings fluctuations.[67] The analysis of wage dynamics tests whether greater foreign competition is, in fact, associated with greater wage volatility for job stayers with relatively stable jobs.

Foreign competition increases job instability…

Job security (and job stability more generally) is analysed here using quarterly hazard rates (i.e. the probability that a worker will separate from his or her job within a given quarter conditional on having stayed in the job up to that point). Separate proportional hazards models are estimated for each of the three destination states: another job, unemployment and inactivity. The baseline hazard is nonparametric, being approximated by a piece-wise constant function. The regressors used include a rich set of controls for individual characteristics, including age, gender, having a child, living in a couple, education level, and occupation categories. Additional regressors include an indicator variable for public sector jobs and a complete set of industry, country and time dummies. Most importantly, foreign competition is measured using the industry-specific exchange rate.[68]

Table 3.5 reports separate estimation results for these proportional hazard models based on the full sample and five sub-samples: low- and high-tenure workers, and workers in low-, medium- and high-skill occupations. The following findings emerge:

● The large majority of job separators in the sample are workers who move directly to another job (79%). Transitions into unemployment represent just 12% of total separations and those into inactivity only 9%.

● The determinants of job-to-job transitions are very different from those for transitions out of employment, confirming the importance of distinguishing between alternative destination states.[69]

● A depreciation of the industry-specific exchange rate reduces the probability of moving out of a job for all workers and all destination states, although this effect is not statistically significant for job-to-job transitions in the full sample. This is consistent with the analysis in Section 2.1, which shows that an increase in foreign competition tends to reduce sectoral labour demand, while also suggesting that an important share of trade-induced reductions in sectoral employment take the form of involuntary separations (i.e. trade displacement).

● The impact of foreign competition on individual worker movements differs across subgroups within the workforce. Foreign competition increases the job-to-unemployment hazard for workers with relatively low job tenure (less than five years) and increases the job-to-job hazard for low-tenure workers and those in medium-skill occupations. This latter finding may indicate that medium-skill workers can more easily find comparable alternative employment than other workers, when their employer experiences financial difficulties or they are displaced. Finally, foreign competition increases transitions out of the labour force, particularly among high-tenure and low-skill workers, suggesting that increased foreign competition induces some low-skill workers to retire early.

The analysis suggests that an intensification of foreign competition makes jobs less stable by increasing the probability of job separations. Since transitions to all three destinations increase, it appears that import competition is a stimulus to both voluntary and involuntary mobility. The analysis also highlights the heterogeneity of the impact of foreign competition on different groups in the workforce, with low-tenure and low-skill workers experiencing the biggest increase in transitions out of employment and workers in medium-skill occupations showing the largest increase in job-to-job transitions.

Table 3.5. **The impact of foreign competition on individual job separations, 1993Q1-2001Q4**[a]

	All	Job tenure[b]		Skill (occupation)[c]		
		Low tenure	High tenure	Low	Medium	High
Panel A. **Job-to-job transitions**						
Age	0.001	0.001	−0.004**	0.000	0.002	0.001
Age square	0.000***	0.000*	0.000	0.000**	0.000**	0.000*
Male	0.189***	0.224***	0.096	0.208***	0.220***	0.044
Household with child(ren)	0.057*	0.053	0.071	0.027	0.064	0.017
Couples	−0.118***	−0.120***	−0.121**	−0.039	−0.169***	−0.164**
Upper secondary education	−0.025	0.032	−0.192***	0.042	−0.030	−0.076
Less than upper secondary education	−0.051	−0.012	−0.182***	0.023	−0.066	−0.098
Medium-skill occupations[c]	−0.028	−0.004	−0.131*			
Low-skill occupations[c]	0.029	0.108*	−0.265***			
Public sector	−0.329***	−0.211*	−0.639***	−0.344**	−0.229	−0.399
Industry-specific exchange rate[d]	−0.228	−0.290*	−0.045	−0.198	−0.434**	0.103
Observations	431 321	161 445	270 559	201 275	150 591	78 822
Panel B. **Job-to-unemployment transitions**						
Age	0.002	0.002	0.004	0.006**	−0.003	−0.001
Age square	0.000	0.000	0.000	−0.001**	0.000	0.000
Male	−0.227***	−0.221**	−0.277*	−0.118	−0.354***	−0.452**
Household with child(ren)	0.189***	0.230***	0.082	0.247***	0.156	−0.170
Couples	−0.226***	−0.181*	−0.271*	−0.278**	−0.261*	0.283
Upper secondary education	0.061	0.055	−0.004	0.249	−0.047	−0.133
Less than upper secondary education	0.197	0.178	0.161	0.404**	0.064	0.033
Medium-skill occupations[c]	0.527***	0.764***	0.175			
Low-skill occupations[c]	0.611***	0.843***	0.253			
Public sector	0.610***	0.820***	−0.129	0.667***	0.297	0.233
Industry-specific exchange rate[d]	−0.772***	−0.842**	−0.664	−0.754*	−0.648	−1.143
Observations	458 454	165 321	278 247	207 709	155 297	71 304
Panel C. **Job-to-inactivity transitions**						
Age	−0.028***	−0.025***	−0.024***	−0.026***	−0.029***	−0.044***
Age square	0.003***	0.003***	0.003***	0.003***	0.003***	0.005***
Male	−0.643***	−0.666***	−0.667***	−0.604***	−0.864***	−0.134
Household with child(ren)	0.013	0.253**	−0.212*	0.032	0.017	0.178
Couples	0.252**	0.236	0.257	0.164	0.375*	0.006
Upper secondary education	−0.078	−0.045	−0.099	−0.153	−0.415	0.413
Less than upper secondary education	0.137	0.328	−0.091	0.000	−0.012	0.062
Medium-skill occupations[c]	0.228	0.097	0.361*			
Low-skill occupations[c]	0.335**	0.046	0.643***			
Public sector	0.845***	0.543*	1.046***	0.971***	0.423	1.556***
Industry-specific exchange rate[d]	−0.721**	−0.609	−0.791*	−1.048***	−0.221	0.232
Observations	416 859	152 785	260 650	194 411	140 806	56 672

* significant at 10%; ** significant at 5%; *** significant at 1%.

a) Proportional hazard estimates by destination status. The baseline hazard is approximated by a piece-wise constant function. The models were estimated using an unbalanced panel of agriculture and manufacturing industries. The hazard models include a complete set of industry, country and time dummies. Error terms are clustered by industry and country groups.

b) Low job tenure is defined as less or equal to 60 months and high tenure as more than 60 months.

c) High-skill occupations include: legislators, senior officials and managers; professionals; technicians and associate professionals; medium-skill occupations include: clerks; services workers and shop and market sales workers; craft and related trades workers; low-skill occupations include: skilled agricultural and fishery workers; plant and machine operators and assemblers; and elementary occupations.

d) Three-quarter moving average of the log of the change in industry-specific exchange rate.

Source: OECD estimates based on the European Community Household Panel (ECHP). See Annex 3.A1 for detailed information on data sources, variable definitions and sample coverage.

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... and also wage instability

Does foreign competition also increase the volatility of wage stability among job stayers? In order to analyse the wage dynamics of job stayers, a standard wage equation is augmented to include a measure of foreign competition, the industry-specific real exchange rate, and two measures of conditions on the external labour market, industry-level multi-factor productivity (MFP) and the national unemployment rate. In order to evaluate how foreign competition affects the sensitivity of wages to industry-specific shocks, the industry-specific exchange rate is interacted with MFP. The analysis is restricted to job stayers with stable jobs that have been in their job for at least 12 months and have a permanent contract.

Table 3.6 reports estimation results for the full sample and five sub-samples: low- and high-tenure workers, and low-, medium- and high-skill workers. The following findings emerge:

● The wages of job stayers with stable jobs are relatively insensitive to market conditions as reflected by the less than proportional response in earnings to changes in multi-factor productivity. More specifically, a 1 percentage point increase in multi-factor productivity leads to an increase in average annual earnings of 0.12%. However, substantial differences exist across different subgroups of the workforce. The wages of low-tenure workers (one to five years) and workers with less than upper secondary education exhibit greater responsiveness to MFP, whereas the wages of workers with medium and high levels of skill appear to be relatively isolated from market conditions.

● Foreign competition, as proxied by the industry-specific exchange rate, has only a small direct effect on wages after controlling for MFP. A depreciation of the industry-specific exchange rate of 1% increases average annual earnings by about 0.01%. This effect is however somewhat stronger for high-tenure and low-skill workers.

● The intensification of foreign competition via an appreciation of the exchange rate tends to amplify the sensitivity of wages to industry-specific shocks, as is indicated by the negative and significant sign on the interaction term between the industry-specific exchange rate and MFP. However, the small size of the estimated coefficient means that its economic impact is modest. The effect is relatively more important for low-tenure and low-skill workers, than for other groups in the workforce.

Table 3.6. **The impact of foreign competition on individual wages, 1994 and 1999**[a]

	All	Job tenure[b]		Skill (occupation)[c]		
		Low tenure	High tenure	Low	Medium	High
Unemployment	−0.006***	−0.006	−0.005**	−0.003	−0.012***	0.002
Multi-factor productivity (MFP)	0.115***	0.190**	0.093**	0.198***	0.060	0.065
MFP * Log industry-specific exchange rate	−0.012**	−0.026**	−0.006	−0.022***	−0.006	−0.007
Log industry-specific exchange rate	0.014*	−0.011	0.024***	0.031**	0.010	0.013
Number of observations	26 023	7 731	18 252	8 395	11 221	6 379
Number of groups	8 657	3 862	5 821	2 862	3 786	2 096
R-squared	0.03	0.05	0.02	0.02	0.03	0.04

* significant at 10%; ** significant at 5%; *** significant at 1%.
a) Fixed effects estimates. Regressions include controls for age, age square and full set of time dummies.
b) Low job tenure is defined as less or equal to 60 months and high tenure as more than 60 months.
c) High-skill occupations include: legislators, senior officials and managers; professionals; technicians and associate professionals; medium-skill occupations include: clerks; services workers and shop and market sales workers; craft and related trades workers; low-skill occupations include: skilled agricultural and fishery workers; plant and machine operators and assemblers; and elementary occupations.
Source: OECD estimates based on the European Community Household Panel (ECHP). See Annex 3.A1 for detailed information on data sources, variable definitions and sample coverage.

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The wage analysis suggests that foreign competition has both direct and indirect effects on individual earnings. Most novel, there is some evidence that foreign competition increases wage volatility by reducing the ability or willingness of employers to insulate wages of continuing workers from changing market conditions. By contrast, no evidence is found that wage volatility rises for workers with at least a medium level of skill or more than five years of job tenure.[70]

Conclusion

Have OECD workers become increasingly vulnerable due to the impact of globalisation? There is no simple, yes or no, answer to this question. The evidence presented in this chapter shows that the expansion of trade is a potentially important source of vulnerability for workers. This is particularly true for the labour force groups most exposed to import competition or least prepared to navigate in labour markets characterised by intensive restructuring, rising skill requirements and employers who are increasingly sensitive to differences in labour costs. Popular concerns about how foreign competition is affecting workers deserve to be taken seriously, but they also appear to be exaggerated in many cases. Indeed, trade appears to have made only a modest contribution to the upward trend in inequality in recent decades, while evidence is lacking for a general increase in insecurity. Perhaps of greatest importance, recent experience confirms that the right mix of domestic policies can generate strong labour market performance, even in very open economies. The bottom line lesson would seem to be that the impacts of globalisation on labour markets are manageable, but international economic integration increases the urgency of enacting pro-growth and pro-employment policies which also ensure that political support for open trade and investment will not be eroded by excessively high levels of insecurity or inequality.

Which types of labour-market policies are required in response to globalisation? While the empirical analysis in this chapter provides a useful first step to answering this question it certainly does not provide a definitive answer. Nonetheless, several broad policy orientations do emerge:

- Trade deepening – especially the rapid integration of large developing economies into the global trading system and the expansion of international production networks – is constantly generating new opportunities for specialisation in production (and undermining old specialisations). A first prerequisite for workers to benefit from globalisation is that businesses seize these opportunities. Policies that facilitate innovation and business formation are crucial in this context.

- Policies to enhance mobility in the labour market can also help individuals and firms to seize emerging opportunities in the world economy. Measures ensuring that workers flow from declining to expanding activities, as the economy restructures itself, are likely to be particularly important. Well-designed employment protection legislation is one of the policies that can contribute to efficient labour reallocation. It is counterproductive to defend jobs that have become uncompetitive, but moderate advance notice requirements and severance pay, structured so as to avoid penalising voluntary mobility (*cf.* the Austrian system of individual savings accounts described in OECD, 2006b), can play a positive role. Since foreign competition is continually changing the structure of labour demand, it is also important that wage setting institutions allow relative wages to adjust to changing market conditions.

● Employment-oriented social policies can help to reconcile security for workers with efficient mobility in the labour market. As is emphasised in the Restated OECD Jobs Strategy (OECD, 2006a, b), relatively generous welfare benefits can be consistent with high employment rates and efficient worker mobility. What is required is that these benefits be combined with mutual-obligations/activation policies which increase re-employment opportunities while mitigating work dis-incentive effects embodied in generous welfare systems. "Make work pay" measures may also be required to make sure that globalisation does not push low-skill workers into working poverty. While in-work benefits *cum* moderate minimum wages can shore up the incomes of low-skill workers, they do not improve longer-term career prospects. Skill development opportunities for low-educated workers are also required to limit low-pay traps and the rise in earnings inequality, as skill requirements rise.

● Governments can help to sustain political support for international economic integration by fostering an open and well-informed discussion of the benefits and costs of globalisation. To be credible, such a discussion needs to frankly acknowledge the costs of globalisation and also take account of wider concerns about economic insecurity and inequality. Most importantly, governments need to explain how their policies are addressing those concerns while also supporting international economic integration. Further research clarifying how globalisation is affecting workers' well-being would contribute to the success of these discussions, by helping to ground them in fact rather than unfounded fears or unrealistic hopes.

Notes

1. This chapter presents results from Part 3 of the OECD's horizontal project on globalisation and structural adjustment, which is a collaborative study undertaken by the Directorate of Employment, Labour and Social Affairs and the Directorate for Trade and Agriculture.

2. Berg and Krueger (2003) and Lewer and Van den Berg (2003) provide alternative estimates of the overall gains from trade which confirm that they are substantial. The evidence is more mixed concerning whether trade openness leads to a sustained increase in growth rates (Baldwin, 2003; Nordås, Miroudot and Kowalski, 2006). There is also growing evidence – which is surveyed in World Bank (2005) – that the potential contribution of trade to stronger economic growth is unlikely to be realised in the absence of an appropriate institutional environment, (*e.g.* an effective legal system which secures property rights). These preconditions have yet to be established in a number of developing economies.

3. A number of recent studies have analysed the adjustment costs borne by trade-displaced workers and concluded that these costs are substantial (Kletzer, 2002; OECD, 2005a). The possibility that import competition from developing countries has reduced the wages of low-skill workers has also received much attention from economists (Slaughter, 2000; Feenstra, 2007). Overall, these studies suggest that trade has been a factor behind the declining position of less skilled workers in OECD labour markets, but that skill-biased technical change probably has played a larger role. For a comprehensive overview of the literature on globalisation and labour markets see ILO/WTO (2007).

4. The seven countries included in the GMF poll are France, Germany, Italy, Poland, the Slovak Republic, the United Kingdom and the United States. The Eurobarometer data reflect public opinion in all EU member and candidate countries at the date of the survey (May 2005), except Latvia.

5. Whereas 87% of the American Ph.D. economists surveyed by Whaples (2006) supported "the elimination of all remaining tariffs and barriers to trade", 76% of Americans in a World Public Opinion/Chicago Council on Global Affairs poll in 2006 believed that "protecting the jobs of American workers" was a very important foreign policy goal for the United States (WPO/CCGA, 2007).

6. The chapter does not explicitly analyse the impact of FDI on labour market outcomes. However, the labour market effects of FDI should be reflected in the empirical results to a considerable extent. The trade statistics which are analysed include trade within multinational firms which is closely related

to FDI. The specific impact of FDI on employment is analysed in a complementary OECD study (Molnar, Pain and Taglioni, 2007). International migration also lies outside of the scope of the chapter. See Hijzen and Nelson (2007) for a recent overview of the labour market effects of immigration.

7. See Goldberg and Pavcnik (2007) for an overview of the distributional effects of trade liberalisation in developing countries.

8. Brazil, Russia, India and China (the so-called "BRICs") account for 45% of the world labour and are increasingly open to trade and investment supply (see Chapter 1 of this publication). Over the past 15 years, total trade grew by over 50% as a proportion of GDP in Russia, it nearly doubled in China and more than doubled in Brazil and India.

9. This growth reflects the emergence of China as an important manufacturing hub for multinational companies from all over the world. China now ranks third, after Germany and the United States, among the world's exporters, with foreign companies accounting for 60% of its trade. The composition of Chinese exports has also shifted rapidly toward products of increasing technological sophistication (Rodrik, 2007).

10. The rapid growth in FDI provides an alternative indicator of the development of international production networks (Molnar, Pain and Taglioni, 2007).

11. The sample includes 13 OECD countries and Chinese Taipei.

12. See OECD (2007a) for a detailed discussion of alternative ways to measure offshoring.

13. The data values reported here tend to be quite a bit lower than those reported by Campa and Goldberg (1997), because the primary sector is excluded.

14. By contrast, Ahn, Fukao and Ito (2007) show that international production networks and trade in intermediates has grown very rapidly during the past decade in East Asia countries, including China.

15. There is not a significant cross-country correlation between openness and unemployment performance in either levels or first differences (data not shown).

16. Both measures are likely to be affected by the demographic structure of the labour force. However, re-calculating these two indicators for prime-age men also indicated no clear trend in job stability.

17. OECD (1997) showed that workers' subjective perceptions of job security deteriorated in many OECD between the mid-1980s and mid-1990s, even in the absence of a general rising trend in labour turnover rates. That study concluded that the rise in perceived insecurity probably reflected an increase in the perceived cost of being laid-off (*e.g.* due to a rising incidence of long-term unemployment). The very fragmentary data available for more recent years suggest that the increasing trend in perceived insecurity may have stopped or even reversed during the past decade in many countries, consistent with the downward trend in long-term unemployment since the mid-1990s. (For trends in long-term unemployment, see the Statistical Annex to this publication.)

18. See Slaughter (2000) and Feenstra (2007) for good surveys of the empirical literature on trade and wages.

19. France and Japan are notable exceptions to the trend increase in earnings inequality. However, the OECD data on earnings inequality presented here only reflect trends in the dispersion of earnings among *full-time* workers. In both France and Japan, there is considerable concern about the possibility that labour market inequality is rising along other dimensions (*e.g.* between permanent and temporary workers or between full- and part-time workers).

20. For developed countries, which are relatively well endowed with medium- and high-skill workers, the HOS trade model predicts that trade with developing countries would drive down the wages of low-skill production workers in OECD countries. This suggests that 10th percentile earnings should fall relative to the median, rather than that 90th percentile earnings should pull away from median earnings. It is possible, however, to identify offshoring scenarios where unconventional distributional effects could result, since the results depend in part on locational complementarities across different production tasks, about which little is known (Antràs, 2003; Markusen, 2007). Similarly, some analyses of ICT-enabled offshoring – as well as the impact of computerisation more generally – suggest that the demand for medium-skill workers is most affected by these developments, because their job tasks are most easily assimilated to the algorithmic logic used by computers (Levy and Murnane, 2004; Autor, Levy and Murnane, 2006).

21. For trends through 2000, see Förster and Mira d'Ecole (2005). The OECD Secretariat is in the process of updating that analysis through 2005 and the text draws upon preliminary results from that updating.

22. For reasons of practicality and privacy, the incomes of the richest households are not accurately reflected in statistics on income inequality which are based on household survey data.

23. Both non-labour income and the redistributive impact of taxes are likely to be particularly important at the top of the income range. Nonetheless, it appears that a large share of the recent increase in very high incomes in the United Kingdom and the United States has resulted from increased labour earnings for the best paid workers (Dew-Becker and Gordon, 2006; Piketty and Saez, 2006).

24. As expressed by Grossman and Rossi-Hansberg (2006), "trade in tasks" deepens the impact of trade on the international division of labour, by allowing Ricardo's logic of trade according to comparative advantage to be applied separately to each of the individual production tasks in Adam Smith's pin factory.

25. The recent literature analysing trade with heterogeneous firms emphasises the pervasive impact of trade on the intensity of job reallocation across firms and, hence, potential worker dislocation (Bernard, Redding and Schott, 2006).

26. Interpreted this way, the industry-level wage variable in the sectoral labour-demand models controls for nation-wide changes in the wage conditional on inter-industry differences in the composition of the workforce.

27. This may take the form of changing the relative demand for different types of labour within industries or the total demand for labour relative to other factors of production.

28. As concerns the technology effect, it is *a priori* unclear whether and how the share of output that is exported should affect employment after controlling for output. The export share would be expected to matter for conditional labour demand only in the case when output destined for the domestic and export markets are produced using different technologies. Since exports (being part of output), are endogenous in the unconditional labour demand model, they cannot be included as an explanatory variable in this model.

29. Homogeneity was imposed on all models.

30. The unconditional labour-demand estimates suggest that import penetration is associated with a decline in the scale of production. However, the results from unconditional labour demand need to be interpreted with caution, since identification of the unconditional demand curve is somewhat problematic (see discussion in Box 3.1).

31. The conditional demand model was also estimated adding the export share as an additional regressor (results not shown). The estimated coefficient for the export share is positively signed, while the import share continues to enter negatively. When these two variables are replaced by the industry trade balance, defined as the difference between the export and the import share, this variable has a negative sign. However, the latter specification imposes the restriction that the impacts of the import and export shares on employment are identical in size but with opposite sign, which is rejected by the data. Indeed, the coefficient on trade balance largely reflects the impact of import penetration on conditional demand. This should not be taken as evidence that exporting does not much affect industry employment. It merely suggests that after controlling for output the export share in production does not matter much for employment.

32. No such a relationship is found in the unconditional labour-demand model. At face value, this suggests that increased foreign competition is associated with an increase in the scale of production. In principle, this could reflect the presence of productivity gains due to for example cheaper offshoring. However, this may also reflect poor identification of the unconditional labour-demand curve.

33. The analysis of offshoring presented here complements and extends the analysis provided by OECD (2007a), which only examines total offshoring. That study finds that total offshoring has a negative effect on employment, conditional on output, particularly in the manufacturing sector.

34. However, R&D intensity does have a positive effect on labour demand in the cross-section estimates, contrary to what one would expect. This is probably due to the high positive correlation between this variable and the offshoring variables. As excluding R&D might amplify the coefficient on offshoring, due to omitted variable bias, it was decided to leave R&D in the regressions. See OECD (2007b) for further details.

35. Narrow offshoring increased by about 1.5 percentage points (recorded in the data as 0.015) on average over the period 1995-2000 in the whole economy and by 2 percentage points in manufacturing.

36. More precisely, the unweighted average of 1995-2000 changes in services offshoring intensity in manufacturing did not increase. However, the sector size-weighted average did increase, consistent with Figure 3.3.

37. To the extent that all or some imported intermediate inputs from industries other than one's own were previously purchased from domestic suppliers, one would expect a larger coefficient on narrow than broad offshoring, as is observed. Ideally, one would also like to estimate the job losses that arise when firms substitute domestic suppliers in other industries by suppliers located abroad. However, this is not straightforward in the present setting.

38. Amiti and Wei (2006) provide empirical support for the prediction that offshoring generates substantial productivity gains. See Olsen (2006) for a survey of the literature on offshoring and productivity.

39. As is discussed below, the newly jobs created tend to be more skill-intensive than those destroyed.

40. The results in Tables 3.1 and 3.2 may be sample specific, rather than strictly inconsistent. The sensitivity of the estimation results to sample coverage (over countries, sectors and years) suggests that the impact of foreign competition of labour demand may be quite heterogeneous, varying with the nature of the trade flows and the national economic environment.

41. In other words, narrow offshoring has been characterised by a tendency to relocate abroad production tasks intensive in low-skill labour. Another way that OECD firms can access low-skill foreign workers is via international migration. Although offshoring and migration are to some extent substitutes, Grossman and Rossi-Hansberg (2006) emphasise that the distribution of the resulting efficiency gains differs. In the case of immigration, the gains are largely captured by the migrants, since they are employed at domestic factor prices (*i.e.* OECD wage levels). In the case of offshoring, the efficiency gains accrue to domestic factors of production.

42. R&D intensity had to be excluded from the regressions for broad offshoring due to the high level of co-linearity between the two variables (pair-wise correlation above 0.9).

43. Although the estimated semi-elasticities are large, the implied impact is dampened by the fact that the offshoring of business services is very small relative to value-added (1.5%). The coefficient on services offshoring corresponds to the impact of a one percentage point increase in the offshoring intensity of services, which would represent a 67% increase in this form of offshoring.

44. Fajnzylber and Maloney (2000), Krishna, Mitra and Chinoy (2001) and Hasan, Mitra and Ramaswamy (2007) analyse the elasticity of labour demand in the context of rapid trade liberalisations in various developing countries. Fajnzylber and Maloney (2000) do not detect a systematic relationship between the elasticity of labour demand and trade reform in Chile, Colombia or Mexico. Similarly, Krishna, Mitra and Chinoy (2001) find no relationship for Turkey. By contrast, Hasan, Mitra and Ramaswamy (2007) find that trade reform in India increased the elasticity of labour demand and that the increase is more pronounced in states with relatively flexible labour regulations.

45. However, he also finds that multinationals have a larger short-run elasticity indicating they adjust their employment levels more quickly in response to shocks, than do domestic firms.

46. A somewhat more aggregated industrial classification has been used for this part of the analysis, in order to achieve full coverage of the manufacturing sector. See Annex 3.A1 for a detailed description of the sample.

47. As in the previous section, all specifications are estimated in five-year differences using OLS. In order to ensure that the results are not driven by changes in the composition of industries and countries over the estimation period, a balanced panel is used. Using an unbalanced panel, instead, does not alter the message of the results, although changes over time in the estimated elasticities tend to be larger due to differences in the sample. In order to remove some of the volatility in the estimated elasticities of labour demand the estimates are based on a three-year moving averages rather than data for a single year. Once again, this change does not have an important effect on the results.

48. Re-estimating the elasticity of labour demand using the total number of hours instead of the total number of employees produces qualitatively similar results.

49. Due to limited data availability for individual services industries, the estimates for the services sector have to be interpreted with caution.

50. Accordingly, one would expect that the gradual skill upgrading of the labour force would have reduced the elasticity of labour over time everything else equal.

51. Slaughter (2001), who experiences similar problems using data for the United States, suggests that this problem arises because shifts in labour demand cannot be adequately accounted for with the available data. Including the capital stock, import penetration and the industry-specific exchange rate to control for the location of the demand curve did not solve this problem.

52. As a result, shifts in labour supply, as captured in our regression model by changes in the wage variable, trace out the labour demand curve (Slaughter, 2001). The location of the conditional labour demand schedule is pinned down by controlling for output and capital. Note that the regressions do not explicitly control for labour productivity, which may also lead to shifts in the labour demand curve. R&D intensity, a standard proxy used in this context, is only available from 1987 onwards. In

an effort to control for factor-biased technological change, import penetration and the industry-specific exchange rate were included as a robustness check. This did not change the results in any significant way. See OECD (2007b) for details.

53. The assumption of perfectly elastic labour supply may be less problematic over relatively long time horizons, in so far as workers change sectors in response to inter-industry wage differentials in the long-run as in the HOV trade model. This is another reason for estimating the model in five-year differences.

54. An alternative estimation strategy is to make use of instruments for female labour supply when estimating the labour demand system. A number of instrumental variables have been tried, but the results have been inconclusive. See OECD (2007b) for further details.

55. Figure 3.11 displays data for narrow offshoring, but results are similar when using total offshoring.

56. One reason for finding only a weak relationship here may be that product market competition is being juxtaposed with the conditional elasticity of labour demand, which in theory is independent of product market competition.

57. The indicator variable equals one for industries with high rates of import penetration, high offshoring intensity and industries that witnessed a depreciation. As there is no natural cut-off for the import penetration and the offshoring indicators, the indicator variables were defined so as to split the sample approximately in half. The coefficient on the wage variable in the regressions represents the labour demand elasticity for industries where the indicator variable equals zero and the coefficient on the interaction term gives the difference in labour demand elasticities between industries with an indicator variable equal to one and industries with an indicator variable equal to zero. Since the indicator variables are time-invariant, there is no need to include them separately in the estimating equations: their independent effects drop out of the estimation model after differencing.

58. These results are consistent with previous findings for the US provided by Senses (2006), who finds that since 1985 the elasticity of labour demand in heavy offshoring industries exceeded that in other industries.

59. Industries with high levels of import penetration have less elastic labour demand, contrary to expectations. This may reflect the fact that industries with high import penetration also tend to have experienced a depreciation in the industry-specific exchange rate, which would tend to reduce the elasticity of labour demand.

60. These simulations make use of the methodology as described in Hasan, Mitra and Ramaswamy (2007).

61. Since the elasticities in Table 3.3 were estimated assuming perfectly elastic labour supply, the simulations based on finite supply elasticities are not fully consistent. To the extent that this assumption is violated the demand elasticity estimates are upward biased, with the size of the bias depending on the actual elasticity of labour supply. In principle, it is possible to back out the actual elasticity of labour demand using the estimated elasticity of labour demand in conjunction with the actual value of the elasticity of labour supply. The bias-corrected elasticity of labour demand would be larger in absolute value than the estimated elasticities. Moreover, given that the actual elasticity of labour supply is not known a bias-corrected elasticity of labour demand has to be calculated for each assumed value of the elasticity of labour supply. However, the purpose of the simulations is to illustrate the qualitative implications of trade shocks for different values of labour demand and supply elasticities, which can more clearly be done on the basis of the uncorrected elasticity of labour demand.

62. The EU15 minus Luxembourg and Sweden.

63. The analysis is restricted to the manufacturing sector.

64. Previous studies adopting an individual-level approach to analyse the impact of globalisation on job security include Goldberg, Tracy and Aaronson (1999), Kletzer (2002), Munch (2005), Egger, Pfaffermayer and Weber (2007) and Geishecker (2007).

65. Previous studies that have explicitly looked at the impact of foreign competition on individual wages are Goldberg and Tracy (2003), Geishecker and Görg (2003), and Munch and Shaksen (2005).

66. OECD (2005a) provides a detailed analysis of the wage losses of trade-displaced workers.

67. Traca (2005a) proposes a model in which wage volatility depends on the degree of openness in an industry. International economic integration reduces the price-dampening effect of variations in industry output, thereby increasing the elasticity of product and labour demand. Using industry-level data for the United States, he finds that wage volatility increases with trade exposure. Bertrand (2004) finds that foreign competition reduces the influence of market conditions at the

time workers are hired on their future earnings and increases the influence of current market condition, consistent with foreign competition reducing the ability or willingness of firms to provide stable wages.

68. It is not straightforward to link the information in the ECHP to external data on market conditions in specific industries as most information in the ECHP relates to the date of the interview and interviews are not conducted at regular time intervals. In order to link the information in the ECHP with industry-level data, the ECHP data had to be re-organized in calendar time. See OECD (2007b) for details.

69. In particular, male workers are less likely to become unemployed or inactive than their female counterparts, but are more likely to move into another job. Employees with children appear more likely to separate from their jobs than employees that have no dependants. Individuals who are part of a couple are less likely to move to another job or become unemployed, but are more likely to leave the labour force. The level of education does not appear to have an impact on the job separation hazard, which may reflect problems in comparing education levels across countries. Workers in less skilled occupations tend to have a higher probability to become unemployed or inactive. Workers in a public firm are less likely to make a job-to-job transition, but more likely to become unemployed or inactive.

70. In the spirit of Bertrand (2004), the model was augmented to include the level with MFP at the start of a job and its interaction with the industry-specific exchange rate. To the extent that job stayers are relatively insulated from market conditions, whereas job changers are not, one would expect that the market conditions at the time of hiring ("the ports of entry") continue to exert an effect on future wages, so long as the worker remains with the same firm. As in Bertrand (2004), foreign competition appears to reduce the role of ports of entry on future wages, but this effect is not statistically significant (results not shown).

ANNEX 3.A1

Background Information for the Econometric Analysis

This annex presents background information for the econometric analysis in Section 2 of the main text. Data sources and variable definitions are reported in Table 3.A1.1 while country, industry and year coverage for the various parts of the analysis are reported in Table 3.A1.2.

Table 3.A1.1. **Variable definitions**
Panel A. **Industry-level controls**

Variable	Definition	Source
Employment	Log of total persons engaged.	OECD STAN database, Groningen Growth and Development Centre, 60-Industry database.
Hours	Log of total hours worked.	Groningen Growth and Development Centre, 60-Industry database.
Wage	Log of total labour costs divided by the number of employees.	OECD STAN database, Groningen Growth and Development Centre, 60-Industry database.
Materials[a]	Log volume of materials at 2000 constant prices.	OECD STAN database, Groningen Growth and Development Centre, 60-Industry database and OECD's Input-Output database.
Price of materials[b]	Log price index of materials.	OECD STAN database (current and previous editions), Groningen Growth and Development Centre, 60-Industry database, OECD STAN Input-Output database.
Capital stock[c]	Log volume of capital stock at 2000 constant prices.	OECD STAN database (current and previous editions).
Value-added	Log volume of value added at 2000 constant prices.	OECD STAN database, Groningen Growth and Development Centre, 60-Industry database.
Price of value-added	Log value-added price index.	OECD STAN database, Groningen Growth and Development Centre, 60-Industry database.
Output[d]	Log volume of output at 2000 constant prices.	OECD STAN database, Groningen Growth and Development Centre, 60-Industry database and OECD STAN Input-Output database.
Price of output[e]	Log price index of output.	OECD STAN database, Groningen Growth and Development Centre, 60-Industry database and OECD STAN Input-Output database.
R&D intensity	Ratio of real expenditure on research and development over real value-added.	OECD Analytical Business Enterprise Research and Development (ANBERD) database.
Unemployment rate	Unemployment rate of persons aged 15-64.	OECD database on Labour Force Statistics.
MFP	Multi-factor productivity measured with Tornqvist index based on value-added production function.	OECD STAN database, Groningen Growth and Development Centre, 60-Industry database.
Mark up	Value added over the wage bill.	OECD STAN database, Groningen Growth and Development Centre, 60-Industry database.

Table 3.A1.1. **Variable definitions** (*cont.*)

Panel B. **Worker-level controls**

Variable	Definition	Source
Gender	Gender of person interviewed (PD004).	European Community Household Panel (ECHP).
Age	Age at the date of interview (PD003).	European Community Household Panel (ECHP).
Living in a couple	Person is living in consensual union (PD007).	European Community Household Panel (ECHP).
Household with child(ren)	Number of children aged less than 16 in the household calculated as the difference between the household size (HD001) and the number of adults in the household (16 years or more) (HD002).	European Community Household Panel (ECHP).
Educational attainment	Highest level of general or higher education completed (PT022), corresponding to the three main groups of the ISCED classification (*i.e.* 0/1/2 Less than upper secondary education; 3/4 Upper secondary education and tertiary education).	European Community Household Panel (ECHP).
Occupational level	Skill requirements of occupation based on three categories: high-skilled, medium-, and low-skilled. This variable is based on the occupation in the current job, *i.e.* principal activity performed (PE006C) corresponding to the nine 1-digit occupations of the ISCO-88 classification (*i.e.* Legislators, senior officials and managers; professionals; technicians and associate professionals; clerks; services workers and shop and market sales workers; skilled agricultural and fishery workers; craft and related trades workers; plant and machine operators and assemblers; and elementary occupations). Skilled occupations include: legislators, senior officials and managers; professionals; technicians and associate professionals; medium-skilled occupations include: clerks; services workers and shop and market sales workers; craft and related trades workers; low-skilled occupations include: skilled agricultural and fishery workers; plant and machine operators and assemblers; and elementary occupations.	European Community Household Panel (ECHP).
Public status	Current job in private or public sector (PE009). Private sector includes non-profit private organisations and the public sector includes para-statal firms.	European Community Household Panel (ECHP).
Individual wage	Log average hourly wage and salary earnings (PI111).	European Community Household Panel (ECHP).

a) For observations for which information on the volume of materials was not available, the volume of materials was imputed by dividing the current value of materials, if available, or otherwise the difference between the current value of output and value-added, by the price index of materials (see below).

b) For observations for which information on the price of materials was not available, the price of materials was imputed using the input-output tables. The price index of materials was imputed by multiplying the share of total purchases (domestic plus imported) by industry *i* from supplying industry *j* in total intermediate purchases (domestic plus imported) by industry *i* with the price of value-added of industry *j*. For the panel data analysis this involves making the assumption that the composition of inputs is fixed over time and corresponds to that in 2000.

c) For countries for which the capital stock was not available or industry coverage was insufficient, capital stocks were reconstructed from gross fixed capital formation using a perpetual-inventory method based on an assumed depreciation rate of 10%.

d) For observations for which information on the volume of output was not available, the volume of output was imputed by adding the volume of materials and the volume of value-added (see for more details the price of materials).

e) For observations for which information on the price of output was not available, the price of output was imputed by taking the sum of the share of value-added in output times the price of value-added and the share of materials in output times the price of materials (see for more details the price of materials).

Table 3.A1.2. **Sample coverage used in the chapter**

Documents	Period covered	Country coverage	Industry coverage (ISIC Rev. 3)
Table 3.1. Panel A	1987–2003 (unbalanced)	Austria, Belgium and Luxembourg, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Italy, Japan, the Netherlands, Norway, Portugal, Spain, Sweden, the United Kingdom and the United States.	15-16, 17-19, 20, 21-22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36-37, 45, 50-52;70-71; 73-74, 55, 60-63, 72
Table 3.1. Panel B	1995 and 2005 (balanced)	Australia, Austria, Belgium and Luxembourg, Canada, Denmark, Finland, France, Germany, Greece, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, the United Kingdom and the United States.	15-16, 17-19, 20, 21-22, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36-37, 45, 50-52; 70-71; 73-74, 55, 60-63, 72
Table 3.2. Import penetration	1994–2003 (unbalanced)	Belgium and Luxembourg, Canada, Finland, Norway, Portugal, Sweden, the United Kingdom and the United States.	15-16, 17-19, 20, 21-22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36-37, 45, 50-52;70-71; 73-74, 60-63, 64, 65-67, 72
Table 3.2. Offshoring	1993–2003 (unbalanced)	Canada, Finland, Portugal, Sweden, the United Kingdom and the United States.	15-16, 17-19, 20, 21-22, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36-37, 45, 50-52, 60-63, 64, 70-71, 73-74, 65-67, 72
Table 3.3. Import penetration and industry-specific exchange rate	1987–2003 (unbalanced)	Austria, Belgium and Luxembourg, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Italy, Japan, the Netherlands, Norway, Portugal, Spain, Sweden, the United Kingdom and the United States.	15-16, 17-19, 20, 21-22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36-37, 45, 50-52;70-71; 73-74, 55, 60-63, 72
Table 3.3. Offshoring	1995, 2000 (balanced)	Australia, Austria, Belgium and Luxembourg, Canada, Denmark, Finland, France, Germany, Greece, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, the United Kingdom and the United States.	15-16, 17-19, 20, 21-22, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36-37, 45, 50-52;70-71; 73-74, 55, 60-63, 72
Table 3.5	1993-2001 (unbalanced)	Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Spain and the United Kingdom.	ECHP industry codes for agriculture and manufacturing only.
Table 3.6	1994 and 1999 (unbalanced)	Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Spain and the United Kingdom.	ECHP industry codes for agriculture and manufacturing only.
Figure 3.11 and Figure 3.12	1980-2002 (balanced)	Austria, Belgium and Luxembourg, Denmark, Finland, France, Italy, the Netherlands, Norway, Spain, the United Kingdom and the United States.	15-16, 17-19, 20, 21-22, 23, 24, 25, 26, 27-28, 29-33, 34-35, 36-37, 40-41, 45, 50-52; 70, 55, 60-64, 65-67, 75, 80-99

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Chapter 4

Financing Social Protection: The Employment Effect

Public social protection can be funded through either social contributions or general taxation. Does this matter for employment? Yes, for a number of reasons. First, social contributions tend to weigh on labour costs and thus may affect employment – unless workers are prepared to accept lower net wages to compensate for social contributions. Other funding bases like income taxes and value-added taxes may also raise labour costs, but because they are typically levied on broader population groups – and not just wage earners – they may be less detrimental to employment than social contributions. The chapter also considers the specific cases of switching to taxes on capital, including real estate, and activities detrimental to environment. Second, the "progressivity" of the funding system also matters. Adverse employment effects can be alleviated by taxing less low-paid employment than high-paid employment. Third, strengthening the link between social contributions and pension entitlements and introducing experience-rating for certain social schemes like sickness benefits may be helpful.

Introduction

Financing social protection is becoming a major challenge for most OECD countries. Some structural factors, including population ageing, exert (and will increasingly exert) upward pressure on social expenditures, in particular in the areas of health and pensions. Many studies focus on the management of spending programmes, with a view to contain their cost and limit their negative impact on employment. However, the issue of how to fund social protection has received less attention in the literature. The purpose of this chapter is to help fill this gap through an analysis of a wide range of topics related to the potential employment effects associated with funding social protection.

The Restated OECD Jobs Strategy concluded that high labour taxes (which is one way to fund social protection) may affect low-paid employment, notably in the presence of overly-high minimum wages. There was little discussion, however, as to whether alternative funding mechanisms or a better design of existing ones would have yielded better employment outcomes. This is precisely the question addressed in this chapter. Obviously, given the redistributive pattern of the tax/benefit system underlying social protection, policy changes in this area may have strong distributive effects with equity implications, which although they are not at the centre of this chapter, should be taken into account when assessing possible policy changes.

Due mostly to the lack of data on the financing of private social protection, this chapter focuses essentially on the financing of *public* social expenditures, although some elements on the private financing are also provided, and references to private social schemes are made in various instances. Section 1 presents an overall picture of social protection expenditure and its financing, and discusses how the associated tax wedge may weigh on employment performance. Section 2 examines how different ways to finance social protection may impact on employment. It starts by discussing whether the progressivity of the tax wedge matters, and examines what can be done in this respect to improve employment prospects at low wage levels. It also assesses cases where the link between the taxes and contributions that fund social protection on the one hand, and the social protection benefits or expenditure on the other can be improved so as to reduce the impact of the tax wedge on employment. Finally, it analyses the extent to which switching tax bases (from social contributions to taxes which weigh less directly on labour) may help to improve employment outcomes.

Main findings

- *Public spending on social protection represents about one quarter of GDP on average in OECD countries.* It has risen significantly since 1980, mostly as a result of spending pressures associated with ageing populations – mainly in the areas of pensions and health.

- *There are significant cross-country differences in how spending on public social protection is funded.* In the majority of OECD countries, social contributions and other earmarked revenues are the main funding source – these revenues cover over 60% of spending on social protection in most Central and Eastern European countries, Belgium, France, Greece, Korea, the

Netherlands and Spain. By contrast, some countries rely mainly on general taxation, *i.e.* non-earmarked government revenues. This is especially the case for Australia, Canada, Denmark, Ireland, New Zealand and the United Kingdom. However, over the past three decades, there has been some convergence across countries in the share of social spending financed by social contributions and other earmarked revenues – with, on average, a significant decrease in countries where such revenues have traditionally been the main source of funding, and some increase in other countries.

● *Social protection financing drives a wedge between total labour costs and what finally remains in the workers' pocket*. The higher the public spending on social protection, the higher is the tax wedge. But the extent to which a higher tax wedge has an impact on employment depends crucially on three factors: *i)* the "progressivity" of funding systems; *ii)* the link between what is paid and expected benefits; and *iii)* how labour taxation affects wage claims and replacement incomes. The chapter examines in detail these three issues and draws implications in terms of how best to structure funding systems so as to make them more consistent with employment goals. It should also be stressed that social protection on its own, if well-designed, will have positive productivity effects which may offset some of the possible adverse employment effects associated with its funding. These productivity effects, however, are not examined in detail in this chapter.

● *Making funding systems more progressive may help alleviate the adverse employment effect of the tax wedge*. Evidence shows that the negative employment effects of the tax wedge are especially strong for low-paid employment, notably in the presence of a binding minimum wage. This justifies policy initiatives to cut the tax wedge on low-paid employment, notably via lower employer contributions. But going too far in this direction may be not the most effective way to boost employment among vulnerable groups. Evaluations show that the deadweight losses are substantial. This raises the question as to whether a combination of well-designed and well-targeted employment-conditional benefits with a moderate minimum wage would be more cost-effective in promoting employment and reducing poverty than a high minimum wage combined with large cuts in employer contributions. More generally, given that higher marginal tax rates tend to moderate wage claims at higher wage levels, the task of alleviating the tax burden on low-paid employment could be facilitated by raising the overall progressivity of the tax system. However, increasing the progressivity of taxation may also have efficiency costs, notably in terms of tax avoidance and reduced incentives to improve skills and productivity for top-income earners. Hence, there is an optimal degree of tax progressivity.

● *Strengthening the links between taxes and expected benefits may help reduce the adverse employment effect of the tax wedge in certain cases*. For employees, it could be achieved in the case of pensions by creating a stronger link between the taxes and contributions they pay and expected pension benefits. Clearly, the extent to which the linkage between taxes and benefits can be reinforced is limited, as it may compromise the solidarity and redistribution principles embedded in pension schemes. For employers, "experience-rating" (*i.e.* partly relating unemployment, disability, pension and sickness contribution rates to the firm history as regards respectively layoffs, early retirement, sickness and disability inflows) may encourage firms to improve workforce management and, ultimately, employment. There is some evidence that experience-rated schemes reduce inflows in social insurance benefits. However, such schemes need to be carefully designed so as to reduce the risk that employers become reluctant to recruit among disadvantaged groups.

- *Reshuffling direct and indirect labour taxation may also reduce the employment impact of the financing of social protection.* Income and consumption taxes have broader tax bases than social contributions and, unlike social contributions, also weigh on replacement incomes. Thus, for a given tax revenue, a partial shift from social contributions to income or consumption taxes may have favourable employment effects. Indeed such a policy may lower both the average tax wedge and replacement incomes – thus increasing incentives to work and moderating wage claims. Which switch (towards the income or consumption tax) is most desirable in terms of employment effects depends on national circumstances, notably on existing indexation mechanisms for replacement revenues and wages (in particular minimum wages) and on the progressivity of the tax wedge. More generally, the specific macroeconomic implications of higher income and/or consumption taxes for growth and employment need to be taken into account.

- *Reductions in the tax wedge could also be obtained by switching in part to other taxes weighing less directly on labour:*

  ❖ The effects of higher corporate taxes on investment outcomes depend on a number of factors – some tax provisions may reduce the cost of capital, while others may increase it. Overall, however, in most cases it is difficult to justify higher corporate taxes to compensate for the loss of revenues arising from lower social contributions. Indeed, due to relatively high mobility of capital, an increase in corporate taxes is likely to be detrimental to investment and growth, and thus employment. For similar reasons, an adverse employment effect may arise in the case of a switch, currently considered in some countries, towards a contribution paid by firms on the basis of their value-added (a different option *vis-à-vis* the value-added tax, which is paid by the consumer). Taxes on households capital income, on the other hand, are much less likely to affect investment. This is especially the case of taxes on property, in particular real estate, which is among the least mobile tax bases, and is quite difficult to evade. Property taxes are relatively low in a number of European countries with high tax wedges. Reducing the favourable tax treatment of pension savings is another possibility, as it is found to be a costly and poorly targeted policy tool.

  ❖ If they are justified from an environmental point of view, environmental taxes could also be part of a tax reshuffling aiming at limiting the possible negative effect of labour taxation on employment. Due to the size of the associated tax base, taxes on energy and transport are the only ones likely to yield sufficient revenues. Concerns about their effects on firms' competitiveness have tended to limit recourse to this tax base up to now, but this may change in the context of climate change.

- *The tax shifts described above are complex and should not be regarded as a substitute for a better management of social protection spending programmes. But overall, the chapter suggests that the structure of financing of public social protection matters for employment.* In particular, the tax burden weighing on labour income could be alleviated in a number of OECD countries by funding social expenditures that encompass a strong collective dimension (*e.g.* health expenditures) through general taxation. Social contributions would then fund social protection areas where individuals perceive a stronger link between taxes and benefits. The size of the employment and distributional effects of the different reform options have not been quantified, however. Further research, taking into account both the direct and indirect effects of the reform options, is therefore needed.

1. How is social protection funded?

1.1. *The size of social protection*

In most OECD countries, spending on social protection represents a significant share of GDP (Figure 4.1).[1] Leaving aside Korea, Mexico and Turkey, where social protection systems have not matured as yet, spending on social protection range from a low 17% of GDP in Ireland to a maximum of 34% of GDP in Sweden in 2003. Spending on social protection as a share of GDP is generally above-average in northern European countries, and below-average in the Asia/Pacific countries, central and eastern European countries, and some southern European countries.[2] In general, social protection is mainly provided by government (Figure 4.1). In most European countries, government spending on social protection accounts for about 90% of total spending on social protection, while the figure is between 70 and 80% in Australia, Canada, the Netherlands, the United Kingdom and Switzerland, and around 60% in the United States.

Figure 4.1. **Social expenditures in 2003**

Gross public and private social expenditure as a percentage of GDP
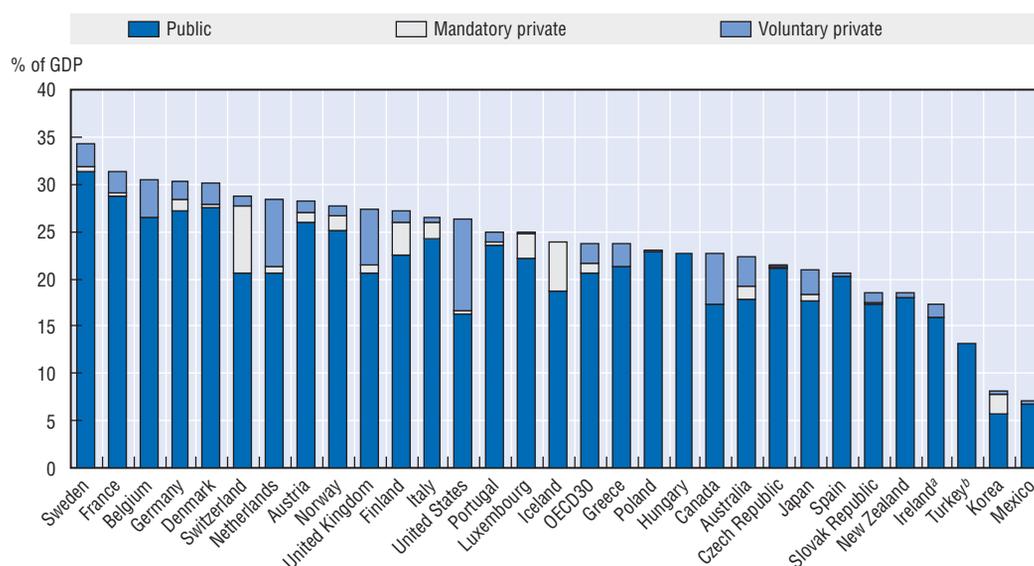
Note: Countries are ranked from left to right in descending share of total social expenditure as a percentage of GDP.
a) Data for voluntary private expenditure refer to 1999.
b) Data refer to 1999.
Source: OECD Social Expenditure database (SOCX).

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Spending on social protection has risen significantly between 1980 and 1993, and, leaving cyclical fluctuations aside, has tended to stabilise between 1993 and 2003 (Figure 4.2). All in all, public spending on social protection has passed from 18% of GDP in 1980, to above 22% in 2003 in the OECD countries for which data are available. Greece and Portugal have registered significant increases, while Ireland, Luxembourg and the Netherlands have experienced reductions. While starting from a much lower level, private spending on social protection increased gradually from 2% of GDP in 1980 to more than 4% of GDP in 2003, in the 12 countries for which data are available. At 5.5 percentage points of GDP, the increase in private spending was particularly large in the United States.

Figure 4.2. **Evolution of public and private social expenditures, 1980-2003**

A. **Public social expenditure, OECD average***a*

B. **Private social expenditure for selected OECD countries,***b* average
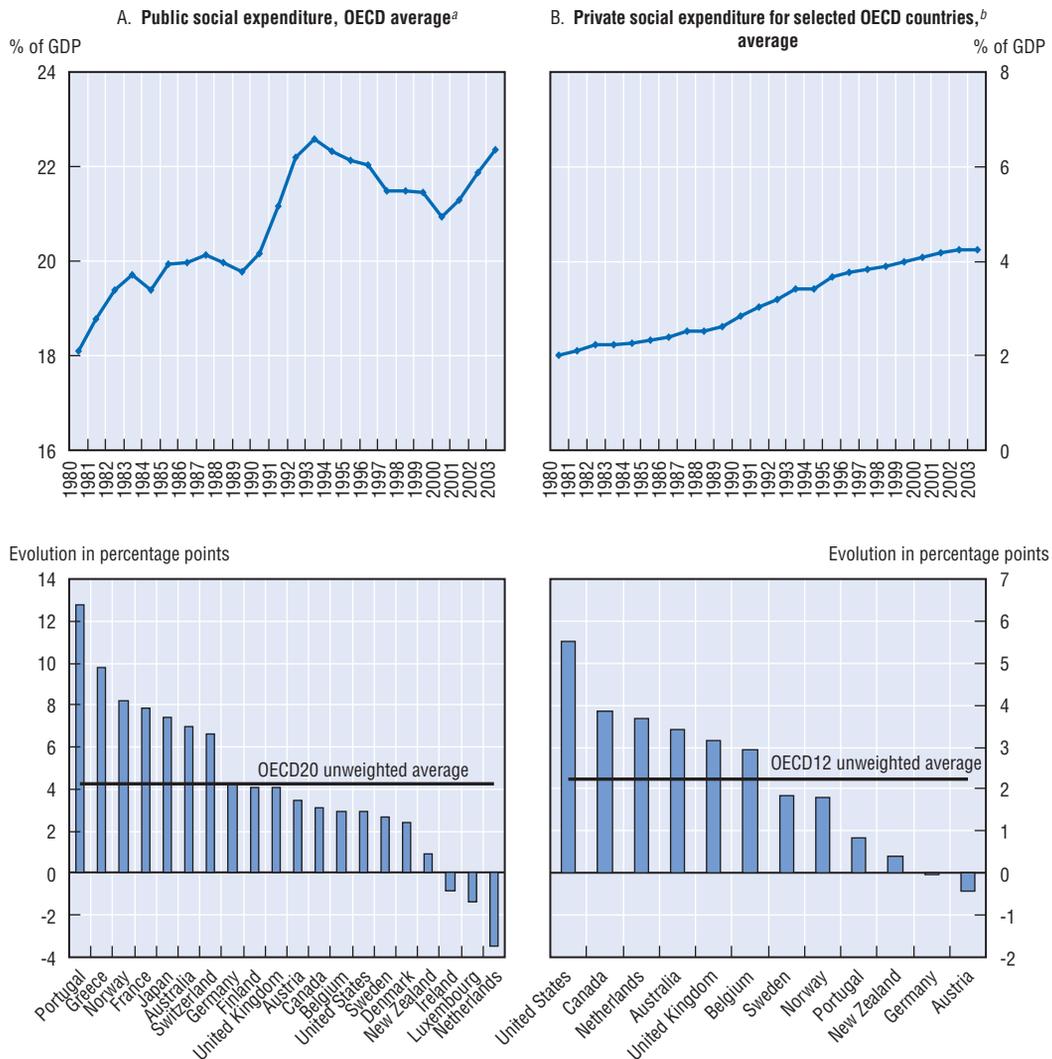
a) Unweighted average for OECD countries excluding the Czech Republic, Hungary, Iceland, Italy, Korea, Mexico, Poland, the Slovak Republic, Spain and Turkey.

b) Unweighted average for 12 OECD countries: Australia, Austria, Belgium, Canada, Germany, the Netherlands, New Zealand, Norway, Portugal, Sweden, the United Kingdom and the United States.

Source: OECD Social Expenditure database (SOCX).

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The main upward spending pressures come from health and pensions. Currently, government spending on pensions and health accounts for two thirds of total government spending on social protection. Likewise, private spending on health and pensions is rising rapidly.[3] And current projections point to a further increase in both government and private spending on health and pensions in coming years, reflecting population ageing. As noted by de Kam and Owens (1999), there are possibilities to limit the claims on public spending by limiting access to or coverage of publicly-financed health programmes, reforming public pensions systems and privatising part of non-basic pensions, but they correspond to social choices with important distributional consequences and are unlikely to relax the overall upward pressure on spending and thus tax levels. OECD (2006a) projects that, in the absence of additional policy measures, public spending on health

and long-term care could double from close to 7% in 2005 to some 13% in 2050; if cost-containment policies are implemented, average expenditures would still reach 10% of GDP in that same year, and the increase would exceed 2.5 percentage points of GDP in almost all countries.[4] Pension projections by the European Commission based on a "no policy change" scenario find much more variance across countries, with increases in pension spending in 2050 projected to be particularly high (above 6 percentage points of GDP) for Hungary, Ireland, Portugal and Spain, and negative in Austria and Poland (European Commission, 2006).[5]

1.2. Social protection financing and the tax wedge

Public social protection can be funded through earmarked contributions and taxes, or the general taxation system. In the absence of national social security accounts allowing proper comparison across countries (see Annex 4.A1 in OECD, 2007), it is assumed in this chapter that public social expenditures not financed by earmarked taxes are financed by general taxation. The relative importance of the two funding sources varies considerably across countries. Social contributions and other earmarked taxes financed more than half of public spending on social protection in 17 out of the 30 OECD countries in 2003 (Figure 4.3, Panel A). Only a few countries, Australia, Denmark and New Zealand, rely exclusively or quasi-exclusively on general taxation. On average, earmarked resources accounted for almost half of the financing of public spending on social protection.

Figure 4.3. **Earmarked contributions and taxes for the financing of social protection, level and evolution**

As a percentage of public social expenditures
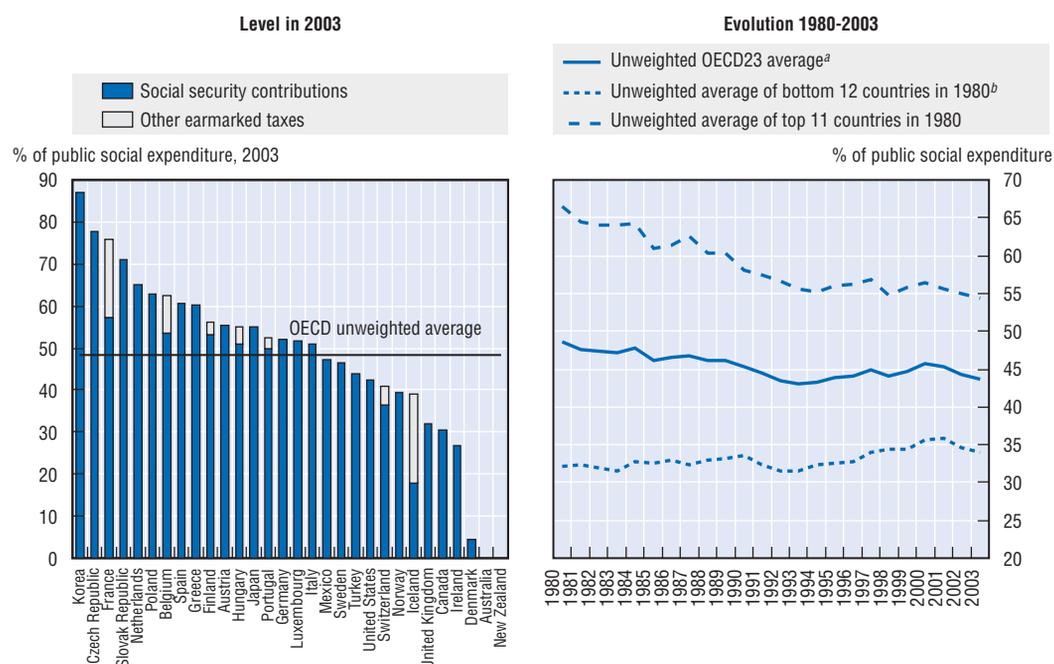
a) OECD average for 23 countries excluding Czech Republic, Hungary, Iceland, Korea, Mexico, Poland and Slovak Republic.
b) Bottom 12 countries, *i.e.* countries with lowest earmarked contributions and taxes (% public social expenditures) in 1980: Australia, Austria, Belgium, Canada, Denmark, Finland, Ireland, Luxembourg, New Zealand, Sweden, the United Kingdom and the United States.

Source: OECD Revenue Statistics database; OECD Social Expenditure database (SOCX).

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There have been significant changes over the past two decades regarding the relative importance of earmarked resources *versus* general taxation. On average in the OECD, the share of earmarked resources has declined by 5 percentage points (Figure 4.3, Panel B). There has also been some convergence in funding patterns across countries. The share of earmarked resources has declined significantly in countries where social contributions are the main source of funding and it has increased somewhat in other countries.

In countries with low social contributions, public social protection financing takes up a considerable share of general taxation[6] – more than 50% in Australia, Denmark, Germany, New Zealand and Switzerland (Figure 4.4, Panel A). But the share of general taxation used for public social protection is also important in other OECD countries. On average in the OECD, it has risen from 34% in 1980 to 43% in 2003. Finally, as income and consumption taxes constitute 75% of these general taxes, the wage bill is likely to be the main tax base for the financing of social protection, even in countries with relatively low social contributions (Figure 4.4, Panel B).

The previous figures provide a first insight into differences across countries and through time in terms of social protection funding. However, they tell little about the economic impact of these funding sources, in particular on employment. To analyse the effect of social protection financing on employment, this chapter will subsequently focus on the so-called "tax wedge", defined as the difference between labour costs and the take home pay in proportion of labour costs.[7] While encompassing a number of limitations, it constitutes the best instrument that can be used in absence of precise and comparable national accounts of social protection funding:

● The tax wedge is the instrument traditionally used to analyse the impact of taxes on employment, as it includes all taxes which have a direct impact on labour costs and real wage incomes: employers' and employees' social security contributions, as well as personal income taxes and consumption taxes.

● A very large share of the taxes included in the tax wedge is in fact related to the financing of public social expenditures: social security contributions are, by definition, earmarked for social protection and while income and consumption taxes are mostly non-earmarked taxes, a large share of these revenues is generally used to finance social protection. And overall, Figure 4.5 indeed shows a close correlation between the tax wedge level and public social expenditures.

● Yet, there is no strict equivalence between the effects of social protection financing on employment and the effect of the tax wedge on employment. The tax wedge is a partial equilibrium construct, measuring the extent to which social contributions, income and consumption taxes *directly* affect wage claims and labour costs. But these taxes also impact *indirectly* on employment, through their potential effect on producer prices, competitiveness and growth, for instance. Thus, the tax wedge is a useful device to analyse the (direct) employment effect of financing social protection, but it is not a substitute for a full general equilibrium treatment. And other taxes may also have indirect implication for employment outcomes. Hence, when examining the possibility to finance social protection out of taxes not included in the tax wedge or, more generally, not exclusively weighing on labour incomes (*e.g.* consumption and income taxes as opposed to social contributions), the possible indirect effects on employment also need to be taken into account.

Figure 4.4. **A significant share of general taxes is devoted to social protection financing**

Panel A. **Public social expenditure financed out of general taxation,[a] as a percentage of general government revenue from (non-earmarked) taxation, 2003**

Panel B. **Income and consumption taxes,[b] as a percentage of general government revenue from (non-earmarked) taxation, 2003**
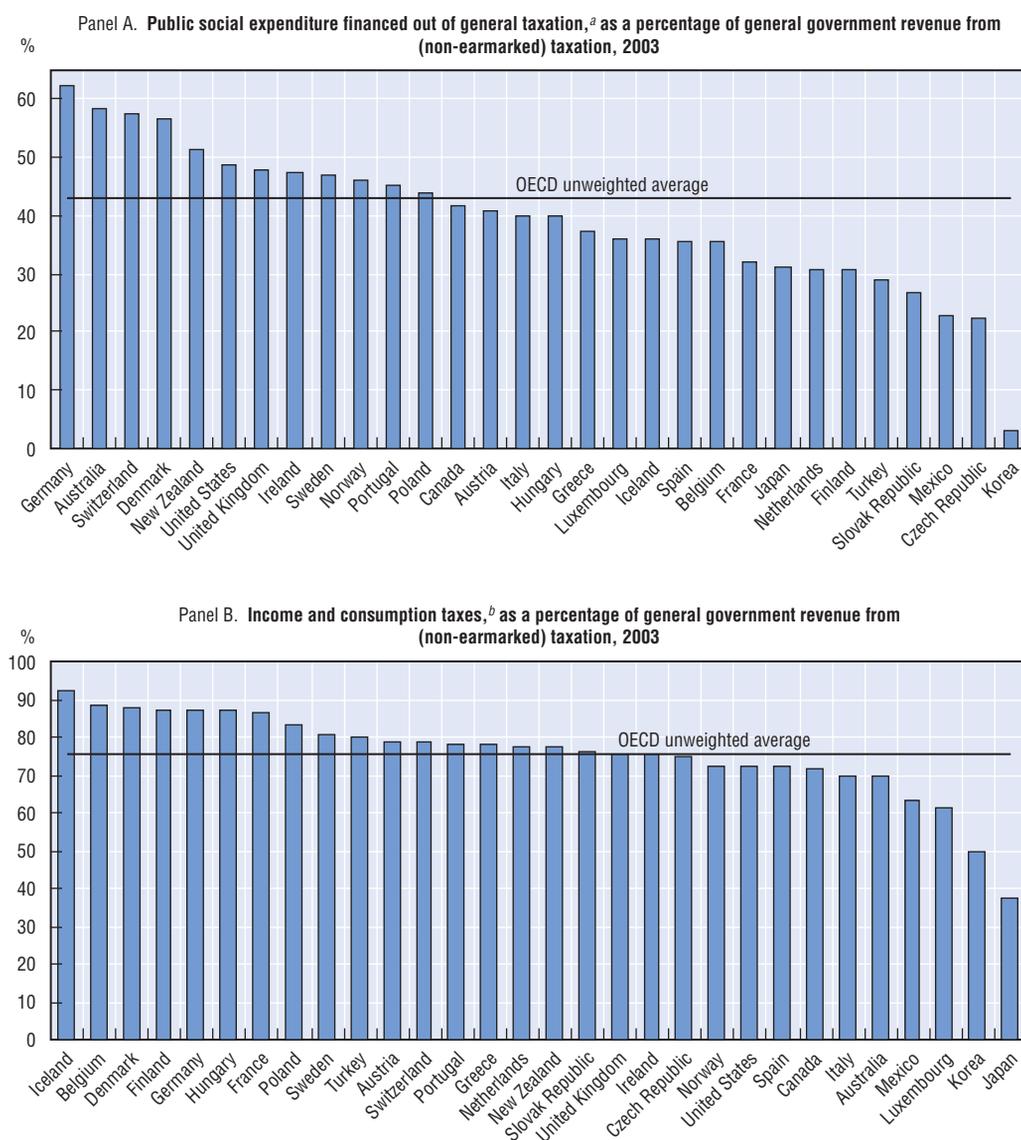
a) Calculated as: (Public social expenditures – taxes earmarked for social protection)/(Total taxes – taxes earmarked for social protection).

b) Calculated as: (Income and consumption taxes)/(Total taxes – taxes earmarked for social protection).

Source: OECD Revenue Statistics database; OECD Social Expenditure database (SOCX).

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Significant cross-country differences in the tax wedge – measured on the basis of actual tax revenues – emerge in Figure 4.6, the latter ranging from a low of 26% in Korea to a high of 57% in Sweden in 2003. On average, social security contributions – the total of employer and employee social security contributions – accounted for almost 20% of labour costs, that is half of the total tax wedge (Figure 4.6, Panel A). These contributions are substantially higher in virtually all countries with above-average tax wedges. By contrast, social security contributions rarely exceed 12-13% of labour costs in countries with below-average tax wedges. Overall, earmarked resources for the financing of social protection largely contribute

Figure 4.5. **Tax wedge and public social expenditure, 2003**
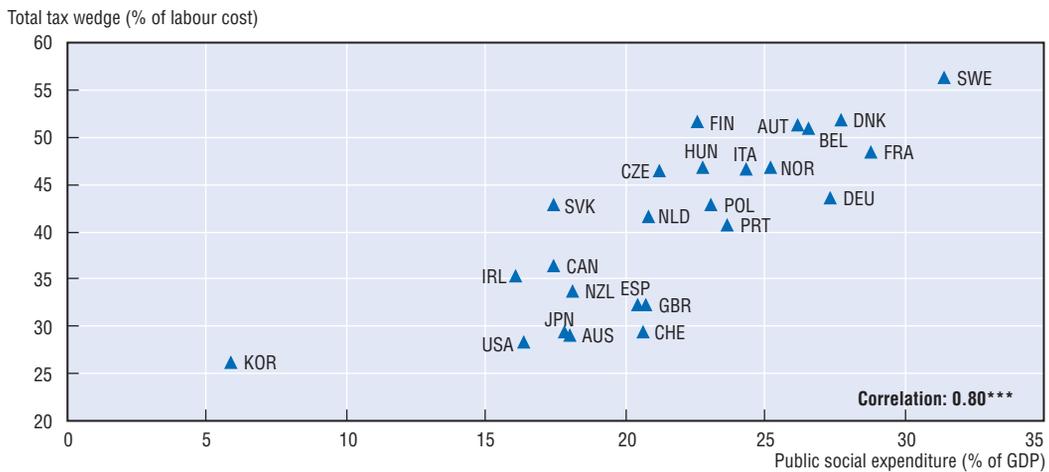
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to explain cross-country differences in the tax wedge. It should, however, be stressed that private contributions, earmarked to fund private social protection, are not included in the estimated tax wedge. As noted earlier, private social protection is important in a number of OECD countries, thereby entailing substantial contributions by employers and/or employees (see Box 4.1). Thus, cross-country differences in the tax wedge may also reflect differences in public social insurance coverage.

The tax wedge increased by 4 percentage points, on average, over the period 1980-2003 (Figure 4.6, Panel B). It increased in all countries, except the Netherlands and Switzerland. The rise was mostly driven by social security contributions: they explain almost entirely the rise in the total tax wedge in 7 out the 11 countries where the latter increased more than the average. By contrast, in countries where the tax wedge declined or rose slightly, these favourable trends have partly, if not mainly, resulted from a decrease in non-earmarked resources.

Finally, the share of indirect taxation in the total (direct and indirect) tax burden weighing on labour incomes has been rather stable, on average, over the period 1980-2003 (Figure 4.7, Panel A). The various components of direct labour taxation show a quite different picture, however (Figure 4.7, Panel B). On average, there has been a substantial shift from personal income taxes to employee social security contributions, while the share of employer social contributions in direct labour taxation has been stable. The latter decreased significantly in a few countries, however: Italy, the Netherlands, Spain and the United Kingdom. Employer social security contributions were shifted towards employee social security contributions and consumption taxes in the Netherlands and the United Kingdom, while in Italy and Spain, the share of income taxes in direct labour taxation increased (in Spain, this was also accompanied by a shift towards consumption taxes).

1.3. *The effect of the average tax wedge on employment*

The economic agent on which a tax is levied is not necessarily the one that fully pays the tax in question, since resulting labour and product market adjustments may result in tax shifting. For instance, in certain cases, firms may seek to partly or wholly shift higher employer social security contributions onto lower wages. In other cases, workers may

Figure 4.6. **The overall tax wedge on labour incomes,
its components and evolution**

A. Level and components of tax wedge, 2003

B. Evolution in percentage points, 1980-2003
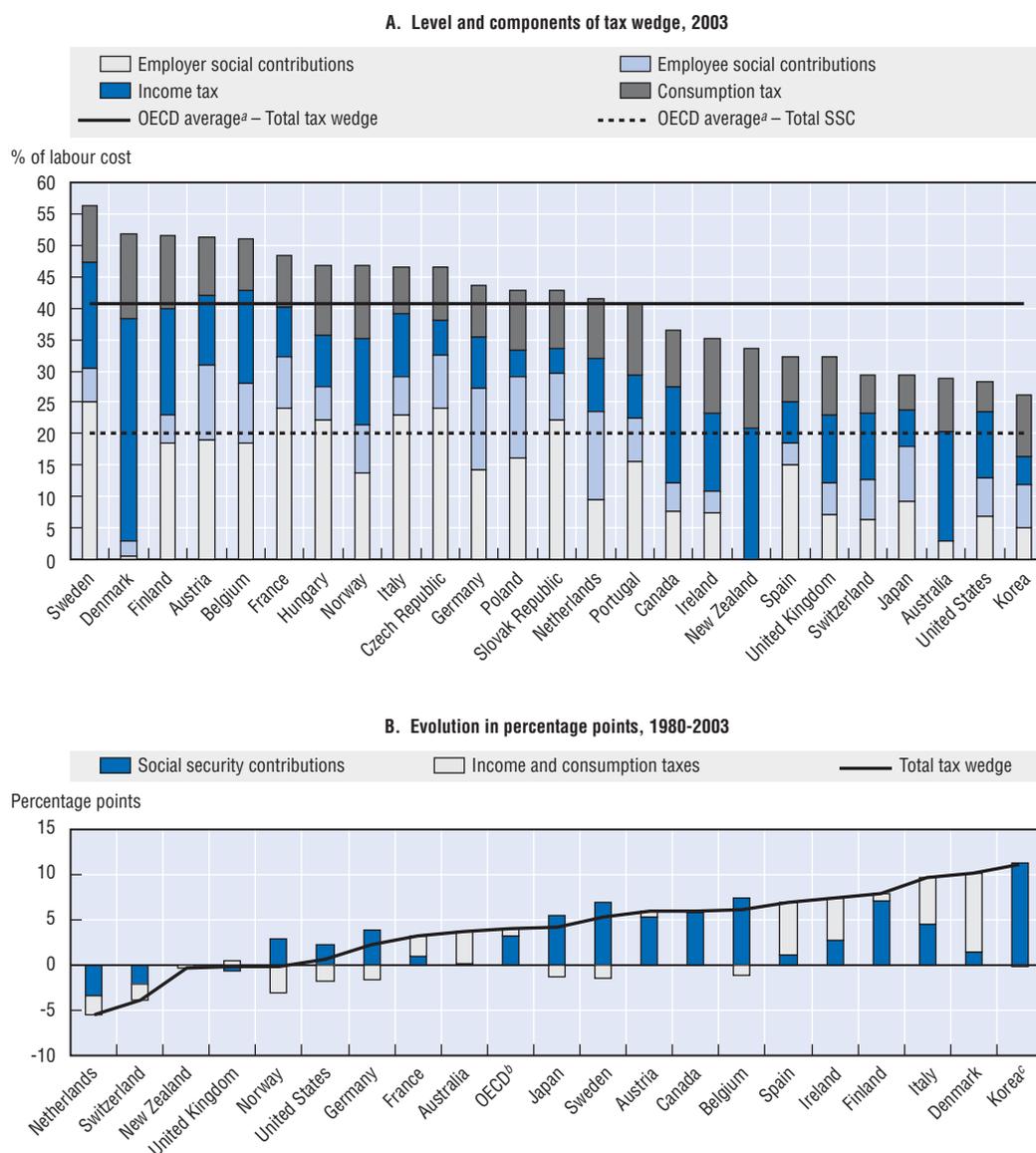
SSC: Social security contributions.

a) Unweighted average for OECD countries excluding Greece, Iceland, Luxembourg, Mexico and Turkey.

b) Unweighted average for countries shown.

c) Benefits in cash for old age, incapacity and unemployment are missing before 1990, they represent less than 3% of the income tax base in 1990.

Source: See OECD (2007), "Financing Social Protection: the Employment Effect – Further Material", *www.oecd.org/els/ employmentoutlook/2007.*

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demand higher wages in the face of higher employee contributions or higher consumption taxes. The respective bargaining power of workers *versus* that of their employers will determine the degree to which changes in the tax wedge impact on real wages, and in turn on employment.

Box 4.1. **The cost of employment-based private social schemes:
some estimates**

Employment-based private social schemes are important in a number of OECD countries. This is especially the case in the United States for health – as the government does not guarantee universal health care – and pensions. Such schemes are also important in Canada and the Netherlands (for both health and pensions), as well as Australia, Ireland, Switzerland, and the United Kingdom (for pensions), and France for complementary health insurance. Both types of schemes have significantly developed in a number of OECD countries as a result of the reform of pension and health systems implemented in face of the increasing pressures on public budgets.

Information on payments for private social scheme as a share of labour costs is not easily available. For the aim of this chapter, an attempt was made to collect such data from relevant national bodies for selected schemes (mainly pensions and health) in certain countries. The choice of scheme and countries was made based on the importance of the associated private social expenditures in current social expenditures, as well as in expected future expenditure for pensions. Contrary to what is provided in the chapter for public social schemes, this data is obviously not comprehensive: some countries for which private schemes are important (*e.g.* Canada) are not covered, and, in the countries for which data have been collected, all private social schemes are not systematically included (for more detailed information on the data, see Annex 4.A3 in OECD, 2007). Given that these data are not based on a common methodology, caution is also required when making cross-country comparisons.

Estimates suggest that these payments by employers and employees represent a significant share of labour costs in a number of countries where the tax wedge (as measured for the purposes of the chapter) is low (see figure below). In the United States in particular, for a worker covered by pensions and health schemes, average payments for private schemes are almost as high as the taxes levied on the gross wage, and they would likely be higher if employees' payments for private pension schemes were included.

**Average effective payments to selected private social schemes
in seven OECD countries**

Note: 2005 for Ireland, Hungary, the Netherlands, the United Kingdom and the United States; 2002-03 for Australia and 2004 for Switzerland.
a) Pension contributions for employers only.
Source: OECD Secretariat based on national sources (see OECD, 2007, "Financing Social Protection: the Employment Effect – Further Material", *www.oecd.org/els/employmentoutlook/2007*).

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Figure 4.7. **Evolution of the structure of the total tax burden weighing on labour income**

Panel A. **Share of indirect taxation in the total (direct and indirect) tax burden weighing on labour income, evolution 1980-2003**

Percentage points

OECD unweighted average[a]

Canada, Denmark, Austria, Finland, France, Belgium, Norway, Ireland, United States, Germany, Italy, Japan, Sweden, Australia, United Kingdom, Switzerland, Netherlands, Spain, New Zealand

Panel B. **Share of employer and employee social security contributions and income taxes in the total direct tax burden weighing on labour income, evolution 1980-2003**

Percentage points

Employer social security contributions

OECD unweighted average[a]

Netherlands, Spain, United Kingdom, Italy, Sweden, France, Australia, Norway, Denmark, New Zealand, Austria, Ireland, Germany, Japan, United States, Switzerland, Belgium, Finland, Canada

Percentage points

Employee social security contributions

OECD unweighted average[a]

Switzerland, Spain, France, Australia, New Zealand, Italy, Ireland, Denmark, Austria, Finland, United Kingdom, Germany, Belgium, United States, Canada, Norway, Netherlands, Sweden, Japan

Percentage points

Income tax

OECD unweighted average[a]

New Zealand, Japan, Sweden, United States, Belgium, Germany, Netherlands, Norway, Canada, Finland, Switzerland, Australia, Ireland, United Kingdom, Austria, Denmark, Spain, Italy, France

a) Excluding Czech Republic, Greece, Hungary, Iceland, Luxembourg, Mexico, New Zealand, Poland, Portugal, Slovak Republic and Turkey. Korea is also excluded (extreme values).

Source: See OECD (2007), "Financing Social Protection: the Employment Effect – Further Material", *www.oecd.org/els/ employmentoutlook/2007.*

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Other things being equal, labour demand always decreases as labour costs rise. Consequently, the extent to which higher taxes may result in lower employment depends crucially on how real wages react to the tax increase – which in turn depends on the supply-side of the labour market (see for instance, Pissarides, 1998; and Bovenberg, 2006). More specifically, there are three different effects of higher tax wedges on labour supply decisions and wage claims:

● A *substitution effect*: other things equal, a higher tax wedge reduces the opportunity cost of not working (as defined by the ratio between non-labour incomes and after-tax wages) and thus tends to depress labour supply and generate wage resistance. This effect holds under the fairly general condition, which often holds true, that non-labour market incomes face a different tax treatment than wages, and partly escape the tax burden supported by employees. In most OECD countries, replacement incomes are generally not fully indexed on net wages: unemployment benefits are indexed on gross rather than net wages (except in Austria, the Czech Republic and Germany) and are often taxed at reduced rates, while other benefits such as family, housing or social assistance benefits are generally not treated as taxable income and, in a number of cases, take the form of lump-sum transfers (OECD, 2004a). In addition, in the presence of opportunities for undeclared work, the opportunity cost of not working (in the regular labour market) is also reduced as taxes on wages rise.

● An *income effect*: in order to compensate for the income loss resulting from higher taxes on wages, households may tend to raise their labour supply, thus moderating wage claims. Higher labour taxes entirely translate into lower after-tax wages, if replacement incomes are fully indexed on after-tax wages (thus neutralising the substitution effect). In case of partial indexation, the extent to which the additional tax burden is shared between reduced after-tax wages and higher labour costs depends on the relative strength of workers' and employers' bargaining positions. Such a trade-off is likely to result in greater wage moderation in centralised/co-ordinated wage-setting regimes than in intermediate wage-setting regimes – where unions are not able to internalise the employment impact of their wage claims (Calmfors and Driffill, 1988).

● A "*perception*" *effect*: employees may be willing to accept lower after-tax wages as taxes rise if they effectively recognise a linkage between the taxes they pay and their benefits entitlements (Summers, 1989; Gruber and Krueger, 1990). While being partly subjective, workers' perceived (individual and collective) value of the taxes and contributions that they pay may be influenced by policy. This may be the case when there is a close link between the tax base and the beneficiary population. Likewise, centralised and co-ordinated wage bargaining systems may facilitate workers' recognition of the tax/benefit linkage (Summers, Gruber and Vergara, 1992). More fundamentally, the perceived value of a tax is strongly associated with the efficiency of the social programme funded from the tax in question. In this perspective, improving the efficiency of social expenditures would not only help to reduce labour taxes, but also, for a given tax burden, it would make labour taxation less distortionary, thus reducing its potential adverse effects on employment.

The above three effects of the tax wedge ignore the potential impact of social protection on productivity. As shown in Chapter 2, certain welfare benefits like parental leave, effective active labour market policies and well-designed unemployment benefits may raise labour productivity in various ways, which would offset any negative employment impact of the taxes needed to finance these welfare benefits. Likewise, health programmes may support workers' motivation and productivity. More generally, well-designed social protection are likely to be a productive input for the economy.

Overall, the employment effects of higher tax wedges may go in different directions and depend on policies and institutions in place. Yet, empirical studies most often conclude that a higher tax wedge tends to increase labour costs (see Annex 4.A1, Table 4.A1.1 for a literature survey). Also, high taxes on labour are particularly damaging to employment of low-paid workers in the presence of a binding high minimum wage (see Bassanini and Duval, 2006; and OECD, 2006b, for a survey). At average wage level, employment taxes are found to be shared between higher labour costs and lower take-home pay, but the magnitude of these adjustments varies considerably across countries and studies.

Results strongly differ as regards the financing of the private social protection schemes implemented in the United States. Indeed, empirical studies on the impact on wages in the 1990s found that the costs of these mandated employer-provided health insurance (which are quite high, Box 4.1) are almost fully shifted to employees in the form of lower wages, with little or no effect on labour utilisation (for a literature survey, see Gruber, 2000). Along the same line, findings from the 2006 Health Confidence Survey indicate that three-quarters of individuals with employment-based health benefits in the United States would prefer USD 6 700 in employment-based coverage to an additional USD 6 700 in taxable income (EBRI, 2006). This indicates that the "perception" effect is very high in that case, where a significant share of the population is not covered by health insurance. This does not mean that private and individual schemes are superior to more redistributive public schemes, however such an assessment would require a deeper and broader analysis of social protection systems which lies beyond the scope of this chapter – see Pearson and Martin, 2005. Moreover, the debate currently taking place in the United States on the potentially detrimental effects of rising health costs on firms competitiveness suggests that the situation may have changed recently (or at least that there are fears that this may change in the future).

2. What is the employment impact of the different ways of financing social protection?

As discussed above, the *average* tax burden weighing on wages and labour costs may shape employment performance in various ways. The precise impact depends crucially on: *i)* the tax burden on low-wage employment (since the presence of wage floors makes it difficult to pass tax increases onto lower wages); *ii)* the extent to which there is a close link between the taxes and contributions that fund social protection on the one hand, and social protection benefits on the other (*a priori*, the closer the link, the less the risk of a negative impact of taxes on employment); and *iii)* the extent to which a broadening of the tax base to fund social protection, as is being done in some countries and debated in others, helps meet employment objectives, notably by affecting the wage/replacement income ratio. This section examines these three key policy issues.

2.1. The role of progressivity

The tax wedge tends to be progressive, especially when funding relies on personal income tax

Figure 4.8 presents an estimate of the progressivity of the tax wedge, *i.e.* the extent to which the tax wedge on low-wage employment is lower than the tax wedge on high-wage employment. The tax wedge is measured here on the basis of statutory rates for social contributions and income taxes, paid by single individuals earning 67% and 167% of the average wage.[8] The tax wedge so calculated is 20% lower for low-wage employment than for high-wage employment, on average across OECD countries. The country ranking has to

Figure 4.8. **Progressivity index of the tax wedge from direct labour taxation**

Relative tax wedge difference between 167% and 67% of AW, single worker without children,[a] 2004
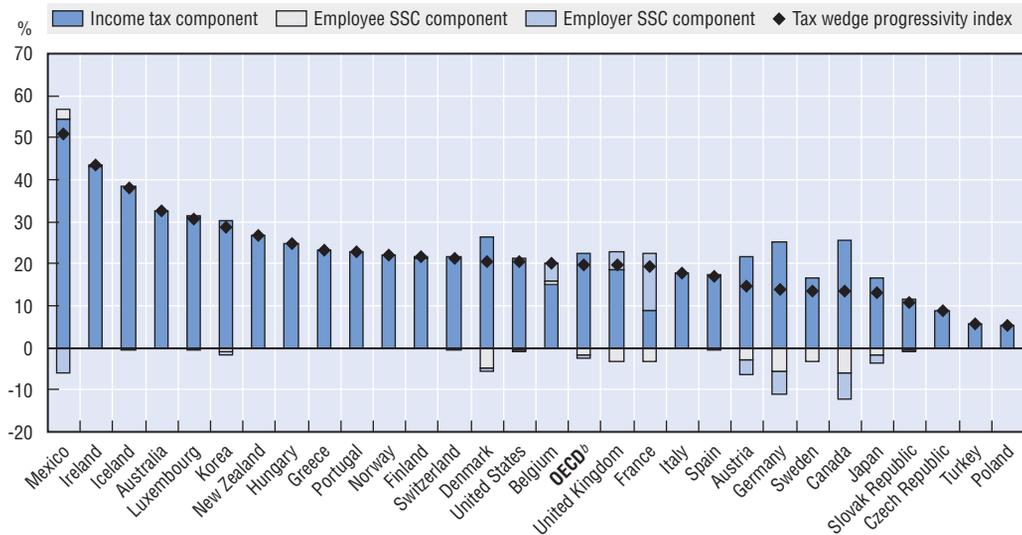
AW: Average wage.

SSC: Social security contributions.

a) The progressivity index of the tax wedge is calculated as $(TW_{167} - TW_{67})/TW_{167}$, where TW_{167} and TW_{67} is the tax wedge for workers at 167% and 67% of average wage, respectively.

b) OECD unweighted average.

Source: OECD Taxing Wages database.

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be considered with caution, however, this measure does not give a synthetic picture of the overall progressive structure of direct labour taxation, since it depends on family types and wage ranges – presently rather narrow – over which it is calculated. Moreover, it does not take into account consumption taxes – another key component of the tax wedge. Therefore, since consumption taxes are likely to bear disproportionately on low-wage employment (the propensity to consume is relatively high for low-income people), it provides an upper bound estimate of tax wedge progressivity.

In most countries, the progressivity of the total tax wedge is entirely explained by the progressive structure of personal income taxes. Social contributions are often proportional and capped at a certain level. Hence, they tend to be regressive – although this does not appear in Figure 4.8, probably due to the fact that the progressivity index is calculated over a relatively small wage range.

Stronger tax progressivity via lower tax wedges on low-wage employment may improve job prospects of vulnerable groups…

At the minimum wage level, labour costs and net incomes result entirely from policy choices as regards labour taxation, benefits and the minimum wage itself. The latter plays a doubled-edge role: a high minimum wage relative to the average wage tends to deter the employment prospects of vulnerable groups, but it also contributes to make work pay relative to welfare benefits. And higher labour taxation will fully translate into either increased labour costs, or reduced opportunity costs of not working, depending on whether taxes are levied on the employer or the employee side.

On the employer side, labour taxation does not impact directly on the minimum-wage cost *relative* to the average wage cost, since social contributions often have a flat structure over this wage range (Immervoll, 2007). In relative terms, labour costs at the minimum-wage would thus result from policy choices as regards gross minimum wage levels rather than labour taxation. However, flat payroll taxes may indirectly increase the relative cost of minimum-wage workers since, at the average wage level, part of these taxes may be transferred onto workers in the form of lower gross wages. Hence, flat taxes are *non-neutral* in presence of a binding minimum wage and lower employers' contributions at the bottom of the wage ladder would avoid that the low-skilled are disproportionately affected by labour taxation. Several countries, notably Belgium, France, the United Kingdom and, until recently, the Netherlands have already moved in this direction. They have applied significant cuts in employer social security contributions on low-wage employment.[9]

... but such a policy may lead to substantial deadweight losses

The effectiveness of broad employers tax cuts at the bottom of the wage ladder should be assessed *vis-à-vis* alternative policy tools to support employment prospects of disadvantaged workers. In this respect, empirical evidence suggests that:[10]

● Payroll tax cuts targeted on lower-wage earners are generally found to be more effective in boosting the employment prospects of disadvantaged groups and reducing aggregate unemployment, than general tax cuts.

● However, deadweight losses – *i.e.* the fact that the reduction of employer social contributions also benefits existing low-wage jobs and new jobs that would have been created even in the absence of the tax reduction – tend to be substantial.[11] This is a strong limitation, as these measures pose a major funding issue and require higher taxes elsewhere in the wage ladder.

● Insofar as payroll taxes are not overly high, implementing or going further with broad tax cuts covering all those in low-paid work may be less cost-effective than schemes more closely targeted at jobless and hard-to-employ individuals, and aimed at facilitating transitions from unemployment or inactivity to regular employment in the private sector. And in countries with overly high minimum wages, well-designed employment conditional benefits may help limit further increases in the statutory minimum wage, and may be more cost-effective that further broad employers tax cuts.

On the employee side, financial rewards from moving from unemployment or inactivity to low-paid work tend to be very low in most OECD countries. For unemployed or inactive persons, accepting a low-paid job – *e.g.* a full-time job at the minimum wage or at 67% of the average wage – provides little net additional incomes (Figure 4.9, and OECD 2005a, Chapter 3 for a detailed analysis). When moving from unemployment to work, 70-80% of the additional gross income is on average taken away in the form of income taxes, employee social security contributions and/or lower welfare benefits. This proportion is lower when switching from inactivity to work but still represents on average 60-70% of the additional gross income.

These high marginal effective tax rates may have sizeable consequences on participation behaviour and employment, notably in a context where upward wage mobility is relatively limited at the bottom of the wage ladder (see OECD, 2006b, Chapter 5). Indeed, empirical evidence suggests that for groups at the margin of the labour market, labour supply tends to be relatively sensitive to earned income (for a survey, see Roed and Strom, 2002). Yet, the striking fact is that overly-high marginal effective tax rates result primarily from sharp welfare benefit

Figure 4.9. **Unemployment and inactivity traps at the bottom of the wage ladder**

OECD average, 2004
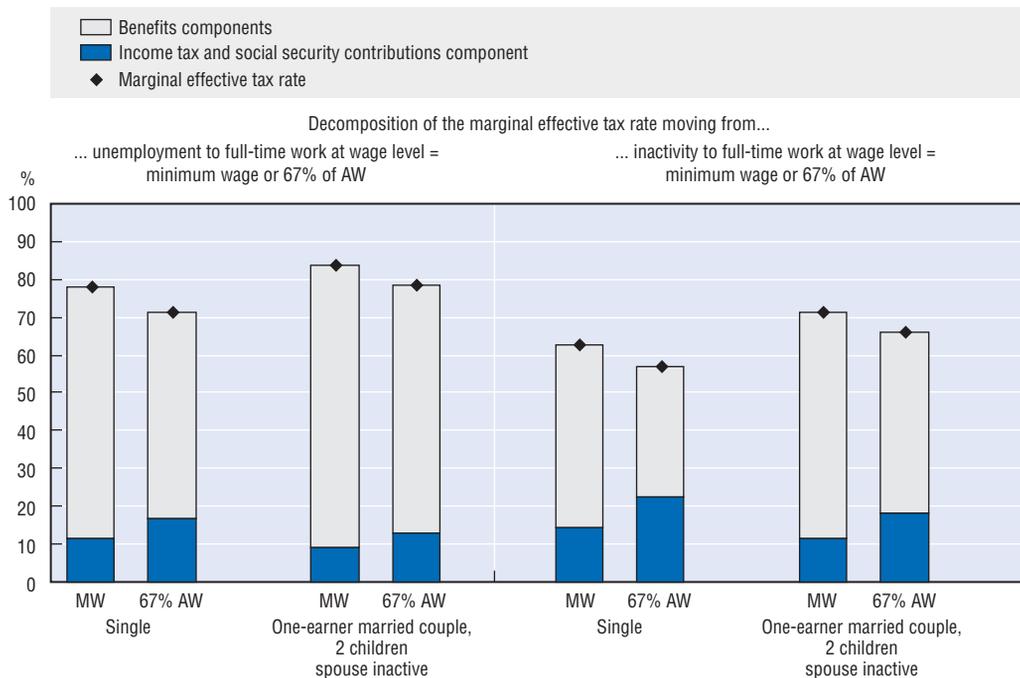
AW: Average wage.

MW: Minimum wage.

a) For minimum wage, average includes only countries with a statutory minimum wage: Australia, Belgium, Canada, Czech Republic, France, Greece, Hungary, Ireland, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Poland, Portugal, Slovak Republic, Spain, Turkey, United Kingdom and United States.

Source: OECD tax-benefits models.

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withdrawals in virtually all countries. Moreover, progressive income taxes reduce the gap between the take-home-pay of minimum-wage workers and average wage earners (Immervoll, 2007). Thus, the policy priority is not reshaping the tax structure on the employee side, but rather, the benefit system. And if well-designed, employment-conditional benefits have proved to be effective in improving the labour market situation of the most vulnerable groups (see OECD, 2005a, Chapter 3).

All in all, a very high minimum wage associated with large cuts in employer social contributions may be less cost-effective in promoting employment and reducing poverty than the combination of a moderate minimum wage with well-designed employment-conditional benefits targeted on low-income families. Even if this latter policy option does not eliminate the risk of deadweight losses, it may allow to better target poorest working families, as opposed to individual minimum wage workers. It would also help reduce high marginal effective tax rates, primarily resulting from sharp benefit withdrawals at the bottom of the wage ladder.

Tax progressivity at all wage levels moderates wage claims

The issue of tax progressivity goes beyond the particular case of minimum-wage workers. Empirical studies indeed concur that the progressive structure of personal income taxes tends to moderate wage claims, at least for workers in the middle of the wage distribution (see Annex 4.A1, Table 4.A1.1, for a literature survey). In fact, more progressive labour taxes are

associated with higher marginal tax rates and while the average tax rate is a tax on the wage level, the marginal tax rate is a tax on wage increases. Thus, the higher is the marginal tax rate, the lower the wage claims (see Box 4.2). In turn, this would tend to reduce unemployment and make room for financing employer tax relief at the bottom of the wage ladder through slight tax increases at higher wage levels (see *e.g.* Drèze and Malinvaud, 1994; and Lockwood, Slok and Tranaes, 2000). Along this line, Pissarides (1998) notes that "a reform of the employment tax structure from regressive to progressive can be one of the very few free lunches that one encounters in the analysis of economic policy". But progressivity of taxation may also have efficiency costs, in particular in terms of tax avoidance, reduced incentives to acquire new skills and to improve productivity for the highest wage workers. All in all, there is probably an optimal degree of tax progressivity, where these potential efficiency costs are just offset by the gain from reduced unemployment (Sørensen, 1999).

2.2. Increasing the link between taxes and social protection benefits/expenditures

There may also be ways to change the tax design so as to better link social contributions and social protection benefits or expenditures, and thus reduce the negative impact that the overall tax wedge may exert on employment. This may be achieved by better linking employees' contributions to their future benefits and employers' contributions to the cost they incur to the system. On the employee's side, increasing the perceived value of the counterpart to taxes would moderate wage claims, thus making taxes less distortionary. On the employer's side, introducing some linkage between labour taxation and the costs incurred by social protection systems (in terms of benefit payments), through experience-rating mechanisms, may be socially desirable and economically efficient, as employer behaviour in terms of workforce management has an impact on the observed frequency of some so-called "risks" covered by social protection and on employment.

Obviously, such a reform could only be made in social protection areas where such a linkage makes sense, *i.e.* in areas where the tax incentives strongly affect behaviours and thus the realisation of the so-called "risks" covered by social protection, and where it can be expected to have repercussions on employment. In the case of employees, pensions would be the main scheme concerned. This is not a possibility in the case of health insurance, where getting a benefit is much more random, and the risk of creaming by insurers is too large.[12] Unemployment, work injuries, disability and early retirement are the most relevant schemes in the case of employers.

Even in those areas, there are limits to increasing the linkage between taxes and benefits in social protection as it runs against the solidarity and redistribution principles embedded in most social protection schemes, to allow the most vulnerable individuals to benefit from social protection. This is obvious for the schemes financed out of general taxation, but is also the case for social insurance schemes, which are based on the same principle of mutualisation of risks as private insurance, but avoid the risks of exclusion of the most vulnerable groups that would characterize individual private insurance schemes.[13]

The link between social contributions and social benefits: employees' perception of pensions' contributions

As outlined above, the higher the perceived value of the counterpart to taxes, the more employees are likely to accept lower net wages. A fundamental determinant of this perceived value is the quality of the benefits that employees expect to get in return for the taxes they pay, and thus the efficiency of social expenditures. The neutralisation of the possible

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Box 4.2. **Tax progressivity, wage claims and employment: some theory**

In a perfectly competitive labour market, the issue of tax progressivity falls into the "standard" trade-off between equity and efficiency. Indeed, increasing the marginal tax rate, while holding the average tax rate constant, simply reduces the opportunity cost of not working, at the margin. And this results in higher wages and lower employment – through the adverse substitution effect on labour supply. By contrast, in the presence of non-tax labour market imperfections – be they agents with market power or informational asymmetry – progressive taxation may both reduce inequality and improve efficiency (see among others, Koskela and Vilmunen, 1996; Sørensen, 1997; and Pissarides, 1998).

Indeed, a progressive tax is also a tax on wage increases and insofar as wages are set above the market-clearing level, greater progressivity may help alleviate distortions in some dimensions of the wage-setting process by encouraging wage moderation. For example, when unions trade-off higher wages against higher employment of their members, a rise in the marginal tax rate makes it less costly for the union to "buy" more jobs through wage moderation, since a given fall in the pre-tax wage now leads to a smaller fall in the after-tax wage. Likewise, greater tax progressivity may reduce equilibrium unemployment in cases where employers cannot fully observe workers' productivity and thus pay wages above the market-clearing level in order to elicit effort. A rise in the marginal tax rate reduces the effectiveness of a high pre-tax wage as an instrument for inducing higher productivity, leading employers to set lower wages.

Yet, tax progressivity has some limits. Raising the marginal tax rate on labour income may increase distortions in some other dimensions of labour supply, such as the choice of education and work effort (see Roed and Strom, 2002 for a survey). When much of the cost of training and education takes the form of forgone earnings, highly progressive tax schedules may reduce individual incentives to invest in human capital by taxing too heavily the higher earnings expected from skill acquisition (see for instance, Heckman *et al*., 2002). And as regards work effort, if unions bargain over both wage rates and work hours, a higher marginal tax rate induces the latter to set shorter working hours, thus distorting the labour-leisure choice in the same way as taxes distort individual labour supply decisions in a competitive labour market. Likewise, in cases where firms set wages in order to elicit effort, a higher marginal tax rate reduces labour productivity by lowering the employer's optimal efficiency wage relative to unemployment benefits, thereby encouraging shirking.*

As noted by Feldstein (1995), in terms of reduced productivity, the efficiency cost of overly-high marginal tax rates may be relatively large for high-income individuals who tend to have substantial discretion about the intensity with which they work. More generally, top-income earners may benefit from various opportunities to reduce their taxable incomes – even if the number of hours worked is unchanged – by transforming higher-taxed labour incomes into lower-taxed capital incomes in order to take advantage of legal possibilities of tax avoidance. And empirical evidence indeed suggests that the elasticity of taxable incomes with regard to marginal tax rates may be relatively high at the top of the income distribution, which in turn, reduces the overall tax return for public finances (see Gruber and Saez, 2002).

* In the standard job-search model of the labour market, while greater progressivity promotes employment by lowering equilibrium wage rates, it also lowers the efficiency of the job-matching process by reducing workers' expected marginal return to job search.

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negative effect of taxes on labour supply and employment might even turn into a positive effect if the related expenditure positively affects labour supply, such as in the case of childcare. Yet, to the extent that they relate exclusively to the perceived efficiency of public expenditures, such effects, although essential,[14] fall outside the scope of this chapter.

Public pension schemes, however, are often meant to operate a form of inter-temporal transfer of wages, with a more or less explicit link between what is paid and what will be received. If pensions were strictly deferred wages, then employees would not perceive them as taxes at all. In fact, this concept of deferred wages comes close to what is meant by actuarially-fair pension schemes. Actuarial fairness requires that the (*ex ante*) present value of lifetime contributions equals the present value of lifetime benefits.[15] It is often argued that the closer to actuarially fair the pension scheme is, the lower the tax component is and thus the lower the disincentive effect on labour participation should be.

Empirical results in this area are mixed. Constructing two indicators of the tax component of pension programmes, both between and within generations, across a range of OECD countries, Disney (2004) confirms that a higher tax component and a lower savings component reduces women's participation, but does not obtain the same result for male participation. Cox Edwards and James (2006) find that the Chilean switch from a traditional pay-as-you-go (PAYG) pension scheme to a fully funded defined-contribution scheme strongly reduced the propensity to become a pensioner and to drop out of the labour force for older workers, but they are unable to determine whether this effect is due to actuarial fairness or to other constraints such as tightened access to early pensions.[16] In fact, as noted in OECD (2006d), people do not always fully incorporate the results of theoretical calculations into their retirement decisions, and they are also likely to be influenced by whether they can attain a particular income to retire on comfortably.

The link between contributions and benefits is more important in public pension programmes relying heavily on social contributions than in those relying mostly on general taxation, since in the latter, pension benefits are often completely unrelated to contributions (they are income-tested in Australia, flat in the Netherlands and New Zealand, a combination of flat and earnings-related in Canada, Ireland, Japan, Switzerland and the United Kingdom). However, even the systems relying on social contributions depart significantly from actuarial fairness. Only a fully-funded defined-contribution scheme could be actuarially-neutral. In PAYG pension systems, what employees contribute to the system today serves to pay pensions to those currently retired; it does not provide employees with savings for the future, but with entitlements to benefit from the same right as current retirees, *i.e.* be paid a pension when they retire by those still working. In addition to redistribution *between* generations, pension systems also encompass redistributive features *within* generations, such as benefits for non-working spouses, widow(er) benefits, ceilings and floors on contributions and benefits, as well as *ad hoc* departures from actuarial fairness in indexation and revaluation of benefits.

Although actuarial fairness does not have to be an aim in its own right (Queisser and Whitehouse, 2006), there are ways to improve the design of current pension systems so as to better relate what employees contribute and what they will get, and make it clearer to them. This would involve in particular: *i)* making the accrued pension rights proportional to contributions; *ii)* making accrual rates (*i.e.* the rate at which pension benefits accrue) reflect differences in life expectancy for different population groups; and *iii)* better linking the first age of receipt of state pension to differences in expected longevity. A number of OECD countries have already implemented reforms aimed at enhancing the financial sustainability of their

pension systems in the face of ageing populations, and some go in the direction outlined above. Sweden and Italy, in particular, have adopted a so-called "notional defined contribution" (NDC) model, based on individual accounts which accrue according to a notional interest rate.[17] Defined-benefit (DB) systems can also be designed so as to link benefits to all lifetime earnings and contributions, in particular those systems relying on point accumulation. In fact, Börsch-Supan (2005) find that the reformed German pension scheme comes closer to a pure NDC system than the NDC implemented in Sweden. One advantage of NDC systems, though, may be that they make the tight link between contributions and benefits clearer to employees. Although the link may be less tight, the perception of the link by employees can also be high in DB systems such as the French one, where pensions entitlements are related to simple parameters such as the duration of cotisation and the annual average earnings.

Such reforms do not make sense in pension schemes mostly financed out of general taxation, but average effective tax or contribution rates are typically lower – as the public pension system generally guarantees only a minimum income – and they are typically complemented by a mandatory or quasi-mandatory funded second pillars, with a clear link between contributions and benefits.

The link between employers' social contributions and social expenditures: employers' social responsibility

Social protection also benefits employers by boosting workers willingness and ability to work and improving productivity if well-designed. This, in turn, justifies requiring firms to make direct contributions to the funding of social protection (at least in a number of areas). Historically, this kind of consideration has for instance motivated the introduction, by employers themselves, of health insurance schemes in a number of OCDE countries. Moreover, employers' behaviour in terms of workforce management (*e.g.* external *vs.* internal flexibility) has an impact on the materialisation of some so-called "risks" covered by social protection. For instance, there is an increasing consensus on the fact that employers play an important role in the extensive use of early retirement or sickness and disability schemes in a number of OECD countries (OECD, 2003c; and OECD, 2006d). To address this issue, countries have reformed early-retirement and disability schemes and have introduced anti-discrimination legislation, information campaigns, employment subsidies and various specific re-employment or re-integration programmes.

General features of experience-rated schemes. In some countries, reforms have also sought to change employers' behaviour by introducing experience-rated schemes. Broadly speaking, experience-rating consists in linking employers' social security contributions to the firm history as regards layoffs, early retirement, sickness or disability inflows. Employers' contribution rates are individualised in order to reflect the costs incurred by social protection systems as a result of employers' individual behaviours, over a given period of time. The precise calculation of individual employer premiums is quite complex,[18] which may limit employers awareness of the experience-rating system, in particular for small- and medium-size firms.

In any case, individual contribution rates generally vary between fixed minimum and maximum premia, so that experience-rated schemes always encompass a certain degree of risk-mutualisation principle. In turn, this tends to limit their ability to provide desired incentives to employers. That said, employers cannot be held fully responsible for unemployment, early retirement or disability risks. General macroeconomic conditions play an important role as regards layoff decisions, the inflow into disability is – for an

important part – driven by worker-specific risks, and for a number of older workers, barriers to employment also result from insufficient or ineffective training policies, as well as from seniority wage-setting arrangements.

Experience rating of early retirement benefits. In the United States, unemployment insurance (UI) benefits are entirely financed through experience-rating and empirical studies concur that this system reduces employer incentives to make excessive use of temporary layoffs (OECD, 2004b, Chapter 2). Although the United States is the only country to have made experience rating a general feature regulating UI financing, some OECD countries have introduced experience rating in UI systems for older workers. Such schemes may reduce the layoff risk at old age and ultimately, early retirement, as the unemployment spells at older ages tend to mean permanent withdrawals from the labour market. The flip-side of experience-rated systems of UI targeted on older workers is that they may reduce employers' incentives to hire workers above a certain age.

In Finland, unemployment pension benefits paid to workers over 60 years of age are partially experience-rated in companies with more than 50 employees. Employment contracts that have lasted for less than three years and started after the age of 50 incur no experience rating, thus limiting the adverse effect that such a system may have on the recruitment of older workers. In the early 2000s, about three-quarter of the 60-64-year-olds received some early retirement benefits, and almost 30% of these early retirees received unemployment pension benefits. In 2000, the Finnish government increased the liability share of firms in order to constrain early retirement in large companies (see Box 4.3). A recent study by Hakola and Uusitalo (2005) shows that this reform of the unemployment pension benefits reduced the unemployment risk of the older workers by about 16%.

Similarly, in France, when dismissing workers over the age of 50 that had been hired before the age of 45, firms have to pay a "one-shot" special contribution to the UI system – the so-called "Delalande" contribution. Yet, according to recent empirical studies, this measure would have little impact on firings of older workers while its effects on hiring are difficult to evaluate (Behaghel, Crépon and Sédillot, 2004; Bommier, Magnac and Roger, 2003). These studies suggest that workers aged 45-49 face lower re-employment chances but, given the existence of hiring subsidies targeted on workers over 50 years of age (notably, the so-called "*Contrat de retour à l'emploi*"), the extent to which this result is imputable to the "Delalande" contribution is not clear.[19]

Experience rating of work-injury and disability benefits. Not surprisingly, considerable age profiling is apparent in disability benefit programmes and in many countries, disability benefit awards are highly concentrated among people over age 50 (OECD, 2003c). However, countries in which the disability scheme is predominantly used by older workers tend to be countries with large numbers of people on early retirement programmes. This lends some credence to the idea that disability benefits may serve as a route for early retirement in countries where the society as a whole tends to have a negative attitude towards employment at older ages. That said, the experience rating of work-injury and disability benefits poses a number of specific issues, notably as regards the appropriate degree of experience rating and the prospective *versus* retrospective approach of rating:

● Employers have a limited ability to control work-injury risk, and more generally, the disability risk. For an important part, the latter are driven by worker-specific risks, whereas layoffs result more directly from the decisions of employers. Thus, the degree of experience

Box 4.3. **The Finnish reform of the unemployment pension scheme**

While the official retirement age in Finland is 65, the activity rate of workers aged 60-64 is very low. In 2002, 40% of early retirees received disability pension benefits, and 27% received unemployment pension benefits. A worker needs first to be laid off before he can retire with unemployment-related benefits. Those who retire because of unemployment first receive UI benefits and at the age of 60, they become eligible for the unemployment pension benefits. Finally, at the age of 65, they receive old-age pension benefits. Accounting for both the UI benefits and the unemployment pension benefits implies that a worker who loses his job after the age of 55 is entitled to unemployment-related benefits until old-age retirement. This system is commonly known as "the unemployment tunnel". The tunnel creates powerful incentives to withdraw permanently from the labour market up to ten years before the official retirement age.

In order to contain early retirement, the Finnish government implemented two important changes in the unemployment pension scheme in 2000. First, it changed the employer contribution rate to the unemployment pension benefits. The employer contribution rates vary with the age of the worker and the size of the firm, and the contribution rates are partially experience-rated. Before 2000, firms with more than 300 employees paid 50% of the present value of the unemployment pension benefits. The liability share of firms with 50-300 workers increased linearly with the firm size from 0% to 50% of the expected benefits. Moreover, experience rating was more heavily applied to social security contributions for disability pensions than for unemployment pensions in larger firms. Thus, if a large firm wanted to get rid of older workers, it had an incentive to lay-off older workers rather than let them become disabled. The situation was the opposite for the small- and medium-sized companies. After the 2000 reform, contributions for both disability and unemployment pensions were made equal. The new maximum liability share of firms for unemployment pensions was set at 80% of the present value of the expected early retirement benefits, and this maximum applied to firms with more than 800 employees. The liability shares for the smallest firms (with less than 50 employees) were unchanged, and the pension liabilities for the firms with 50-800 employees were adjusted so that the firm share of the benefits increased linearly with the firm size in this range. After the reform in 2000, the pension costs for a firm when a 60-year-old former employee starts to receive an unemployment pension, represents almost four years' pension payments for the largest firms.

The second part of the reform reduced the accrual rates of the unemployment pension benefits. Before 2000, the unemployment pension was calculated almost as if the unemployed had been working up to their old-age retirement age. After 2000, the benefit calculations took the employment history into account only up to the age the employee began receiving the unemployment pension. The reform thus reduced the incentives for early retirement, and the maximum reduction in a pension was 4.0% per annum for all years before 65.

Source: Adapted from Hakola and Uusitalo (2005) and OECD (2004e).

rating should probably be lower for disability than for unemployment insurance. Yet, the appropriate degree of experience rating is difficult to evaluate. Setting the rate is for instance a two-stage process in a number of experience-rated workers compensation schemes implemented in the United States and Canada (Hyatt and Thomason, 1998). In the first stage, firms are categorised into rate groups, which are defined according to underlying risk, so that firms with similar risk profiles are placed in the same group. For example, rate groups can be based on industrial sectors, reflecting the belief that employees in the same sector are exposed to similar risks. In the second stage, the base rate is modified according to the firm's own accident experience.

● The firm's ability to prevent injuries is substantially greater than its ability to reduce claim severity once an injury has occurred. In this respect, making employers directly liable for the first payments of the benefits received by their former employees (as is already the case in a number of sickness insurance schemes), instead of having a complex system of individual experience-rated premiums, allows one to have a more transparent and direct link between workplace safety and compensation costs. The employer knows that every industrial accident will result in a higher compensation bill. The major drawback of such a system is that it provides little or no incentive for firms to control or reduce the severity of injury through rehabilitation or prevention.

● By necessity, experience rating programmes use cost-based measures of accident experience to adjust premiums for individual firms, thus following a retrospective approach. Ideally, from the employer perspective, experience rating should be fully prospective, and based on the full information on the employer's effort to prevent disability insurance costs. In practice, such a setting is not possible, but experience-rated schemes can nevertheless encompass some prospective elements. For example, employers can choose to invest more in prevention in a way that can be verified, thereby decreasing the extent of experience rating.

In the Netherlands, empirical research on the size of hidden unemployment in disability insurance suggests that the disability insurance scheme has been used by employers as an exit route for under-performing workers: about 10% of the disability insurance inflow would be due to redundancy of workers (Hassink, van Ours and Ridder, 1997). In 1998, the government introduced a system of experience-rating in order to curb this tendency (see Box 4.4). In principle, employers bear the costs of the first five years of disability insurance benefits. In 2003, the experience rating incentive has reached its maximum impact, and criticism against this system has grown steadily, as an increasing group of employers had been confronted with substantial increases in their premiums. In parallel, various measures have been introduced as to reduce the potential side-effect of experience rating on the recruitment of persons with an increased risk of ending up in the disability scheme (*e.g.* older persons and disability benefit recipients).

Available empirical evidence suggests that the impact of experience rating on disability insurance inflow has been substantial in the Netherlands (Koning, 2004). More strikingly, the decision of employers to increase preventative activities seems to have been driven mainly by the experience rating system once they had experienced substantial increases in their premium rates. This *ex post* effect of the experience rating system is estimated to amount to a 15% reduction in the disability insurance inflow after one year. Increasing the *ex ante* employer awareness may thus have substantial impact. The way this could be done is not clear, however.

Likewise, the bulk of empirical studies reviewed by Hyatt and Thomason (1998) on experience-rated schemes implemented in the United States and Canada for work-injury and disability benefits strongly suggests that experience rating is associated with a reduction in the incidence of workplace injuries (at the extreme, the estimated impact can even amount to a reduction of about 40%). Evidence of the effects on the severity of claims is however less convincing, as once an injury has occurred, employers have limited ability to rehabilitate workers. Finally, it seems that experience rating induces employers to appeal more often against decisions to grant workers' compensation.

Box 4.4. **Dutch reforms of sickness and disability schemes**

Expressed as a percentage of the insured population, disability insurance enrolment peaked at 16% in the mid-1980s, and since then declined and stabilised at about 13%. At the same time, various reform plans have been introduced. For an important part, these plans have aimed at improving employer incentives. To start with, the sickness benefit programme was privatised in 1996, making employers fully responsible for these costs for the first year of benefit payments. This period was then extended to two years in 2002. Since the disability insurance programme follows after a period of absenteeism, preventative measures on absenteeism may have important implication for disability insurance.

In 1998, employer's incentives were further enhanced by the introduction of an experience-rated system of disability insurance. The calculation of the employer disability risk combines information on the disability costs of the first five worker cohorts and the average wage sum over a five-year period. Individual employer premiums vary between maximum and minimum premiums. For large firms, the maximum premium is set equal at four times the average premium, whereas it corresponds to three times the average premium for small firms. Next, the minimum premiums are set at the level that balances the disability costs with the collected premiums. Since premiums of small firms have a higher probability to be bounded by the maximum, the minimum premium is higher for small firms. In 2002, the (potential) impact of incentives was extended by a more stringent system of gate-keeping. In order to be eligible for a medical disability insurance assessment, both workers and employers have to meet several conditions, so as to convince the benefit administration that disability was unavoidable.

To reduce the potential side-effect of experience rating on the recruitment of persons with an increased risk of ending up in the disability scheme (*e.g.* older persons and disability benefit recipients), several measures have been taken to relieve a new employer of some of the potential costs, either through a reduction of employer contributions or by taking away part of the future risk. Since 2002, employers get various contribution exemptions if they hire a disabled person. In the interests of stimulating employment of older workers, the employer is exempted as of 1 January 2004 from paying the fixed part of the disability benefit contribution for any incumbent employee aged 55 years and over and for all new hires aged 50 and over. The exemption is granted on the condition that the employee was not hired within six months of the end of a previous labour relationship, to prevent misuse.

Initially, the experience-rating system did not cause substantial controversy among employers and policy makers. However, as the incentive became stronger, criticism against it grew steadily. In 2003, the Dutch government responded to this by abolishing the experience rating system for employers with less than 25 employees. The whole system will be abolished as of 1 January 2008, in line with the drastic reform of the disability system that was introduced in 2006 and privatised partial disability schemes. The abolition was requested by the employers, on the grounds that: *i)* they already pay for two years of sickness and have to supplement the wages of those with a partial but considerable handicap, not admitted to the new disability system; and *ii)* the public part of the new disability system – *i.e.* the only part that could be subject to experience rating – covers only "irreparable" disability, which employers are unable to influence.

Source: Adapted from Koning (2004) and OECD (2005c).

All in all, experience rating appears to reduce substantially inflow in disability benefits. However, this result has to be qualified by the fact that none of the empirical studies mentioned above are able to determine whether experience rating results in actual reductions in the frequency and costs of injuries, or whether some claims are either not reported or shifted to other forms of disability insurance. This is an area where further research is needed.

2.3. Switching tax bases

The literature on the effect of the tax wedge on employment generally assumes that payroll, personal income and consumption taxes have broadly similar effects on labour market performance.[20] However, this view – the so-called Invariance of Incidence Proposition – strongly relies on the assumption that the various tax-components of the overall tax wedge have the same structure regarding the size and the type of incomes included in the tax base. In practice, this is not the case, and the formal composition of the overall tax burden on labour may impact on the wage-formation process and employment levels. Potentially, this makes room for reducing the employment impact of the financing social protection through reshuffling labour taxation.

The formal composition of the overall tax burden on labour matters

The larger the tax base, the lower the average tax wedge and the lower the replacement income/wage ratio.   For a given tax revenue, broadening the tax base from labour income only to other tax bases would obviously reduce the overall tax burden on labour. While social security contributions mainly weigh on labour incomes, the personal income tax burden is more equally shared between active and inactive persons as well as between labour and capital incomes of households, and all individuals are subject to the same consumption tax rates. In most OECD countries, social security contributions have a smaller tax base than consumption and personal income taxes. Hence, for an *ex ante* revenue-neutral reform, a given reduction in the average social contribution tax rate would require a smaller increase in percentage points in the average tax rates on consumption or income. And ultimately, such tax shifts would reduce the overall tax wedge, which may impact on employment. Moreover, although high tax rates *per se* do not appear to influence levels of undeclared work in international comparisons, shifting part of the tax burden weighing *directly* on labour costs and wages onto consumption expenditures may reduce incentives for under-declaring earnings per employee and increase tax revenues (see OECD, 2004b, Chapter 5).

Figure 4.10 illustrates this size effect of the tax base for 22 OECD countries. Switching 5 percentage points of social contributions to income tax would imply an increase in income tax rate ranging from 1.6 percentage points in Italy to 3.6 percentage points in Japan. If the switch were towards consumption taxes, increases in consumption tax rates would range from a minimum of 2.1 percentage points in Italy to a maximum of 4 percentage points in Switzerland. In general, the income tax base is larger than consumption, and the switch towards income tax thus requires a smaller increase in the income tax rates than in the consumption tax rates. In those countries where employees' contribution are deductible from the income tax, the size effect of a switch from social contributions to income tax is higher when the reduction is made on employee's social contributions than on employers' contributions (because reducing employee contributions increases the income tax base).

Figure 4.10. **Cutting the rate of social security contributions would imply smaller rises of income or consumption tax rates**

A. Increase in income or consumption tax rates resulting from an *ex ante* budget neutral cut in social security contributions by 5 percentage points of gross wage

☐ Income tax (% taxable income): cut in SSC paid by employees
■ Income tax (% taxable income): cut in SSC paid by employers
◆ Consumption tax (% total consumption expenditure): cut in SSC paid either by employees or employers

Change in income or consumption tax rates (percentage points)

B. Corresponding change in the total tax burden (including consumption taxes) on wages

☐ Tax-shift from SSC paid by employees to income tax
■ Tax-shift from SSC paid by employers to income tax
◆ Tax-shift from SSC paid by employees or employers to consumption tax

Change in tax burden expressed as a percentage of gross wage (percentage points)

SSC: Social security contributions.

Source and calculations: See OECD (2007), "Financing Social Protection: the Employment Effect – Further Material", *www.oecd.org/els/employmentoutlook/2007.*

StatLink ⎯⎯⎯ *http://dx.doi.org/10.1787/024223542365*

In terms of tax burden on labour, a tax shift from social security contributions towards the income tax leads to an *ex ante* reduction of the *overall* tax burden on labour ranging from 1.5 to 3.2 percentage points of gross wage. The substitution in France over the 1990s of some social contributions by the CSG, an earmarked tax for social protection weighing on *all types* of households' revenues – with a limited number of allowances and exemptions compared to personal income tax – is an example of such a shift (Box 4.5). *Ex ante* reduction of the overall tax burden on labour ranges from 2.4 to 3.6 percentage points of gross wage in the case of a switch towards the consumption tax and is always larger than for the switch towards income tax. This is due to the fact that only part of the households revenue are consumed, which cushions the effect of the increase in the consumption tax rate. Finally, although not surprising,[21] it is noticeable that the size effect and the *ex ante* reduction in the tax burden on labour generally tends to be higher in countries where the employment rate is relatively low,that is in countries where the issue addressed in this chapter probably matters most. If the reduction of the tax burden on labour improves the employment performance, the *ex post* reduction in the tax burden on labour could even be larger, or alternatively, resources for financing social protection could increase.

Box 4.5. **An example of base broadening of social protection financing: the French CSG**

The Contribution Sociale Généralisée (CSG) was introduced in 1991, initially to finance some family-related social expenditures. At the same time, employer and employee social contribution for pension and health were reduced, especially for low wages. The CSG is a proportional tax, levied at the household level. The CSG applies in principle to all revenues from activity, social transfers, and capital, but some exemptions also applied in the income tax persist (most importantly on the income from some savings instruments). Its current level of 7.5% was reached in several steps and it also now finances part of health expenditures. In 2003, the CSG represented 13.5% of all financing earmarked for social protection, while wage and salaries constituted 65% of the CSG tax base and revenues.

Overall, the substitution of tax bases has had a limited impact on the overall tax burden weighing on labour. Compared with the former financing structure of social protection, these changes would have allowed a reduction of taxes on wages of about 1.1 percentage point, as measured in 2003. However, this has to be qualified by the fact that these changes in the financing structure/system of social protection were not aimed only at substituting one base to the other, but also at increasing tax revenues for social protection (tax revenues increased by about 1%).

Source: Based on Caussat *et al.* (2005).

A word of caution is necessary when considering these results:

● As regards the switch towards the income tax, they rely on the assumption that the rise in the average rate for personal income tax applies uniformly to all types of households' revenues, that is labour and capital incomes as well as pension, unemployment and disability benefits. Hence, they provide a lower-bound estimate of the rise in the average rate of personal income required to compensate for the cut in social contributions. Indeed, capital income is often taxed at a lower rate than labour income and in all OECD countries, personal income tax systems encompass a large range of tax allowances and tax exemptions. The latter tend to reduce the efficiency of the tax system and over the

past two decades, most countries have reformed their personal income tax system in order to broaden the tax base, thus lowering tax rates (for a comprehensive report on reforms of personal income tax systems, see OECD, 2006c).[22]

● More generally, reducing the tax wedge by broadening its tax base may reduce the *direct* impact of labour taxation on employment but does not reduce *per se* the *overall* incidence of the *total* tax burden weighing on households' incomes on labour market performance. In other words, the above results are of a partial equilibrium, first-round nature. They take no account of a number of possible second-round effects. The latter may for instance result from changes in consumer prices, as well as from changes in individual behaviours as regards wage bargaining or economic decisions that are not directly related to the labour market, such as savings and investment decisions.

Regarding wage outcomes, broadening the tax base for financing social protection may increase the opportunity cost of not working – that is the wage/replacement income ratio – thus weakening workers position in the wage negotiation. A switch from social security contributions towards consumption taxes would indeed transfer part of the tax burden weighing on wages towards replacement incomes, thus making it possible to reduce wage costs while increasing the financial incentives to work (Bovenberg, 2006).[23] These effects are likely to be lower in the case of a switch towards the personal income tax, due to its progressive structure (in that low replacement incomes are not subject – or at reduced rates – to personal income tax). Moreover, personal income tax may have mixed effects on the wage/replacement income ratio and labour supply in countries with joint income taxation that discriminates by marital status. For instance, Caliendo, Gambaro and Haan (2007) show that joint taxation in Germany leads to strong negative labour supply incentives for secondary earners and to positive incentives for first earners in married couples, relative to single filers.

Pro and cons of the various bases: a synthesis. Social security contributions are often seen as being less detrimental to employment than other taxes not earmarked for the financing of social protection. The main advantage of social contributions is to open individual/households rights to social insurance schemes, which makes the tax/benefit linkage more obvious than for the other direct and indirect taxes weighing on wage income. This view must be qualified, however, as health and pension payments constitute the bulk of social security contributions in virtually all OECD countries (see Figure 4.11):

● While a number of health expenditures are related to work, as in the case of work injury and sickness benefits, a substantial part, if not the main part, of these expenditures funds benefits and public services that benefit households in general, not employees only. In other words, a large part of the beneficiary population contributes little to their funding in countries where social contributions represent an important resource for the financing of social expenditure. For instance, few countries charge contributions on pension income for health and long-term care insurance or for survivors' insurance (OECD, 2005b). From this perspective, a shift from health social contributions towards income or consumption taxes would bring the tax base more in line with the beneficiary population and would, on average, reinforce the tax/benefit linkage of (remaining) social security contributions levied on labour income.

● Public pension expenditures are projected to increase in line with ageing populations. This raises the question as to what extent pension social contributions should increase in line. Indeed, dependency ratios are projected to rise substantially in most OECD

Figure 4.11. **Structure of social security contributions, 2005**

Social security contributions for a single worker without children at 100% AW, percentage of gross wage
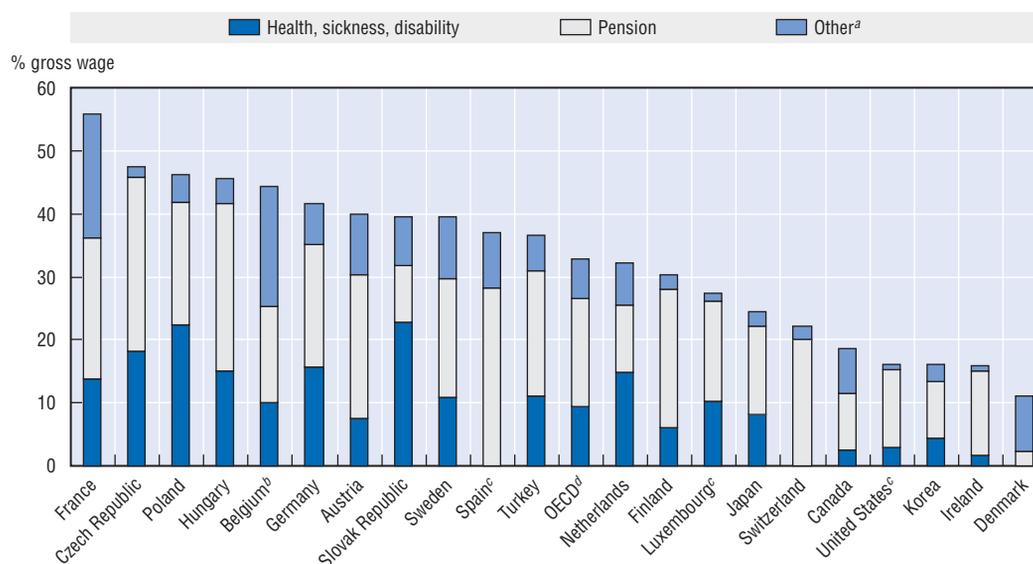
AW: Average wage.
a) The "other" category mainly includes unemployment insurance and work-related illness and accident insurance.
b) The "other" category includes family allowances (6%) and wage restraint (6.6%).
c) Pension includes disability. For Spain, it also includes health.
d) Average for countries shown except Luxembourg, Spain and the United States.
Source: OECD (2005d), *Taxing Wages, 2004-2005*, Paris.

StatLink ⌖ *http://dx.doi.org/10.1787/024243024066*

countries (OECD, 2006d), which will widen the gap between the tax base for pension contributions and the beneficiary population. In PAYG pension systems, the perceived value of tax counterparts and its incidence on the wage-formation process may depend, for a substantial part, on the degree of altruism between generations in each society. The extent to which this *structural* degree of altruism may evolve in line with population age structure is not entirely clear, notably in the present context of *marked* population ageing, since demographic shocks, as with most shocks, in part encompass a *temporary* component. Thus, the extent to which pension contributions – instead of income taxes or consumption taxes which would also concern pension revenues – could be used to insure the sustainability of pension systems is an open question and the answer is likely to vary between countries.

All in all, given their present form, transferring part of social contributions towards income or consumption taxes may alleviate the potential distortive effect of the overall tax burden weighing on labour income. Yet, the extent to which consumption taxes may be more "employment-friendly" than personal income taxes is not entirely clear and remains an empirical question. Both of them have relatively broad tax bases (at least potentially in the case of personal income taxes), in line with the beneficiary population as regards a number of areas of social protection expenditure. The major side effect of consumption taxes lies in the fact that they will result in consumer price rises and generate upward wage pressure, while their positive impact on competitiveness remains uncertain (Box 4.6). On the other hand, due to their progressive structure, income taxes should not create much wage pressure. But this is an empirical question depending on the wage-setting process and union bargaining power, both of which will differ across countries and over time.

Box 4.6. **Special features of consumption taxes**

Beyond their potential distortive effects on domestic product and labour markets, taxes may impinge on international competitiveness. And in most countries, there are fears that non-competitive tax systems induce physical and human capital to move abroad. From this perspective, consumption taxes are often viewed as a better option than social security contributions or personal income taxes that directly weigh on households' incomes. Along this line, Germany has recently reduced contributions for the unemployment insurance by 2 percentage points (from 6.5 to 4.2) while at the same time increasing the standard consumption rate from 16 to 19%. Although this substantial hike pursues broader policy objectives of budget consolidation than solely reducing direct labour taxation, it is expected to finance one third of the cut in unemployment insurance contributions.

As consumption taxes are levied on imported goods but not on exported goods (while the opposite is true for social security contributions), such a tax shift may raise competitiveness if labour costs decrease as a result and domestic producers cut their sales prices by the amount of the cost relief. This gain of competitiveness may boost growth and employment, at least temporarily. However, a standard prediction of the international trade literature is that consumption taxes do not impact on either exports or imports – except in the very short-run – insofar as real exchange rate adjustments tend to offset the effect of consumption taxes on the relative prices of domestic and foreign goods. And from an empirical point of view, consumption taxes do not appear to influence trade performance in international comparisons (Desai and Hines, 2002; and Keen and Syed, 2006). Yet, in the context of a monetary union such as the euro area, raising consumption taxes in an individual country may still boost the competitiveness of the country in question *vis-à-vis* its partners. But the other member countries are likely to view such a measure as highly non-co-operative.

Moreover, (after-tax) domestic consumer prices are likely to increase as a result of a hike in consumption taxes, which in turn would deter domestic consumption and generate upward wage pressure, thus reducing the potential beneficial effect on employment. Statutory or contractual minimum-wage levels, as well as some government transfers such as social assistance, might be progressively adjusted in line with prices in order to maintain their purchasing power, even if there is no direct institutional link between social assistance or minimum-wage levels and price developments. In turn, this would both reinforce general wage pressure and raise public expenditures (as a result of increased transfer incomes per beneficiary and possibly wage increases in the public sector).

Finally, and although general redistributive issues go beyond the scope of this chapter, it is important to keep in mind that the choice between income or consumption taxes is also determined by societal preferences. Income and consumption taxes contribute to shape the redistributive pattern of any tax/benefit system, but in opposite directions: consumption taxes tend to weigh less heavily on the richest while personal income taxes redistribute income towards the poorest (see Förster and Pearson, 2002; and Immervoll *et al.*, 2005).

Some empirical evidence.   Available evaluations of the labour market effects of budget neutral reshuffling of labour taxation are mainly based on simulation models. The main advantages of macro-econometric or CGE models is that they allow for a general equilibrium treatment of tax reforms. That said, evaluation results are very sensitive to the underlying assumptions, notably as regards the modelling of the wage-formation process, the extent to which benefits are indexed on consumer prices and wages, and the international openness

of the economy. And indeed, short-term results vary substantially across and within studies, depending on the selected baseline assumptions (see Annex 4.A1, Table 4.A1.2). In the long-run, the employment outcomes of a budget neutral reshuffling of labour taxation are found to be either slightly positive or slightly negative. But overall, these studies suggest that such reforms would have little impact on labour market performance (yet, in most cases, long-run outcomes are almost fully determined by the underlying modelling assumptions).

In addition, simulation models have the major drawback of relying on a too synthetic representation of labour taxes, which reduces their relevance in assessing the employment effect of a switch from one tax base to another. They generally do not fully, if not at all, account for the progressive structure of personal income tax, the linkage between taxes and benefits and the fact that different taxes have different impacts on the wage/replacement income ratio. In sum, these models tend to offer a more accurate view of the indirect effects of labour taxes on employment than of their direct effects.

As regards econometric evaluations, most studies on the employment effect of labour taxation use the overall direct tax wedge variable, based on the hypothesis that the precise structure of labour taxation is a second order issue. Empirical evidence on the employment effect of the formal composition of the overall tax wedge is relatively scarce and this is an area where further research is needed. Existing studies suggest that employers' social contributions impinge more heavily than taxes on employees (social contributions and personal income tax) on the wage-setting process and/or unemployment (see *e.g.* Koskela, 2001; Graafland and Huizinga, 1999; and Muysken, van Veen and de Regt, 1999). These results stand in line with the fact that the progressive structure of personal income tax is often found to moderate wage claims. In most cases, these studies do not include consumption taxes and thus, they do not discriminate between income and consumption taxes.

The estimates made for the purpose of this chapter – for 19 OECD countries and over the period 1982-2003 – offer the same broad picture (see Annex 4.A2). On average, direct labour taxes, taken together, tend to have a detrimental (and statistically significant) effect on unemployment. But this effect appears to be entirely driven by social security contributions. Indeed, while also positive, the estimated coefficients for income taxes are never statistically significant. And the same result holds for indirect taxation, the positive estimated coefficients for consumption taxes being not statistically different from zero. Finally, employers' social contributions seem to impinge more heavily on unemployment than employee's contributions (the difference is not statistically significant, however). And overall, these results hold over both a short-term (annual data) and a medium-term (three-year average data) perspective.

Turning to other tax bases

Environmental taxes. Targeting value-added tax hikes on specific goods would obviously reduce the magnitude of their side effect on prices. However, this would also reduce the associated additional tax revenue and therefore, the scope for cutting direct labour taxation. Unless there are other kinds of positive externalities from taxing more heavily the consumption of specific goods or inputs, targeted hikes in value-added taxes would not necessarily constitute a better option than a general increase in consumption taxes.

In this respect, compared with other value-added taxes, environmental taxes have the advantage to deliver a first dividend in terms of an improved environment. Actually, the need to better internalise environmental externalities should always be the first condition to introduce an environmental tax. But when direct taxes on labour are judged to affect

employment negatively, it may be appropriate to use the revenues from environmental taxes to cut labour taxes and improve the efficiency of the tax system – thereby giving rise to a so-called "double dividend".

All member countries have introduced environmental taxes to a varying extent and some countries have implemented more comprehensive so-called "green tax reforms". Denmark, Finland, Germany, the Netherlands, Norway, Sweden and the United Kingdom have implemented such reforms, recycling the revenue from new environmental taxes to reduce other taxes (Table 4.1). Tax cuts have focused on labour taxes, especially employers' social security contributions but also on the personal income tax. Tax shifts undertaken have been relatively small, except in Sweden in 1990 and Denmark in 1994, where it concerned 2.5 and 6% of the tax revenues, respectively. In principle, such tax shifts may allow some reduction in unemployment (see Box 4.7). *Ex post* evaluations of the green tax reforms implemented are scarce, and do not always isolate employment effects from more general macroeconomic effects. In the case of the United Kingdom, while the environmental effects seem to have been effective, the small size of the tax shift is found have generated very small macroeconomic effects (Cambridge Econometrics, 2005).

Environmental taxes represented about 2.5% of GDP in 2004 on average in the OECD and about 5.5% of overall tax revenues.[24] Room remains in many OECD countries to increase them, as for example industrial consumption of energy is still very often much less taxed than households' consumption and heavy polluters often get exemptions. Carbon taxes may also play an important role in climate change mitigation. Energy consumption is probably the only base for an environmental tax that might provide a sufficiently large tax base, as other tax bases are often rather narrow.

There are limits of a political-economy nature to the size of the shift that can be realised with environmental taxes *per se*. Part of the revenues generated by the environmental tax are often earmarked to specific uses, often to compensate polluters in some way (while hopefully maintaining the appropriate price incentives) from the costs associated with the tax, reducing

Table 4.1. **Green tax reforms**

	Start year	Taxes raised on	Tax cut	Magnitude
Denmark	1994	Various[a] CO_2 SO_2	Personal income tax Social security contributions Capital income	Around 3% of GDP by 2002, or over 6% of total tax revenue
Germany	1999	Petroleum products	Social security contributions	Around 1% of total tax revenue in 1999 and 1.8% in 2002
Netherlands	1996	CO_2	Corporation tax Personal income tax Social security contributions	0.3% of GDP in 1996, or around 0.5% of total tax revenues in 1999
Norway	1999	CO_2 SO_2 Diesel Oil	Personal income tax	0.2% of total revenue in 1999
Sweden	1990	CO_2 SO_2 Various	Personal income tax Energy taxes on agriculture Continuous education	2.4% of total tax revenue
United Kingdom	1996	Landfill	Social security contributions	Around 0.1% of total tax revenues in 1999
	2001	Energy (for industry)	Social security contributions	0.2% of total tax revenues in 2002 for the climate change levy

a) Gasoline, electricity, water, waste and cars.
Source: OECD (2001a), updated by the Secretariat based on Kohlhaas and Bach (2005), *Environmental Accounts – UK National Statistics*, and OECD Revenue Statistics database.

Box 4.7. **Green tax reforms and unemployment**

Contrary to most taxes, which are aimed at raising revenues and are all the more efficient that they do so without changing behaviour very much, environmental taxes are – or should be – designed to change behaviour so as to reduce environmental externalities. Yet, as a side effect, environmental taxes also raise revenue, which can be used to reduce other taxes. Revenue-neutral green tax reforms are sometimes advocated on the basis that they can generate a "double dividend": the first dividend in terms of more effective environmental protection and the second reflecting the efficiency gains arising from the reduction in other distortionary taxes, *e.g.* higher employment when direct labour taxes are reduced.

The likelihood of such a double dividend has given rise to a large body of theoretical and empirical (mostly simulation models) literature – see *e.g.* Schöb (2003). In the mid-1990s, a number of economists – *e.g.* Bovenberg and de Mooij (1994) and Parry (1995) – have questioned the double-dividend hypothesis, arguing that the positive impact on employment that could be obtained from reducing distorting labour taxes would be reduced and even offset by the interaction effect between the new environmental tax and the remaining distorting labour taxes.

In fact, replacing labour taxes with environmental taxes is quite similar in principle to switching from labour taxes to consumption taxes weighing on specific goods, and the effects on employment – or the conditions for such effects to materialize – should thus be quite similar. Indeed, by raising the cost of production in the affected industries, environmental taxes give rise to higher prices of output in these industries and a higher price of consumption goods. In a competitive framework, in particular with market-clearing wages, this would imply a lower real wage and a lower labour supply. Environmental taxes could thus exacerbate rather than alleviate the pre-existing distortions caused by labour taxes.

But the double-dividend issue tends to be particularly topical in countries experiencing high levels of unemployment, for which perfectly competitive labour markets are not the appropriate framework for analysis. Subsequent studies, assuming imperfect competition on the labour market and sometimes also on product markets, are generally more positive on the possibility to generate a double dividend. For example, Koskela and Schöb (1999), using a model with endogenous wage negotiations between trade unions and firms, find that a revenue-neutral green tax reform alleviates unemployment by shifting the tax burden away from workers towards the unemployed. Brunello (1996) and Carraro, Galeotti and Gallo (1996), on the other hand, find that the employment dividend may vanish in the long-run if trade unions succeed in raising the after-tax real wage in line with the cut in the labour tax rate. Schöb (2003) argues that this should not be the case if the replacement income is not strictly proportional to wages, *i.e.* if part of the income of the unemployed is not related to wages, as is likely to be the case for welfare transfers other than unemployment benefits.

the amounts available for other tax cuts. In fact, worries that environmental taxes would harm the competitiveness of energy-intensive sectors have also limited their use.[25] In addition, since 2000, higher world prices for oil and the prospects that this may be a long-run trend – as well as growing popularity of non-fiscal instruments such as emissions trading – seem to lead to reduced appetite for additional environmental taxation (European Commission and Eurostat, 2006). Indeed, in the European Union, the implicit tax rate calculated for energy (in euros per ton of oil equivalent) shows that taxation has been declining on average since 1999, due to large decrease in some large countries, notably Italy, France and Spain, offsetting increases in the majority of other countries (Figure 4.12). This is also reflected in a decrease of

Figure 4.12. **Real implicit tax ratio on energy (energy tax revenues divided by final energy consumption)**

Euro per ton of oil equivalent, deflated with final demand deflator
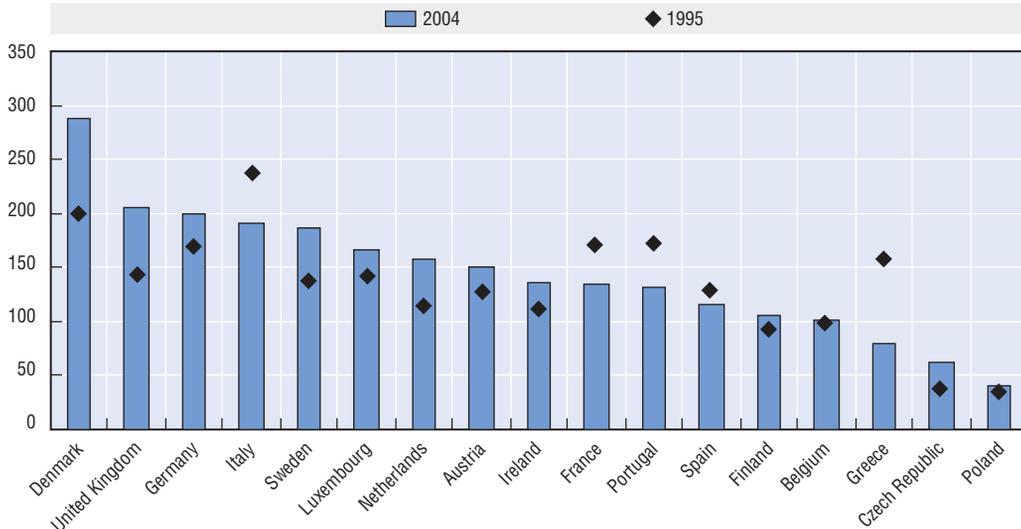
environmental tax revenues both in relation to GDP and as a share of total tax revenues. This may change, however, if the growing prominence of the climate change issue in the political debate translates into action. In particular, taxes remain the most efficient instrument to curb carbon emissions from diffuse sources, such as transport, which, contrary to emissions from other sources, are continuing to increase at very high rates (according to the 2006 report of the European Environment Agency, transport emissions are compromising the achievement of Kyoto objectives for Europe and individual EU member countries).

Taxing capital rather than labour?   If direct taxes on labour income are thought to be too important, capital is the other obvious candidate with consumption as an alternative tax base. Capital income takes many forms, such as dividends, interests, capital gains, corporate profits, the value of housing services enjoyed by owner-occupiers, etc. and all can be taxed. However, there are some limits to the use of taxes on capital by governments, as they may reduce investment and growth, and thereby cut employment rather than increasing it.

This is especially the case for *source-based taxes on capital income*, *i.e.* taxes levied in the country where capital income is produced, such as the corporate income tax but also source-based taxes on value added (which weigh both on labour and capital income at the firm's level). Offsetting a reduction in employers' social contributions, for example, by an increase in corporate income tax in an economy with high unemployment may reduce unemployment in the short-run, but it may in some case increase the cost of capital,[26] which, in an open economy with international capital mobility, would also reduce domestic investment in the longer run. To the extent that investment is driving innovation, this could also have long-run negative repercussions on productivity, growth and thus employment. In short, the short-run substitution of capital by labour induced by the change in the relative factor costs maybe partly or wholly offset by its effect on investment and growth.[27] A tax levied only on non-reinvested profits could have a lesser negative effect on investment.

Alternatively, an increase in corporate income tax may reduce not investment, but the tax base itself, as firms try to escape taxes (via transformation of profits into interests or salaries, shifting to affiliates located abroad, transfer pricing, etc.).

As noted above, the mobility of capital plays an important role in the potential detrimental effect of source-based taxes on capital income on investment. Obviously, capital mobility is not perfect, but it is higher than that of labour, has been increasing with the financial liberalisation that has taken place in most OECD countries over the past two decades and the implementation of the EU monetary union, and is likely to continue increasing in the future. When it comes to foreign direct investment (FDI) flows, tax differentials are indeed found to play a role in the decision of where to invest (Bénassy-Quéré, Fontagné and Lahrèche-Révil, 2003; Gordon and Hines, 2002), and, in an increasingly globalised economy,[28] this has become a concern for governments when setting corporate income tax rates, especially in small open economies. Besides, financial companies, which have greater flexibility in responding to tax incentives, tend to account for an increasing share of corporate activities, making it more difficult for governments to use corporate income taxes to generate tax revenues (Auerbach, 2006). However, other factors such as potential demand, infrastructure, the qualification of the workforce, natural resources, and possible agglomeration effects are also found to be determinant for investment location decisions, which suggests that "large" countries can impose higher taxes rates than "small" ones. Bénassy-Quéré, Fontagné and Lahrèche-Révil (2003) also find that countries with low taxation have more room for manoeuvre than those where taxes are already high.

In practice, the dominant trend in corporate income taxation across OECD countries has been a move towards lower statutory tax rates accompanied by a base broadening (reduction in deductions and exemptions),[29] and *effective* tax burdens on profits are likely to have fallen (De Kam and Owens, 1999). As to switching the base of taxes financing social protection from labour to source-based capital income, just one country, Italy, replaced part of the social contributions by a tax weighing on the net value added of firms, *i.e.* on labour costs, profits, interest payments and rents less some capital depreciation (Box 4.8). But this was part of a more wide-ranging tax reform which overall significantly reduced effective tax rates on corporate capital income. Substituting a source-based tax on the net value-added of enterprises for part of the social contributions is also one of the options envisaged in France for a possible reform of social protection financing. Most evaluations to date concur that the effect on employment would be relatively small in the short-run – due in large part to the small size of the reduction envisaged in employers social contributions (2.1 percentage points) – and quasi nil in the long run, while it would harm investment and growth.[30] However, evaluations rely on simulation models and are thus very dependent on some assumptions; in the case of the long-run scenario, for example, the assumption of perfect mobility of capital explains the absence of effects on employment.[31]

On the other hand, more room is likely to remain for increasing the contribution of *residence-based taxes on capital income* of individuals or households – or taxes on savings. Indeed, residence-based taxes on capital income, levied only on (the return to) the wealth owned by domestic residents, regardless of whether it is invested at home or abroad, as for example personal income taxes or wealth taxes, are much less likely to affect domestic investment and growth than source-based taxes. In theory, with perfect mobility of capital, an increase in taxes on savings would reduce the level of domestic savings, but would leave domestic investment unaffected, as capital imports would increase. In practice, there are two main qualifications to this (Sørensen, 2006). First, in the absence of systematic international exchange of information

> ### Box 4.8. **An experience of switch from social contributions to taxes on firms' value-added: the Italian IRAP**
>
> IRAP (*imposta regionale sulle attivita produttive*), the regional tax on business activities, a 4.5% tax on net value-added of businesses and self-employed, was introduced in 1998. As a counterpart, a social contribution earmarked for health expenditures was eliminated, bringing the overall social contribution rate down from 46.4% to 34.1%. A local tax on profits and a wealth tax on the firm's net worth were eliminated, at the same time as a two-tier system of corporate income taxation was introduced. Overall, the statutory tax rate on profits was reduced by about 10 percentage points (Bordignon *et al.*, 2001). The aim of the tax reform was mainly to rebalance tax incentives towards equity (instead of debt) financing and reduce the incentives for tax avoidance (in particular by large multinationals through transfer-pricing mechanisms) and tax evasion (mostly by small businesses). While the reduction in the social contribution rate led to a significant fall in the tax wedge measures, this is partly artificial since labour costs represented about 67% of the IRAP tax base, but are not included in the wedge.[*]
>
> The overall effects of the reform on employment have probably been small. Gregorelli *et al.* (2003) found that the reform encouraged a more intensive utilisation of the existing labour force instead of new hirings. The reason is that, compared with the local tax on profits which was eliminated, a tax on the value added of firms does not allow to deduct operating costs associated with new jobs.
>
> [*] IRAP revenues are classified as "other taxes paid solely by business" (6100 category) in the OECD tax revenue statistics and thus not included in the tax wedge.

among tax authorities, governments cannot effectively monitor a taxpayer's personal wealth invested abroad – and its associated income – and thus bring all foreign-source capital into the tax net of residence countries. Despite progress in co-operation, including through the OECD initiative to counter "harmful tax practices", wealthy investors are still able to escape residence-country tax by hiding away their wealth in foreign accounts. This effect is nevertheless moderated by the important home bias remaining also in portfolio investment due mainly to information costs and transactions costs (Faruqee, Li and Yan, 2004). Second, capital mobility is not perfect and some companies, in particular small unquoted domestic companies, may not have access to international finance, so that a rise in residence-based taxes on capital income may increase their cost of finance and reduce their investment.

Overall, reforms of current capital income taxation at the household level aiming at broadening the base by reducing preferential treatment of specific forms of savings could serve the objective of improving the efficiency of tax systems while at the same time increasing the tax revenues from capital income and thus allowing to reduce taxes on labour. This is especially the case in the two following cases:

● First, mandatory and voluntary pension plans very often receive favourable tax treatment. The main purpose of these provisions is to avoid "moral hazard" of workers who may otherwise be tempted to consume too much of their earnings during their working life and lapse into poverty or depend on the social safety net once they retire and ease the transition from pay-as-you go financing to pre-funding in countries with severe ageing problem (OECD, 2001b). However, this tax treatment is costly – Yoo and de Serres (2004) estimated the overall budgetary costs to be greater than 1% of GDP in a majority of the countries they studied – and poorly targeted, as it also benefits groups whose prospective pension is well above the social safety net.

● Home ownership is another area often favoured by tax systems, which goes against the neutrality principle and where gradual reforms could prove beneficial (OECD, 2001b). Removing allowances in place in a large number of countries on capital gains might also increase efficiency while improving equity (Joumard, 2001). Finally, in a number of OECD countries, property taxes may be under-used. Real property in particular is a tax base with few risks of distortions since it is amongst the least mobile of all potential tax base. Real estate taxes are also difficult to evade and can easily be designed to be progressive (Van den Noord and Heady, 2001). This makes them one of the most equitable and efficient tax instrument. While important in Canada, France, Japan, the United Kingdom and the United States, recurrent real property taxes represent a very small share of overall tax revenues and GDP in a number of EU countries, in particular Austria, the Czech Republic, Germany, Hungary and the Slovak Republic, as well as in some Nordic countries, such as Finland and Norway (Figure 4.13). In general, however, real property taxes are raised by local authorities. Financing a reduction in social contributions by an increase in property taxes would thus require a corresponding reduction in the transfers from central to local governments (*i.e.* a modification of the institutional arrangements for local governments financing). It would also require adjusting the valuation rules used to estimate the tax base in a number of countries where they are out of date.[32]

Figure 4.13. **Recurrent taxes on immovable property,**[a] **average 2002-04**
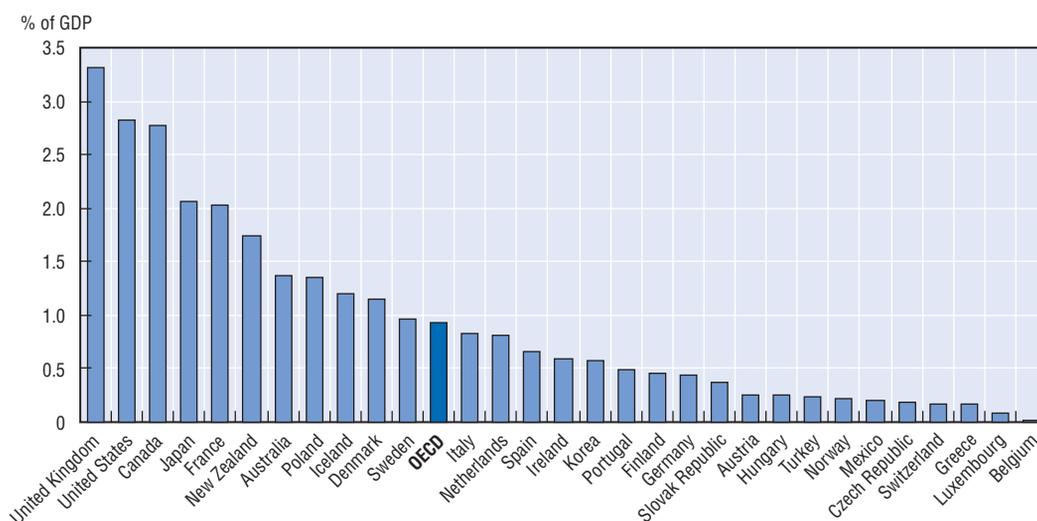
a) Item 4100 of the OECD Revenue Statistics database.

Source: OECD Revenue Statistics database.

StatLink ᴍˢᴾ *http://dx.doi.org/10.1787/024286336320*

Conclusion

This chapter suggests that the extent to which public social protection is financed via social contributions, as opposed to general taxation, matters for employment. More specifically, there are grounds for funding public social protection schemes which have a strong collective dimension (*e.g.* health) through general taxation. By contrast, social contributions should be used to fund schemes more closely related to labour market status (*e.g.* unemployment insurance or pension schemes). Besides, different options exist as to better link social contributions to their benefit counterparts. One approach is to ensure

that pension rights increase in line with the amount of contributions. Introducing some degree of experience rating in the financing of unemployment insurance or sickness and disability schemes is another possibility.

Clearer policy recommendations cannot be drawn on the basis of these findings, however. For instance, among general taxation, which taxes could constitute the best alternative to social contributions remains an open question. Addressing this issue would require a quantification of the employment effects of the various possible tax reshufflings, taking into account both their direct and indirect effects on employment and growth, as well as budget outcomes. This is an area where further work is needed. In this respect, macroeconomic models constitute a useful device. This chapter suggests, however, it would be crucial for such models to take into account the wage formation process and the structure of taxes by main group (*i.e.* going beyond simple average tax rates). Indeed, the employment effects of any given tax reshuffling depends on a number of design factors which are often ignored in macroeconomic models, namely: *i)* the progressivity of the different funding mechanisms; *ii)* their precise incidence on replacement incomes; and *iii)* their detailed impact on the wage-setting process. This is especially important since the various funding mechanisms that can be used to finance social protection differ on all three grounds.

Finally, the structure of the financing of social protection may have strong distributional implications. For instance, consumption taxes tend to weigh more heavily on the poorest households, while income taxes tend to compress income distribution. Taxes on capital income are also more equitable. Thus, the distributional consequences of the various possible tax reshufflings would also need to be assessed before drawing strong policy recommendations.

Notes

1. For a definition of social protection and information on data sources, see Annex 4.A1 in OECD (2007).

2. Differences across countries are nevertheless reduced when looking at *net* social expenditures (see Figure 4.A1.1 in OECD, 2007). Indeed, as shown by Adema and Ladaique (2005), a comparison of *gross* social spending does not provide a full picture of the collective social effort across countries, as it neglects impacts that the tax system can have on the value of social expenditures. On the one hand, governments can levy direct taxes and social contributions on cash transfers, as well as indirect taxes on the consumption made out of these transfers, which will reduce the amounts finally spent by governments. On the other hand, governments often pursue social policy through the tax system, by providing tax incentives that can be similar to cash benefits (*e.g.* child tax allowances) or aim to stimulate the provision of private social benefits (*e.g.* favourable tax treatment of health insurance provided by employers and favourable tax treatment of private pension plans), which constitute additional expenditures.

3. Pension benefits constitute a major part of private social spending everywhere, but tend to be most important in countries where the level of public pension benefits is comparatively low (the United States, the United Kingdom, Canada, the Netherlands, and Australia). Japan and Switzerland – two countries already at an advanced stage of the ageing process – are exceptions, as they have both important public and private pension spending. Public health expenditure, comprised between 5 and 7% of GDP for all but Korea and Mexico, is much more similar across countries than public pension expenditures. When taking into account private social expenditure for health, however, the United States stands out, with total social expenditure on health reaching 12.5% of GDP, almost double the 25 OECD countries average.

4. Both projections are based on a cohort approach with constant policies on labour force participation rates. Labour productivity growth is assumed to converge linearly from the initial past rate to 1.75% per year by 2030 in all countries except former transition countries and Mexico where it converges only by 2050. Population projections are those gathered by the OECD Directorate of Employment, Labour and Social Affairs from national sources.

5. The pensions projections were done using the models of national authorities, based on labour force projections following the same cohort methodology as the OECD, unemployment is expected to converge towards the 2008 estimates for the NAIRU by the European Commission and labour productivity is assumed to converge between 2020 and 2030 towards the 1.75%, the same level as in the OECD health spending projection, and stay there afterwards. See *http://ec.europa.eu/ economy_finance/publications /european_economy/2005/eesp405en.pdf, for more detail on the assumptions.*

6. General taxation is understood here as taxes not earmarked for social protection.

7. In this chapter, the average tax wedge is generally measured on the basis of actual taxes (*i.e.* through implicit average effective tax ratios). In addition, statutory tax rates are used in order to estimate tax wedges for different income levels of workers (this data come from the OECD Taxing Wages database). See Annex 4.A2 in OECD (2007) for more details.

8. Due to data availability, this is the only measure of progressivity that could be calculated.

9. France is a case in point: the budgetary cost of general tax cuts at low-wage level exceeds public expenditures on active labour market programmes (Remy, 2005).

10. For more details, see OECD (2003a, Chapter 3).

11. For instance, according to employer surveys in the Netherlands, between 20 to 60% of new recruits would have been hired without employer tax cuts (see OECD, 2003, Chapter 3).

12. The elderly and the chronically-ill are those drawing most on health benefits.

13. The degree of redistribution may vary across the type of schemes, according to the underlying logics of social protection – inter-temporal wage transfers for pensions; replacement income for unemployment benefits, which is also a sort of deferred wage but more of an insurance nature; public goods, for health; and assistance to fight poverty and ensure a minimum income, such as for minimum subsistence incomes or a minimum old-age pension. It varies also across countries, reflecting the historical construction of institutions and reflects national social choices.

14. The economic literature on the effect of the perceived quality of welfare benefits on employment, although potentially highly relevant, also seems to be very scant.

15. For a definition and discussion of the concepts of actuarial fairness and actuarial neutrality and a clarification of their relevance in the pension debate, see Queisser and Whitehouse (2006).

16. Previous research on Chile was not able to separately identify these effects either.

17. For more details on the reforms in Italy and Sweden, see OECD (2003b) and OECD (2004c).

18. See for instance, the experience-rated system of unemployment insurance in force in the United States, described in OECD (2004b, Chapter 2).

19. Moreover, there were a number of possibilities for firms to be exempt from the Delalande contribution, and many firms availed from these legal possibilities and "by-passed" this contribution (see OECD, 2005e).

20. For a survey of this literature, see Bassanini and Duval (2006).

21. If employment rates are low, it is likely that the labour tax basis will be low relative to income tax basis and consumption.

22. Broadly speaking, efficient tax systems seek to minimise tax-induced distortions. As a first consideration, efficiency may be achieved by broad tax bases and small differences in tax rates that can applied to different taxes. Indeed, special tax treatment for certain types of income (fringe benefits, owner-occupied housing, capital gains, pensions, etc.) tends to increase the compliance and administrative costs, and may thus reduce tax compliance and tax revenues. Simplicity and transparency of the tax rules may also promote the overall efficiency of the system.

23. A shift from employers' to employees' social security contributions could have similar effects insofar as some of existing replacement incomes are subject to employees' but not to employers' social security contributions (*e.g.* unemployment benefits in a number of countries).

24. Weighted average for the OECD. *Source:* The OECD/EEA database on instruments used for environmental policy. The main increase took place in the first half of the 1990s and was driven mainly by above-average increase in energy taxes.

25. For a discussion of the political economy of environmentally related taxes, in particular regarding these competitiveness issues, see OECD (2006e). Fundamentally, although there might be ways to cushion their impact, and/or phase them in progressively to avoid important sunk costs, to be effective tools, green taxes have to reduce the competitiveness of the polluting activities.

26. An increase in the corporate income tax does not necessarily increase the cost of capital. For a company with existing profits, an increased corporate income tax reduces the cost of debt-financed investment (which is deductible from profits).

27. See *e.g.* Malinvaud (1998).

28. Foreign direct investment inflows represented as much as 80% of domestic investment in 2002-03 in Ireland, 40% in Belgium, and a sizeable share also in the Slovak Republic, the Netherlands, the Czech Republic, Sweden, Hungary and Spain, and more than 5% in a number of other OECD countries (*source:* International Direct Investment Statistics Yearbook; Gross total fixed capital formation, OECD EO database).

29. See OECD (2004d) and European Commission and Eurostat (2006).

30. See "Avis du Conseil d'orientation pour l'emploi sur l'élargissement de l'assiette des cotisations de sécurité sociale", *www.securite-sociale.fr/communications/rapports/2006/cotisvalajoute/cva.htm*, as well as the synthesis of reactions of members of the Conseil d'Analyse Économique, *www.cae.gouv.fr/ avis_cotsoc.htm*.

31. By contrast, a recent article by Timbaud *et al.* (2007) finds relatively significant employment effect of introducing a "contribution sur la valeur ajoutée" (130 000 jobs over 4 years, *i.e.* about 0.7% of the dependant employment). However, the model used has significant limits, in particular, there is no mobility of capital flows (but also no effect of marginal tax rates on behaviours and no long-run determination of the long-run productivity).

32. It is also important to find proper valuation methods, which attempt to avoid excessive volatility of the tax base due to shifting market values, as observed for example in Canada.

ANNEX 4.A1

Empiral Analysis: Literature Survey

Table 4.A1.1. **Estimated effect of the average and marginal tax rates on gross wage and/or wage cost**

	Country, estimation period and dependant variable	Average tax rate (holding the marginal rate or progressivity constant)	Marginal tax rate/progressivity index (holding the average rate constant)
Malcomson and Sartor (1987)	Italy, time-series data, 1968-80. Average earnings for industrial workers.	No robust result.	Wage moderating effect of the marginal tax rate.
Lockwood and Manning (1993)	The United Kingdom, time-series data, 1954-87.	Personal[a] tax variables:	
	Average pre-tax earnings for male manual workers.	Wage increasing effect.	Wage moderating effect of the marginal tax rate.
		No clear results for the employers tax variables.	
Holmlund and Kolm (1995)	Sweden.		
	Pre-tax earnings for full time workers from the Swedish income distribution survey.		
	Time-series data, 1975-92. Quintiles of the earning distribution.	Wage increasing effect.	Wage moderating effect of progressivity.
	Micro panel data, 1989-92.	Wage increasing effect but not statistically significant (when holding progressivity constant[b]).	Wage moderating effect of progressivity.
Tyrväinen (1995)	Australia, Canada, France, Finland, Germany, Italy, Japan, the United Kingdom and the United States. Time-series data, 1972-1990/92. Average real wage from national accounts (private sector).	Wage costs increasing effect of both incomeand employers tax variables (the latter being only partly shifted onto workers), in virtually all countries. The magnitude of this effect differs substantially between countries.	Wage moderating effect of the marginal income tax rate in Canada, Finland, Italy and Japan. No significant effect in the other countries.
Graafland and Huizinga (1999)	The Netherlands, time-series data, 1967-93. Average wage costs from national accounts.[c]	Wage costs increasing effect of both personal[a] and employers tax variables (the latter being only partly shifted onto workers).	Wage moderating effect of the marginal personal[a] tax rate.
Lockwood, Slok and Tranaes (2000)	Denmark, time-series data, 1970-92. Average pre-tax earnings by occupational groups, income level and gender.		
	Low income-earners.[d]	Wage increasing effect of the income tax variable. Wage costs increasing effect of the employers' tax variable (the latter being only partly shifted onto workers).	No significant effect of income-tax progressivity.
	Middle-income earners.[d]		Wage moderating effect of income tax progressivity.
	High-income earners.[d]		Wage increasing effect of income tax progressivity.

Table 4.A1.1. **Estimated effect of the average and marginal tax rates on gross wage and/or wage cost** (cont.)

	Country, estimation period and dependant variable	Average tax rate (holding the marginal rate or progressivity constant)	Marginal tax rate/progressivity index (holding the average rate constant)
Hansen, Pedersen and Slok (2000)	Denmark, time-series data, 1970-92. Average pre-tax earnings.		
	Blue-collar workers.[e]	Wage increasing effect of the average tax variable.	Wage moderating effect of the marginal tax rate.
	White-collar workers.[e]		Wage increasing effect of the marginal tax rate, not statistically significant.
Brunello and Sonedda (2006)	20 OECD countries, aggregate panel data, 1997-2004. Pre-tax earnings for eight household types characterised by different economic and family status.	Wage increasing effect of the average tax variable.	Wage moderating effect in centralised or decentralised systems of wage bargaining; wage increasing effect in case of intermediate level of centralisation.
Schneider (2006)	Germany, micro panel data, 1986-90. Pre-tax earning of middle income married men aged 25-55.	Wage increasing effect of the income tax variable.	Wage moderating effect of the marginal income tax rate. Smaller and less significant effect for high-skilled labour.
Tranaes, Arnberg and Holm (2006)	Denmark, micro panel data, 1985-86; 1991-92 (and difference in difference). Earnings of full-time workers, aged 18-66 and living in the Copenhagen municipality and with no unemployment over the overall sample period (1985-91).	Wage increasing effect of the average income tax rate and progressivity. Relative wage moderating effect from unions in that the wage increasing effect tends to be lower in unionised sectors than in non-unionised ones. Magnitude and significance of the estimated coefficients vary between periods of estimates and thus between estimation methodologies (first difference *vs.* difference in difference).	
Private schemes in the United States			
Gruber and Krueger (1990)	United States, pre-tax earnings. Micro panel data, 1979-81 and 1987-88. Aggregate panel data by state/industry, 1979 and 1988.	Wage decreasing effect of the payroll tax associated with the employer-provided Workers' Compensation Insurance.	Not applicable.
Gruber (1994)	United States, micro panel data, 1978-79 and 1981-82. Pre-tax wage for 20-40 year old married women.	Wage decreasing effect of the costs associated with employer-provided maternity benefits. This effect applies to the beneficiary population only.	Not applicable.

a) Personal tax variable includes employees' social security contributions and personal income taxes.

b) Constant progressivity implies an increase in both the average and marginal rate of the same magnitude. Results suggest that a rise in the average tax rate, holding the marginal tax rate constant, would increase the pre-tax wage.

c) Employers social security contributions are fund to have a relatively large effect on wage costs. This can be explained by the fact that in the Netherlands, collective bargaining comprises contracts for the gross wage (*e.g.* wage costs excluding social security contributions paid by employers). If the gross wage is fixed, an unanticipated increased in the employers tax rate will, in the short run, cause a similar change in wage costs. An unexpected increase in the employees tax rate, in contrast is absorbed by workers in terms of a lower net wage.

d) Low-income workers: blue-collar and lower-quartile white-collar women; middle income earners: unskilled, skilled blue-collar and lower-quartile white-collar men, and median- and upper-quartile white-collar women; high-income earners: median- and upper-quartile white-collar men.

e) The category "blue-collar workers" is defined as "unskilled workers": it includes a number of both low- and middle-income workers as defined in Lockwood, Slok and Tranaes (2000). The category "white-collar workers" is defined as the upper quartile of the wage distribution for white-collar workers: it includes a number of both middle- and high-income workers as defined in Lockwood, Slok and Tranaes (2000).

Table 4.A1.2. **Employment outcomes of a budget neutral reshuffling of labour taxation**

Some examples of evaluation results from simulation models

Tax cuts	Outcome variable (deviation *vis-à-vis* baseline)	Employment and unemployment outcomes				
		Tax cuts	Funding options			
			Personal income tax		Consumption tax	
		Individual effect	Individual effect	Combined effect	Individual effect	Combined effect
Belgium Bassillière *et al.* (2005) Cut in employer or employee social contributions amounting to 0.5% GDP *ex ante*. This corresponds to cutting the employer SSC rate by 1.3 to 1.6% points, or the employee SSC rate by 1.6% points.	Employment level[a] (% deviation).	*Holding gross wage constant*				
		Employer SSC T: +0.18 T+7: +0.55 Employee SSC T: +0.07 T+7: +0.10	Employer SSC T: −0.10 T+7: −0.17	Employer SSC T: +0.08 T+7: +0.38 Employee SSC T: −0.03 T+7: +0.07	(*ex ante* increase in the VAT rate by 1.4% points) Employer SSC T: −0.25 T+7: −0.59	Employer SSC T: −0.07 T+7: −0.04 Employee SSC T: −0.18 T+7: −0.49
		Flexible gross wage				
		Employer SSC T: +0.17 T+7: +0.37 Employee SSC T: +0.06 T+7: +0.02	Employer SSC T: −0.09 T+7: −0.04	Employer SSC T: 0.08 T+7: 0.33 Employee SSC T: −0.03 T+7: −0.02	Employer SSC T: −0.22 T+7: −0.17	Employer SSC T: −0.05 T+7: 0.20 Employee SSC T: −0.16 T+7: −0.15
France						
Sénat (2005) Cut in employer social contributions amounting to 1.3% GDP *ex ante*, which corresponds to cutting the employer SSC rate by 5.4% points.	Unemployment rate (% points deviation).	T+2: −1.3 T+4: −2.4[a]			(*ex ante* increase in the VAT rate by 5.3% points) T+2: +0.3 T+4: +0.4	T+2: −0.8 T+4: −1.2[a]
Benard, Nicolas and Delpal (2006) Cut in the employer SSC rate by 2.1% points.	Unemployment rate (% points deviation).	T+1: −0.2 T+2: −0.3 Long-run: −0.15			T+1: 0.1 T+2: 0.2 Long-run: +0.15	T+1: −0.1 T+2: −0.1 Long-run: 0.0
Caussat *et al.* (2005) Cut in the employer SSC rate by 1 percentage points.	Unemployment rate (% points deviation).		(*ex ante* average increase in personal income tax rate by 8%) T+5: −0.1		(*ex ante* increase in the VAT rate by 0.5% point) T+5: 0.0	
Change in the structure of social protection financing over the period 1980-2003.	Unemployment rate (% points deviation).	Shift from employer SSC (EUR 27.3 billion) and corporate taxes (EUR 5 billion) towards income taxes (EUR 20.9 billion) and consumption taxes (EUR 11.3 billion). −0.90 over the period 1980-2003.				
Euro Area European Commission (2000) Cut in labour taxation amounting to 1% GDP *ex ante*.	Employment level (% deviation).	Non-indexation of replacement incomes on consumer prices.				T+10: +0.82
		Replacement incomes indexed on consumer prices.				T+10: +0.48

a) Medium-term effects tend to be larger than short-run ones since firms tend to substitute labour to capital (due to reduced relative costs of labour).

ANNEX 4.A2

Empiral Analysis: Some New Elements

Table 4.A2.1. **Estimated effect of employers and employees social contributions, income and consumption taxes on the unemployment rate**

	Baseline equation: total direct tax wedge		Baseline with consumption taxes		Baseline with labour taxes split into income taxes, employers and employees SSC		Baseline with labour taxes split into income taxes and total SSC		Baseline with consumption taxes and labour taxes split into income taxes and total SSC	
	Annual data	3-year average data	Annual data	3-year average data	Annual data	3-year average data	Annual data	3-year average data	Annual data	3-year average data
Tax variables										
Total direct taxes on wages[a] (% of labour costs)	0.182*** [3.859]	0.171* [1.792]	0.189*** [3.828]	0.199* [1.896]						
Consumption taxes (% consumption expenditure)			0.065 [0.791]	0.206 [1.108]					0.066 [0.799]	0.210 [1.125]
Income taxes (% of labour costs)					0.062 [0.903]	0.071 [0.480]	0.059 [0.853]	0.057 [0.375]	0.066 [0.931]	0.082 [0.500]
Total social security contributions (SSC)							0.263*** [4.201]	0.252* [1.916]	0.271*** [4.225]	0.283** [2.039]
Employees SSC[b] (% of labour costs)					0.222*** [3.152]	0.091 [0.564]				
Employers SSC[b] (% of labour costs)					0.293*** [3.612]	0.352** [2.434]				
Other explanatory variables[c]										
Average replacement rate	0.092*** [4.473]	0.122*** [2.774]	0.089*** [4.231]	0.110** [2.382]	0.091*** [4.369]	0.117** [2.605]	0.093*** [4.481]	0.122*** [2.718]	0.090*** [4.254]	0.110** [2.339]
Union density	−0.016 [0.675]	−0.066 [1.234]	−0.015 [0.645]	−0.065 [1.206]	−0.005 [0.195]	−0.054 [0.952]	−0.005 [0.199]	−0.055 [0.972]	−0.004 [0.170]	−0.053 [0.925]
Employment protection legislation	−0.301 [0.740]	−0.797 [0.949]	−0.239 [0.574]	−0.569 [0.659]	−0.234 [0.566]	−0.707 [0.818]	−0.235 [0.567]	−0.728 [0.832]	−0.172 [0.405]	−0.493 [0.546]
Product market regulation	0.700*** [3.141]	0.756 [1.443]	0.685*** [3.014]	0.707 [1.338]	0.590** [2.545]	0.602 [1.137]	0.599** [2.585]	0.670 [1.265]	0.584** [2.471]	0.618 [1.157]
High corporatism	−2.320*** [5.194]	−2.179* [1.946]	−2.290*** [5.205]	−2.093* [1.882]	−2.219*** [4.901]	−2.082* [1.798]	−2.225*** [4.918]	−2.099* [1.802]	−2.194*** [4.933]	−2.008* [1.733]
Observations[d]	412	130	412	130	412	130	412	130	412	130

Robust *t* statistics in brackets, * significant at 10%; ** significant at 5%; *** significant at 1%.

a) Sum of employers and employees social contributions, and income taxes.

b) Test of equality of employers and employees SSC coefficients (Wald test). P-values: 0.439 (0.132 with three-year average data), a high P-value meaning that the difference in coefficients is not statistically significant.

c) All regressions also include country and time dummies and output variables. For detailed information on methodological issues, see Bassanini and Duval (2006), baseline specification.

d) Estimation period: 1982-2003; countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, the United Kingdom and the United States. Data for Finland, Germany and Sweden are excluded from the regressions in 1991 and 1992, since the explanatory variables are not able to fully account for the important changes in labour market performance, experienced in these three countries in the early 1990s.

Source: For tax variables, see OECD (2007), "Financing Social Protection: the Employment Effect – Further Material", available online *www.oecd.org/els/employmentoutlook/2007*; and for the other variables, see Bassanini and Duval (2006).

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Chapter 5

Activating the Unemployed:
What Countries Do

Strategies to "activate" the unemployed with the help of high-quality employment services can help ensure that benefit recipients have a better chance to find employment. The essence of such activation strategies is to encourage jobseekers to become more active in their efforts to find work and/or improve their employability. What are the main instruments used by employment services to activate jobseekers and implement the principle of "mutual obligations"? How do they monitor independent job search? How intensive is the jobseeker follow-up by means of obligatory intensive interviews and other contacts? Which countries make participation in programmes such as training or subsidised jobs compulsory after a period of unsuccessful job search?

Introduction

Over the past few years, strategies to "activate" the unemployed with the help of high-quality employment services have loomed larger in the policy debate. If well designed, such strategies can help ensure that benefit recipients have a better chance of obtaining employment. They are also crucial to minimise the risk that high or long-lasting unemployment benefits reduce work incentives – as emphasised in the Restated OECD Jobs Strategy, which noted under its Pillar B that employment services should have adequate resources to implement well-designed active labour market policies, while strictly enforcing work-availability criteria as a condition for benefit payment (see OECD, 2006b).[1]

The essence of activation strategies is to encourage jobseekers to become more active in their efforts to find work and/or improve their employability. They feature, *inter alia*, *i)* early intervention by the Public Employment Service (PES) in the unemployment spell and a high contact density between jobseekers and employment counsellors; *ii)* regular reporting and monitoring of work availability and job-search actions; *iii)* direct referrals of unemployed clients to vacant jobs; *iv)* the setting-up of back-to-work agreements or individual action plans; and *v)* referral to active labour market programmes (ALMPs) to prevent loss of motivation, skills and employability as a result of longer-term joblessness. These strategies aim to apply the principle of "mutual obligations", and in particular to monitor benefit recipients' compliance with eligibility conditions and implement, when necessary, temporary sanctions or benefit exclusions. Further, the introduction of contestability and quasi-market mechanisms is a novel feature of the employment services market in a few OECD countries, where private providers are being tasked with implementing activation policies.

Despite the fact that many countries now espouse a strategy of activation based on mutual obligations, relatively little is known about how they go about implementing this strategy in detail. The aim of this chapter is to remedy this knowledge gap. It does so by documenting measures undertaken by OECD countries along the above dimensions, and by drawing out some general policy lessons with respect to how employment services can help jobseekers obtain employment. The chapter is based on replies to an OECD Secretariat questionnaire on "Interventions in the Unemployment Spell", to which 29 countries replied.[2]

There are a number of difficulties in accurately summarising information obtained through the questionnaire. In particular, country replies do not always distinguish between legal regulations or PES headquarter guidelines on the one hand, and actual practices, on the other. They may in fact cite policies that PES management would like to implement but lacks the ability or the resources to actually do so. Moreover, when a procedure (for example, profiling or the set-up of individual action plans) exists, but has low *de facto* coverage, countries nevertheless tend to report it. Coverage can be low because participation in the intervention is formally voluntary, or because implementation has declined to a low level as new priorities are imposed on the PES without additional resources.[3]

Despite these caveats, the chapter and its background document posted on the OECD website (OECD, 2007) give a reasonable overall picture of the ways in which the PES

intervenes during the unemployment spell and assists jobseekers through specific "activation" measures. The chapter also compares current practices with those obtained from a similar survey undertaken in 1999, a general description of which can be found in OECD (2001a).

The chapter is structured as follows. Section 1 focuses on actions and interventions undertaken by OECD countries during the initial stages of unemployment (registration procedures, benefit entitlement and confirmation of status). Section 2 examines how OECD countries monitor job-search efforts on the part of jobseekers. The next three sections examine key components of job-search support and monitoring in more detail: Section 3 discusses direct referrals to vacant jobs – a practice which may help ensure that jobseekers continue to be available for work; Section 4 discusses countries' interview practices and the set-up of individual action plans; and Section 5 presents some findings concerning participation in ALMPs. Further, Section 6 takes up the issue of the costs of activation measures and the need for evaluation evidence that their benefits exceed their costs. The chapter ends with some concluding remarks and a discussion of issues which deserve further analysis.

The detailed information supplied by countries responding to the OECD questionnaire, as well as the questions themselves, are listed in the online document (OECD, 2007). That document also attributes scores to country practices, with the long-range aim of constructing a composite indicator of "interventions" or "activation".

Main findings

- *Countries seem to be increasing the number and variety of instruments used to "activate" jobseekers*, focusing on density of contacts, verification of job search, the set-up of individual action plans and referrals to ALMPs after a period of unsuccessful job search. However, these practices vary considerably across countries.

- *Registration for placement is in most countries a precondition for benefit payment.* Registration of full jobseeker details and assessment of work availability are key instruments for ensuring that intervention occurs early and in an organised manner. However, there is also a sizeable group of countries where entitlement to unemployment benefits starts from the date of loss of work, and benefits can be paid retroactively even when registration with the employment service is delayed. In other countries, registration for benefit precedes that for placement, while another group of countries may allow substantial delays before holding a full registration interview at which a detailed file on the jobseeker is established. As a result of these practices, it is possible that a certain number of potential matches of jobseekers to suitable vacancies are missed, at a time when benefit is already being paid. By contrast, half of OECD countries delay the payment of unemployment benefit by means of a waiting period (often a week).

- *Many recent evaluations have shown that job-search assistance and monitoring can have a sizeable impact on re-employment rates.* Reflecting this, an increasing majority of countries now have relatively explicit job-search reporting procedures. There are, however, substantial cross-country differences in terms of the *frequency* of such reporting: 13 countries require reporting of job search between every two weeks and monthly, with three of these requiring proof of eight or more job-search actions per month (Australia, United Kingdom and most US states); another large group requires job-search reporting at longer (two to six months) or variable intervals. And a few countries (Greece, Italy, Poland and Turkey) appear not to verify job search in principle or practice.

● *Half of all OECD countries verify unemployment status* through requiring periodical in-person attendance at a local office, and a further group requires regular declarations to be sent in by post or Internet or to be made by telephone. Such regular reporting may not only avoid errors in benefit payment, but also creates opportunities for the PES to encourage job search and deliver up-to-date information on vacancies and other services. By contrast, four countries do not require regular reporting, but rather a declaration of changes in situation, when relevant (Germany, Italy, New Zealand and Turkey).

● *As part of job-search assistance and monitoring, almost all countries follow a practice of intensive obligatory interviews* between the jobseeker and an employment counsellor. The frequency of such interviews varies, however. At least ten countries have set up a fixed schedule of interviews during the unemployment spell, five of them (Czech Republic, France, Korea, Slovak Republic and the United Kingdom) on a monthly basis or less. Other countries have fixed schedules (or guidelines) varying by jobseeker category or by duration of the unemployment spell. Based on the available evidence, it can be concluded that half of all countries achieve four or more intensive interview-equivalent contacts per unemployed per year. In other countries intervals may depend on counsellor assessment or an agreed number laid down in an individual action plan. By contrast, Italy, Japan, Poland and Turkey have no guidelines in this respect.

● *Almost all countries (apart from Turkey) have established some sort of individual action plan*, sometimes for the totality or large majority of newly registering unemployed, sometimes destined for particular target groups; in most of them (exceptions are Canada, the Czech Republic and Japan), jobseeker participation in the plan is obligatory. In about a third of the countries, an action plan is supposed to be in place for all unemployed within one month of registration. However, some employment services may lack office capacity to establish such plans and follow up on their implementation in accordance with official PES guidelines.

● *Referring jobseekers to vacancies* not only helps reduce the risk of prolonged unemployment, but also acts as a work test. However, the average number of direct referrals to jobs per unemployed person is relatively low (it is highest – in that order – in Austria, Switzerland, Spain and the United Kingdom). There are therefore grounds for promoting this practice and not relying exclusively on self-referrals by jobseekers to open or semi-open vacancies.

● *Compulsory participation in ALMPs after a period of unsuccessful job search can help reduce the risk of either long-term unemployment or labour market exit.* Yet, only four countries (Australia, Denmark, Sweden and the United Kingdom) can be considered to have such obligatory programmes for all benefit recipients passing a well-specified spell of unemployment. In the Netherlands, the contracting out of unemployed persons who are not immediately job-ready to private and community providers could be considered the functional equivalent of an active labour market programme; and in Germany, existing regulations ask that that all unemployment assistance ("unemployment benefit II") recipients below the age of 25 are immediately placed either into a job, a public works programme or a training measure. In most of the other countries participation of jobseekers referred to labour market programmes is obligatory, although no timing for such compulsory participation is specified.

● *It is advisable to leave participants in ALMPs some time for job search,* which may facilitate them finding work even before the end of the programme. For many types of programme – vocational training programmes which are expected to deliver a certificate upon

completion should probably be an exception – the principle of continuing job-search verification with a requirement to take up any suitable job offer seems reasonable. However, over half of the review countries currently exempt programme participants from any job-search requirements.

● *A number of studies show significant effects of intensive intervention measures on duration of benefit spells or on job-finding rates.* However, there is a case for conducting more evaluations regarding the cost effectiveness of measures, which would include both staff and operational costs involved and the (expected) benefit savings.

1. Registration procedures, benefit entitlement and confirmation of status

Registration with the placement service and assessment of jobseeker availability are in most countries a precondition for benefit payment. This is important to allow the PES to intervene so as to minimise unemployment as well as benefit payment, in particular through quick referrals of the applicant to vacant jobs. That is why the full registration of jobseeker details is desirable as early as possible after loss of employment.[4] The assessment of jobseeker availability and personal characteristics also ensures that contacts with the PES start with a "work focus" rather than a "benefit focus".[5] Likewise, regular reporting and confirmation of unemployment status (which may include reporting of intermittent work spells) creates opportunities for PES counsellors to keep up the work focus and encourage job-search activity.

1.1. *Entitlement to benefit*

OECD countries follow different practices as regards the *sequence* between registration for placement and that for benefit. The largest group of countries states, explicitly or implicitly, that both occur simultaneously or are part of the same procedure.[6] A smaller group emphasises that registration for placement precedes that for benefit. By contrast, in Australia, Belgium, France, Ireland and Switzerland, registration for benefit comes first. Further, in Canada, depending on provincial practices registration with placement services is not necessarily a precondition for benefit payment. This also applies to certain jobseekers in the United States: while registration for job-search assistance is usually automatic and happens at the time of application for benefits, the sizeable category of unemployed who are temporarily laid off with a specific date for recall by their employer are entitled to benefit receipt without having to register for placement.

Due to procedural delays, the first benefit payment usually occurs at least a week or two after lay-off or first contact with the PES. Days of unemployment that generate entitlement to benefit may begin upon lay-off from the previous job or they may be counted as from the date of first contact with the PES, subject in some countries to a waiting period (usually up to one week) in case of an initial claim.[7]

Table 5.1 (Column 1) classifies OECD countries in terms of whether entitlement to benefit payment starts before, simultaneously with, or after registration with the placement service that could allow referral to a vacant job:

● In Canada, the Czech Republic, Italy, Luxembourg, the Netherlands, Spain and Turkey after initial registration entitlement to benefit can be retroactive back to the date of loss of work. In Ireland, as well, such backdating is possible, but only if claimants convince deciding officers that there is a good reason for doing so. However, the extent of such back pay is limited to one week prior to initial registration in the Netherlands, two weeks in Luxembourg and Spain, and four weeks in Canada and Turkey. It is also reduced by a waiting period in Italy (one week) and Canada (two weeks).

Table 5.1. **Registration procedures, benefit entitlement and confirmation of status**

	Benefit entitlement starts before (B), simultaneously with (S) or after (A) registration for placement[a] R = benefit pay retroactive back to date of loss of work	Length of waiting period (for which benefit is not payable at the start of unemployment), if any	Timing of first intensive interview and extent of profiling and individual action plan (IAP) at that interview	Reporting of status, by being regular (R) or not, length of intervals, and in-person attendance (P) or not
Australia	B	Seven days	At registration, often with profiling and IAP	R, P, every two weeks
Austria	S	–	Often at registration, with IAP	R,P, usually weekly
Belgium	B	–	At registration	R, once a month
Canada	B, R	Two weeks	No timing specified	R, every two weeks
Czech Republic	B, R	–	Within a week	R, P, every two weeks
Denmark	S	–	Within a month, with profiling	R, every month
Finland	A	Seven days (UI benefit) Five days (assistance)	Within a month, with profiling	R, every month
France	B	Seven days	Within five days (up to 2007, eight days), with profiling and IAP	R, every month
Germany	S	–	Usually within ten days, with profiling and IAP	No regular declaration
Greece	S	–	Immediately or within two/three days	R, P, every month
Hungary	S	–	"As soon as possible", with profiling and IAP	R, P, monthly for regular benefit recipients
Ireland	B, R (if justified)	Three days	After one month	R, once a month, P (in most cases)
Italy	B, R	Seven days	Large variance across offices, from registration to three months	No regular declaration
Japan	A	Seven days	At registration	R, P, every four weeks
Korea	A	Seven days	At registration, with profiling and IAP	R, P, one to four weeks
Luxembourg	B, R	–	Within 2 weeks	R, P, every 2 weeks
Netherlands	B, R	–	At registration, with profiling	R, every month
New Zealand	B	One to ten weeks (under review)	Within a week, with profiling and IAP	No regular declaration
Norway	A	Four days	Within three weeks	R, every two weeks
Poland	A	Seven days	Not specified	R, every month
Portugal	S	–	At registration, with profiling	R, P, every two weeks
Slovak Republic	S	–	At registration	R, P, every two weeks
Spain	B, R	–	Within two weeks, with IAP	R, P, quarterly
Sweden	A	Five days	Within ten days, with IAP	R, every two weeks
Switzerland	B	Five days	After 16 days on average	R, P, every month
Turkey	B, R	–	No information available	No regular declaration
United Kingdom	S	–	Usually within a week	R, P, every two weeks
United States	B	Usually seven days	Within one to three weeks, with IAP (only if profiled as probable benefit exhaustees)	R, every two weeks

– Not applicable.

a) Classification as B = before includes countries that offer retroactive pay, and those where the first contact with the PES has no or little placement contact. Note, however, that where there is a waiting period, the first placement interview could roughly coincide with the end of that period.

Source: Compendium of national replies to the OECD Secretariat questionnaire on "Interventions in the Unemployment Spell".

- In Austria, Denmark, Germany, Greece, Hungary, Portugal, the Slovak Republic and the United Kingdom, entitlement to benefit begins on the day of registration and no backdating is possible. In all these countries, if a jobseeker registers late, he or she loses the benefit that would have been due (although, if unemployment persists, the lost days may be made up at the end of the benefit period). Out of concern to promote rapid placement, Germany has recently tightened registration requirements: a jobseeker registering on his first day of unemployment can be sanctioned for not having registered earlier, for example after receiving notice, or otherwise learning of pending unemployment. By contrast, in Portugal a jobseeker can register up to 90 days after loss of work, and still be entitled to the normal benefit duration.

- In Australia, Belgium, France, Ireland, Switzerland and the United States, the first contact with the PES determines the start of benefit entitlement, although it has no or limited placement content (*e.g.* it mainly records personal identification and lay-off details) – in fact, in most of these countries first contact is with the benefit office. Entitlement to benefit starts after a waiting period of three days in Ireland, five days in Switzerland and one week in Australia, France and most US states.

- A waiting period is also attached to benefit receipt in Norway (four days), Sweden (five days), Finland, Japan, Korea and Poland (one week), as well as New Zealand.[8] Altogether, 14 OECD countries have instituted a waiting period before benefit starts (Table 5.1, Column 2).[9]

1.2. Placement efforts at initial registration

Most responding countries report or imply that availability for work is evaluated at initial registration, as a precondition for benefit. However, there are indications that the intensity of this evaluation varies considerably and may consist only of accepting a statement by the jobseeker, or his/her signature on a standard form.[10] When registration for placement and a first screening of availability are preconditions for benefit entitlement, the PES can intervene immediately with offers for placement, so that – at least theoretically – there may be no need to process the benefit application further. The country replies, however, usually imply that applications for benefit will not be delayed when a job is immediately offered: a number explicitly state that they cannot be delayed.[11] A few countries nevertheless indicate or hint how often the placement service asks applicants to apply for one or more job vacancies at initial registration:

- Canada, Denmark, Italy and Sweden either note or imply that benefits are not conditional on applying for vacancies, or that administrative processes for benefit application do not usually lead to referral to vacancies at initial registration.

- Several more countries (Czech Republic, Finland, Germany, Greece, Hungary, Korea, Luxembourg and the Slovak Republic) note that jobseekers should apply for every vacancy proposed, implying that this also applies to referrals made at initial registration. These countries usually add that a benefit sanction can be applied if a job offer (including one made at registration) is refused.

- Austria, Belgium (VDAB), the Czech Republic, France, Germany, Greece, New Zealand (within one or two days), Norway, Portugal, Switzerland, the United Kingdom and the United States explicitly note a practice of referral to job vacancies at first contact. Poland reports an obligation for the PES to check the availability of suitable vacancies, when

determining the right to benefit. The United Kingdom is the only country that can quantify referrals at first contact, noting that 12% of them tend to result in a submission for a job and 1% in a job entry.

● In Australia, Japan, the Netherlands, Spain and Turkey, work readiness is assessed at registration, but it is not clear from the replies whether that implies referral to vacancies. For the Netherlands, however, other available information indicates that referrals at registration occur to some extent. In fact, the Centre for Work and Income (CWI) operates under a target, included in its annual agreement with the government, to prevent inflow into regular unemployment benefit (through early job starts or withdrawal of application) during the first eight days after initial registration, *i.e.* the time needed to process a benefit application. This "prevention quota" is currently set at about 20% (SZW, 2006; Tergeist and Grubb, 2006).

1.3. *The detailed registration interview*

Countries may only record some basic personal data at initial registration for placement. In this case, the employment service needs to hold a full registration interview in order to obtain more detailed information on the jobseeker (qualifications, previous work history, hours constraints, etc.) so as to allow successful matching and referral to vacant jobs or, if necessary, integration into a relevant ALMP. These interviews also may be used to explain the full range of PES services available (including the self-service facilities) and the rights and duties of the jobseeker.[12] In addition, they can provide the occasion to apply a profiling instrument – if this has not already been done during initial registration – or to set up an individual action plan. Key features of the detailed registration interviews are presented in Table 5.1, Column 3.

Australia, Austria (in 60% of the cases), the regional placement agencies in Belgium, Japan, Korea, Portugal and the Slovak Republic state that a first intensive interview takes place already at the jobseeker's first contact with the employment service.[13] In a further five countries (Czech Republic, France, Greece, New Zealand and in a majority of cases in the United Kingdom), the detailed interview usually occurs within a week; in another four countries (Germany, Luxembourg, Spain and Switzerland) it may take about a fortnight.

However, several OECD countries allow sometimes considerably longer delays. These can be up to one month or even longer in Denmark, Finland, Ireland, Sweden and in some regions of Italy. Individual US states may, as well, wait up to three weeks before inviting those profiled as likely to exhaust their benefit to more detailed (often collective) orientation sessions. In Ireland, it seems that individuals registering for benefit are even discouraged from immediately registering with the placement service.[14] As a result, due to such delays before full registration and recording of relevant jobseeker details occurs, it is possible that a certain number of potential matches of jobseekers to suitable vacancies are missed – at a time when benefit payment has already started. It might be considered desirable that in the case of new unemployment spells benefits are not paid before full registration with a possibility of referral to suitable vacancies has taken place. However, this may not be possible in some countries with heavily under-resourced PES networks, since initial registration can take up a significant proportion of PES staff time.

Hungary and Poland did not report an average delay before the first intensive interview. Canada, where registration for placement is not obligatory, notes however – without specifying the delays involved – that clients are recommended to contact an Employment Assistance Services provider for a needs assessment interview. The Netherlands and Australia, where

most employment services are contracted out, are special cases. In the Netherlands, the initial registration interview at the Centres for Work and Income (CWI) is already relatively intensive and, for example, includes a profiling instrument; subsequently, those who are not considered to be job-ready receive another intensive interview ("profiling intake"), before being transferred to a reintegration provider where the registration and interview procedure starts again to determine a suitable "reintegration trajectory".[15] Similarly, in Australia, Centrelink assesses jobseekers' eligibility for income support and employment services, after which another intake interview will usually occur with a Job Network provider.

The use of profiling instruments at the first intensive interview is explicitly or implicitly mentioned by Australia, Denmark (the *Job Barometer*), Finland, France, Hungary, Korea, the Netherlands (the *Kansmeter*) and the United States – although in fact profiling at this stage is now used by other countries as well, for example Canada, Germany and New Zealand.[16] The setting up of an individual action plan or an agreement of required activities at this stage is mentioned by Australia, Austria, France, Germany, Hungary, Korea, New Zealand, Spain, Sweden, the United Kingdom and the United States (see Section 4 below). Finally, organising other events such as collective information sessions for the newly registered is reported as common practice for the PES in half of the responding countries [Austria, the Czech Republic, Finland, Germany, Ireland, Japan, Korea, Luxembourg, the Netherlands (for those profiled as easy-to-place), New Zealand, Norway, Sweden, Switzerland and the United States], although it is not always specified whether these are optional or mandatory (see also the discussion of collective information sessions in Section 4 below).

1.4. *Regular reporting and confirmation of unemployment status*

Regular reporting and confirmation of status may not only avoid errors in benefit payments (when there was a brief work spell), but also creates opportunities for the PES to encourage job search and deliver information on vacancies and other services. Three main methods are used to report and confirm status during the unemployment spell: *i)* a regular (usually fortnightly or monthly) declaration in person at a local office; *ii)* a similar declaration by mail, telephone or Internet; and *iii)* no regular declaration, but instead an obligation to declare (usually immediately) changes of situation relevant for unemployment status, and therefore benefit payment. Table 5.1, Column 4, shows country practices in this respect.

Half of the review countries (Australia, Austria, the Czech Republic, Greece, Hungary, Japan, Korea, Ireland, Luxembourg, the Slovak Republic, Spain, Switzerland, the United Kingdom and, since January 2007, also Portugal) verify unemployment status through requiring periodical in-person attendance at a local office. Beyond mere confirmation of status, such in-person visits may also be used for discussing the client's job-search evidence; going through the vacancy register expecting the jobseeker to agree to apply for particular vacancies; and for providing further information, for example on collective information or training sessions offered by the local office. Attendance is usually required every week in Austria; every fortnight in Australia,[17] the Czech Republic, Korea, Luxembourg, Portugal, the Slovak Republic and the United Kingdom; every four weeks in Japan; monthly in Greece, Hungary, Ireland[18] and Switzerland, and quarterly in Spain.

Belgium, Canada, Denmark, Finland, the Netherlands, Norway, Poland, Sweden and the United States require regular declarations to be sent in by post, Internet or telephone (or dropped off in a letter box): usually by post in Belgium, Finland, the Netherlands and Poland, by post or Internet in Denmark, Norway and Sweden, and commonly by telephone

or Internet in Canada and the United States. France lets the jobseeker choose among Internet, telephone or personal appearance. Declarations are usually fortnightly in Canada, Norway, Sweden and the United States and monthly or four-weekly in Belgium, Denmark, Finland, France, the Netherlands and Poland.

Germany, Italy, New Zealand and Turkey do not require regular declarations, but request a declaration (usually immediate) of relevant changes of situation.[19] The Slovak Republic adds that even in the absence of such declaration, the benefit services immediately learn of deregistration via continuous data matching. Declared earnings from a few days' work would normally entail a benefit suspension or temporary reduction of the benefit amount, while longer work spells (above six days in Italy) require a renewed application for benefits.

1.5. *Changes since 1999*

The 1999 OECD survey had identified five countries where benefit could be paid for days prior to initial registration for placement (OECD, 2001a). Based on the recent survey, this number is now significantly higher. There is, first, a sizeable group where entitlement can start before registration with the PES, so that benefits are paid retroactively; and, second, another group where entitlement starts with registration for benefit, which has little or no placement-related content. At the same time, several more countries – there are now 14 of them in total – now report a waiting period before entitlement to benefit begins.[20]

As to the reporting of unemployment status, the number of countries allowing or expecting respective declarations to be made by telephone and Internet has, not surprisingly, increased since 1999 – there now seem to be at least six countries where declarations can be made by Internet. The policy of Internet reporting rather than in-person visits does, taken in isolation, reduce the intensity of in-person contacts. But if the PES resources freed by Internet reporting are devoted to other interventions such as intensive interviews, Internet reporting may not reduce the overall intensity of interventions as covered in the questionnaire.

At the same time, a few countries no longer require any regular declaration of days worked and of continuing unemployment status. A number of factors may favour this development:

- Declines in the frequency of very short-term employment spells (*e.g.* day labouring) in favour of temporary contracts of somewhat longer duration.
- A refocusing of PES strategies away from verification of formal requirements and towards placement assistance and assisting and monitoring independent job search.
- Increased use of computer data matches which can detect work performed by people who are also receiving unemployment benefits. The replies from the Slovak Republic, Spain and New Zealand refer to data matching directly, but it is now probably performed (in some cases with a considerable lag, *e.g.* monthly) by many more countries.[21]

2. Job-search requirements

While self-motivated unemployed will often look for jobs effectively, for other types of individuals, job-search assistance and monitoring may be required to ensure that they search actively for work. This feature is definitely on the rise in member countries, and a clear majority now seem to have explicit regulations for job-search reporting and monitoring. This is not surprising as several studies have shown that such a policy can have a considerable impact on re-employment rates (Benus and Johnson, 1997; Borland and Tseng, 2007; see also

the discussion in OECD, 2005). Other studies (*e.g.* Boone, Sadrieh and van Ours, 2004) have argued that job-search obligations coupled with a credible threat of benefit sanctions can partially offset disincentives generated by generous unemployment benefits.

However, there remains a risk that too-rigid requirements, with high minimum frequencies to be reported, may generate perverse effects, such as: *i)* employer cynicism about too many solicitations; or *ii)* pressure on jobseekers to quickly accept job matches that do not maximise their individual productivity. On the latter point, several studies have pointed out the economic gains resulting from an unemployment insurance system which provides the necessary "breathing space" for looking for an efficient match (Acemoglu and Shimer, 2000; Polachek and Xiang, 2005).

2.1. *Frequency of reporting*

As shown in Table 5.2, Column 1, half of OECD countries require reporting of job search (in most cases) every two weeks or at least monthly: these are Australia, Austria, the Czech Republic, Finland (after an action plan has been signed), Hungary (in the case of regular benefit recipients), Japan, Korea, the Netherlands, the Slovak Republic, Switzerland, the United Kingdom and the United States. In most of these, job-search reporting is combined with the verification of unemployment status. The reporting and verification techniques used are quite varied, but most of these countries use relatively standardised procedures: for example, requiring employer confirmation of applications, or handing out standard forms where individual job applications should be listed. The information is normally transmitted without face-to-face contact (*e.g.* on paper) in the Netherlands (standard forms sent to UWV) and the United States, but through an in-person counselling interview in Australia (in most cases), Austria, the Czech Republic, Finland, Korea, Slovak Republic, Switzerland and the United Kingdom.[22]

Other countries verify job search within the context of intensive interviews: France once a month (starting at the fourth month of an unemployment spell), New Zealand every six weeks, Spain on average six times a year, Denmark and Norway every three months. Among these countries, documentation does not appear to be required in Hungary and Spain, while documentation requirements are relatively precise in Norway and documentary proof of job search seems also required in Denmark and New Zealand, although the exact format is flexible.

The regional placement agencies in Belgium (FOREM and VDAB), Canada, Germany, Ireland and Sweden describe procedures for reporting or verification of job search, but do not state how frequently such reporting takes place. The Belgian benefit agency (ONEM) evaluates job-search efforts within intervals depending on age and on the results of previous assessments, permitting multiple types of evidence, including declarations "on my honor". In Germany, specific requests for evidence of job search are not excluded, but normally related activities are discussed in the context of intensive interviews (whose number varies by jobseeker category; on average, six such interviews can be assumed in a given year, see OECD, 2007, item 5b).

Greece, Poland and Turkey do not require reporting of job-search activities, while Italy in principle requires active job search, but does not currently monitor it in a concrete way. Finally, Luxembourg and Portugal which did not require job search in the past, have introduced respective requirements in 2007.[23]

Table 5.2. **Job-search requirements**

	Frequency at which unemployed have to report their job-search activities	Number of actions to be reported in a month
Australia	Every two weeks	From 8 to 20
Austria	Once a month	Not specified
Belgium	Variable requirements at placement agencies; after 15/21 months at ONEM (benefit agency)	Not specified
Canada	Variable requirements	"Reasonable" efforts expected
Czech Republic	Every two weeks	Not specified
Denmark	At least once every three months	Variable requirements (depending on IAP)
Finland	From one week to one month	Variable requirements (depending on IAP)
France	Once a month (after fourth month)	Variable requirements
Germany	Depends on profiling category: on average six times per year	Not specified
Greece	No specific requirements	Not specified
Hungary	Monthly for regular benefit recipients	Variable requirements (depending on IAP)
Ireland	Variable requirements	Not specified
Italy	Job-search monitoring is rare, despite a legal requirement	Not specified
Japan	Once every four weeks	Two
Korea	Variable, from once a week to once every four weeks	Two
Luxembourg	No specific requirements up to 2006; variable requirements starting in 2007	Not specified
Netherlands	Every four weeks	Four
New Zealand	Every six weeks	Variable requirements (depending on IAP)
Norway	Every three months	Not specified
Poland	No requirements	No requirements
Portugal	No specific requirements up to 2006; variable requirements starting in 2007	Variable requirements (depending on IAP)
Slovak Republic	Variable, from once a week to once every four weeks	One action per contact
Spain	Every two months (estimated average)	Not specified
Sweden	Every six weeks on average (adults six to eight weeks; youth two to three weeks)	Not specified
Switzerland	Once a month	From four to ten
Turkey	No requirements	No requirements
United Kingdom	Every two weeks	Ten
United States	Every two weeks	Ten

Source: Compendium of national replies to the OECD Secretariat questionnaire on "Interventions in the Unemployment Spell".

2.2. Number of actions to be reported

As to the minimum number of job-search actions to be undertaken by the registered unemployed (Table 5.2, Column 2), many countries report that this is determined in an individual action plan or by a placement officer on the basis of client characteristics and the local labour market. In these cases, usually no information about a typical or average required number of actions is available. Thus, no relevant information has been located for Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, Germany, Hungary, Ireland, New Zealand and Spain, although many clients there will have a rough idea about the number of employer contacts or other job-search actions expected from them.

Typical numbers of required job-search actions per month are between eight and twenty in Australia,[24] ten in the United States and the United Kingdom, between four and ten in Switzerland, four in the Netherlands, and about two in Japan, Korea and the Slovak Republic.[25] In Norway and Sweden, there is a general requirement that some job search be reported, a condition that appears to be possible to satisfy with relatively infrequent job-search acts. At

the other end of the scale, the number of actions that have to be reported is or approaches zero in countries with no reporting requirements or little monitoring, *i.e.* Greece, Italy, Poland and Turkey, as well as (up to 2007) Luxembourg and Portugal.

Finally, it should also be noted that countries or even local offices may use varying definitions as to the characteristics of job-search actions. Often not only application letters or lists of employers contacted, but also personal accounts (written or verbal) of less precise activities, spontaneous "walk-in" applications, efforts to set up business, etc. may be accepted as evidence. Thus, requirements are usually less rigid than they may appear at first sight.

2.3. Changes since 1999

In at least eight of the countries that reported both in 1999 and 2005-07, there is evidence that the intensity of job-search monitoring has increased. A clear and increasing majority of reporting countries now monitor job search in a relatively explicit way. Belgium and Finland had no procedures for reporting independent job search in 1999, and have them now. Finland, for example, now includes a requirement for such reporting in individual action plans, which are established after five months of unemployment at the latest. In Austria, verification procedures are now more precise than in 1999 (on average monthly reporting, with employer contact details and evidence of written applications). The change is striking when current practice is compared to the 1996 OECD review of the public employment service in Austria when, although there was already a formal legal requirement, benefit claimants were not required to supply proof of job search (OECD, 1996b, p. 49). Procedures in Denmark have also changed considerably. In 1999, job search was reviewed in six-monthly eligibility reviews by the unemployment insurance funds, while currently it is verified at least every three months during contact meetings at the PES.

The description of procedures in the Czech Republic, Germany (based on a 2002 change in legislation), New Zealand and Sweden also now more clearly indicates regular verification of job search actions. For example, New Zealand in 1999 reported that "A beneficiary who is long-term unemployed or is considered to be at risk is likely to be required to make more regular contact", and reported to the more recent survey that reviews of job-search activities are every six weeks.[26]

Following these changes, now only four reporting countries (Greece, Italy, Poland and Turkey) appear to not verify active job search in principle or practice. Poland may have decreased the intensity of its monitoring (it mentioned in 1999, but not in 2006, that an oral report of individual effort was required), and some decline in intensity may also have occurred in the United States where fortnightly reporting is now most often done through automated telephone systems.

As to the minimum number of required job-search actions, due to the paucity of data, no general trend can be observed. In 1999, the estimated frequency per month of job applications or other actions to be reported was eight per month in the United Kingdom and the United States, and the estimates given now are ten per month. In the United Kingdom, the *Jobseeker's Allowance (Amendment) Regulations* in 2004 (*www.opsi.gov.uk/si/si2004/20041008.htm*) raised the usual requirement from two to three per week in 2004, but exceptions are allowed and it is not clear how much impact this change had on local office practice. In Switzerland, until 1997, ten job-search actions per month were required, but flexibility to set lower requirements was already in place by 1999.

3. Direct referrals to vacant jobs

The term "direct referrals" is intended to refer to occasions when the PES offers a specific vacancy to the jobseeker, not including referrals when the jobseeker himself/herself selected the vacancy. "Closed" vacancies are always handled by direct referral, while an employment service can also make direct referrals to advertised ("open" or "semi-open") vacancies. Direct referrals can be contrasted with "self-referrals", where the jobseeker takes the initiative to select and apply for an advertised vacancy.

Without a doubt there has been a trend in recent decades towards transparency of vacancies through the use of self-service facilities. In general, the more information is attached to a vacancy, the less need there is for PES intervention to fill it. Nevertheless, direct referrals can still serve important purposes, notably to: *i)* speed up the matching process; *ii)* bring jobseekers who use inefficient job-search strategies into contact with vacant jobs that might otherwise be ignored; *iii)* serve as a work-test and remind jobseekers of the "mutual obligations" requirement; and *iv)* in the final analysis reduce aggregate unemployment spell durations. Further, feedback on referral outcomes (including negative ones) may help improve register information and develop more effective mediation strategies in the future.

3.1. *Referral procedures and vacancy types*

A few countries report a practice of keeping a significant share of vacancies under "closed" procedures. The proportion of notified vacancies handled using such procedures is reported as 9% in Austria, 20% in the Czech Republic and Finland, one-quarter in Denmark, over 40% in Germany and the majority in Spain. While most employment services would keep vacancies "closed" if asked to do so by an employer who wants only candidates pre-selected by the PES, the proportion is given as zero or insignificant in Belgium, Canada, Luxembourg and Sweden.

Most countries report more or less regular use of direct referrals, although the vacancies involved are usually open or semi-open and therefore also invite self-referrals. For a number of them (Australia, the Czech Republic, France, Germany, Greece, Hungary, Italy, Japan, the Netherlands, Poland, the Slovak Republic and the United States), no estimate of the number of direct referrals per unemployed jobseeker in a given time period is available. In those cases where referral rates were either indicated by the responding country or estimated by the OECD Secretariat, they were from one to three per unemployed person-year in Belgium (VDAB), Denmark, Finland, Ireland, Korea, New Zealand, Norway, Portugal and Sweden; between four and five in France, Japan and Luxembourg, and between six and eight in Austria, Spain, Switzerland and the United Kingdom (see Table 5.3, Column 1). Although it can be argued that referrals should be tailor-made and employers not be overwhelmed by large numbers of applicants, these figures may be considered surprisingly low, given the advantages of direct referrals mentioned above, and given the opportunity counsellors have during intensive interviews to orient the client to newly-advertised vacancies. However, it is difficult to gauge the extent to which the events reported here as "direct referrals" are fully comparable.[27]

Typical referral rates of about two or three per year are much lower than requirements on unemployed people to make independent job applications (*i.e.* often two per month, ranging up to eight or ten per month in a few countries, see Section 2 above). But even three direct referrals per year can influence unemployment spell durations. For example, if the probability of a direct referral is 1/4 per month and one in ten direct referrals results in

Table 5.3. **Referrals to vacant jobs**

	Referral rates (annual number of direct referrals per registered unemployed)[a]	Special reports on application outcomes required from employer (ER) and/or jobseeker (JS)
Australia	n.a.	No formal requirements
Austria	8.1	ER, JS
Belgium	1.4 (VDAB)	ER, JS (VDAB); JS (FOREM)
Canada	0	No formal requirements
Czech Republic	n.a.	JS
Denmark	2.4	ER, JS
Finland	1.1	ER, JS
France	4.8	ER, JS
Germany	n.a.	ER, JS
Greece	n.a.	ER, JS
Hungary	n.a.	ER, JS
Ireland	1.5	No formal requirements, variable practice
Italy	n.a.	ER (if hiring occurs)
Japan	4.2	ER
Korea	2.4	ER, JS
Luxembourg	5	ER
Netherlands	n.a.	ER
New Zealand	1.8	ER
Norway	2.8	ER, JS
Poland	n.a.	ER
Portugal	1.4	ER
Slovak Republic	n.a.	ER
Spain	6.5	ER
Sweden	2.8	JS
Switzerland	7	ER, JS
Turkey	n.a.	ER
United Kingdom	6[b]	JS
United States	n.a.	JS

n.a.: Not available.

a) Numbers refer to 2004 in Belgium, Spain and the United Kingdom; 2005 in Denmark and New Zealand; and 2006 in Austria, Finland, France, Ireland, Japan, Korea, Luxembourg, Norway, Portugal, Sweden and Switzerland.

b) The UK reports almost 30 million submissions for notified vacancies, an average of six submissions annually per client of Jobcentre Plus. These clients include incapacity benefit, lone parent and jobseeker allowance recipients. If only the latter category were counted, the figure would rise to over 20.

Compendium of national replies to the OECD Secretariat questionnaire on "Interventions in the Unemployment Spell".

a hiring, then 2.5% of the unemployed enter work through this channel each month. This can make a significant contribution to overall rates of exit from unemployment (which are often about 10% or 15% per month in Europe). And in practice, direct referrals may be targeted on a subgroup of the unemployed, while relying on independent job search in the majority of cases.

As to the degree of "openness" of advertised PES vacancies, Australia, Greece, Italy, Luxembourg, Portugal, the Slovak Republic and New Zealand report that advertised vacancies are mainly semi-open, implying that interested applicants need to request employer contact details from the PES officer. Other countries making extensive use of semi-open advertising (although no exact proportions were indicated) are Denmark, Hungary, Japan, the Netherlands, Switzerland and the United Kingdom. Countries where advertising is fully open in the majority of cases (*i.e.* includes employer contact details) include Austria, the Czech Republic, Finland, Germany, Ireland, Korea and the United States. Finally, advertised PES vacancies are almost

always fully open in Belgium, Canada, Norway and Sweden. In Spain, as well – where the majority of vacancies are "closed" – those that are advertised are usually fully transparent.[28]

With a view to managed or direct referrals, the OECD survey enquired as to how common were "pre-selection" interviews of candidates at PES offices. Of the countries responding to this question, 11 indicated that their employment services did not hold pre-selection interviews, or held them very rarely. The reply by the Slovak Republic is representative for many of these: the counsellor matches vacancies to jobseekers based on his personal knowledge of them and on standard criteria used by the office. It may also be the case that improvements in the initial registration procedures and in electronic data processing enable the PES to make accurate referrals without further personal contact.

Only Denmark, Germany and Portugal replied that job offers are usually discussed with jobseekers before referral to verify whether qualifications, experience and personal abilities match a particular vacancy. Belgium, Finland, Luxembourg, New Zealand and Spain indicated that this is sometimes the case, for example if qualifications recorded in the information system are unclear (Finland); to address any potential barriers to employment (New Zealand); or to carry out skill and psychological tests at the office (Spain). In addition, eight countries (Austria, the Czech Republic, Finland, Germany, Hungary, Ireland, the Netherlands and the United States) mention that they undertake more intensive pre-screening of candidates on the special request of employers, with most of them adding that this practice is rare (in 9% of all direct referrals in Austria, for example), and some implying that the service is paid for by employers.

Usually, some pre-selection also takes place in the case of self-referrals to semi-open vacancies. When jobseekers approach the desk to obtain an employer's contact details, these may in some cases be provided by junior staff with little screening, but often be provided by a counsellor who first checks the applicant's computer file and/or engages the person in a brief conversation to check their suitability for the post.

3.2. Reports on application outcomes

Feedback on application outcomes – either positive or negative – can supply important information for an employment service. However, replies by countries to the question on post-referral feedback are less detailed than would have been desirable. For example, while countries usually note whether employers and/or jobseekers are asked by the PES to report on outcomes, the replies give no information on the proportion of cases where this is actually done, and answers are often not precise as to the way such reports should be or are actually made (for example, reporting on a standard form, by other means of communication or through special follow-up visits).[29]

Yet, countries can be grouped by whether they put equal emphasis on both employer and jobseeker feedback, or whether they stress reporting by either one of the parties involved (see Table 5.3, Column 2). Countries that regularly ask *both* employers and jobseekers to report on referral outcomes are Austria, Belgium (VDAB), Denmark, Finland, France, Germany, Greece, Hungary, Norway, Korea, Poland, the Slovak Republic and Switzerland.

Countries that seem to stress employer responses are Luxembourg, Japan, Portugal, Spain and Turkey, with Japan noting expressly that jobseekers are not required to report on interviews. Spain, for example, specifies that the employer is asked to report the reasons why candidates were not selected. The Netherlands and New Zealand also belong to this group: in these countries the employer is usually contacted after referral, while jobseekers

can postpone any reporting until their next regular interview at the office. *De facto*, this will also be the case with some countries in the previous group, namely in those cases where jobseekers do not comply with the PES request to report immediately after the interview. On the other hand, countries that stress jobseeker reporting, while not normally expecting feedback from employers, are the Czech Republic, Sweden, the United Kingdom and the United States (in some states).

The classifications in Table 5.3 do not consider what seems to be a requirement in all countries: that applicants who have been accepted and sign an employment contract need to report this fact immediately to the employment service, with a view to cancelling any benefit. However, information on failed applications are equally important for the placement service, with a view to improving the matching process.

As to the form that this reporting takes, a number of countries (Austria, Belgium [VDAB], Greece, Japan, Korea, Luxembourg, Portugal and Switzerland) require employers to report the outcome of every referral by filling out standard forms to be returned to the employment office. For jobseekers, reporting requirements seem to be most rigid in the United Kingdom, where they need to list details of every application at each fortnightly signing. Finally, Australia and Canada mention that there are no formal reporting requirements (although Australia considers it best practice for Job Network providers to obtain the relevant feedback), and Italy notes that such information is sought only rarely (in the main, employers are asked to report a hiring).

3.3. Changes since 1999

Given the difficulty of estimating referral rates per unemployed jobseeker, estimates for both 1999 and a recent date are available for only a few countries. Among these, direct referral rates appear to have fallen most in Luxembourg (from about ten to five) and Sweden (from about six to three). By contrast, they increased in Denmark and Korea (from one to over two), Switzerland (from three to seven) and Spain (from about 1.5 to over six). The increased rate of direct referrals reported in Denmark may reflect a policy shift to case-management methods of activation, while in Spain it largely reflects a reported change from sending three candidates per vacancy to sending six candidates per vacancy.

Under the item of feedback on referral outcomes, there are now more countries than in 1999 (11 instead of five), where both the employer and the jobseeker are required to report rapidly on referral outcomes (see Table 5.3, Column 2, as well as item 4d in OECD, 2007). This may be because employment services are now putting more emphasis on follow-up than previously. However, it needs to be kept in mind that little information was obtained in the recent survey as to the extent to which these requirements are followed; indeed, in the previous exercise more information about the *actual* employer response rates had been obtained.

4. Intensive interviews, collective information sessions and individual action plans

Country practices concerning the first intensive interview (often at registration), usually held to obtain more detailed information on the jobseeker so as to allow successful matching, have been noted under Section 1 above. Regular intensive interviews later in the unemployment spell are another important element in the counsellor's "tool kit" for maintaining the client's work focus. They are often coupled with monitoring of job-search

efforts (see above) and discussion/modification of individual action plans where these have been set up (see below). While the average interval between intensive interviews is important, fixed interview schedules are not necessarily preferable. Thus, the interview intensity and frequency need not be identical for all types of jobseekers, in particular where profiling has identified those groups that are likely to engage in successful job search on their own. In practice, the interview frequency is often constrained by inadequate staff/client ratios, *i.e.* overly high caseloads per counsellor.

4.1. *Frequency and length of intensive interviews in the unemployment spell*

A large number of responding countries report that intervals between intensive interviews can vary considerably, depending on counsellor assessment, jobseeker attributes or profiling category (Canada, Finland, Greece, Germany,[30] the Netherlands, Portugal, Sweden, Switzerland and the United States). Other countries stress that there are no rules or guidelines in this respect (Italy, Japan and Poland). Austria and Norway list a *minimum* number of four intensive interviews per year, implying the possibility that some clients have more frequent interview contacts, while in Spain varying practices add up to an average number of six interviews per year. In Ireland, clients receive on average 11 "interventions", starting at three months unemployment, up until they have been either placed in employment or have completed a labour market programme and are considered job ready; however, it is up to the PES counsellor how many of these are interviews, phone calls, letters, etc.

By contrast, a fixed schedule of intensive interviews during the unemployment spell is mentioned by ten countries: every two weeks in the case of the Czech Republic and of fortnightly signings in the United Kingdom; at least once a month in Slovakia and Switzerland; every six weeks in New Zealand; every two months in Luxembourg; and every three months in Denmark, Hungary, Norway and in the case of the *13-week reviews* in the United Kingdom. In addition, Korea has made its previous two-week schedule more flexible: interviews are now fixed at between once a week and once every four weeks, depending on jobseeker category. Australia also cites fixed schedules that vary by jobseeker category and unemployment duration (for example, four times in the first year for Intensive Support clients, but 14 times in the second year). Further, France and the regional placement agencies in Belgium note that intensive interviews set in after an unemployment duration of three and six to nine months, respectively, and then usually occur on a monthly basis.

Based on the available evidence, it can be concluded that Belgium, the Czech Republic, France, Germany, the Slovak Republic, Spain, Sweden, Switzerland and the United Kingdom reach a standard of at least five intensive interview-equivalent contacts per unemployed client per year.[31] Australia (when calculating interviews on the basis of a two-year unemployment spell), and Korea after its recent PES reform, can probably be added to this group. This set of countries is followed by another group with on average four intensive contacts annually that includes Austria, Denmark, Hungary and Norway. By this account, over half of all review countries have four or more intensive contacts annually.[32]

The duration of intensive interviews varies again considerably, not only between but also within countries. The most typical reported duration is 30 minutes, although countries are likely to note that the actual duration depends very much on client needs and circumstances. The shortest durations mentioned are ten minutes (UK fortnightly signings) and 15 minutes (cited as minimum duration in Canada and the Czech Republic, and as average duration in Luxembourg). On the other end of the spectrum, Finland and Switzerland note that intensive interviews can last up to 1½ hours.

4.2. Voluntary interviews

A majority of countries note that no information is available on the proportion of intensive interviews that take place upon the request of unemployed clients (countries report, for example, that "the PES booking system does not distinguish between voluntary and non-voluntary interviews"). Austria, France, Luxembourg, the Netherlands, Norway and the Slovak Republic report that the proportion of such interviews is not significant; Luxembourg, for example, reports only about 200 such interview requests per year, which corresponds to no more than 2% of the unemployed stock. It would seem, however, that jobseekers should have an interest in requesting meetings with their counsellor, if only to update their personal file, for example in case they have acquired a new qualification.

Replies from Belgium, Canada, Greece, Ireland, Japan, Korea, Portugal, Spain and the United Kingdom indicate that a certain number of voluntary interviews are indeed occurring. Belgium (FOREM) notes that 20% of interview time is reserved for jobseeker requests. Japan lists as recurring themes of such meetings help in CV writing and job search and interview training. Spain mentions the wide offer of guidance services, including those of non-profit organisations collaborating with the PES, and the large number of intensive interviews at these services requested by jobseekers. The United Kingdom has calculated that over half of JSA recipients arrange a voluntary meeting – perhaps a surprising piece of information in view of the tight mandatory scheduling.

Altogether, however, the replies seem to confirm that on average voluntary contacts are not very frequent and that PES scheduling is necessary to maintain intensive contact with unemployed clients.

4.3. Collective information sessions

Employment services can ask jobseekers to attend collective information sessions, to inform them of their rights and responsibilities, familiarise them with PES services, including self-service facilities and, more generally, help maintain the client's work focus. Collective sessions can save valuable staff resources, since the provision of certain information and other services does not necessarily require one-on-one encounters between jobseekers and counsellors. Information sessions can also be combined with, or lead up to group training sessions on job-search and interview techniques.

Regarding the frequency and content of collective information sessions, ten countries report participation of jobseekers in at least one obligatory information session during a given year, often early in the unemployment spell (Austria, the Czech Republic, Finland, Japan, Korea, Luxembourg, Portugal, Sweden and Switzerland), or at a certain duration of the spell (Belgium [FOREM]).

Next, Greece, New Zealand, Norway, the Slovak Republic and Spain report that a significant number of jobseekers attend collective information sessions, if directed (or strongly encouraged) to do so by their PES counsellors. In New Zealand, new benefit claimants are encouraged to attend the WRK4U (Work for You) seminars, which provide information on job-finding techniques and are meant to convey the general message that work is available and should be considered ahead of benefit payment. By contrast, a complete absence of collective sessions, or their very rare occurrence, is reported by Italy, Turkey and the United Kingdom. The replies by the remaining countries imply that such sessions exist, but are impossible to quantify, with participation either voluntary or obligatory only for certain individuals or sub-groups. In Canada, for example, clients are obliged to participate once this is laid down in their

return-to-work action plan, while in the United States only clients profiled as likely to exhaust benefits need to attend orientation sessions at one-stop career centers.

Most countries that reported on the content of collective sessions refer to job-search and interview techniques. The Czech Republic notes that, in addition to one information session at the start of unemployment, jobseekers are required to attend Job Clubs (group training sessions in job-search techniques) after three or six months of unemployment. Australia, Belgium (FOREM), Canada, Finland, Greece, Ireland, Japan, Korea, New Zealand, Poland and the United States also mention the holding of job-search training sessions, which are often obligatory or strongly encouraged.

In addition, Austria cites collective sessions for women returnees, the Czech Republic reports on meetings focusing on competency assessment, and Finland and Sweden hold information sessions on planned training courses. Further, Finland and Greece organise sessions dealing with enterprise start-up, Hungary offers courses for disabled persons, and Korea has set up confidence-building modules. The report from Hungary is also interesting since it states that collective sessions are usually requested by employers for candidate selection.

A few countries gave information on participation levels, although it is not always clear whether voluntary or in principle obligatory sessions/courses are meant. In New Zealand, the large majority of newly registering unemployed participate in the WRK4U seminars noted above, while approximately 30% of the unemployed stock participate in the IN2WRK programme, an intensive one-week course for people who need more intensive job-search support. Belgium (FOREM) reports a participation rate of about 50% for its voluntary sessions, distinguishing between a response rate of 15 to 20% to a general mailing on the one hand, and of 80 to 90% after direct contact with a counsellor, on the other. Luxembourg reports a participation rate of 50% "upon convocation". In Spain, the same proportion of persons participate in collective sessions after having gone through an intensive interview (further broken down into 20% opting for job-search skills; 10% for interview techniques; and 8% attending self-employment support training), while Korea notes that about 30% of jobseekers advised by their counsellors to attend a session or programme actually do so. Participation rates in the Czech Republic and Poland, with 10% and 4% respectively, are lower.

4.4. Participation in individual action plans

Setting-up individual action plans with unemployed clients has become an increasingly important element of activation strategies. Their name may vary (guidance plan, job-seeking agreement, activity agreement, etc.), but in each case an individual action plan is a written document to be signed by both parties, describing the jobseeker's situation, laying down certain actions to be taken by the client and listing commitments by the employment service.

Almost all responding countries now mention the establishment of some sort of individual action plan, sometimes for the totality of unemployed inflows, sometimes destined for particular target groups. The main exception is Turkey where no such plans are prepared. The replies imply that they are also rare in Poland and the United States. They are voluntary in Canada, the Czech Republic (except for youth), Japan, and were until recently voluntary in Luxembourg, but are obligatory – by law, if not always in actual practice – in all remaining countries.

There are wide differences as to the moment in the unemployment spell when an individual action plan is created (Table 5.4, Column 2). In Australia, the Activity Agreement

is created at the initial registration with Centrelink, and Italy notes as well that in many PES offices individual action plans are established at initial registration. In seven countries, according to existing guidelines or regulations, individual action plans are set up within a week to a month after registration (Austria, Germany, France, Greece, Hungary, Sweden and the United Kingdom). In New Zealand, as well, they are usually set up within a week, although the legal deadline for adults is 13 weeks. The target date is three months in the Slovak Republic and Switzerland (as well as for youths in the Czech Republic, Luxembourg and Portugal); five months or less in Finland (the national target is now set at one month);

Table 5.4. **Intensive interviews and individual action plans**

	Intensive interview schedule during the unemployment spell	Duration of unemployment when an individual action plan is created
Australia	1st year: four interviews; 2nd year: up to 14	At initial registration
Austria	At least every three months	Within one month after registration
Belgium	Flanders: every month, starting at or before six to nine months of unemployment	Flanders: after six to nine months
	Wallonia: every month, starting at or before two months (youth) to seven months (adults) of unemployment	Wallonia: after two months for youth, before seven months for adults
Canada	Not specified; all interviews are voluntary	Not specified (voluntary)
Czech Republic	Usually twice in a month	Within two to three months for youth; within six months for adults (voluntary)
Denmark	Every three months	After six months for unemployed under 30 and over 60; after nine months for others
Finland	By mutual agreement; more frequent for youths	After five months at the latest; target now set at one month
France	Variable practice in the first three months; at least monthly thereafter	Usually within five days (up to 2007, eight days)
Germany	Six per year (estimated average)	Usually within ten days
Greece	By mutual agreement, as laid down in IAP	Preferably within a week
Hungary	Every three months	Shortly after registration
Ireland	Estimated at three to four on average, between three and twelve months of unemployment	At three months
Italy	Not specified	At initial registration or during first intensive interview
Japan	Not specified	Not specified (voluntary)
Korea	Variable, from once a week to once every four weeks	Two weeks after registration
Luxembourg	Every two months	Within three months for youth; within six months for others (obligatory as from 2007)
Netherlands	Wide variation at CWI; more intensive at contracted providers	CWI "reintegration advice" set up for hard-to-place clients within one month
New Zealand	Every six weeks	Usually in a week
Norway	At least every three months	Obligatory only for certain categories (the vocationally disabled; those in need of training)
Poland	Not specified	Only applied to young persons who recently left school
Portugal	Not specified (depends on individual action plan)	Within three months for youth and six months for adults
Slovak Republic	At least once a month	Within six months
Spain	Six per year	At six months for youths and twelve months for adults
Sweden	Every six weeks on average	Within 30 days of registration
Switzerland	On average once a month	After three months at the latest
Turkey	Not specified	No practice of action plans
United Kingdom	Jobseeker reviews every two weeks; more intensive reviews every three months	Within two weeks
United States	No fixed schedule; much variance by state	Only in a minority of cases; no defined duration

Source: Compendium of national replies to the OECD Secretariat questionnaire on "Interventions in the Unemployment Spell".

and six months for youths in Denmark and Spain and for adults in the Czech Republic, Luxembourg and Portugal. It is nine months for prime-age unemployed in Denmark and for all adults in Spain.

In Belgium, the situation varies by region: while in Flanders the action plan is set up after six to nine months, depending on age and educational level, the time frame for Wallonia is two months for youth and (up to) seven months for adults. In the Netherlands, where the bulk of employment services is outsourced to private providers, the situation is even more varied: first, the CWI puts proposals for action into its reintegration advice for clients that are not considered job-ready, and second, many private providers subsequently conclude a detailed agreement with jobseekers about the job-search efforts expected from them.

There is little information on the content of individual action plans, but if such plans are prepared in the initial phase of unemployment, they usually specify availability requirements as well as job-search activities and strategies. An action plan at a later stage in the unemployment spell will tend to warn that at a certain point in time, if no employment has been found, the client will or may be placed in an ALMP.

Importantly, there may be some discrepancy between PES guidelines requesting the establishment of individual action plans on the one hand, and the actual capacity of PES offices to establish such plans with all newly registered unemployed and follow up on them efficiently, on the other. Based on available information from evaluations and other literature, Germany, Greece and Hungary are some (but probably not the only) examples of countries that have found it difficult in the past to implement existing guidelines in this respect (see WZB/Infas, 2006; NAP Greece, 2004; NAP Hungary, 2004).[33]

Concerning the frequency of interviews for reviewing or revising the individual action plan, most countries note that several such interviews are held in a given year, with four sessions being the most common figure. Since most countries now run individual action plans, they tend to include their review in all or most intensive interviews, so country replies referring to action plan interviews tend to overlap with their indication of the frequency of intensive interviews overall.

4.5. Changes since 1999

Compared with the 1999 OECD survey, the number of countries with a fixed schedule of jobseeker interviews has increased from five to ten (or even to twelve, if Australia and Korea which have fixed schedules varying by jobseeker category are included). In those countries that reported a number of annual interviews both in 1999 and 2005, their average number increased by one-quarter. The fact that individual action plans now tend to be established early in the unemployment spell and are continuously reviewed, seems to explain part of this increase. Little change was observed as to the average length of interviews and the (usually low) frequency of voluntary interviews initiated by jobseekers.

As to the set-up of individual action plans, these have become more widespread and have a tendency to start earlier in the unemployment spell than in 1999. While the 1999 survey found four countries that established an action plan for all unemployed within a month of initial registration, this group includes at least ten countries in 2006. By contrast, individual action plans were not known or rare in seven countries in 1999, but in only three countries in 2006. The content of action plans remains varied; they have a focus on job-search activities in a large number of cases, but may also include proposals for referral to ALMPs.

5. Referral to active labour market programmes (ALMPs)

Substantial cross-country differences persist in both the overall level of spending on active labour market programmes (ALMPs) and in their composition. However, a number of recent macro-econometric studies on the impact of ALMP spending on aggregate unemployment have found that active programmes speed up re-employment for benefit recipients and other jobseekers. Further, microeconomic studies have identified the relative returns to various types of programmes, where job-search assistance and continuing vocational training (after taking account of the "lock-in effect"[34]) often rate well, while public job creation programmes are often disappointing.[35]

These findings have led to suggestions – expressed among others in the Restated OECD Jobs Strategy of 2006 – that in situations of longer unemployment duration, compulsory participation in active labour market programmes can help improve employment prospects. Also, referral to ALMPs under threat of benefit sanctions has been shown to lead to increases in the hazard rates off benefit into work around the formal deadline for programme entry – mainly through so-called "motivation effects" (for further study, see Bassanini and Duval, 2006; Betcherman, Olivas and Dar, 2004; Kluve, 2006; OECD, 2005; and OECD, 2006a).[36]

5.1. *Compulsory or voluntary entry*

Table 5.5 takes up the issue as to whether countries provide for obligatory or voluntary entry into ALMPs. The table shows, *inter alia*, that countries with obligatory programmes for those unemployed passing a certain threshold in their unemployment spell are Australia (after six months for ages 18 to 49), Denmark (nine months for ages 30 to 60), Sweden (28 months for all) and the United Kingdom (22 months for ages 25 to 49). Two of these countries have a lower threshold for youths: Denmark at six months, and the United Kingdom at ten months.[37] Denmark also has a six-month threshold for older workers over 60 years of age.[38]

In addition, Finland indicates that offers usually start at 12 months for adults and three months for youth, and they tend to be obligatory when the respective activity is contained in the client's individual action plan (which is often the case). The Dutch response presents the contracting-out of unemployed persons, judged to be at some distance to the labour market, to private and community providers as a functional equivalent of an active programme. And Germany adds that all unemployment assistance ("unemployment benefit II") recipients below the age of 25 are immediately referred to an active labour market programme, if no jobs are available for them.[39]

Thirteen other countries (Austria, France, Hungary, Ireland, Italy, Luxembourg, New Zealand, Norway, Poland, Portugal, Spain, Switzerland and regional organisations in Belgium) note that, while there is no general obligation to enter programmes at a certain stage in the unemployment spell, benefit recipients nevertheless need to comply with a referral to an ALMP by a PES counsellor. In Switzerland, for example, referrals targeting the low-skilled are often decided at six months duration of unemployment and they are binding for the target group. By contrast, seven countries, generally those with relatively short-duration UI entitlements, indicate that participation in ALMPs is not compulsory.

Little information is available of the percentage of unemployed reaching the month when an obligation to participate in an ALMP takes effect. In the United Kingdom, only 11% of the inflow reaches the New Deal "gateway" period, and an even smaller share goes on an active measure ("option") four months later. In the Netherlands, about one third of the CWI inflow is categorised into "phases" (profiling groups) two to four that are soon transferred

Table 5.5. **Participation in active labour market programmes (ALMPs)**

	Compulsory participation after some set unemployment duration (Yes/after how many months/No)	Compulsory when referred by PES (Yes/No)	Continuing job-search requirement (R) and verification (V) during participation in ALMPs
Australia	Yes, six months for all aged 18 to 49	Yes	R, V
Austria	No	Yes	No
Belgium	No	Yes	R, V (VDAB)
Canada	No	No	No
Czech Republic	No	No	R, V
Denmark	Yes, six months for unemployed under 30 and over 60; nine months for all others	Yes	R
Finland	No	Yes, if a measure is contained in an individual action plan	R
France	No	Yes	No
Germany	No, but unemployment assistance (UBII) recipients below age 25 can be referred immediately	Yes	Variable requirements
Greece	No	Participation "strongly encouraged"	No
Hungary	No	Yes	No
Ireland	No	Yes	No
Italy	No	Yes	No
Japan	No	No	No
Korea	No	No	No
Luxembourg	No	Yes	No
Netherlands	Yes, one month/six months (start of "reintegration trajectory")	Yes	No reply
New Zealand	No	Yes, if a measure is contained in an individual action plan	Variable requirements
Norway	No	Yes	No
Poland	No	Yes	No
Portugal	No	Yes	No
Slovak Republic	No	No	R, V
Spain	No	Yes	No
Sweden	Yes, at 28 months at the latest	Yes	R, V
Switzerland	No	Yes	R, V
Turkey	No	No	No
United Kingdom	Yes, ten months for youth, 22 months for adults 25-49	Yes	No
United States	No	No	R and possibly V in some states

Source: Compendium of national replies to the OECD Secretariat questionnaire on "Interventions in the Unemployment Spell".

to an external provider. For the other countries, rough estimates were calculated based on the description of regulations and (LFS-based) shares of total unemployed by duration group. These estimates were about 15% in Sweden and as high as a quarter or more in Australia, Denmark and Finland. Further research would need to be undertaken to substantiate these estimates by means of data on clients' actual enrolment rates in ALMPs.

5.2. *Job-search verification during participation in ALMPs*

To some extent, it may be considered advisable to leave participants in ALMPs time for continuing job search, and for the PES to verify that job search, since take-up of market-sector jobs would usually have priority over publicly-subsidised employment programmes.

This would suggest that active programmes should not be full-time activities. Exceptions might be certain types of training courses that should not necessarily be terminated before graduation because of a job offer.

In response to the corresponding question as to the extent to which unemployed participants in training and job creation programmes still have to prove continuing independent job search or attend PES interviews, the largest group of countries (16) indicates that such persons were exempt from job-search obligations. This group includes four countries where the unemployed do not have such an obligation in the first place, and 12 where that obligation was apparently waived for them. Characteristic are responses to the effect that ALMP participants "(…) should rather focus on the successful conclusion of the measure" (Germany), or "(…) no longer have a commitment of any kind to the placement service" (Portugal). By contrast, in seven countries (Australia, Belgium [VDAB], the Czech Republic, the Slovak Republic, Sweden, Switzerland and some US states) job-search requirements and verification seem to continue more or less unchanged. In a further four countries, the principle of job search is upheld, but no regular reporting to the PES seems to be required. In sum, most countries waive the job-search test for participants on ALMPs.

5.3. Changes since 1999

OECD (2001a), based on the 1999 survey, already mentioned Denmark, Sweden and the United Kingdom as having obligatory programmes for unemployed passing a certain threshold in the unemployment spell (although the threshold for Sweden was defined differently than in the current exercise). Australia was added to this group of countries because the information it provided was much clearer than before concerning the obligatory character of participation. Further, in the Netherlands a system is now in place where large numbers of unemployed are involved in "reintegration trajectories" managed by private providers. By contrast, in Luxembourg and Switzerland which were presented as part of the group in 1999, the obligatory character of ALMPs seems to have been abandoned. Lower duration thresholds for youth have remained an important characteristic. Finally, the number of countries reporting that requirements and verification of independent job search continues during programme participation appears to be on the rise.

6. Costs of activation

The interventions in the unemployment spell described in this chapter aim to speed up job-finding through a focus on activating the unemployed, as opposed to treating individuals as passive benefit recipients. However, the issue arises whether the benefits of these interventions exceed their costs. Evaluations can as a first step consider whether interventions are *cost-effective*, in terms of savings in benefit expenditure (due to earlier exits from unemployment) relative to their *direct budget costs*.

The OECD Database on Labour Market Programmes provides some information regarding these direct budget costs.[40] *A priori*, stronger activation of unemployment benefit recipients requires higher spending on PES offices and staff, since appropriate staff-client ratios are necessary to ensure density of contacts, quality of interviews, job-search monitoring, tailor-made referrals to vacancies, etc. The staff and related costs of implementing interventions during the unemployment spell appear in Category 1 (*PES and administration*) of the database. For several reasons, however, these data provide at best a partial measure of the cost of the type of interventions described in the chapter. First, Category 1 expenditure typically includes a variety of other cost items such as buildings and related overheads and

computer systems; and expenditure related to benefit administration, advertising, statistics, financial control, etc. Next, although Subcategory 1.1 (*Placement and related services*) in principle identifies spending on employment services with greater precision than Category 1, in practice this subcategory and Subcategory 1.2 (*Benefit administration*) include only expenditure that has been separately identified.[41]

With these caveats in mind, it can be noted that from 1985 to 2002, the average share of Category 1 in total "active" programme spending was about 25% (it is currently about 27%, following some increase in this share in the Czech Republic, Denmark, Germany, Korea and New Zealand – see Table H of the Statistical Annex of this publication).

Figure 5.1 examines the cross-country relationship between expenditure on Category 1 (*PES and administration*) and Subcategory 1.1 (*Placement and related services*) and spending on other active labour market programmes (ALMPs).[42] In four countries (Australia, Japan, the Slovak Republic and United Kingdom), expenditure on Subcategory 1.1 (*Placement and related services*) alone is higher that on all other ALMPs; in three more countries (Canada, Czech Republic and Norway), expenditure on Category 1 as a whole is higher.

Figure 5.1 also shows that in many countries spending on Category 1 is low compared to total spending on active programmes. These countries could raise their level of Category 1 spending to the highest levels currently observed at an additional cost of about 0.2% of GDP. This additional cost might be expected to permit the implementation of a regime of similar intensity to that of the highest spender, the United Kingdom, which schedules a range of interventions including (for unemployment beneficiaries) brief personal interviews every two weeks. At the same time, five European countries are spending over 2% of their GDP on passive measures and a further six spend over 1% of GDP. Thus, in these countries the adoption of a relatively intensive regime will be cost-effective if it reduces the average duration of benefit spells by 10 to 20% – assuming that the reduction in benefit durations is not counteracted by increased churning, nor achieved primarily through entry to ALMPs which themselves are expensive.

Plausibly, some types of intervention are cost-effective while others are not.[43] But relatively few evaluations have directly estimated the cost-effectiveness of specific interventions. This is due partly to the fact that most countries do not separately budget the interventions on a regular basis. Also, it is not possible to fully weigh costs against benefits without broader measures of impact, which are often not available.[44]

Job-search training courses have often been found to be effective, especially given their comparatively low cost. This chapter's supplementary material (at *www.oecd.org/els/employmentoutlook/2007*) shows recent positive results in terms of reduced inflows to benefits from work-focused information seminars for potential new claimants in New Zealand. OECD (2005) refers to a number of other findings, including reductions in the average duration of benefit spells after the introduction of stricter job-search requirements (now published as Borland and Tseng, 2007, for Australia; Klepinger, Johnson and Joesch, 2002, for the US State of Maryland); and long-term reductions in the incidence of unemployment after participation in compulsory "Restart" interviews in the United Kingdom (Dolton and O'Neill, 2002). By contrast, insignificant impacts on the job-finding rate emerged from an experiment in the Netherlands involving considerably increased staff/client ratios, and from additional verification of reported job-search contacts by unemployment benefit claimants in the United States prior to the first benefit payment (Gorter and Kalb, 1996; Ashenfelter, Ashmore and Deschênes, 2005). More recently, a major review of 140 evaluation studies by Kluve (2006) found that programmes

Figure 5.1. **Expenditure on labour market programmes, 2004**[a]

Percentages of GDP
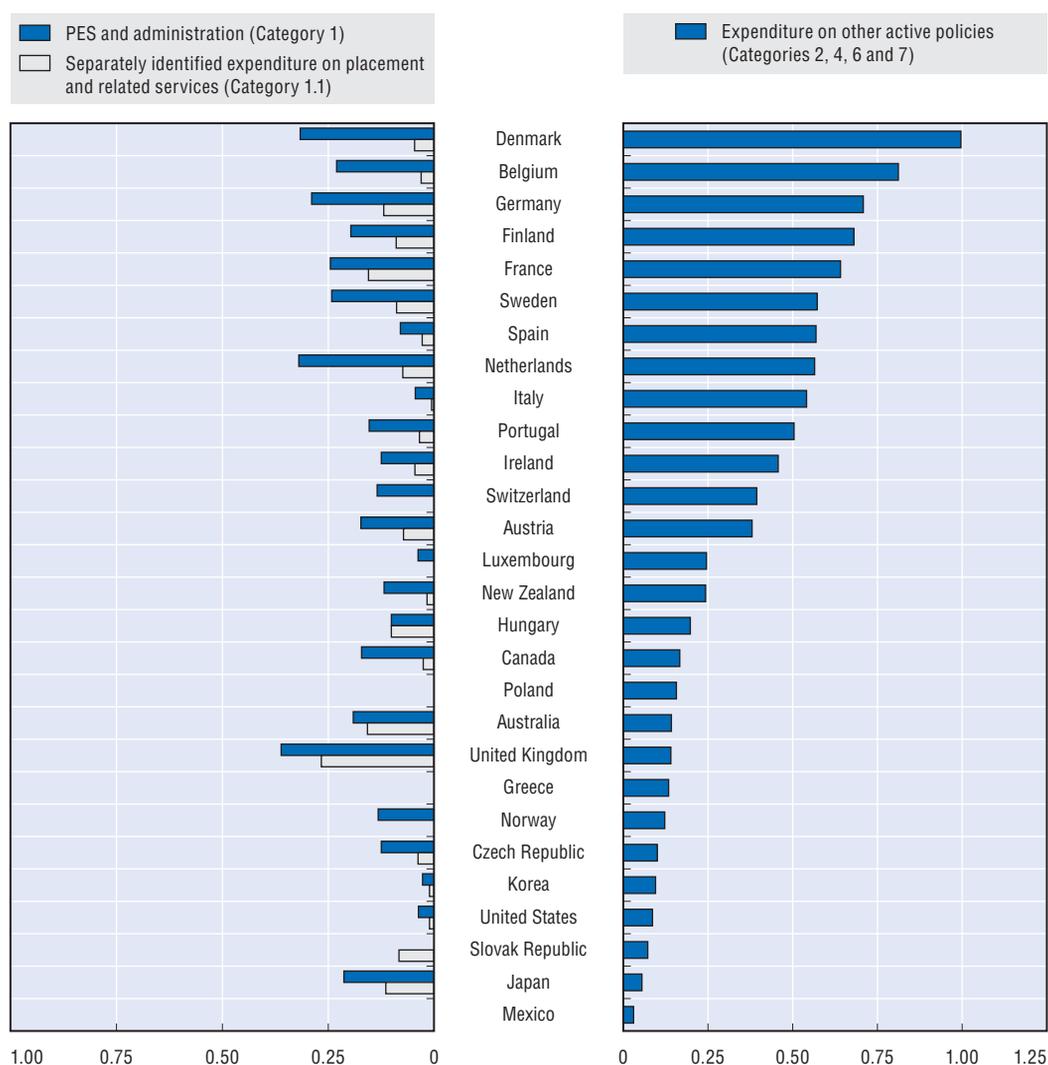
a) Fiscal years in some cases: see the source for further technical notes.

Source: OECD (2006a), *OECD Employment Outlook*, Table H of the Statistical Annex, OECD, Paris.

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summarised as "[PES] Services and Sanctions" were associated with a particularly high probability of yielding positive employment effects (this chapter does not take up the issue of benefit sanctions).

Recent studies on the efficiency of specific interventions have become available from Denmark, the Netherlands and the United Kingdom.

- For Denmark, Graversen and van Ours (2006) report an experiment where the programme for the treatment group included early participation in a two-week job-search training course, followed by an intensive interview schedule, and to be later followed (if unemployment continued) by participation in a full-time work-experience or training programme. The control group was subject to much less intensive job-search assistance and monitoring, fewer interviews and a longer time period (12 months) before the expected start of a work or training programme. The job-finding rate of

the treatment group was 30% higher, on average. An analysis of this programme's cost-effectiveness is currently underway.

● For the Netherlands, van den Berg and van der Klaauw (2006) report a controlled social experiment in 1998 and 1999 where the treatment group had an interview every four weeks at the local office of the unemployment insurance (UI) agency (which monitored job search and compliance with an individual action plan). The cost of the intervention was known since the UI agency received a lump-sum "counselling and monitoring" fee per individual. On average the transition rate to employment of the treatment group was about 6% higher, which was enough to generate (under reasonable assumptions) a positive net return from the treatment; but at the same time, due to the small sample size of the experiment, the hypothesis of no treatment effect and a negative net return could not be rejected.

● For the United Kingdom, Eccles and Lloyd (2005) and Middlemas (2006) report pilot evaluations of five alternative intervention regimes during the first 13 weeks of a benefit claim, where the regular intervention regime is a fortnightly job-search review of about nine minutes conducted in person at the local employment office. The alternative intervention regimes were: fortnightly telephone job-search reviews; random contact only during the first 13 weeks; random contact only during the first six weeks; shortened job-search reviews (checking of identity, checking that no work had been performed, and taking signature); and group signing reviews. Flows off benefit during the first six to ten weeks of a unemployment spell were on average about one-sixth lower for the first treatment and one-third lower for the second and third treatments (in later weeks, the survival rates for the treatment and control groups tended to converge) but little different for the fourth and fifth treatments. Freud (2007) reports that the overall cost of the regular interventions regime for the unemployed is about GBP 275 million per year[45] and that each of the first three treatments described above would allow administrative savings of about GBP 30 million, but the money saved would be more than wiped out by the additional benefit costs (up to GBP 100 million). He concludes that "the existing regime is close to optimal value for money".

In sum, many studies show positive employment effects of intensive intervention measures. Recent experience in France illustrates the potential high cost of a more intensive intervention regime, while research has generated conflicting evidence about impact (Box 5.1). There is a case for conducting more evaluations regarding the cost effectiveness of measures, which would include both the staff and operational costs involved and the (expected) benefit savings.

Box 5.1. **Intensified PES intervention in France since 2001**

In France, the *Plan d'aide au retour à l'emploi* (PARE) agreement in 2001 introduced an individual action plan (*Projet d'action personnalisé*, PAP), which was implemented through an intensive interview at the start of the unemployment spell, with further interviews taking place at least every six months thereafter. Under the agreement, the unemployment insurance organisation (UNEDIC) financed new staff in the placement agency (ANPE) to implement 1.5 million PAPs annually for UI beneficiaries at a total cost of about EUR 200 million. UNEDIC also funded increased provision of specialised counselling and guidance services, implemented largely by external providers, at a cost of EUR 270 million. Further, the French state financed similar services for other registered unemployed (many of them on unemployment assistance or social assistance benefits). Thus, the new intervention regime cost about EUR 1 billion annually in total. The additional resources allowed the implementation of about 3 million new PAP per year which (given the duration structure of unemployment) implied an average cost of about EUR 300 per participant-year (ANPE, 2001; Official Experts, 2004).

Box 5.1. **Intensified PES intervention in France since 2001** (*cont.*)

ANPE increased its total staff from 16 000 in 2000 to 28 000 in 2004 (Jeanneau, 2006). In the 18 months to June 2001, the ANPE had conducted 1.8 million jobseeker interviews: in the 18 following months this had increased to 8.2 million (Souvet, 2003). Participation in additional services delivered by or via the ANPE (such as workshops and skills assessments) tripled from 780 000 (23% of registered jobseekers) in 2000 to 2 385 000 (65% of registered jobseekers) in 2003 (Official Experts, 2004). Thus the PARE/PAP led to a sharp increase in the intensity of interventions.

Crépon, Dejemeppe and Gugand (2005a, b) evaluated the impact of four specific services offered by the PARE/PAP (job-search support implemented by ANPE, and three counselling and guidance services implemented by external operators), using administrative data for jobseekers who entered the register from July 2001 to September 2003 and a timing-of-events estimation method. Among the specific services involved, the "job-search support" programme increased rates of job entry particularly during the three months of participation. After 12 months, the employment entry rate of its participants was 30% compared with 22% for non-participants (these rates do not include employed individuals who initially exited due to illness or programme entry or without declaring the reason). This programme also had a large estimated impact on unemployment recurrence: the percentage who were unemployed a year after initial entry to a job was 24% among those had received employment support before job entry and 43% among a comparison group that had not received the service. Although these estimated impacts are large, they remain non-experimental and may be biased by variation (across individuals, or through time for a given individual) in unobserved characteristics.

The introduction of the PARE/PAP in 2001 coincided with a cyclical downturn in the economy. However, Debauche and Jugnot (2007) estimate that the rate of stable exits from unemployment (defined as exits for at least six months) in the early stages of implementation between July 2001 and early 2003 was even lower than would be expected on the basis of previous cyclical experience. They conclude that, despite the apparent impact of certain specific services, the PAP did not seem to have increased the overall average rate of return to work among registered jobseekers. However, at the time when the PAP was introduced, benefit degressivity was abolished (*i.e.* the UI replacement rate no longer declines with the duration of the unemployment spell, prior to exhaustion), and this could have counteracted any positive impact from the PAP itself. Thus, evaluations of the PARE/PAP schemes fail to provide a clear conclusion.

In 2005, the ANPE piloted in three regions the *Projet personnalisé d'accès à l'emploi* (PPAE), which has now replaced the PAP. During 2006, monthly interviews with all unemployed registered for four or more months were progressively introduced, approximately doubling the total annual number of interviews as compared to 2005. Jobseekers are allocated to three categories ("accelerated job search", "active job search" and "assisted job search") which receive different types of support and interviews are now personalised (*i.e.* the client sees the same ANPE counsellor each time). Cooperation between the placement and the benefit agency has been reinforced: ANPE contacts are in some cases supplemented by obligatory contacts with the UNEDIC (ASSEDIC, at local level), and a unique electronic jobseeker dossier, used by both actors, has been introduced to facilitate effective cooperation. Further use of pilot experiments for evaluating the performance of different intervention regimes is also intended (Gauvin, 2007).

Plausibly due to the increasing effectiveness of these policies, France's ILO unemployment rate has been falling since 2005. However, part of the fall in registered unemployment arises from the "mechanical" impact of the policies (*e.g.* towards the end of 2006, about 1.6% of registered jobseekers were being struck off the register monthly due primarily to non-attendance at interviews, up from the 2002-05 average of about 1.2%).

Conclusion

The chapter shows that countries use a variety of instruments to "activate" jobseekers. This finding raises several key policy issues. First, the fact that job-search monitoring is definitely on the rise in member countries and that verification procedures have become stricter, indicates a "work-first" approach, with its clear advantages in terms of more rapid re-employment. However, such an approach involves some risk that jobseekers may have to accept jobs too quickly, resulting in lower wages or more rapid return to unemployment. In this context, the objectives of improving job-match quality and job stability may deserve greater attention.

Second, the chapter points out large variations as to when benefit entitlement starts. Some countries seem keen on registering jobseeker details as early as possible so that matching activities can start, while others seem to put less importance on this and continue to have sometimes considerable delays between the start of benefit entitlement and a first intensive interview. Thus, despite the diffusion of a "mutual obligations" rhetoric, there is no common view as to the importance of avoiding benefit payment at a time when the other side of "mutual obligations" is not fully in place. Further analysis of the pros and cons of each approach would be helpful.

Another issue deserving greater attention is whether there should be strict government or PES headquarter guidelines determining the nature and frequency of employment office interventions, or whether there should be more freedom for local employment offices and/or counsellors to shape the type of interventions, depending on client and local labour market characteristics. This issue arises, for example, when determining the intervals between client interviews or the number of job-search actions to be reported by them.

Further, while the Restated OECD Jobs Strategy recommended that effective active labour market programmes be made compulsory after a certain length of joblessness (which may differ across groups), a number of countries seem to have problems with such a policy approach. Only a small minority of them can be considered to have obligatory programmes for benefit recipients passing a specified unemployment duration. This may be considered surprising in view of evaluation findings to the effect that such a policy tends to speed up re-employment for benefit recipients. However, countries may also have good reasons for a more individualised approach, maintaining the obligatory character of participation in ALMPs, but leaving the exact timing to the employment counsellor, or to some mutual agreement. In any event, unemployed clients should be aware that, when their unemployment drags on, interventions are likely to become more intensive.

More fundamentally, there is an obvious need for further empirical analysis to identify good practices and better gauge what works and under what circumstances. As part of this work, additional information is needed on several other components of a successful "activation" approach that have been little discussed in this chapter. First, related to the discussion of cost effectiveness in Section 6, information is needed on whether countries have reached the staff/client ratios needed for the contact density and intervention frequency and quality that are part and parcel of activation strategies.

Next, benefit eligibility criteria and their enforcement are an important element of employment service activities, which has not been touched upon in this chapter. For example, "suitable job" criteria not only determine the nature of PES referrals to vacancies, but can also be used to assess clients' availability for work, in the sense that persons who appear unwilling to take up a job offer for particular reasons may be considered as not available for work and

therefore be sanctioned. Indeed, an appropriate definition of work-availability is one element of well-designed activation strategies, and in this context benefit sanctions (temporary reductions, suspensions or definite cessation of benefit payments) are a last-resort mechanism in the counsellor's "tool-kit" for enforcing the range of requirements imposed on jobseekers. Information on sanction frequency and sanction regimes, as well as the relationship between these characteristics and the exit rate from unemployment, is therefore needed to complete the analysis of countries' activation strategies.

Further, the impact of activation measures for unemployment benefit recipients can be undermined by poorly-controlled access to non-employment or safety-net benefits (for the disabled, social assistance beneficiaries or lone parents for example), since some of the long-term unemployed enter benefit schemes that facilitate inactivity. There is thus a case for extending the activation principle, first developed for the unemployed, to some recipients of benefits that have typically not been conditional on availability for work. As in the case of unemployment benefits, data are needed on staffing in safety-net benefit administrations, benefit eligibility criteria and sanction patterns.

Finally, the question arises as to whether the material that has been presented in this chapter and the additional material to be collected can be used to construct a composite indicator of activation. This chapter has not summarised the wealth of information emerging from country replies to the OECD questionnaire in a way to immediately allow an assessment as to which countries are closest to an "activation" stance. It should however be possible in the longer-term to achieve a composite indicator on the basis of the available information reflected in Tables 5.1 to 5.5 (and spelled out in more detail in the background documentation in OECD, 2007), and supplemented by new information on benefit eligibility and its enforcement.

Any composite indicator of activation would also need to stand the test of relevance under different labour market characteristics. For example, certain procedures (such as registration or compulsory ALMP entry) do not have the same significance in labour markets characterised by short *vs.* long unemployment spells. Other issues emerging in this context are: *i)* if unemployment is high and there are few jobs available, how much real difference do activation strategies focused on the unemployed client make? *ii)* are tight activation measures a more suitable solution *vis-à-vis* loosening labour market rigidities that create barriers to hiring? *iii)* can activation measures be less rigid in contexts of low benefit duration and/or low benefit levels, considering that in these cases there may be less need for other job-search incentives? OECD work on these issues continues.

Notes

1. Employment services have in the past been the subject of many country and thematic reviews by the OECD Secretariat. For example, between 1990 and 2001, the Secretariat carried out country reviews of labour market policies and employment services in 20 OECD countries. Results of these reviews were published in a series of country studies (the last of which being *Innovations in Labour Market Policies: The Australian Way*, OECD, 2001b), and used for several *Employment Outlook* chapters (OECD, 1995, Chapter 3; OECD, 2000, Chapter 4), and separate publications (OECD, 1996a; OECD, 1997; OECD, 2001a). The Secretariat is also currently working on an audit of the public employment service in Luxembourg.

2. The questionnaire was issued in November 2004. A summary of the responses was prepared in 2006, and many countries subsequently sent in further or revised information. Iceland did not reply to the questionnaire. The reply from Mexico has not been used for this chapter, since the country has no unemployment benefit system and a "mutual obligations" approach is therefore of

little relevance. However, replies from Mexico are summarised in a separate background document (OECD, 2007). As to Belgium, the chapter reflects answers sent in separately by the federal PES (ONEM) and the regional placement agencies from Wallonia and Flanders (FOREM and VDAB).

3. In addition, some questions may have been difficult to answer because of conceptual issues, for example because countries do not always have distinct procedures under each of the question headings, and a particular question may not make sense in a specific national context. Finally, country responses may also reflect a misinterpretation of the question or, conversely, the Secretariat, not fully understanding the context, may have misinterpreted the answer. Since the Secretariat did not collect information from independent additional sources systematically and for all countries, various problems of this type will remain in the data. More generally, the summary information below should not be seen as a substitute for information on detailed practices in their national context.

4. Full registration of jobseeker details is, however, expensive and not in all cases cost-effective.

5. This emphasis on options for returning to work as from the very first contact with the jobseeker is, for example, explicitly spelled out in the SUWI Act in the Netherlands (Act on implementation structure for work and income) (MISEP, 2003).

6. To give one example, the reply from Germany noted: "The registration as unemployed is tantamount to the application for benefit, and separate applications are not required".

7. Renewal claims following a short break in the unemployment spell, or any new spells within the same year, may be exempt from the waiting period.

8. New Zealand's "stand-down" period can be as high as ten weeks (depending on previous income and separation payments); however, legislation before parliament currently seeks to reduce the maximum period to two weeks.

9. Waiting periods here refer to cases of involuntary unemployment – all OECD countries normally apply a waiting period to cases of voluntary quit.

10. One indication of the possible lack of depth of the initial assessment of availability is found in Luxembourg, where the SAPDE (personal counselling of jobseekers) branch of the placement service, which offers intensive follow-up to youths after three months and to adults after six months of unemployment, finds that the majority of the clients assessed face multiple barriers which prevent them from taking decisions oriented towards employment (ADEM, 2005). Some degree of ambiguity commonly arises: in the United Kingdom the employment service itself does not usually describe particular client groups on unemployment benefit as "not job ready", but labour market actors and researchers more generally do use this term.

11. In fact, authorities in some countries may not take a social assistance application when a job can be offered immediately. A number of US states, for example, require "applicant job search" or participation in work activities for periods of one to six weeks before an initial welfare payment (TANF) can be made (*http://aspe.hhs.gov/hsp/isp/diverzn/IV3V2.htm*).

12. The UK Jobcentre Plus normally uses this occasion for demonstrating its "better-off" calculation, presenting evidence that return to work will normally be more lucrative than remaining on benefit.

13. The Belgian VDAB defines this interview as "leading to an immediately employable file".

14. This policy is based on the assumption that many claimants sign off from the Live Register within a month, and it would not be worthwhile for the placement service to spend time on them.

15. After the radical restructuring of the Dutch employment service over the past decade, the main actors are the CWI, which represents the remaining public employment service; the social insurance agency UWV, which pays unemployment insurance and disability benefit; and the municipalities, which provide social assistance. The CWI transfers clients profiled as having a large distance from the labour market to UWV and municipalities which, in turn, usually contract out placement and reintegration services to private and community providers (de Koning, 2004; Sol and Hoogtanders, 2005).

16. See IAB (2005) and OECD (2002), Annex 4C, for recent overviews of jobseeker profiling, and the discussion of early identification/profiling instruments in selected OECD countries in OECD (1998).

17. In Australia, while benefit recipients must usually submit a standard form in person, in some instances (for example in remote areas) they may be allowed to report by phone, fax or paper mail, and/or to report less frequently.

18. This requirement applies to benefit recipients who reside within 16 kilometers of their local social welfare office; for others, attendance is quarterly.

19. In addition, unemployment status is usually verified during scheduled interviews.

20. However, these increases are probably related to the wording of the question for the current survey, which explicitly requested information on both retroactive entitlements (for days of unemployment which occurred before the benefit application and/or registration) and waiting periods. By contrast, the number of countries indicating that the placement service tries to place applicants already at the time of initial registration has not changed much (about ten countries).

21. Situations reported from France and the Netherlands in the 1990s, where it was possible to work through a temporary employment agency while not declaring the earnings to benefit authorities, have generally been tackled.

22. Austria and the Czech Republic state that counsellors review documents (lists of employers contacted, employer statements or job application forms, but not on standardized forms), while Finland and the Netherlands do not mention any documentation.

23. Recent legislation in Luxembourg envisages, as from the second half of 2007, laying down job-search requirements in an individual activation agreement (*Convention d'activation individualisée*) for jobseekers who have been registered for six months (three months for youth).

24. While the default number of job-search actions required in Australia is ten per fortnight, the actual number laid down in the Activity Agreement can be lower, but should not fall below four. The default number is usually applied to adult jobseekers in large urban labour markets. Four job-search actions applications per fortnight are expected, for example, from participants in public work programmes or for clients from small regional areas.

25. These differences appear to be correlated with national rates of labour turnover, suggesting there may be some objective basis in the labour market for differences in the national norms in this area. For example, in 2004, the proportion of employees with job tenure less than one year was 23% in the United States and Australia, 19% in the United Kingdom, 16% in Switzerland, and 8% in the Netherlands and Japan (OECD labour market database and European Labour Force survey).

26. This finding is consistent with a review undertaken in 2006 on the basis of OECD Economic Surveys, which showed that, following the initial OECD Jobs Study in 1994, ten countries increased their job-search monitoring procedures (OECD, 2006a, Table 3.4).

27. For example, in *Australia*, vacancies are matched to jobseekers, and jobseekers are subsequently notified automatically of job leads by methods such as email or SMS. Depending on how tight the matching and follow-up procedures are, automatic notifications of this kind could become similar to targeted vacancy advertising. The notifications are recorded electronically and placement results can be recorded against the referrals, so follow-up action is possible. In the *United Kingdom*, there is probably no administrative procedure for recording cases where counsellors take the initiative, so the reported number of almost 30 million referrals in 2004 is likely to include cases of self-referral to semi-open vacancies (*i.e.* where the jobseeker approaches a counsellor for contact details). By contrast, the procedures described for two other countries with high referral rates, Luxembourg and Spain, appear to relate to direct referrals strictly defined.

28. A PES website may display many vacancies that are not directly processed by the PES. In Australia, about two-thirds of the vacancies that can be accessed on the government's "Australian JobSearch" website are listed by private employment agencies or fed through automatically from private job websites, and in the Netherlands 40% are entered directly by private business. However, the intention here is to describe the display and processing of vacancies that have been specifically notified to the PES (or in some cases, have been specifically entered into the database by PES staff, *e.g.* from newspapers).

29. In the 1999 survey, ten countries had actually indicated the proportion of employer feedback reports, which ranged from 40% in Greece to over 80% in Denmark, Norway, Poland and Spain.

30. In Germany, current PES guidelines envisage between three and seven interview contacts per year for recipients of the main unemployment benefit, varying by jobseeker (profiling) category.

31. The large number of countries without a fixed schedule or set number of interviews per year shows the difficulties of a scoring exercice. Avoiding double-counting of time spent on job-search monitoring (item 3a) and action plan review (item 7b/c) during such interviews also poses a problem. In a large number of cases, intensive interviews are used, *inter alia*, for action plan review and discussion of previous job-search activities, while the time spent on each of these two items is difficult to measure. Different from the situation in the 1990s, action plans are now often established already at initial registration or the subsequent intensive interview. When scoring replies to item 5b in the website document (OECD, 2007), it was decided to adjust the number of interviews only on the basis of interview length, *i.e.* score them only partially when they are on average below 30 minutes (as in the case of fortnightly signings in the United Kingdom). *De facto*, the scoring under item 5b implies therefore a degree of double counting with the scoring under items 3a and 7b/c, which is difficult to avoid in the absence of more detailed information (see scores and scoring methodology in OECD, 2007).

32. OECD (2001a) had noted that, on average, "(…) thirty minutes of general counselling every two months with each unemployed person seems a good target". While most OECD countries still fall short of this target, it might be said that about half of them are now approaching it.

33. Complete coverage will be rarely reached and may not necessarily be required, for example in cases where it can be assumed that the current unemployment spell will end in the near future (through an imminent new job start, military service, pregnancy, etc.).

34. The "lock-in effect" occurs when job-entry rates tend to fall during programme participation, due to a decline in job-search efforts.

35. OECD (2005) and OECD (2006a) review international evaluation findings showing long-run positive effects of some training programmes, positive effects of hiring subsides (although these tend to reflect selection bias or be offset by substitution effects, *e.g.* see Boockmann *et al.*, 2007) and little or negative impact of public sector job-creation programmes.

36. On the other hand, such a motivation or programme-avoidance effect could provoke less efficient job matches.

37. The thresholds given for the United Kingdom (22 months/10 months) are those for participation in a New Deal "option", while obligatory participation in a New Deal "gateway period" (assisted job-search) starts at 18/6 months.

38. Beyond the six months/nine months thresholds, Denmark has another cut-off point at 30 months, when UI beneficiaries must participate for the remainder of their benefit period of altogether four years ("full-time activation"). Before that time, measures usually last only one or two months, and are repeated every six months, if necessary.

39. Perhaps surprisingly, EU countries made little reference to duration targets in existing EU employment policy guidelines which ask member countries to ensure that "every unemployed person is offered a new start before reaching six months of unemployment in the case of young people and 12 months of unemployment in the case of adults in the form of training, retraining, work practice or other employability measure (…)".

40. It remains difficult to deduce from these data whether spending on active programmes is effective, because high spending tends to arise in situations of greater problems: either higher levels of benefits which require stronger activation measures to offset their disincentive effects, or higher levels of unemployment for other reasons.

41. In some countries the budget(s) of the main PES organisation(s) is (are) not wholly allocated across these two subcategories. For example, an integrated PES which performs both placement and benefit administration functions may have only one register and computing system, which makes it difficult to cost these functions separately. Also, other types of "active" spending enhance the effectiveness of the direct spending on interventions in the unemployment spell, *e.g.* direct referrals to vacancies depend on work maintaining the vacancy register and relations with employers; and the effectiveness of interventions generally is enhanced by the effective administration of benefit eligibility criteria.

42. Including training, employment incentives, direct job creation and start-up support, but not programmes for the disabled whose participants will less often be targeted by PES interventions in the unemployment spell.

43. For example, the use of the full battery of intervention measures on "job-ready" client groups in their initial phase of unemployment, or in high-turnover labour markets, might not be cost-effective. Thus, Finland waits one month before undertaking a full registration interview, and Ireland even discourages jobseekers who ask for benefit from registering with the placement service within the first month of unemployment.

44. OECD (2005, Chapter 5) argues that the benefits from labour market programmes for the unemployed should be evaluated in terms of their long-term impact on (B+tW), where B is the negative of benefit costs, t is a tax rate and W is earnings in work. This formula includes savings in benefit expenditure associated with shorter spell durations, but is also influenced by any impacts on the frequency of repeat claims and on wage rates for some years after the initial return to work.

45. However, total spending on Jobcentre Plus "placement and advisory functions" is much higher, about GBP 2 billion per year in 2004 (Eurostat, 2006).

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Statistical Annex

Sources and definitions

Most of the statistics shown in these tables can also be found in two other (paper or electronic) publications and data repository, as follows:

● the annual edition of *OECD Labour Force Statistics, 1986-2006*;

● OECD.Stat, the OECD's central data warehouse (*www.oecd.org/els/employment/stats*), which contains both raw data and derived statistics.

These references, which include information on definitions, notes and sources used by member countries, contain longer time series and more detailed data by age group, gender, duration of unemployment, etc., than are shown in this annex.

This Statistical Annex includes for the first time selected earnings related indicators (Tables H and I). Sources and definitions for data shown can be found on the URL specified at the bottom of Tables H and I as this is the case for a number of other annex tables.

Please note that the 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 and reproduced in Tables 1.2 and 1.3 of the Introduction of this publication.

Interested users can refer to the on-line database (*www.oecd.org/els/employment/stats*), which contains data series describing the labour market situation in OECD countries: population, labour force, employment and unemployment disaggregated by gender and age, educational attainment, employment status and sector of activity, participation and unemployment rates, statistics on part-time employment and duration of unemployment, job tenure, etc. The on-line database contains a number of additional series on labour market performances and on features of the institutional and regulatory environment affecting the functioning of labour markets. Among these are the following:

● annual hours of work data for comparisons of trends over time;

● gross earnings by percentile for deriving measures of earnings dispersion for full-time workers by gender;

● gross mean and median earnings of full-time workers by age group and gender;

● statutory minimum wages;

● public expenditure on labour market programmes and number of participants;

● trade union density rates in OECD member countries.

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 to ensure that standardized unemployment rates are consistent over time.

Tables B to E and Table G: Most of the breaks in series mentioned below 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: Austria (2003/2004), Belgium (1998/1999), Czech Republic (1996/1997), Finland (1999/2000), France (2002/2003), Germany (2004/2005), Hungary (2002/2003), Iceland (2003/2004), Ireland (1996/1997/1998), Italy (2003/2004), Luxembourg (2002/2003), Norway (1995/1996), Poland (1998/1999/2000), Portugal (1997/1998), Slovak Republic (1997/1998), Spain (1998/1999), Sweden (1998/1999).

● Redesign of labour force survey: Greece (1997/1998), Portugal (1997/1998), Slovak Republic (1998/1999), Spain (2004/2005), Turkey (1999/2000 – half-yearly to quarterly results).

● Change in the operational definition of unemployment regarding:

❖ active job search methods, in particular change from registration to contact with the public employment service: France (2002/2003), Spain (2000/2001).

❖ duration of job search changed from one week to four weeks: Korea (1999/2000).

❖ other minor changes: Australia (2000/2001).

● Changes in the questionnaire with impact on employment and unemployment estimates (Spain 2004/2005) and unemployment estimates (Sweden 2004/2005).

● Change from a seasonal to a calendar quarter: Slovak Republic (1999/2000).

● Inclusion of population controls based on Census results in the estimation process: Spain (1995/1996), United Kingdom (revised series 1992), United States (1999/2000).

Further explanations on breaks in series and their impact on employment and unemployment levels and on ratios can be found at:
www.oecd.org/els/employmentoutlook/2007.

Table A. **Standardised unemployment rates in 27 OECD countries**

As a percentage of civilian labour force

	1990	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Australia	6.7	9.5	8.2	8.2	8.3	7.7	6.9	6.3	6.8	6.4	6.1	5.5	5.1	4.9
Austria	..	3.9	3.9	4.3	4.4	4.5	4.0	3.7	3.6	4.2	4.3	4.8	5.2	4.8
Belgium	6.6	9.8	9.7	9.5	9.2	9.3	8.5	6.9	6.6	7.5	8.2	8.4	8.4	8.2
Canada	8.1	10.4	9.5	9.6	9.1	8.3	7.6	6.8	7.2	7.7	7.6	7.2	6.8	6.3
Czech Republic	..	4.4	4.1	3.9	4.8	6.4	8.6	8.7	8.0	7.3	7.8	8.3	7.9	7.2
Denmark	7.2	7.7	6.8	6.3	5.2	4.9	5.1	4.3	4.5	4.6	5.4	5.5	4.8	3.9
Finland	3.2	16.9	15.3	14.6	12.7	11.3	10.2	9.8	9.1	9.1	9.0	8.9	8.4	7.8
France	8.5	11.7	11.1	11.6	11.5	11.1	10.5	9.1	8.4	8.7	9.4	9.6	9.7	9.4
Germany[a]	4.8	8.3	8.0	8.6	9.2	8.8	7.9	7.2	7.4	8.2	9.1	9.5	9.5	8.4
Greece	6.3	8.8	9.0	9.7	9.6	11.0	12.0	11.2	10.7	10.3	9.7	10.5	9.9	8.9
Hungary	..	11.0	10.4	9.6	9.0	8.4	6.9	6.4	5.7	5.8	5.9	6.1	7.2	7.5
Ireland	13.4	14.3	12.3	11.7	9.9	7.5	5.7	4.3	4.0	4.5	4.7	4.5	4.4	4.4
Italy	8.9	10.6	11.2	11.2	11.3	11.4	10.9	10.1	9.1	8.6	8.4	8.0	7.7	6.8
Japan	2.1	2.9	3.2	3.4	3.4	4.1	4.7	4.7	5.0	5.4	5.3	4.7	4.4	4.1
Korea	2.4	2.5	2.1	2.0	2.6	7.0	6.6	4.4	4.0	3.3	3.6	3.7	3.7	3.5
Luxembourg	1.7	3.2	2.9	2.9	2.7	2.7	2.4	2.3	2.0	2.7	3.7	5.1	4.5	4.7
Netherlands	5.9	6.8	6.6	6.0	4.9	3.8	3.2	2.9	2.2	2.8	3.7	4.6	4.7	3.9
New Zealand	7.8	8.1	6.3	6.1	6.6	7.4	6.8	6.0	5.3	5.2	4.6	3.9	3.7	3.8
Norway	5.8	6.0	5.5	4.8	4.0	3.2	3.3	3.4	3.6	3.9	4.5	4.4	4.6	3.5
Poland	..	14.4	13.3	12.3	10.9	10.2	13.4	16.1	18.2	19.9	19.6	19.0	17.8	13.8
Portugal	4.8	6.9	7.3	7.3	6.8	5.1	4.5	4.0	4.0	5.0	6.3	6.7	7.6	7.7
Slovak Republic	..	13.7	13.1	11.3	11.9	12.6	16.3	18.8	19.3	18.6	17.6	18.2	16.2	13.4
Spain	13.0	19.5	18.4	17.7	16.7	15.0	12.5	11.1	10.3	11.1	11.1	10.6	9.2	8.6
Sweden	1.7	9.4	8.8	9.6	9.9	8.2	6.7	5.6	4.9	4.9	5.6	6.3	7.3	7.0
Switzerland	..	3.9	3.5	3.9	4.2	3.6	3.0	2.7	2.6	3.2	4.2	4.4	4.5	..
United Kingdom	6.9	9.3	8.5	7.9	6.8	6.1	5.9	5.4	5.0	5.1	4.9	4.7	4.8	5.3
United States	5.6	6.1	5.6	5.4	4.9	4.5	4.2	4.0	4.7	5.8	6.0	5.5	5.1	4.6
EU-15[b]	8.1	10.4	10.0	10.1	9.8	9.2	8.5	7.6	7.2	7.6	7.9	8.0	7.9	7.4
OECD Europe[b]	8.0	10.5	10.0	9.9	9.6	9.1	8.8	8.3	8.1	8.5	8.8	8.9	8.6	7.8
Total OECD[b]	6.1	7.6	7.2	7.2	6.9	6.8	6.6	6.2	6.4	6.9	7.1	6.9	6.6	6.0

a) For 1990, the data refer to western Germany; subsequent data concern the whole of Germany.

b) For above countries only.

Note: In so far as possible, the data have been adjusted to ensure comparability over time and to conform to the guidelines of the International Labour Office. All series are benchmarked to labour-force-survey-based estimates. In countries with annual surveys, monthly estimates are obtained by interpolation/extrapolation and by incorporating trends in administrative data, where available. The annual figures are then calculated by averaging the monthly estimates (for both unemployed and the labour force). For countries with monthly or quarterly surveys, the annual estimates are obtained by averaging the monthly or quarterly estimates, respectively. For several countries, the adjustment procedure used is similar to that of the Bureau of Labor Statistics, U.S. Department of Labor. For EU countries, the procedures are similar to those used in deriving the Comparable Unemployment Rates of the Statistical Office of the European Communities. Minor differences may appear mainly because of various methods of calculating and applying adjustment factors, and because EU estimates are based on the civilian labour force. For a fuller description, please refer to the following URL: *www.oecd.org/std* .

Source: OECD (2007), *OECD Main Economic Indicators,* April, Paris.

StatLink 🔗 *http://dx.doi.org/10.1787/024830722817*

Table B. **Employment/population ratios, activity and unemployment rates**[a]

Persons aged 15-64 years (percentages)

	Employment/population ratio						Labour force participation rate						Unemployment rate					
	1994	2002	2003	2004	2005	2006	1994	2002	2003	2004	2005	2006	1994	2002	2003	2004	2005	2006
Australia	66.0	69.4	70.0	70.3	71.6	72.2	73.2	74.3	74.6	74.5	75.5	75.9	9.9	6.5	6.1	5.6	5.2	5.0
Austria	68.3	68.5	68.7	67.8	68.6	70.2	70.8	71.3	71.8	71.3	72.4	73.7	3.6	4.0	4.2	5.0	5.2	4.8
Belgium	55.7	59.7	59.3	60.5	61.0	60.4	61.7	64.1	64.3	65.3	66.4	65.9	9.7	6.9	7.7	7.4	8.1	8.4
Canada	67.0	71.4	72.2	72.5	72.5	72.9	74.9	77.4	78.2	78.2	77.8	77.9	10.5	7.7	7.7	7.3	6.8	6.3
Czech Republic	69.2	65.7	64.9	64.2	64.8	65.3	72.4	70.9	70.4	70.1	70.4	70.3	4.3	7.3	7.8	8.4	8.0	7.2
Denmark	72.4	76.4	75.1	76.0	75.5	76.9	78.8	79.9	79.4	80.2	79.4	80.1	8.1	4.3	5.5	5.3	4.9	4.0
Finland	59.9	67.7	67.4	67.2	68.0	68.9	72.0	74.5	74.1	73.8	74.3	74.7	16.7	9.1	9.1	8.9	8.5	7.8
France[b]	58.4	62.2	62.5	62.4	62.3	62.3	66.6	68.3	69.3	69.3	69.1	69.1	12.4	8.9	9.8	10.0	9.9	9.8
Germany[b]	64.5	65.3	64.6	65.0	65.5	67.2	70.5	71.5	71.3	72.6	73.8	75.0	8.5	8.7	9.4	10.4	11.3	10.4
Greece	54.1	57.7	58.9	59.6	60.3	61.0	59.5	64.2	65.1	66.5	66.8	67.0	9.1	10.1	9.5	10.4	9.8	8.9
Hungary	53.5	56.2	57.0	56.8	56.9	57.3	60.0	59.7	60.6	60.5	61.4	62.0	10.8	5.8	5.9	6.1	7.2	7.5
Iceland[c]	78.5	82.8	84.1	82.8	84.4	85.3	83.0	85.6	87.0	85.5	86.7	88.0	5.4	3.2	3.4	3.1	2.7	3.0
Ireland	51.9	65.0	65.0	65.5	67.1	68.1	61.1	67.9	68.0	68.6	70.2	71.3	15.1	4.3	4.5	4.4	4.3	4.4
Italy	51.5	55.6	56.2	57.4	57.5	58.4	58.0	61.2	61.6	62.5	62.4	62.7	11.1	9.1	8.7	8.1	7.8	6.9
Japan	69.3	68.2	68.4	68.7	69.3	70.0	71.4	72.3	72.3	72.2	72.6	73.1	3.0	5.6	5.4	4.9	4.6	4.3
Korea	62.8	63.3	63.0	63.6	63.7	63.8	64.4	65.6	65.4	66.1	66.3	66.2	2.6	3.4	3.7	3.8	3.9	3.6
Luxembourg	60.2	63.6	62.2	62.5	63.6	..	62.3	65.3	64.6	65.8	66.6	..	3.5	2.6	3.7	5.1	4.5	..
Mexico	58.7	59.3	58.8	59.9	59.6	61.0	61.4	61.1	60.7	62.2	61.9	63.0	4.4	3.0	3.1	3.8	3.6	3.3
Netherlands	63.9	72.4	71.8	71.2	71.1	72.4	68.6	74.8	75.1	75.1	75.1	75.7	6.8	3.2	4.4	5.1	5.2	4.4
New Zealand	68.0	72.4	72.5	73.5	74.6	75.2	74.1	76.4	76.1	76.6	77.5	78.1	8.2	5.2	4.7	4.0	3.8	3.8
Norway[c]	72.2	77.1	75.8	75.6	75.2	75.5	76.4	80.3	79.3	79.1	78.9	78.2	5.4	4.0	4.5	4.5	4.7	3.5
Poland	58.3	51.7	51.4	51.9	53.0	54.5	68.4	64.8	64.2	64.2	64.6	63.4	14.8	20.3	20.0	19.3	18.0	14.0
Portugal	64.0	68.1	67.1	67.8	67.5	67.9	69.0	72.0	72.0	72.9	73.4	73.9	7.2	5.4	6.8	7.0	8.1	8.1
Slovak Republic	59.8	56.9	57.7	57.0	57.7	59.4	69.3	69.9	70.0	69.7	68.9	68.5	13.7	18.6	17.6	18.2	16.2	13.3
Spain[c]	47.4	59.5	60.7	62.0	64.3	65.7	62.4	67.1	68.5	69.7	70.8	71.9	24.0	11.4	11.4	11.0	9.2	8.6
Sweden[c]	71.5	74.9	74.3	73.5	73.9	74.5	79.2	79.1	78.9	78.7	80.1	80.2	9.7	5.3	5.8	6.6	7.8	7.1
Switzerland	75.6	78.9	77.9	77.4	77.2	77.9	78.7	81.3	81.3	81.0	80.8	81.2	4.0	3.0	4.2	4.4	4.5	4.1
Turkey	52.4	46.7	45.5	46.1	45.9	45.9	57.5	52.3	51.1	51.5	51.3	51.1	8.8	10.6	10.8	10.6	10.5	10.1
United Kingdom[c]	68.7	72.3	72.6	72.7	72.6	72.5	76.0	76.2	76.3	76.2	76.2	76.7	9.7	5.1	4.9	4.7	4.7	5.4
United States[b]	72.0	71.9	71.2	71.2	71.5	72.0	76.7	76.4	75.8	75.4	75.4	75.5	6.2	5.9	6.1	5.6	5.1	4.7
EU-15	59.9	64.2	64.3	64.8	65.2	66.0	67.5	69.7	70.0	70.7	71.1	71.7	11.2	7.8	8.2	8.4	8.4	8.0
EU-19	59.9	62.9	62.9	63.3	63.8	64.7	67.5	69.0	69.3	69.9	70.3	70.7	11.3	8.9	9.2	9.3	9.2	8.5
OECD Europe	59.4	61.2	61.0	61.4	61.8	62.5	66.6	67.2	67.2	67.7	68.0	68.3	10.9	8.9	9.2	9.3	9.2	8.5
Total OECD	64.0	65.0	64.8	65.1	65.5	66.1	69.5	69.9	69.8	70.1	70.2	70.5	7.8	7.0	7.1	7.0	6.8	6.3

Table B. Employment/population ratios, activity and unemployment rates[a] *(cont.)*

Men aged 15-64 years (percentages)

	Employment/population ratio						Labour force participation rate						Unemployment rate					
	1994	2002	2003	2004	2005	2006	1994	2002	2003	2004	2005	2006	1994	2002	2003	2004	2005	2006
Australia	75.0	76.8	77.1	77.6	78.5	78.8	83.5	82.3	82.1	82.1	82.7	82.9	10.2	6.7	6.1	5.5	5.0	4.9
Austria	77.5	75.9	76.0	74.9	75.4	76.9	80.2	79.1	79.4	78.5	79.3	80.4	3.3	4.1	4.3	4.6	5.0	4.4
Belgium	66.5	68.1	67.1	67.9	67.7	67.0	72.0	72.6	72.6	72.7	73.1	72.7	7.7	6.3	7.5	6.7	7.4	7.8
Canada	73.0	75.9	76.4	76.7	76.7	76.8	82.0	82.7	83.1	82.9	82.5	82.2	11.0	8.2	8.0	7.6	7.1	6.6
Czech Republic	77.5	74.2	73.4	72.4	73.3	73.7	80.4	78.9	78.2	77.9	78.4	78.2	3.6	5.9	6.1	7.1	6.5	5.9
Denmark	77.6	80.2	79.7	79.9	80.1	80.6	83.7	83.8	84.0	84.2	83.6	83.4	7.3	4.3	5.2	5.1	4.2	3.4
Finland	61.1	69.2	69.0	68.8	69.4	70.5	74.8	76.2	76.1	75.5	75.7	76.2	18.3	9.1	9.3	8.9	8.3	7.5
France[b]	66.1	68.6	68.6	68.1	67.8	67.5	74.1	74.5	75.3	74.9	74.5	74.2	10.8	7.9	8.8	9.0	9.0	9.1
Germany[b]	74.0	71.7	70.4	70.8	71.4	72.9	79.8	78.7	78.0	79.2	80.6	81.4	7.2	8.8	9.7	10.7	11.5	10.4
Greece	72.2	72.5	73.5	74.0	74.5	74.6	77.0	77.6	78.3	79.1	79.2	79.1	6.2	6.6	6.1	6.5	5.9	5.7
Hungary	59.6	62.9	63.4	63.1	63.1	63.8	67.8	67.1	67.6	67.2	67.9	68.7	12.1	6.2	6.1	6.1	7.0	7.2
Iceland[c]	82.4	85.7	86.8	86.2	87.4	88.7	86.8	88.9	90.1	89.1	89.8	91.4	5.1	3.6	3.7	3.3	2.7	3.0
Ireland	64.8	74.7	74.5	75.2	76.2	77.3	76.2	78.3	78.3	79.1	79.9	81.0	15.0	4.7	4.9	5.0	4.7	4.6
Italy	67.8	69.2	69.7	69.7	69.7	70.5	74.2	74.5	74.8	74.5	74.4	74.6	8.6	7.0	6.8	6.4	6.3	5.5
Japan	81.9	79.9	79.8	80.0	80.4	81.0	84.4	84.8	84.6	84.2	84.4	84.8	2.9	5.8	5.7	5.1	4.7	4.4
Korea	76.3	74.9	75.0	75.2	75.0	74.6	78.6	77.9	78.0	78.3	78.2	77.7	2.9	3.8	3.9	4.0	4.1	4.0
Luxembourg	74.9	75.5	73.3	72.8	73.3	..	77.3	77.0	75.5	75.6	76.0	..	3.0	1.9	3.0	3.7	3.5	..
Mexico	82.9	81.6	80.8	81.0	80.2	81.6	86.4	83.8	83.0	83.7	83.1	84.2	4.1	2.6	2.7	3.2	3.5	3.1
Netherlands	74.9	80.7	79.3	78.0	77.4	78.7	79.6	83.0	82.7	82.1	81.4	81.9	5.9	2.9	4.2	5.0	4.9	4.0
New Zealand	76.2	79.8	79.4	80.8	81.5	82.1	83.4	84.1	83.1	83.8	84.4	85.1	8.6	5.1	4.4	3.6	3.5	3.6
Norway[c]	76.8	80.2	78.7	78.4	78.3	78.6	81.6	83.8	82.8	82.5	82.3	81.4	6.0	4.2	5.0	4.9	4.9	3.5
Poland	64.9	57.0	56.7	57.4	59.0	60.9	75.0	70.8	70.2	70.4	71.0	70.1	13.4	19.5	19.3	18.5	16.9	13.1
Portugal	73.5	75.7	73.9	74.1	73.4	73.9	78.4	79.3	78.5	79.0	79.0	79.5	6.3	4.5	5.9	6.2	7.1	7.0
Slovak Republic	67.2	62.5	63.4	63.2	64.6	67.0	77.6	76.7	76.7	76.5	76.4	76.3	13.3	18.6	17.4	17.4	15.4	12.2
Spain[c]	63.3	73.9	74.5	74.9	76.4	77.3	78.5	80.4	81.1	81.6	82.2	82.5	19.4	8.1	8.2	8.2	7.1	6.4
Sweden[c]	72.2	76.4	75.7	75.0	75.9	76.8	81.3	81.1	80.8	80.7	82.5	82.6	11.1	5.7	6.4	7.0	7.9	7.0
Switzerland	86.3	86.2	85.1	84.5	83.9	84.7	89.5	88.7	88.5	88.0	87.4	87.8	3.6	2.9	3.9	4.0	4.0	3.5
Turkey	74.6	66.9	65.9	67.9	68.2	68.0	82.0	75.1	74.0	76.1	76.2	75.5	9.0	11.0	11.0	10.8	10.5	9.9
United Kingdom[c]	75.3	78.6	78.9	78.9	78.8	78.4	85.1	83.3	83.6	83.1	83.0	83.2	11.5	5.7	5.5	5.0	5.1	5.8
United States[b]	79.0	78.0	76.9	77.2	77.6	78.1	84.3	83.0	82.2	81.9	81.8	81.9	6.2	6.0	6.4	5.7	5.1	4.7
EU-15	70.5	72.9	72.6	72.6	72.9	73.5	78.4	78.4	78.5	78.7	79.0	79.3	10.0	7.0	7.5	7.6	7.7	7.3
EU-19	69.9	71.1	70.9	71.0	71.4	72.1	77.9	77.4	77.5	77.6	78.0	78.2	10.2	8.1	8.5	8.6	8.5	7.8
OECD Europe	70.7	70.9	70.5	70.8	71.2	71.8	78.5	77.4	77.2	77.6	77.9	78.0	9.9	8.4	8.7	8.7	8.6	7.9
Total OECD	75.4	75.0	74.5	74.8	75.0	75.6	81.4	80.4	80.1	80.2	80.3	80.4	7.4	6.7	6.9	6.8	6.5	6.0

Table B. **Employment/population ratios, activity and unemployment rates**[a] *(cont.)*

Women aged 15-64 years (percentages)

	Employment/population ratio						Labour force participation rate						Unemployment rate					
	1994	2002	2003	2004	2005	2006	1994	2002	2003	2004	2005	2006	1994	2002	2003	2004	2005	2006
Australia	56.9	62.1	62.9	63.1	64.7	65.5	62.8	66.3	67.1	66.9	68.4	69.0	9.5	6.3	6.2	5.7	5.3	5.1
Austria	58.8	61.0	61.5	60.7	62.0	63.5	61.3	63.5	64.1	64.2	65.6	67.0	4.0	3.9	4.2	5.4	5.5	5.3
Belgium	44.8	51.1	51.4	53.0	54.1	53.6	51.2	55.4	55.8	57.7	59.5	58.9	12.5	7.8	8.0	8.3	9.0	9.0
Canada	61.1	67.0	67.9	68.4	68.3	69.0	67.8	72.1	73.2	73.4	73.1	73.5	9.8	7.2	7.2	6.9	6.5	6.1
Czech Republic	61.0	57.1	56.3	56.0	56.3	56.8	64.4	62.8	62.5	62.2	62.4	62.3	5.2	9.1	9.9	10.0	9.8	8.9
Denmark	67.1	72.6	70.5	72.0	70.8	73.2	73.8	75.9	74.8	76.1	75.1	76.7	9.0	4.4	5.8	5.5	5.6	4.6
Finland	58.7	66.1	65.7	65.5	66.5	67.3	69.1	72.7	72.1	72.0	72.9	73.2	14.9	9.1	8.9	9.0	8.7	8.1
France[b]	50.8	55.8	56.4	56.7	56.9	57.1	59.3	62.1	63.4	63.8	63.8	63.9	14.4	10.1	11.0	11.1	10.9	10.7
Germany[b]	54.7	58.8	58.7	59.2	59.6	61.5	60.9	64.2	64.5	65.8	66.9	68.5	10.1	8.4	8.9	10.1	11.0	10.3
Greece	37.1	43.1	44.5	45.5	46.2	47.5	43.2	51.0	52.1	54.1	54.6	55.0	14.0	15.4	14.5	16.0	15.3	13.5
Hungary	47.8	49.8	50.9	50.7	51.0	51.2	52.7	52.7	53.9	54.0	55.1	55.5	9.3	5.4	5.6	6.1	7.5	7.9
Iceland[c]	74.6	79.8	81.2	79.4	81.2	81.6	79.1	82.2	83.9	81.8	83.4	84.2	5.7	2.9	3.1	3.0	2.7	3.1
Ireland	38.9	55.2	55.4	55.8	58.0	58.8	45.8	57.3	57.6	58.0	60.3	61.3	15.2	3.7	3.9	3.7	3.8	4.1
Italy	35.4	42.0	42.7	45.2	45.3	46.3	41.9	47.9	48.3	50.6	50.4	50.8	15.5	12.3	11.7	10.6	10.1	8.8
Japan	56.5	56.5	56.8	57.4	58.1	58.8	58.3	59.7	59.9	60.2	60.8	61.3	3.1	5.4	5.1	4.7	4.4	4.1
Korea	49.8	52.0	51.1	52.2	52.5	53.1	50.8	53.5	52.9	54.1	54.5	54.8	2.0	2.9	3.5	3.5	3.6	3.1
Luxembourg	44.9	51.5	50.9	51.9	53.7	..	47.0	53.5	53.5	55.8	57.0	..	4.3	3.6	4.7	7.1	5.8	..
Mexico	36.2	39.5	39.1	40.9	41.6	42.9	38.1	41.0	40.6	43.0	43.2	44.5	4.9	3.6	3.7	4.8	3.7	3.6
Netherlands	52.6	64.0	64.2	64.3	64.8	66.0	57.3	66.4	67.3	67.8	68.6	69.4	8.1	3.5	4.6	5.2	5.6	4.8
New Zealand	59.9	65.3	65.7	66.5	68.0	68.4	64.9	69.0	69.2	69.6	70.8	71.4	7.7	5.4	5.1	4.5	4.1	4.1
Norway[c]	67.5	73.9	72.7	72.7	72.0	72.3	70.9	76.7	75.8	75.7	75.4	74.8	4.8	3.7	4.0	3.9	4.4	3.4
Poland	51.9	46.4	46.2	46.4	47.0	48.2	62.1	58.9	58.4	58.2	58.3	56.8	16.4	21.2	20.8	20.2	19.4	15.1
Portugal	55.0	60.8	60.6	61.7	61.7	62.0	60.0	65.0	65.6	67.0	67.9	68.4	8.3	6.5	7.7	8.0	9.2	9.5
Slovak Republic	52.6	51.4	52.2	50.9	50.9	51.9	61.2	63.2	63.5	62.9	61.5	60.9	14.1	18.7	17.8	19.1	17.2	14.7
Spain[c]	31.5	44.9	46.8	49.0	51.9	54.0	46.3	53.7	55.7	57.7	59.1	61.1	31.8	16.4	16.0	15.1	12.2	11.6
Sweden[c]	70.7	73.4	72.8	71.8	71.8	72.1	77.0	77.1	76.8	76.6	77.7	77.7	8.2	4.7	5.2	6.2	7.6	7.2
Switzerland	64.9	71.5	70.7	70.3	70.4	71.1	68.0	73.9	74.1	73.9	74.3	74.7	4.4	3.2	4.6	4.8	5.2	4.8
Turkey	30.4	26.6	25.2	24.3	23.7	23.8	33.2	29.5	28.1	27.0	26.5	26.7	8.3	9.8	10.5	10.0	10.6	10.6
United Kingdom[c]	62.1	66.3	66.4	66.6	66.7	66.8	67.1	69.3	69.2	69.6	69.6	70.3	7.4	4.4	4.1	4.3	4.2	5.0
United States[b]	65.2	66.1	65.7	65.4	65.6	66.1	69.4	70.1	69.7	69.2	69.2	69.3	6.1	5.7	5.7	5.5	5.2	4.7
EU-15	49.4	55.6	56.0	56.9	57.5	58.5	56.5	61.0	61.6	62.7	63.3	64.2	12.7	8.8	9.0	9.3	9.2	8.8
EU-19	49.9	54.6	55.0	55.7	56.3	57.3	57.2	60.7	61.2	62.1	62.6	63.2	12.8	9.9	10.1	10.3	10.1	9.4
OECD Europe	48.0	51.5	51.5	52.0	52.3	53.2	54.8	57.0	57.2	57.8	58.1	58.6	12.3	9.7	9.9	10.1	10.0	9.3
Total OECD	52.9	55.3	55.3	55.7	56.1	56.8	57.8	59.6	59.6	60.1	60.4	60.8	8.4	7.2	7.4	7.3	7.1	6.6

a) Ratios refer to persons aged 15 to 64 years who are in employment or in the labour force divided by the working age population, or in unemployment divided by the labour force.
b) Data for 2006 are Secretariat estimates obtained by applying changes between 2005 and 2006 estimates from the European Labour Force Survey to national estimates for 2005.
c) Refers to persons aged 16 to 64.
Source: OECD database on Labour Force Statistics (see URLs at the beginning of the Annex). For Belgium, Denmark, Greece and Luxembourg data are from the European Union Labour Force Survey.

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Table C. **Employment/population ratios, activity and unemployment rates by selected age groups**

Both sexes (percentages)

		15 to 24					25 to 54					55 to 64				
		1994	2003	2004	2005	2006	1994	2003	2004	2005	2006	1994	2003	2004	2005	2006
Australia	Unemployment rates	17.1	12.2	11.6	10.8	10.4	7.6	4.8	4.2	3.9	3.8	9.5	3.8	3.6	3.2	3.3
	Labour force participation rates	70.7	70.4	70.6	71.3	71.2	79.7	81.1	80.9	82.0	82.3	44.8	52.5	53.9	55.5	57.5
	Employment/population ratios	58.6	61.8	62.4	63.6	63.8	73.6	77.2	77.4	78.8	79.2	40.5	50.5	52.0	53.7	55.6
Austria	Unemployment rates	4.8	6.5	9.7	10.3	9.1	3.4	3.8	4.2	4.4	4.1	3.5	5.0	3.8	3.6	3.5
	Labour force participation rates	62.5	55.1	57.4	59.2	59.4	82.2	87.0	86.2	86.4	87.1	29.5	31.7	29.9	33.0	36.8
	Employment/population ratios	59.5	51.5	51.9	53.1	54.0	79.5	83.7	82.6	82.6	83.5	28.4	30.1	28.8	31.8	35.5
Belgium	Unemployment rates	21.8	19.0	17.5	19.9	18.9	8.4	7.0	6.6	7.2	7.5	4.9	1.7	3.6	4.4	5.4
	Labour force participation rates	35.2	33.5	34.0	33.2	32.3	79.9	81.8	82.8	84.4	84.5	23.5	28.5	31.3	33.5	32.2
	Employment/population ratios	27.5	27.1	28.1	26.6	26.2	73.1	76.1	77.3	78.3	78.2	22.4	28.1	30.1	32.1	30.4
Canada	Unemployment rates	15.9	13.6	13.4	12.4	11.6	9.4	6.5	6.0	5.8	5.3	9.2	6.3	5.9	5.4	5.2
	Labour force participation rates	63.9	67.4	67.0	65.9	66.4	83.3	86.4	86.5	86.3	86.2	48.1	56.5	57.3	57.9	58.7
	Employment/population ratios	53.8	58.3	58.0	57.8	58.7	75.5	80.8	81.3	81.3	81.6	43.6	53.0	53.9	54.8	55.6
Czech Republic	Unemployment rates	8.7	17.6	20.4	19.3	17.5	3.4	7.0	7.3	7.1	6.4	3.5	4.4	5.4	5.2	5.3
	Labour force participation rates	52.0	38.1	35.8	33.9	33.5	89.3	87.8	87.8	88.3	88.1	33.5	44.2	45.1	47.0	47.7
	Employment/population ratios	47.5	31.4	28.5	27.3	27.7	86.3	81.7	81.4	82.0	82.5	32.3	42.3	42.6	44.6	45.2
Denmark	Unemployment rates	10.2	9.8	7.8	7.9	7.6	7.8	5.0	4.7	4.2	3.3	6.5	3.9	5.6	4.9	3.7
	Labour force participation rates	69.1	65.9	66.4	67.2	69.0	87.2	87.8	88.2	87.7	88.4	53.7	63.1	65.5	62.9	63.2
	Employment/population ratios	62.1	59.4	61.3	62.0	63.7	80.5	83.5	84.0	83.9	85.5	50.2	60.7	61.8	59.8	60.9
Finland	Unemployment rates	34.1	21.6	20.8	20.0	18.8	14.1	7.3	7.3	6.9	6.1	19.0	7.7	7.3	6.9	6.7
	Labour force participation rates	42.3	49.1	48.1	49.0	50.1	87.1	87.5	87.3	87.8	87.8	41.3	54.1	55.0	56.4	58.4
	Employment/population ratios	27.9	38.5	38.1	39.2	40.6	74.9	81.1	81.0	81.7	82.5	33.5	49.9	51.0	52.6	54.5
France[a]	Unemployment rates	27.5	21.5	22.7	22.8	23.9	11.2	8.8	8.8	8.7	8.6	7.0	7.0	7.3	6.8	7.2
	Labour force participation rates	30.4	34.4	34.1	33.7	33.2	85.9	86.7	87.0	87.2	87.4	35.9	43.3	43.8	43.6	43.6
	Employment/population ratios	22.0	27.0	26.4	26.0	25.3	76.3	79.1	79.3	79.6	80.0	33.4	40.3	40.6	40.7	40.5
Germany[a]	Unemployment rates	8.2	10.6	12.6	15.2	13.5	8.1	9.1	9.7	10.4	9.5	11.6	9.7	12.5	12.7	12.3
	Labour force participation rates	56.0	47.4	48.0	50.2	50.7	82.9	86.0	86.5	86.4	87.1	40.6	43.1	47.8	52.1	55.3
	Employment/population ratios	51.4	42.4	41.9	42.6	43.9	76.2	78.2	78.1	77.4	78.8	35.9	39.0	41.8	45.5	48.5
Greece	Unemployment rates	27.7	25.7	26.5	25.3	24.5	7.0	8.3	9.1	8.9	8.0	3.1	3.1	4.3	3.4	3.6
	Labour force participation rates	36.9	35.2	37.3	33.9	32.5	73.7	79.7	81.1	81.6	81.9	40.7	42.4	41.2	43.1	44.0
	Employment/population ratios	26.7	26.2	27.4	25.3	24.5	68.6	73.1	73.7	74.3	75.3	39.5	41.0	39.4	41.6	42.4
Hungary	Unemployment rates	20.9	13.4	15.5	19.4	19.1	9.3	5.5	5.5	6.4	6.8	7.0	2.8	3.1	3.9	3.9
	Labour force participation rates	39.0	30.8	27.9	27.1	26.8	79.0	77.8	77.9	78.8	79.6	18.3	29.8	32.0	34.3	34.9
	Employment/population ratios	30.8	26.7	23.6	21.8	21.7	71.7	73.7	73.6	73.7	74.2	17.0	29.0	31.1	33.0	33.6

Table C. **Employment/population ratios, activity and unemployment rates by selected age groups** *(cont.)*

Both sexes (percentages)

		15 to 24					25 to 54					55 to 64				
		1994	2003	2004	2005	2006	1994	2003	2004	2005	2006	1994	2003	2004	2005	2006
Iceland[b]	Unemployment rates	11.5	8.2	8.1	7.2	8.4	4.2	2.5	2.0	1.7	1.9	3.8	2.1	2.7	1.5	1.6
	Labour force participation rates	58.5	74.2	72.1	77.1	79.5	91.3	91.5	89.8	89.7	90.9	88.1	85.1	84.3	86.1	86.3
	Employment/population ratios	51.7	68.1	66.3	71.6	72.9	87.5	89.2	88.0	88.2	89.1	84.7	83.3	82.0	84.8	84.9
Ireland	Unemployment rates	24.2	7.6	8.1	8.3	8.4	13.4	3.9	3.9	3.7	3.8	8.5	2.4	2.4	2.9	2.3
	Labour force participation rates	44.2	49.6	48.8	50.5	52.4	72.4	79.1	79.8	81.0	81.5	43.2	50.5	50.7	53.2	54.7
	Employment/population ratios	33.5	45.8	44.8	46.3	48.0	62.7	76.0	76.7	78.0	78.4	39.5	49.3	49.5	51.7	53.4
Italy	Unemployment rates	30.5	26.3	23.5	24.0	21.6	8.2	7.2	6.9	6.7	5.9	3.4	3.8	4.1	3.5	2.9
	Labour force participation rates	40.7	35.3	35.6	33.5	32.5	71.7	76.3	77.5	77.4	77.8	30.4	31.5	31.8	32.6	33.4
	Employment/population ratios	28.3	26.0	27.2	25.5	25.5	65.8	70.8	72.1	72.2	73.3	29.4	30.3	30.5	31.4	32.5
Japan	Unemployment rates	5.5	10.2	9.5	8.6	8.0	2.4	4.7	4.4	4.2	3.9	3.5	5.5	4.4	4.1	3.9
	Labour force participation rates	47.6	44.8	44.2	44.8	45.0	81.4	82.1	82.2	82.5	82.8	66.1	65.8	66.0	66.6	67.3
	Employment/population ratios	45.0	40.3	40.0	40.9	41.4	79.5	78.3	78.6	79.0	79.6	63.7	62.1	63.0	63.9	64.7
Korea	Unemployment rates	7.2	10.1	10.5	10.2	10.0	1.9	3.1	3.2	3.4	3.2	0.6	2.1	2.2	2.5	2.3
	Labour force participation rates	37.2	34.3	34.8	33.3	30.2	75.1	75.4	75.9	76.0	76.3	63.3	59.0	59.8	60.2	60.7
	Employment/population ratios	34.5	30.8	31.2	29.9	27.2	73.6	73.1	73.4	73.4	73.9	62.9	57.8	58.5	58.7	59.3
Luxembourg	Unemployment rates	7.9	10.9	16.9	13.7	..	3.0	3.2	4.4	3.9	..	0.7	1.5	1.5	2.1	..
	Labour force participation rates	46.5	30.4	28.0	28.8	..	75.8	80.4	83.0	83.9	..	23.3	30.7	30.9	32.4	..
	Employment/population ratios	42.8	27.0	23.3	24.9	..	73.5	77.8	79.3	80.7	..	23.2	30.3	30.4	31.7	..
Mexico	Unemployment rates	7.1	6.2	7.6	6.6	6.2	3.3	2.3	2.8	2.8	2.5	1.9	1.1	1.4	2.1	1.7
	Labour force participation rates	54.1	47.0	48.0	46.8	47.8	67.2	68.8	70.7	70.7	71.7	53.5	53.5	54.5	53.7	55.9
	Employment/population ratios	50.3	44.1	44.3	43.7	44.8	65.0	67.3	68.7	68.8	69.9	52.4	52.9	53.8	52.6	55.0
Netherlands	Unemployment rates	10.2	7.8	9.2	9.6	7.6	6.3	3.8	4.4	4.4	3.6	3.5	3.1	3.8	4.5	4.4
	Labour force participation rates	61.7	70.4	69.6	68.5	69.2	78.7	84.3	84.3	84.6	85.1	30.0	44.2	46.0	47.0	49.1
	Employment/population ratios	55.4	64.9	63.2	61.9	63.9	73.7	81.1	80.6	80.9	82.0	29.0	42.9	44.2	44.9	46.9
New Zealand	Unemployment rates	15.0	10.2	9.3	9.4	9.6	6.6	3.5	2.9	2.7	2.6	4.7	3.6	2.5	1.9	2.0
	Labour force participation rates	66.5	62.8	62.6	62.8	65.0	81.5	82.7	83.2	84.2	84.3	49.7	66.7	68.9	71.0	71.8
	Employment/population ratios	56.5	56.3	56.8	56.9	58.8	76.2	79.8	80.8	82.0	82.1	47.3	64.3	67.2	69.7	70.4
Norway[b]	Unemployment rates	12.6	11.7	11.7	12.0	8.6	4.5	3.8	3.8	4.0	2.9	2.6	1.4	1.1	1.7	1.1
	Labour force participation rates	55.4	62.6	61.6	60.2	58.1	85.1	86.2	86.5	86.6	87.0	63.3	69.5	68.8	68.8	68.2
	Employment/population ratios	48.4	55.3	54.4	52.9	53.1	81.3	82.9	83.1	83.2	84.4	61.6	68.6	68.0	67.6	67.4
Poland	Unemployment rates	32.6	43.0	40.8	37.8	29.8	12.8	17.3	16.9	16.0	12.2	7.0	11.2	11.6	11.2	8.5
	Labour force participation rates	41.5	34.4	33.9	33.5	34.2	84.7	81.7	82.2	82.8	81.7	37.0	32.2	31.7	32.8	30.7
	Employment/population ratios	28.0	19.6	20.0	20.9	24.0	73.8	67.6	68.3	69.5	71.8	34.4	28.6	28.0	29.1	28.1

Table C. **Employment/population ratios, activity and unemployment rates by selected age groups** (cont.)

Both sexes (percentages)

		15 to 24					25 to 54					55 to 64				
		1994	2003	2004	2005	2006	1994	2003	2004	2005	2006	1994	2003	2004	2005	2006
Portugal	Unemployment rates	14.1	14.6	15.3	16.1	16.2	6.0	5.7	6.1	7.3	7.3	4.0	4.3	5.6	6.2	6.3
	Labour force participation rates	47.2	45.0	43.6	43.0	42.7	83.8	85.9	86.3	87.1	87.7	47.9	53.4	53.2	53.8	53.4
	Employment/population ratios	40.5	38.4	36.9	36.1	35.8	78.7	81.0	81.1	80.8	81.3	45.9	51.1	50.3	50.5	50.1
Slovak Republic	Unemployment rates	27.3	33.1	32.7	29.9	26.6	11.0	15.1	16.0	14.4	11.8	9.0	13.6	15.4	13.3	9.7
	Labour force participation rates	47.3	41.2	39.4	36.5	35.1	88.0	89.5	88.9	87.9	87.5	23.5	28.5	31.7	35.1	36.8
	Employment/population ratios	34.4	27.6	26.5	25.6	25.7	78.4	76.0	74.7	75.3	77.2	21.3	24.6	26.8	30.4	33.2
Spain[b]	Unemployment rates	42.9	22.7	22.0	19.7	17.9	20.9	10.2	9.8	8.0	7.5	12.4	6.9	7.1	6.1	5.7
	Labour force participation rates	49.4	47.6	49.2	52.1	52.7	73.9	79.4	80.6	80.9	82.0	37.3	43.8	44.4	45.9	46.8
	Employment/population ratios	28.3	36.8	38.4	41.9	43.3	58.4	71.3	72.7	74.4	75.8	32.7	40.8	41.3	43.1	44.1
Sweden[a]	Unemployment rates	22.7	13.8	17.0	22.3	21.3	8.1	4.9	5.5	6.2	5.3	6.9	4.8	4.9	4.5	4.4
	Labour force participation rates	53.5	52.3	51.5	54.7	56.0	89.2	87.8	87.7	89.5	89.4	66.5	72.5	73.1	72.8	73.0
	Employment/population ratios	41.3	45.1	42.8	42.5	44.0	81.9	83.5	82.9	83.9	84.7	61.9	69.0	69.5	69.6	69.8
Switzerland	Unemployment rates	5.8	8.5	7.7	8.8	7.7	3.6	3.7	4.0	3.8	3.5	4.1	2.5	3.2	3.7	3.0
	Labour force participation rates	64.0	69.3	67.0	65.6	68.6	86.2	88.1	88.2	88.5	88.3	63.7	67.4	67.4	67.6	67.8
	Employment/population ratios	60.3	63.5	61.9	59.9	63.3	83.2	84.8	84.7	85.1	85.2	61.1	65.7	65.2	65.1	65.7
Turkey	Unemployment rates	16.0	20.5	19.7	19.3	18.7	6.2	8.7	8.7	8.7	8.4	2.3	3.7	3.1	3.4	3.8
	Labour force participation rates	51.2	38.4	39.3	38.7	37.9	63.7	59.1	59.2	59.3	59.2	41.8	34.0	34.1	31.9	31.3
	Employment/population ratios	43.0	30.5	31.6	31.2	30.8	59.8	54.0	54.1	54.1	54.2	40.8	32.7	33.1	30.8	30.1
United Kingdom[b]	Unemployment rates	16.1	11.5	10.9	12.2	13.9	8.2	3.7	3.6	3.4	4.1	9.1	3.3	3.1	2.6	2.9
	Labour force participation rates	70.1	67.4	67.4	66.7	66.6	83.4	83.8	83.8	84.0	84.6	52.1	57.3	58.0	58.2	59.1
	Employment/population ratios	58.8	59.7	60.1	58.6	57.3	76.5	80.7	80.7	81.1	81.2	47.4	55.4	56.2	56.7	57.4
United States[b]	Unemployment rates	12.5	12.4	11.8	11.3	10.5	5.0	5.0	4.6	4.1	3.8	4.1	4.1	3.8	3.3	3.0
	Labour force participation rates	66.4	61.6	61.1	60.8	60.6	83.4	83.0	82.8	82.8	82.9	56.8	62.4	62.3	62.9	63.7
	Employment/population ratios	58.1	53.9	53.9	53.9	54.2	79.2	78.8	79.0	79.3	79.8	54.4	59.9	59.9	60.8	61.8
EU-15	Unemployment rates	20.8	15.7	16.0	16.7	16.1	9.7	7.3	7.4	7.4	7.0	8.4	5.9	6.8	6.5	6.4
	Labour force participation rates	49.2	47.0	47.5	47.9	47.9	80.5	83.2	83.7	83.9	84.5	39.4	44.5	46.1	47.5	48.8
	Employment/population ratios	39.0	39.6	39.9	39.9	40.2	72.7	77.1	77.5	77.7	78.6	36.1	41.9	42.9	44.4	45.6
EU-19	Unemployment rates	21.4	18.2	18.3	18.6	17.4	9.8	8.2	8.3	8.2	7.5	8.2	6.1	7.0	6.8	6.5
	Labour force participation rates	48.3	44.9	45.1	45.4	45.4	81.1	83.1	83.6	83.8	84.2	38.4	43.2	44.5	46.0	46.9
	Employment/population ratios	38.0	36.8	36.9	36.9	37.5	73.1	76.3	76.6	77.0	78.0	35.3	40.5	41.4	42.9	43.9
OECD Europe	Unemployment rates	20.1	18.3	18.2	18.4	17.3	9.4	8.1	8.2	8.1	7.4	7.6	5.8	6.6	6.4	6.2
	Labour force participation rates	49.0	44.2	44.5	44.5	44.5	79.4	80.2	80.5	80.7	81.0	39.2	43.1	44.3	45.4	46.2
	Employment/population ratios	39.2	36.1	36.4	36.3	36.8	72.0	73.7	73.9	74.1	74.9	36.2	40.6	41.4	42.5	43.4
Total OECD	Unemployment rates	14.3	13.8	13.7	13.4	12.5	6.7	6.2	6.1	5.9	5.4	5.4	4.9	4.9	4.6	4.4
	Labour force participation rates	53.3	49.5	49.7	49.5	49.5	79.8	80.2	80.5	80.6	80.9	48.7	52.8	53.6	54.5	55.4
	Employment/population ratios	45.7	42.7	42.9	42.9	43.3	74.5	75.2	75.6	75.8	76.5	46.1	50.2	51.0	52.0	53.0

Table C. **Employment/population ratios, activity and unemployment rates by selected age groups** *(cont.)*

Men (percentages)

		15 to 24					25 to 54					55 to 64				
		1994	2003	2004	2005	2006	1994	2003	2004	2005	2006	1994	2003	2004	2005	2006
Australia	Unemployment rates	17.7	12.8	12.0	11.1	10.9	7.8	4.7	4.1	3.7	3.6	11.4	4.2	4.0	3.6	3.6
	Labour force participation rates	73.0	71.7	71.7	72.5	72.6	91.6	89.9	89.9	90.3	90.4	61.7	63.7	64.9	66.3	67.4
	Employment/population ratios	60.1	62.5	63.1	64.4	64.7	84.4	85.7	86.2	87.0	87.2	54.7	61.0	62.3	63.9	64.9
Austria	Unemployment rates	4.5	6.6	9.3	10.7	8.8	3.0	3.8	3.8	4.0	3.6	3.9	5.6	4.2	4.1	4.3
	Labour force participation rates	65.6	60.8	61.7	63.6	63.9	92.4	94.0	92.9	92.8	93.2	41.3	42.6	40.6	43.1	47.3
	Employment/population ratios	62.6	56.8	56.0	56.8	58.2	89.6	90.5	89.4	89.1	89.9	39.7	40.2	38.9	41.3	45.3
Belgium	Unemployment rates	20.5	20.1	15.8	20.6	18.4	6.4	6.6	6.0	6.3	7.0	4.5	1.8	4.1	4.4	4.7
	Labour force participation rates	37.3	38.1	35.8	34.8	35.9	92.1	90.4	91.1	91.8	91.9	34.5	39.4	41.0	43.2	40.1
	Employment/population ratios	29.7	30.4	30.2	27.6	29.3	86.2	84.4	85.7	86.0	85.4	33.0	38.7	39.3	41.3	38.3
Canada	Unemployment rates	17.9	15.3	14.9	14.2	12.9	9.6	6.6	6.1	5.8	5.4	9.7	6.8	6.1	5.4	5.3
	Labour force participation rates	65.9	68.3	67.8	66.1	66.5	91.2	91.6	91.6	91.5	91.1	59.5	65.3	66.0	66.7	66.3
	Employment/population ratios	54.1	57.9	57.7	56.7	57.9	82.5	85.6	86.0	86.1	86.2	53.7	60.9	62.0	63.1	62.8
Czech Republic	Unemployment rates	7.9	16.6	21.1	19.4	16.6	2.5	5.0	5.6	5.3	4.7	3.5	4.0	4.9	4.5	5.1
	Labour force participation rates	59.9	42.1	40.0	38.7	37.7	95.3	94.5	94.6	94.8	94.8	49.0	59.9	60.1	62.2	62.7
	Employment/population ratios	55.2	35.1	31.6	31.2	31.4	92.9	89.7	89.2	89.8	90.4	47.3	57.5	57.2	59.4	59.5
Denmark	Unemployment rates	10.2	10.6	8.5	6.1	7.6	6.7	4.4	4.4	3.7	2.6	6.3	4.0	5.5	4.8	3.4
	Labour force participation rates	72.1	68.1	69.0	70.6	68.2	91.9	92.0	91.3	91.1	91.6	63.8	70.8	73.3	70.2	70.5
	Employment/population ratios	64.8	60.9	63.1	66.3	63.0	85.7	88.0	87.3	87.7	89.2	59.8	68.0	69.3	66.8	68.1
Finland	Unemployment rates	37.1	21.7	22.2	20.6	19.3	15.5	7.5	7.0	6.5	5.6	20.4	7.9	7.6	7.2	6.7
	Labour force participation rates	43.5	48.5	47.4	47.9	49.4	90.2	90.1	90.0	90.3	90.3	43.9	55.8	55.7	56.5	58.7
	Employment/population ratios	27.3	38.0	36.9	38.0	39.9	76.2	83.3	83.7	84.4	85.2	35.0	51.4	51.5	52.5	54.8
France[a]	Unemployment rates	24.1	20.5	21.6	21.4	22.4	9.6	7.5	7.6	7.7	7.6	7.2	7.0	7.2	7.1	7.5
	Labour force participation rates	33.2	38.3	37.8	37.3	37.0	95.1	93.8	93.7	93.8	93.8	42.1	48.2	47.9	47.1	46.8
	Employment/population ratios	25.2	30.4	29.7	29.3	28.7	85.9	86.7	86.6	86.6	86.7	39.1	44.9	44.5	43.8	43.3
Germany[a]	Unemployment rates	8.2	12.3	14.2	16.1	14.2	6.5	9.4	9.9	10.6	9.5	10.5	9.4	12.3	12.6	11.9
	Labour force participation rates	58.8	49.9	50.9	53.5	53.9	92.9	93.0	93.0	93.6	93.8	53.1	52.0	57.8	61.3	64.1
	Employment/population ratios	53.9	43.8	43.7	44.9	46.2	86.8	84.2	83.9	83.7	84.8	47.5	47.1	50.7	53.6	56.5
Greece	Unemployment rates	19.8	18.0	18.8	17.5	17.3	4.8	5.2	5.4	5.2	4.9	3.3	3.0	3.9	3.1	3.2
	Labour force participation rates	41.8	38.9	40.5	37.1	36.4	94.5	94.2	94.7	94.7	94.6	60.1	60.1	58.7	60.7	61.2
	Employment/population ratios	33.5	31.9	32.9	30.6	30.1	90.0	89.3	89.6	89.8	89.9	58.1	58.3	56.4	58.8	59.3
Hungary	Unemployment rates	24.6	13.8	16.2	19.7	18.6	10.2	5.5	5.3	6.0	6.4	6.8	2.9	3.2	4.3	4.0
	Labour force participation rates	42.7	34.4	31.4	30.3	30.1	86.9	84.8	85.0	85.5	86.5	28.4	39.0	39.7	42.4	43.2
	Employment/population ratios	32.2	29.7	26.3	24.4	24.5	78.0	80.1	80.5	80.3	81.0	26.5	37.9	38.4	40.6	41.4

Table C.   **Employment/population ratios, activity and unemployment rates by selected age groups** (cont.)

Men (percentages)

		15 to 24					25 to 54					55 to 64				
		1994	2003	2004	2005	2006	1994	2003	2004	2005	2006	1994	2003	2004	2005	2006
Iceland[b]	Unemployment rates	13.0	9.4	9.3	8.5	9.2	3.5	2.4	1.9	1.6	1.8	3.8	2.9	2.9	0.9	1.5
	Labour force participation rates	57.9	75.5	71.8	75.2	77.6	96.1	94.8	94.2	94.3	95.8	95.9	90.2	89.7	90.1	90.6
	Employment/population ratios	50.4	68.5	65.1	68.8	70.4	92.7	92.5	92.4	92.8	94.1	92.3	87.6	87.1	89.3	89.3
Ireland	Unemployment rates	25.4	8.6	8.7	9.1	8.8	13.4	4.4	4.5	4.0	4.1	8.6	2.6	2.9	3.1	2.5
	Labour force participation rates	48.7	53.4	52.8	53.3	56.9	91.3	90.9	91.7	92.2	92.2	64.9	66.5	66.6	67.8	68.3
	Employment/population ratios	36.3	48.8	48.2	48.5	51.9	79.0	87.0	87.6	88.5	88.5	59.3	64.8	64.7	65.7	66.6
Italy	Unemployment rates	26.3	23.0	20.7	21.5	19.1	6.1	5.4	5.2	5.1	4.5	3.4	3.6	4.1	3.6	2.8
	Labour force participation rates	46.9	40.5	39.3	38.1	37.8	90.8	91.5	91.3	91.2	91.3	48.1	44.4	44.0	44.3	45.0
	Employment/population ratios	34.5	31.2	31.2	29.9	30.6	85.3	86.5	86.5	86.6	87.2	46.5	42.8	42.2	42.7	43.7
Japan	Unemployment rates	5.6	11.6	10.6	9.9	8.8	2.0	4.6	4.3	4.0	3.9	4.5	6.7	5.3	5.0	4.5
	Labour force participation rates	48.0	45.2	44.0	44.5	44.7	97.5	96.4	96.2	96.0	96.1	85.0	83.0	82.5	83.1	83.8
	Employment/population ratios	45.4	40.0	39.4	40.1	40.8	95.5	92.0	92.1	92.1	92.4	81.2	77.4	78.1	78.9	80.0
Korea	Unemployment rates	9.2	11.8	12.2	12.2	11.7	2.5	3.4	3.6	3.7	3.6	0.9	2.6	2.7	3.1	3.0
	Labour force participation rates	31.8	28.1	28.8	26.7	24.3	94.6	92.0	91.7	91.3	90.8	79.2	72.8	73.6	74.5	74.9
	Employment/population ratios	28.9	24.8	25.3	23.5	21.4	92.3	88.9	88.4	87.9	87.5	78.5	70.9	71.6	72.2	72.6
Luxembourg	Unemployment rates	8.5	9.7	12.1	11.7	..	2.5	2.6	3.3	2.9	..	0.4	1.0	1.3	2.9	..
	Labour force participation rates	47.9	31.0	29.6	32.1	..	94.9	94.1	95.3	95.5	..	33.6	40.1	38.8	39.4	..
	Employment/population ratios	43.8	28.0	26.0	28.4	..	92.6	91.6	92.2	92.8	..	33.5	39.7	38.3	38.3	..
Mexico	Unemployment rates	6.5	5.1	5.9	6.1	5.4	3.2	2.1	2.4	2.8	2.5	2.0	1.4	1.4	2.5	1.8
	Labour force participation rates	72.6	62.1	63.5	61.3	62.6	96.1	95.0	95.2	95.1	95.5	82.4	79.4	79.3	79.3	82.1
	Employment/population ratios	67.9	59.0	59.8	57.6	59.2	93.0	93.0	92.8	92.5	93.1	80.7	78.4	78.2	77.3	80.6
Netherlands	Unemployment rates	10.9	7.7	9.6	9.5	7.1	5.2	3.6	4.2	4.0	3.2	2.7	3.0	4.3	4.8	4.5
	Labour force participation rates	62.6	71.4	70.2	68.8	70.0	92.3	92.4	91.8	91.3	91.7	41.8	56.9	58.0	57.9	59.3
	Employment/population ratios	55.8	65.9	63.5	62.3	65.1	87.5	89.0	88.0	87.6	88.8	40.7	55.1	55.5	55.1	56.6
New Zealand	Unemployment rates	15.6	10.1	8.7	9.1	9.3	7.0	3.2	2.5	2.4	2.4	5.4	3.4	2.4	1.8	1.8
	Labour force participation rates	70.4	65.4	65.9	65.6	67.8	92.3	91.0	91.6	92.5	92.4	62.8	76.2	78.2	79.7	81.4
	Employment/population ratios	59.4	58.8	60.1	59.6	61.5	85.8	88.1	89.4	90.3	90.2	59.4	73.6	76.4	78.3	79.9
Norway[b]	Unemployment rates	13.1	12.7	12.6	12.5	8.6	5.0	4.3	4.3	4.2	3.1	3.1	1.6	1.5	2.1	1.3
	Labour force participation rates	57.8	63.2	61.9	61.0	58.2	90.6	89.9	90.1	90.1	90.6	71.5	74.7	74.3	74.6	74.1
	Employment/population ratios	50.2	55.2	54.1	53.3	53.2	86.0	86.0	86.2	86.3	87.8	69.3	73.5	73.2	73.1	73.2
Poland	Unemployment rates	30.8	42.1	39.0	36.7	28.3	11.3	16.5	16.0	14.5	11.2	7.5	12.0	12.9	12.6	9.8
	Labour force participation rates	45.2	38.2	37.7	37.2	37.5	90.9	87.4	88.0	88.9	88.2	46.7	41.8	41.3	43.4	42.6
	Employment/population ratios	31.3	22.1	23.0	23.6	26.9	80.6	73.0	74.0	76.0	78.3	43.2	36.8	36.0	37.9	38.4

Table C. **Employment/population ratios, activity and unemployment rates by selected age groups** *(cont.)*

Men (percentages)

		15 to 24					25 to 54					55 to 64				
		1994	2003	2004	2005	2006	1994	2003	2004	2005	2006	1994	2003	2004	2005	2006
Portugal	Unemployment rates	12.3	12.6	13.5	13.7	14.5	5.0	4.9	5.1	6.2	5.8	5.0	4.8	6.0	6.9	7.3
	Labour force participation rates	51.6	48.5	47.6	46.9	46.6	93.6	92.5	92.2	92.5	92.9	63.6	64.7	62.8	62.4	62.7
	Employment/population ratios	45.2	42.4	41.2	40.5	39.8	88.9	88.0	87.4	86.7	87.4	60.4	61.6	59.1	58.1	58.2
Slovak Republic	Unemployment rates	28.0	34.3	34.2	30.7	26.3	10.4	14.5	14.6	13.2	10.4	8.1	14.7	15.6	13.1	9.8
	Labour force participation rates	52.7	45.2	43.1	40.6	39.3	95.0	94.1	93.7	93.8	93.8	40.9	48.1	52.0	55.1	55.3
	Employment/population ratios	38.0	29.7	28.4	28.1	29.0	85.1	80.5	80.0	81.4	84.1	37.6	41.0	43.8	47.9	49.9
Spain[b]	Unemployment rates	37.4	19.4	18.7	16.7	15.0	16.4	6.9	6.9	5.9	5.4	13.3	5.8	6.0	5.4	4.8
	Labour force participation rates	55.0	53.1	54.8	57.2	57.1	93.1	92.4	92.5	92.4	92.5	56.6	62.9	62.7	63.2	63.5
	Employment/population ratios	34.4	42.8	44.5	47.7	48.6	77.8	86.0	86.1	86.9	87.6	49.1	59.3	58.9	59.7	60.4
Sweden[a]	Unemployment rates	25.3	14.7	17.8	23.0	21.1	9.3	5.3	5.7	6.2	5.1	8.5	5.8	5.8	5.4	4.9
	Labour force participation rates	53.5	52.0	51.4	53.9	55.2	91.3	90.1	90.1	92.4	92.5	70.5	75.4	76.0	76.4	76.2
	Employment/population ratios	40.0	44.3	42.2	41.5	43.5	82.8	85.3	85.0	86.6	87.7	64.5	71.1	71.6	72.2	72.4
Switzerland	Unemployment rates	5.4	8.3	8.0	8.5	7.9	3.1	3.4	3.5	3.2	2.7	4.6	2.5	3.1	3.7	2.8
	Labour force participation rates	63.2	70.4	68.1	66.6	70.1	98.2	95.6	95.7	95.6	95.5	82.9	79.7	79.1	77.8	77.1
	Employment/population ratios	59.8	64.6	62.6	60.9	64.6	95.2	92.4	92.3	92.6	92.9	79.1	77.7	76.6	74.9	74.9
Turkey	Unemployment rates	17.5	21.5	20.1	19.3	18.2	6.2	8.9	9.0	8.9	8.5	3.0	5.0	4.1	4.5	4.9
	Labour force participation rates	67.2	50.6	53.1	52.9	52.0	93.7	87.7	89.2	89.4	88.6	59.5	47.1	49.0	47.4	46.3
	Employment/population ratios	55.5	39.7	42.5	42.7	42.6	87.9	79.9	81.1	81.4	81.1	57.7	44.7	47.0	45.3	44.0
United Kingdom[b]	Unemployment rates	19.2	13.3	11.8	13.7	15.8	9.7	4.1	3.8	3.6	4.2	11.6	4.3	3.9	3.3	3.3
	Labour force participation rates	75.1	70.8	70.2	70.0	69.1	92.9	91.4	91.0	91.0	91.7	64.0	67.8	68.0	67.9	68.3
	Employment/population ratios	60.7	61.4	61.9	60.4	58.1	83.9	87.6	87.5	87.7	87.8	56.6	64.9	65.4	65.7	66.0
United States[b]	Unemployment rates	13.2	13.4	12.6	12.4	11.2	4.9	5.2	4.6	3.9	3.6	4.4	4.5	3.9	3.3	3.0
	Labour force participation rates	70.3	63.9	63.6	62.9	63.3	91.7	90.6	90.5	90.5	90.6	65.5	68.7	68.7	69.3	69.6
	Employment/population ratios	61.0	55.3	55.5	55.2	56.2	87.2	85.9	86.3	86.9	87.3	62.6	65.6	66.0	67.0	67.5
EU-15	Unemployment rates	19.8	15.6	15.6	16.4	15.8	8.5	6.5	6.6	6.6	6.2	8.7	5.9	6.8	6.6	6.3
	Labour force participation rates	53.2	50.6	50.7	51.2	51.3	92.8	92.4	92.3	92.4	92.7	52.5	55.0	56.4	57.2	58.1
	Employment/population ratios	42.6	42.7	42.8	42.9	43.2	85.0	86.4	86.2	86.4	86.9	47.9	51.8	52.5	53.4	54.4
EU-19	Unemployment rates	20.5	18.1	18.0	18.3	17.0	8.6	7.4	7.4	7.3	6.6	8.5	6.2	7.1	6.9	6.5
	Labour force participation rates	52.4	48.6	48.5	48.8	48.8	92.6	91.9	91.8	92.1	92.2	51.3	53.9	55.0	56.0	56.7
	Employment/population ratios	41.7	39.8	39.8	39.9	40.5	84.6	85.1	85.0	85.4	86.1	47.0	50.5	51.1	52.1	53.1
OECD Europe	Unemployment rates	19.6	18.5	18.1	18.2	16.9	8.2	7.5	7.5	7.4	6.8	7.9	6.0	6.8	6.6	6.2
	Labour force participation rates	55.0	49.3	49.7	49.9	49.7	92.8	91.4	91.5	91.7	91.8	52.5	54.0	55.1	55.8	56.4
	Employment/population ratios	44.3	40.2	40.7	40.8	41.3	85.1	84.5	84.6	85.0	85.6	48.4	50.7	51.4	52.2	52.9
Total OECD	Unemployment rates	14.4	14.1	13.8	13.8	12.6	6.1	5.9	5.7	5.5	5.1	5.9	5.3	5.2	5.0	4.6
	Labour force participation rates	59.0	54.1	54.4	54.0	54.2	93.3	92.0	92.0	92.1	92.1	62.7	64.3	65.0	65.7	66.3
	Employment/population ratios	50.5	46.5	46.9	46.6	47.4	87.6	86.6	86.7	87.0	87.4	59.0	60.9	61.6	62.4	63.3

Table C. **Employment/population ratios, activity and unemployment rates by selected age groups** *(cont.)*

Women (percentages)

		15 to 24					25 to 54					55 to 64				
		1994	2003	2004	2005	2006	1994	2003	2004	2005	2006	1994	2003	2004	2005	2006
Australia	Unemployment rates	16.4	11.6	11.1	10.5	9.8	7.3	5.0	4.4	4.2	4.0	5.5	3.1	2.9	2.6	2.8
	Labour force participation rates	68.3	69.1	69.4	70.0	69.7	67.7	72.5	71.9	73.8	74.4	27.7	41.2	42.8	44.6	47.5
	Employment/population ratios	57.1	61.1	61.6	62.7	62.8	62.8	68.9	68.8	70.7	71.4	26.2	39.9	41.5	43.4	46.2
Austria	Unemployment rates	5.2	6.4	10.1	9.9	9.3	3.8	3.8	4.8	4.9	4.8	2.7	3.8	3.0	2.6	2.3
	Labour force participation rates	59.3	49.2	53.2	54.8	55.1	71.7	79.9	79.6	79.9	80.9	18.5	21.5	19.9	23.5	26.9
	Employment/population ratios	56.2	46.0	47.8	49.4	49.9	68.9	76.9	75.8	76.0	77.0	18.0	20.7	19.3	22.9	26.3
Belgium	Unemployment rates	23.4	17.5	19.5	19.1	19.5	11.2	7.4	7.4	8.2	8.1	5.9	1.3	2.8	4.2	6.6
	Labour force participation rates	33.0	28.8	32.2	31.5	28.6	67.2	73.1	74.3	76.8	77.0	13.2	18.0	21.8	24.0	24.3
	Employment/population ratios	25.3	23.8	25.9	25.5	23.0	59.7	67.7	68.8	70.5	70.8	12.4	17.7	21.2	23.0	22.7
Canada	Unemployment rates	13.7	11.8	11.7	10.6	10.3	9.0	6.3	5.9	5.7	5.2	8.4	5.6	5.7	5.3	5.1
	Labour force participation rates	61.9	66.5	66.2	65.8	66.4	75.4	81.1	81.5	81.1	81.3	36.9	47.9	48.8	49.4	51.4
	Employment/population ratios	53.4	58.6	58.4	58.8	59.5	68.6	75.9	76.7	76.5	77.1	33.8	45.3	46.0	46.8	48.7
Czech Republic	Unemployment rates	9.8	18.8	19.5	19.1	18.6	4.4	9.3	9.3	9.3	8.3	3.7	5.2	6.2	6.3	5.6
	Labour force participation rates	43.7	34.0	31.5	28.8	29.1	83.2	81.0	80.9	81.6	81.3	20.0	30.0	31.3	33.1	34.0
	Employment/population ratios	39.4	27.6	25.4	23.3	23.7	79.6	73.5	73.4	73.9	74.5	19.3	28.4	29.4	31.0	32.1
Denmark	Unemployment rates	10.2	9.0	7.1	9.8	7.6	9.0	5.6	5.1	4.9	4.1	6.7	3.8	5.8	5.1	4.0
	Labour force participation rates	65.9	63.6	63.9	63.9	69.8	82.7	83.6	84.9	84.1	85.1	43.1	55.2	57.6	55.7	55.8
	Employment/population ratios	59.1	57.9	59.4	57.6	64.5	75.2	78.9	80.6	80.0	81.7	40.2	53.1	54.2	52.9	53.5
Finland	Unemployment rates	30.7	21.5	19.4	19.4	18.4	12.5	7.0	7.6	7.3	6.6	17.5	7.6	7.0	6.5	6.6
	Labour force participation rates	41.1	49.7	48.7	50.2	50.8	84.0	84.8	84.6	85.2	85.3	38.9	52.4	54.3	56.4	58.1
	Employment/population ratios	28.5	39.0	39.3	40.4	41.4	73.5	78.8	78.1	79.0	79.7	32.1	48.5	50.4	52.7	54.3
France[a]	Unemployment rates	31.7	22.9	24.2	24.6	25.8	13.1	10.2	10.0	9.9	9.6	6.6	7.0	7.5	6.4	6.9
	Labour force participation rates	27.6	30.4	30.3	29.9	29.2	76.7	79.8	80.3	80.7	81.2	30.1	38.6	39.8	40.2	40.5
	Employment/population ratios	18.8	23.5	23.0	22.6	21.6	66.7	71.7	72.2	72.7	73.4	28.1	35.9	36.8	37.6	37.8
Germany[a]	Unemployment rates	8.3	8.6	10.8	14.0	12.6	10.1	8.8	9.6	10.2	9.5	13.5	10.1	12.7	13.0	13.0
	Labour force participation rates	53.0	44.9	45.1	46.7	47.3	72.6	78.9	79.7	79.1	80.3	28.3	34.3	37.8	43.2	46.7
	Employment/population ratios	48.6	41.1	40.2	40.1	41.3	65.3	72.0	72.1	71.0	72.7	24.5	30.9	33.0	37.6	40.6
Greece	Unemployment rates	36.9	35.2	35.6	34.7	33.9	10.7	12.9	14.4	14.2	12.3	2.6	3.5	5.1	4.0	4.4
	Labour force participation rates	32.6	31.4	34.1	30.6	28.5	53.9	65.1	67.5	68.3	69.1	23.0	26.2	25.3	26.9	28.0
	Employment/population ratios	20.6	20.3	22.0	20.0	18.8	48.1	56.8	57.8	58.6	60.6	22.4	25.3	24.0	25.8	26.7
Hungary	Unemployment rates	16.5	12.9	14.4	19.1	19.8	8.1	5.0	5.6	6.9	7.2	7.2	2.7	2.9	3.5	3.9
	Labour force participation rates	35.3	27.2	24.3	23.8	23.4	71.5	71.0	71.0	72.2	72.9	10.2	22.4	25.8	27.7	28.2
	Employment/population ratios	29.5	23.7	20.8	19.3	18.8	65.7	67.4	67.0	67.2	67.6	9.4	21.8	25.0	26.8	27.1

Table C. **Employment/population ratios, activity and unemployment rates by selected age groups** *(cont.)*

Women (percentages)

		15 to 24					25 to 54					55 to 64				
		1994	2003	2004	2005	2006	1994	2003	2004	2005	2006	1994	2003	2004	2005	2006
Iceland[b]	Unemployment rates	10.1	7.0	6.8	6.0	7.5	5.0	2.5	2.0	1.8	2.1	3.8	1.3	2.5	2.2	1.7
	Labour force participation rates	59.1	72.8	72.5	79.2	81.7	86.3	88.1	85.3	85.1	85.6	80.5	80.0	78.8	81.9	81.7
	Employment/population ratios	53.1	67.7	67.5	74.5	75.6	82.0	85.9	83.6	83.5	83.8	77.4	78.9	76.9	80.2	80.3
Ireland	Unemployment rates	22.5	6.5	7.4	7.3	7.9	13.4	3.4	3.1	3.1	3.5	8.1	2.0	1.5	2.6	2.0
	Labour force participation rates	39.6	45.7	44.6	47.6	47.8	53.6	67.4	67.9	69.6	70.5	21.5	34.1	34.5	38.4	40.8
	Employment/population ratios	30.6	42.7	41.3	44.1	44.0	46.5	65.1	65.8	67.4	68.1	19.7	33.5	34.0	37.4	40.0
Italy	Unemployment rates	36.5	30.9	27.2	27.4	25.3	11.8	10.0	9.2	9.0	7.8	3.4	4.3	4.0	3.2	2.9
	Labour force participation rates	34.4	29.9	31.7	28.7	26.9	52.6	60.9	63.6	63.6	64.3	14.2	19.3	20.4	21.5	22.5
	Employment/population ratios	21.8	20.6	23.1	20.8	20.1	46.3	54.9	57.8	57.9	59.3	13.7	18.5	19.6	20.8	21.9
Japan	Unemployment rates	5.3	8.7	8.3	7.4	7.2	2.8	4.9	4.5	4.4	3.9	1.9	3.7	3.0	2.7	2.8
	Labour force participation rates	47.1	44.4	44.3	45.0	45.3	65.3	67.7	68.1	68.8	69.3	48.1	49.3	50.1	50.8	51.5
	Employment/population ratios	44.6	40.5	40.6	41.7	42.0	63.4	64.4	65.0	65.7	66.6	47.2	47.5	48.6	49.4	50.1
Korea	Unemployment rates	6.0	9.0	9.4	9.0	9.0	1.0	2.6	2.7	2.9	2.5	0.2	1.3	1.5	1.6	1.2
	Labour force participation rates	41.8	39.6	40.1	39.0	35.5	54.8	58.4	59.6	60.4	61.5	49.5	46.0	46.6	46.5	47.0
	Employment/population ratios	39.3	36.0	36.3	35.5	32.3	54.2	56.8	58.0	58.6	60.0	49.4	45.4	45.9	45.7	46.4
Luxembourg	Unemployment rates	7.2	12.2	22.5	16.2	..	3.9	4.1	6.1	5.3	..	1.2	2.4	2.0	0.9	..
	Labour force participation rates	45.0	29.7	26.4	25.5	..	55.7	66.5	70.4	72.2	..	13.4	21.2	22.6	25.1	..
	Employment/population ratios	41.8	26.1	20.5	21.3	..	53.5	63.8	66.2	68.4	..	13.2	20.6	22.2	24.9	..
Mexico	Unemployment rates	8.3	8.3	10.6	7.4	7.4	3.5	2.5	3.3	2.8	2.6	1.6	0.4	1.4	1.1	1.3
	Labour force participation rates	35.8	32.3	33.2	33.3	34.3	41.3	46.3	49.5	50.0	51.3	25.8	29.7	31.8	30.7	32.2
	Employment/population ratios	32.8	29.6	29.7	30.8	31.8	39.8	45.1	47.8	48.6	50.0	25.4	29.6	31.3	30.4	31.8
Netherlands	Unemployment rates	9.4	7.8	8.9	9.7	8.2	7.8	3.9	4.6	4.8	4.1	5.2	3.1	2.8	4.0	4.2
	Labour force participation rates	60.7	69.3	69.0	68.1	68.4	64.5	76.0	76.6	77.8	78.4	18.5	31.4	33.8	36.0	38.7
	Employment/population ratios	55.0	63.9	62.9	61.5	62.7	59.4	73.0	73.1	74.0	75.1	17.5	30.4	32.8	34.5	37.1
New Zealand	Unemployment rates	14.3	10.4	10.1	9.8	10.0	6.0	3.9	3.3	3.0	2.9	3.6	3.8	2.6	1.9	2.2
	Labour force participation rates	62.6	60.0	59.3	59.9	62.2	71.1	74.9	75.2	76.4	76.7	36.7	57.5	59.6	62.5	62.3
	Employment/population ratios	53.7	53.8	53.3	54.1	55.9	66.9	72.0	72.7	74.1	74.4	35.4	55.3	58.1	61.3	61.0
Norway[b]	Unemployment rates	12.1	10.7	10.7	11.5	8.7	3.8	3.3	3.3	3.8	2.8	1.9	1.2	0.6	1.3	1.0
	Labour force participation rates	53.0	62.0	61.3	59.4	58.1	79.4	82.3	82.8	83.0	83.4	55.4	64.3	63.1	62.9	62.2
	Employment/population ratios	46.6	55.4	54.7	52.5	53.0	76.4	79.6	80.0	79.9	81.0	54.3	63.5	62.7	62.1	61.6
Poland	Unemployment rates	34.7	44.3	43.3	39.2	31.6	14.5	18.3	18.0	17.7	13.4	6.4	10.2	9.5	9.0	6.2
	Labour force participation rates	37.9	30.5	29.9	29.8	30.7	78.6	76.1	76.4	76.7	75.4	28.7	23.9	23.3	23.5	20.3
	Employment/population ratios	24.8	17.0	17.0	18.1	21.0	67.2	62.1	62.7	63.1	65.3	26.8	21.5	21.0	21.4	19.0

Table C. **Employment/population ratios, activity and unemployment rates by selected age groups** *(cont.)*

Women (percentages)

		15 to 24					25 to 54					55 to 64				
		1994	2003	2004	2005	2006	1994	2003	2004	2005	2006	1994	2003	2004	2005	2006
Portugal	Unemployment rates	16.3	16.9	17.6	19.1	18.4	7.2	6.7	7.1	8.5	9.0	2.4	3.7	5.1	5.3	5.2
	Labour force participation rates	42.6	41.3	39.5	38.8	38.7	74.4	79.6	80.6	81.8	82.7	34.2	43.5	44.8	46.1	45.1
	Employment/population ratios	35.7	34.3	32.5	31.4	31.6	69.0	74.2	74.9	74.9	75.3	33.4	41.8	42.5	43.7	42.8
Slovak Republic	Unemployment rates	26.5	31.6	30.8	28.8	27.0	11.6	15.7	17.5	15.7	13.5	12.3	9.9	14.9	13.8	9.4
	Labour force participation rates	41.8	37.1	35.6	32.3	30.6	81.1	84.8	84.0	82.1	81.2	9.2	12.4	14.8	18.2	21.0
	Employment/population ratios	30.7	25.4	24.6	23.0	22.3	71.7	71.5	69.3	69.1	70.2	8.0	11.2	12.6	15.7	19.0
Spain[b]	Unemployment rates	50.1	27.2	26.4	23.5	21.6	28.6	14.8	13.8	10.9	10.5	9.9	9.3	9.4	7.5	7.4
	Labour force participation rates	43.7	41.9	43.4	46.8	48.1	54.6	66.3	68.3	69.0	71.2	19.4	25.8	27.2	29.6	31.0
	Employment/population ratios	21.8	30.5	32.0	35.8	37.7	39.0	56.5	58.9	61.5	63.7	17.5	23.4	24.6	27.4	28.7
Sweden[a]	Unemployment rates	19.9	12.8	16.1	21.6	21.5	6.8	4.4	5.2	6.3	5.5	5.2	3.8	4.0	3.4	3.8
	Labour force participation rates	53.4	52.7	51.6	55.6	56.8	86.9	85.4	85.3	86.5	86.2	62.6	69.5	70.2	69.2	69.8
	Employment/population ratios	42.7	46.0	43.3	43.6	44.6	81.1	81.7	80.8	81.1	81.5	59.3	66.8	67.4	66.9	67.1
Switzerland	Unemployment rates	6.1	8.7	7.4	9.1	7.5	4.2	4.0	4.6	4.6	4.5	3.2	2.5	3.4	3.7	3.3
	Labour force participation rates	64.8	68.3	65.9	64.7	67.0	74.1	80.5	80.8	81.3	81.2	47.2	55.4	55.9	57.7	58.6
	Employment/population ratios	60.8	62.3	61.1	58.8	62.0	70.9	77.3	77.1	77.5	77.6	45.7	54.0	54.0	55.6	56.6
Turkey	Unemployment rates	13.4	18.9	18.9	19.3	19.8	6.0	8.1	7.5	8.2	8.2	0.7	1.1	0.7	0.5	0.8
	Labour force participation rates	35.8	26.8	26.1	25.1	24.6	33.1	29.8	28.6	28.5	29.0	24.8	21.4	19.8	17.0	16.8
	Employment/population ratios	31.0	21.7	21.1	20.2	19.8	31.1	27.4	26.4	26.2	26.6	24.6	21.2	19.7	16.9	16.6
United Kingdom[b]	Unemployment rates	12.6	9.5	9.9	10.6	11.8	6.4	3.3	3.4	3.2	3.9	5.3	2.0	2.1	1.7	2.4
	Labour force participation rates	65.1	64.0	64.6	63.5	64.1	74.1	76.6	76.8	77.2	77.9	40.7	47.2	48.3	48.9	50.2
	Employment/population ratios	56.9	57.9	58.2	56.7	56.5	69.3	74.1	74.2	74.7	74.9	38.5	46.3	47.3	48.1	49.0
United States[b]	Unemployment rates	11.6	11.4	11.0	10.1	9.7	5.0	4.8	4.6	4.4	3.9	3.9	3.7	3.7	3.3	2.9
	Labour force participation rates	62.5	59.2	58.7	58.6	57.9	75.3	75.6	75.3	75.3	75.5	48.9	56.6	56.3	57.0	58.2
	Employment/population ratios	55.3	52.5	52.2	52.6	52.3	71.5	72.0	71.8	72.0	72.5	47.0	54.5	54.3	55.1	56.5
EU-15	Unemployment rates	21.9	15.9	16.4	17.1	16.4	11.4	8.3	8.5	8.3	7.9	7.9	5.9	6.8	6.4	6.7
	Labour force participation rates	45.1	43.3	44.2	44.4	44.4	68.0	74.0	75.1	75.3	76.2	27.0	34.4	36.1	38.2	39.8
	Employment/population ratios	35.2	36.5	36.9	36.8	37.1	60.3	67.8	68.7	69.0	70.2	24.9	32.4	33.7	35.8	37.2
EU-19	Unemployment rates	22.5	18.4	18.7	19.0	17.8	11.4	9.3	9.4	9.3	8.5	7.7	6.1	6.9	6.5	6.6
	Labour force participation rates	44.1	41.2	41.7	41.8	41.9	69.5	74.4	75.3	75.6	76.2	26.4	33.0	34.5	36.5	37.6
	Employment/population ratios	34.2	33.6	33.9	33.9	34.4	61.6	67.5	68.2	68.6	69.8	24.3	31.0	32.1	34.1	35.1
OECD Europe	Unemployment rates	20.8	18.1	18.4	18.7	17.7	10.9	9.1	9.2	9.1	8.3	7.0	5.6	6.4	6.2	6.2
	Labour force participation rates	43.0	39.0	39.3	39.1	39.1	66.0	69.0	69.5	69.6	70.1	26.8	32.7	34.0	35.5	36.5
	Employment/population ratios	34.0	31.9	32.0	31.8	32.2	58.8	62.7	63.1	63.3	64.3	24.9	30.9	31.8	33.4	34.3
Total OECD	Unemployment rates	14.3	13.4	13.5	12.9	12.3	7.5	6.6	6.6	6.4	5.9	4.6	4.3	4.4	4.2	4.1
	Labour force participation rates	47.6	44.8	45.0	45.0	44.8	66.4	68.6	69.1	69.3	69.8	35.7	41.9	42.8	43.9	45.0
	Employment/population ratios	40.8	38.8	38.9	39.2	39.3	61.5	64.1	64.5	64.8	65.7	34.0	40.1	40.9	42.1	43.2

a) Data for 2006 are Secretariat estimates obtained by applying changes between 2005 and 2006 estimates from the European Labour Force Survey to national estimates for 2005.

b) Age group 15 to 24 refers to 16 to 24.

Source: OECD database on Labour Force Statistics (see URLs at the beginning of the Annex). For Belgium, Denmark, Greece and Luxembourg, data are from the European Union Labour Force Survey.

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Table D. **Employment/population ratios, activity and unemployment rates by educational attainment, 2005***

Persons aged 25-64 (percentages)

		Both sexes			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	Unemployment rates	6.3	3.4	2.5	6.4	2.7	2.5	6.3	4.6	2.5
	Labour force participation rates	67.2	82.6	86.6	81.5	89.9	92.2	56.5	72.3	81.5
	Employment/population ratios	62.9	79.8	84.4	76.3	87.4	89.9	53.0	69.0	79.5
Austria	Unemployment rates	8.6	3.9	2.6	9.2	3.5	2.4	8.1	4.3	2.8
	Labour force participation rates	58.3	77.3	86.8	71.1	83.4	88.7	51.0	70.7	84.2
	Employment/population ratios	53.3	74.3	84.5	64.5	80.4	86.6	46.9	67.7	81.8
Belgium	Unemployment rates	12.4	6.9	3.7	10.6	5.4	3.6	15.4	8.8	3.8
	Labour force participation rates	55.9	79.5	87.4	69.6	86.5	91.3	42.2	71.8	83.8
	Employment/population ratios	49.0	74.0	84.2	62.3	81.8	88.0	35.7	65.5	80.6
Canada	Unemployment rates	9.8	5.9	4.6	9.1	5.8	4.5	10.1	6.0	4.5
	Labour force participation rates	62.5	81.1	86.1	73.9	87.4	90.3	49.2	74.0	82.4
	Employment/population ratios	56.4	76.3	82.2	67.2	82.3	86.2	44.2	69.6	78.7
Czech Republic	Unemployment rates	24.4	6.2	2.0	26.3	4.5	1.9	23.2	8.4	2.1
	Labour force participation rates	54.5	80.5	87.5	67.1	88.2	93.8	48.6	72.3	79.8
	Employment/population ratios	41.2	75.5	85.8	49.5	84.3	92.0	37.4	66.2	78.1
Denmark	Unemployment rates	6.8	4.0	3.7	6.1	3.4	3.5	7.7	4.8	3.8
	Labour force participation rates	64.8	83.1	89.7	74.4	86.7	92.2	55.5	78.9	87.6
	Employment/population ratios	60.4	79.7	86.4	69.9	83.7	88.9	51.2	75.1	84.3
Estonia	Unemployment rates	13.0	8.4	3.8	14.9	8.6	3.9	9.8	8.2	3.8
	Labour force participation rates	57.5	80.4	87.8	64.4	85.1	91.5	48.8	75.6	85.6
	Employment/population ratios	50.0	73.6	84.5	54.8	77.8	87.9	44.0	69.4	82.3
Finland	Unemployment rates	10.7	7.4	4.4	10.2	6.9	4.0	11.5	7.9	4.8
	Labour force participation rates	64.9	81.1	88.0	68.4	84.2	90.0	60.6	77.7	86.5
	Employment/population ratios	57.9	75.2	84.1	61.4	78.4	86.4	53.6	71.5	82.4
France	Unemployment rates	12.4	7.3	6.0	11.4	6.0	5.9	13.5	8.9	6.0
	Labour force participation rates	66.0	80.9	86.8	74.4	85.7	90.7	58.7	75.3	83.4
	Employment/population ratios	57.8	75.0	81.6	65.9	80.6	85.4	50.7	68.6	78.3
Germany	Unemployment rates	20.2	11.0	5.5	22.8	11.3	5.3	17.6	10.6	5.9
	Labour force participation rates	64.6	79.3	87.7	80.4	85.9	91.1	54.3	72.9	83.0
	Employment/population ratios	51.6	70.6	82.9	62.1	76.1	86.3	44.7	65.2	78.1
Greece	Unemployment rates	8.2	9.2	7.0	5.2	4.8	4.5	13.4	15.3	10.0
	Labour force participation rates	63.0	76.9	88.2	83.4	90.9	91.4	44.0	63.3	84.6
	Employment/population ratios	57.9	69.9	82.0	79.0	86.5	87.3	38.1	53.6	76.2
Hungary	Unemployment rates	12.4	6.0	2.3	13.3	5.4	2.0	11.6	6.7	2.5
	Labour force participation rates	43.5	74.9	85.0	52.4	81.3	89.3	37.5	67.8	81.5
	Employment/population ratios	38.1	70.4	83.0	45.4	76.9	87.5	33.1	63.3	79.4
Iceland	Unemployment rates	-	1.1	1.3	3.1	0.9	0.9	2.0	1.5	1.7
	Labour force participation rates	84.0	89.1	93.2	91.6	93.6	95.7	78.5	82.0	91.2
	Employment/population ratios	81.9	88.1	92.0	88.8	92.8	94.8	76.9	80.8	89.7

Table D. **Employment/population ratios, activity and unemployment rates by educational attainment, 2005*** *(cont.)*

Persons aged 25-64 (percentages)

		Both sexes			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
Ireland	Unemployment rates	6.0	3.1	2.0	6.3	3.0	2.0	5.3	3.3	1.9
	Labour force participation rates	62.2	79.1	88.5	79.3	92.1	94.0	41.8	67.1	83.6
	Employment/population ratios	58.4	76.7	86.8	74.3	89.4	92.1	39.6	64.9	82.0
Israel	Unemployment rates	14.0	9.5	5.1	13.1	8.5	4.8	16.4	10.8	5.4
	Labour force participation rates	47.9	73.6	84.6	64.8	81.6	87.8	29.1	65.6	81.8
	Employment/population ratios	41.2	66.6	80.3	56.3	74.7	83.6	24.3	58.5	77.4
Italy	Unemployment rates	7.7	5.3	5.7	6.0	3.9	4.3	11.2	7.1	7.1
	Labour force participation rates	55.9	77.4	85.3	75.3	86.5	90.1	36.5	68.2	81.0
	Employment/population ratios	51.6	73.3	80.4	70.8	83.2	86.2	32.4	63.4	75.3
Japan	Unemployment rates	..	4.9	3.1	..	5.4	2.7	..	4.3	3.6
	Labour force participation rates	..	76.1	82.0	..	91.1	95.8	..	61.8	67.0
	Employment/population ratios	..	72.3	79.4	..	86.3	93.2	..	59.2	64.6
Korea	Unemployment rates	2.9	3.8	2.9	4.0	4.1	3.0	1.9	3.3	2.8
	Labour force participation rates	67.8	72.8	79.1	81.7	88.7	92.3	59.0	56.3	60.2
	Employment/population ratios	65.9	70.1	76.8	78.5	85.1	89.6	57.9	54.5	58.5
Luxembourg	Unemployment rates	5.0	3.5	3.2	4.2	2.3	2.7	6.0	5.2	3.9
	Labour force participation rates	64.2	73.5	86.8	79.2	84.4	91.3	51.8	62.3	81.3
	Employment/population ratios	61.0	71.0	84.0	75.8	82.5	88.9	48.7	59.0	78.1
Mexico	Unemployment rates	2.5	3.2	3.7	2.5	3.5	3.9	2.4	3.1	3.3
	Labour force participation rates	65.1	67.5	85.1	92.7	94.2	93.2	41.7	58.2	74.8
	Employment/population ratios	63.5	65.3	82.0	90.3	90.9	89.6	40.7	56.4	72.3
Netherlands	Unemployment rates	5.8	4.1	2.8	5.1	3.9	2.9	6.8	4.3	2.7
	Labour force participation rates	63.2	81.3	88.1	79.2	87.5	90.7	50.5	74.7	85.0
	Employment/population ratios	59.5	77.9	85.6	75.2	84.1	88.0	47.1	71.5	82.7
New Zealand	Unemployment rates	3.8	2.4	1.9	3.5	2.0	1.9	4.2	2.9	1.8
	Labour force participation rates	69.2	84.6	86.0	80.7	92.3	92.7	59.1	76.1	81.0
	Employment/population ratios	66.6	82.6	84.4	77.9	90.4	90.9	56.6	73.9	79.5
Norway	Unemployment rates	7.3	2.6	2.1	8.7	2.5	2.2	6.1	2.7	2.1
	Labour force participation rates	69.4	84.6	90.8	74.9	88.8	92.6	64.3	79.3	89.2
	Employment/population ratios	64.3	82.4	88.8	68.4	86.6	90.5	60.3	77.2	87.4
Poland	Unemployment rates	27.1	16.6	6.2	26.0	14.6	5.4	28.5	19.2	6.8
	Labour force participation rates	51.7	74.0	88.1	63.0	81.8	91.0	42.1	65.8	86.0
	Employment/population ratios	37.7	61.7	82.7	46.6	69.9	86.1	30.1	53.1	80.1
Portugal	Unemployment rates	7.5	6.7	5.4	6.6	5.7	5.2	8.8	7.7	5.5
	Labour force participation rates	77.3	85.0	92.3	85.5	87.1	93.7	69.0	82.9	91.3
	Employment/population ratios	71.5	79.3	87.3	79.9	82.2	88.8	62.9	76.5	86.3
Slovak Republic	Unemployment rates	49.2	12.7	4.4	54.3	11.6	3.9	44.9	14.2	5.0
	Labour force participation rates	42.6	81.1	87.9	57.1	88.8	93.4	35.2	73.1	82.0
	Employment/population ratios	21.7	70.8	84.0	26.1	78.5	89.7	19.4	62.7	78.0

Table D. **Employment/population ratios, activity and unemployment rates by educational attainment, 2005*** *(cont.)*

Persons aged 25-64 (percentages)

		Both sexes			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
Slovenia	Unemployment rates	8.7	5.7	3.0	8.9	4.9	3.1	8.5	6.8	2.8
	Labour force participation rates	61.4	79.1	89.6	71.7	82.9	90.9	53.5	74.5	88.6
	Employment/population ratios	56.1	74.6	87.0	65.3	78.8	88.1	49.0	69.5	86.1
Spain	Unemployment rates	9.3	7.3	6.1	6.7	5.2	4.8	14.1	10.0	7.4
	Labour force participation rates	64.6	80.6	87.7	83.4	90.2	91.7	45.5	70.7	83.7
	Employment/population ratios	58.6	74.7	82.4	77.8	85.5	87.3	39.1	63.6	77.5
Sweden	Unemployment rates	8.5	6.0	4.5	7.7	6.1	4.9	9.9	5.8	4.2
	Labour force participation rates	72.2	86.5	91.4	79.2	89.9	92.6	63.0	82.5	90.6
	Employment/population ratios	66.1	81.3	87.3	73.1	84.4	88.1	56.7	77.8	86.7
Switzerland	Unemployment rates	7.7	3.7	2.7	6.8	3.5	2.2	8.5	3.9	3.8
	Labour force participation rates	70.0	82.7	92.5	81.9	90.8	95.5	62.5	76.1	86.9
	Employment/population ratios	64.6	79.7	90.0	76.3	87.7	93.5	57.2	73.2	83.6
Turkey	Unemployment rates	8.7	9.2	6.9	9.3	7.6	5.8	6.2	16.7	9.4
	Labour force participation rates	53.8	69.5	81.8	82.9	89.4	88.4	23.2	32.8	70.2
	Employment/population ratios	49.1	63.2	76.1	75.2	82.6	83.2	21.8	27.3	63.6
United Kingdom	Unemployment rates	6.6	3.2	2.0	7.4	3.2	2.0	5.7	2.6	1.7
	Labour force participation rates	55.8	82.2	89.7	64.3	87.4	91.4	47.9	76.1	87.5
	Employment/population ratios	52.1	79.6	87.9	59.5	84.7	89.6	45.2	74.1	86.0
United States	Unemployment rates	9.0	5.1	2.6	7.9	5.5	2.7	10.9	4.6	2.5
	Labour force participation rates	62.8	76.7	84.7	75.6	83.9	90.2	48.7	69.7	79.7
	Employment/population ratios	57.2	72.8	82.5	69.6	79.3	87.8	43.4	66.5	77.7
EU-15[a]	Unemployment rates	9.1	5.9	4.3	8.4	5.0	3.9	10.3	7.1	4.8
	Labour force participation rates	63.5	80.2	88.3	76.5	87.2	91.4	51.5	73.0	85.1
	Employment/population ratios	57.8	75.5	84.5	70.1	82.9	87.9	46.2	67.9	81.1
EU-19[a]	Unemployment rates	13.1	6.8	4.2	12.9	5.8	3.8	13.9	8.2	4.6
	Labour force participation rates	60.3	79.7	88.1	73.0	86.8	91.5	49.2	72.3	84.5
	Employment/population ratios	52.9	74.3	84.4	64.2	81.7	88.1	42.8	66.5	80.6
OECD Europe[a]	Unemployment rates	12.4	6.4	4.0	11.9	5.4	3.6	12.4	7.8	4.6
	Labour force participation rates	61.9	80.0	88.3	74.7	87.4	91.8	50.6	71.5	84.5
	Employment/population ratios	55.0	75.0	84.8	66.4	82.7	88.5	44.7	66.2	80.7
Total OECD[a]	Unemployment rates	11.0	5.8	3.8	10.2	5.1	3.5	11.1	7.0	4.2
	Labour force participation rates	62.7	79.4	87.4	73.5	88.0	91.9	51.0	70.4	82.3
	Employment/population ratios	56.5	74.8	84.1	66.3	83.5	88.7	45.7	65.7	78.9

* At the time this report is sent to print (June 2007), the data in the table are provisional until *Education at a Glance* is printed (September 2007).

- Below reliability thresholds.

a) For above OECD countries only.

Source: OECD (2007), *Education at a Glance - OECD Indicators,* September, Paris.

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Table E. **Incidence and composition of part-time employment**[a]

Percentages

	Part-time employment as a proportion of total employment									
	Men					Women				
	1994	2003	2004	2005	2006	1994	2003	2004	2005	2006
Australia[b, c]	12.9	16.5	16.1	15.7	16.0	40.1	42.2	40.8	41.7	40.7
Austria	..	..	3.7	4.6	5.4	..	26.2	29.4	29.4	31.4
Belgium	4.4	5.9	6.3	6.2	6.7	30.0	33.6	34.5	33.4	34.7
Canada	10.8	11.1	10.9	10.8	10.9	28.8	27.9	27.2	26.9	31.9
Czech Republic	2.1	1.6	1.5	1.6	1.6	5.6	5.3	5.2	5.5	5.6
Denmark	9.8	10.4	11.5	11.8	11.4	26.2	21.8	24.0	24.4	25.6
Finland	6.5	8.0	8.0	7.9	8.1	11.5	15.0	14.9	14.8	14.9
France	5.3	4.6	4.6	5.2	5.1	24.5	22.6	23.5	23.2	22.9
Germany	3.0	5.9	6.3	7.4	7.6	28.0	36.3	37.0	39.4	39.2
Greece	5.0	2.8	3.0	3.0	4.0	13.1	10.2	10.8	11.1	12.9
Hungary	..	1.8	1.9	1.8	1.5	..	4.8	4.8	5.0	4.2
Iceland	9.2	7.7	7.8	7.3	7.6	37.9	25.1	26.4	26.6	26.0
Ireland	6.4	7.5	6.9	7.1	7.7	25.5	33.9	34.7	35.0	34.9
Italy	4.2	4.9	5.6	5.1	5.3	20.6	23.6	28.7	29.2	29.4
Japan[b, d]	11.7	14.7	14.2	14.2	12.8	35.7	42.2	41.7	42.3	40.9
Korea[b]	2.9	5.3	5.9	6.5	6.3	6.8	11.2	11.9	12.5	12.3
Luxembourg	1.9	1.7	1.8	1.6	1.5	25.7	30.2	29.6	30.7	27.2
Mexico	..	7.0	8.1	..	..	..	25.7	27.6	..	..
Netherlands	11.3	14.8	15.1	15.3	15.8	54.5	59.7	60.2	60.9	59.7
New Zealand	9.0	10.8	10.7	10.2	10.1	36.1	35.8	35.4	35.3	34.5
Norway	7.7	9.9	10.3	10.0	10.6	37.7	33.4	33.2	32.9	32.9
Poland	..	7.1	7.5	7.1	6.5	..	16.8	17.5	17.4	16.3
Portugal	4.9	5.9	5.8	5.9	5.9	15.2	14.9	14.0	14.4	13.2
Slovak Republic	1.3	1.3	1.6	1.4	1.3	4.4	3.6	4.5	4.1	4.1
Spain	2.4	2.5	2.7	4.0	3.9	14.3	16.8	17.6	22.1	21.4
Sweden	7.1	7.9	8.5	8.5	8.4	24.9	20.6	20.8	19.0	19.0
Switzerland[c]	6.8	8.1	8.1	8.0	8.8	44.9	45.8	45.2	45.7	45.7
Turkey	4.9	3.6	3.7	3.2	4.4	18.5	12.3	14.8	13.4	17.8
United Kingdom	7.0	9.7	9.7	9.8	9.9	41.2	40.0	40.3	39.1	38.8
United States[e]	8.5	8.0	8.1	7.8	7.8	20.4	18.8	18.8	18.3	17.8
EU-15[f]	5.0	6.2	6.5	7.0	7.1	28.3	30.0	31.1	31.9	31.7
EU-19[f]	4.8	6.0	6.3	6.7	6.7	27.1	27.5	28.6	29.3	29.0
OECD Europe[f]	4.9	5.8	6.0	6.3	6.5	27.0	27.0	28.1	28.6	28.7
Total OECD[f]	7.2	7.9	8.1	8.2	8.1	25.7	26.1	26.6	26.7	26.4

Table E. **Incidence and composition of part-time employment**[a] *(cont.)*

Percentages

	Part-time employment as a proportion of total employment					Women's share in part-time employment				
	1994	2003	2004	2005	2006	1994	2003	2004	2005	2006
Australia[b, c]	24.4	27.9	27.1	27.3	27.1	69.6	67.2	67.1	68.3	67.3
Austria	..	13.5	15.4	16.0	17.3	..	87.1	86.9	84.4	83.1
Belgium	14.6	18.0	18.9	18.5	19.3	81.8	81.7	81.3	81.7	81.1
Canada	18.9	18.9	18.5	18.3	18.1	68.9	68.8	68.8	68.6	68.1
Czech Republic	3.6	3.2	3.1	3.3	3.3	67.7	71.9	72.9	72.8	72.8
Denmark	17.3	15.7	17.3	17.6	18.1	69.4	64.5	64.5	63.8	66.2
Finland	8.9	11.3	11.3	11.2	11.4	62.8	63.5	63.3	63.6	62.9
France	13.8	12.8	13.2	13.5	13.3	78.6	80.5	81.0	79.4	79.4
Germany	13.5	19.6	20.1	21.8	21.9	87.1	83.3	82.8	81.4	81.1
Greece	7.8	5.6	6.0	6.1	7.5	59.1	68.7	68.9	69.5	67.0
Hungary	..	3.2	3.3	3.2	2.7	..	69.0	67.7	70.5	70.4
Iceland	22.6	16.0	16.6	16.4	16.0	78.3	74.6	75.0	76.2	74.2
Ireland	13.5	19.3	19.3	19.6	19.9	70.3	78.6	80.3	80.2	78.7
Italy	10.0	12.0	14.8	14.6	14.9	72.6	74.7	77.1	79.0	78.4
Japan[b, d]	21.4	26.0	25.5	25.8	24.5	67.6	66.7	67.4	67.7	69.4
Korea[b]	4.5	7.7	8.4	9.0	8.8	61.3	59.4	59.0	57.9	58.5
Luxembourg	10.7	13.3	13.2	13.9	12.7	88.6	92.2	91.9	93.2	93.1
Mexico	..	13.4	15.1	..	..	..	65.7	65.1	..	..
Netherlands	28.9	34.6	35.0	35.7	35.5	76.8	76.1	76.0	76.3	75.5
New Zealand	21.0	22.3	22.0	21.7	21.3	76.1	73.7	73.6	74.8	74.4
Norway	21.5	21.0	21.1	20.8	21.1	80.6	75.2	74.1	74.6	73.5
Poland	..	11.5	12.0	11.7	10.8	..	66.2	65.7	66.5	67.0
Portugal	9.5	10.0	9.6	9.8	9.3	71.3	68.2	67.0	67.9	65.8
Slovak Republic	2.7	2.3	2.8	2.6	2.5	72.0	69.1	69.0	69.2	70.0
Spain	6.4	8.0	8.5	11.3	11.1	75.5	80.7	81.0	78.9	79.3
Sweden	15.8	14.1	14.4	13.5	13.4	76.8	70.8	69.5	67.1	67.3
Switzerland[c]	23.2	25.1	24.9	25.1	25.5	83.3	82.2	82.1	82.6	81.2
Turkey	8.8	6.0	6.6	5.8	7.9	61.0	56.9	59.4	59.4	58.6
United Kingdom	22.4	23.7	24.0	23.5	23.4	82.7	78.1	78.3	77.8	77.6
United States[e]	14.2	13.2	13.2	12.8	12.6	68.4	68.8	68.3	68.4	67.8
EU-15[f]	14.6	16.6	17.3	18.0	18.0	80.1	78.8	79.0	78.4	78.1
EU-19[f]	14.1	15.4	16.1	16.7	16.6	79.9	78.0	78.1	77.7	77.5
OECD Europe[f]	13.8	14.7	15.4	15.8	16.0	78.7	77.3	77.4	77.1	76.6
Total OECD[f]	15.1	15.8	16.1	16.3	16.1	72.5	71.4	71.4	72.0	72.1

a) Part-time employment refers to persons who usually work less than 30 hours per week in their main job. Data include only persons declaring usual hours.

b) Data are based on actual hours worked.

c) Part-time employment based on hours worked at all jobs.

d) Less than 35 hours per week.

e) Data are for wage and salary workers only.

f) For above countries only.

Sources and definitions: OECD database on Labour Force Statistics (see URLs at the beginning of the Annex). For Austria, Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain and the United Kingdom, data are from the European Union Labour Force Survey. See OECD (1997), "Definition of Part-time Work for the Purpose of International Comparisons", Labour Market and Social Policy Occasional Paper No. 22, available on Internet (*www.oecd.org/els/workingpapers*).

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Table F. **Average annual hours actually worked per person in employment**[a]

	1979	1983	1994	2001	2002	2003	2004	2005	2006
Total employment									
Australia	1 823	1 774	1 771	1 748	1 727	1 730	1 728	1 719	1 714
Austria	..	..	..	1 630	1 632	1 642	1 650	1 656	1 655
Belgium	..	1 768	1 646	1 577	1 579	1 575	1 549	1 565	1 571
Canada	1 832	1 780	1 780	1 762	1 744	1 734	1 752	1 738	1 738
Czech Republic	..	..	2 043	2 000	1 980	1 972	1 986	2 002	1 997
Denmark	1 624	1 622	1 494	1 562	1 556	1 552	1 558	1 574	1 577
Finland[b]	..	1 809	1 763	1 721	1 694	1 686	1 669	1 688	1 691
Finland[c]	1 869	1 823	1 775	1 734	1 728	1 720	1 724	1 718	1 721
France	1 855	1 758	1 675	1 578	1 536	1 530	1 555	1 557	1 564
Germany	..	..	1 547	1 458	1 445	1 439	1 442	1 437	1 436
Western Germany	1 770	1 705	1 515	1 439	1 428	1 422	1 426	1 422	1 421
Greece		2 152	2 092	2 086	2 087	2 087	2 060	2 053	2 031
Hungary	..	2 112	2 032	2 019	2 026	1 997	1 996	1 994	1 989
Iceland	1 875	1 860	1 813	1 847	1 812	1 807	1 810	1 794	..
Ireland	..	1 981	1 883	1 709	1 695	1 671	1 668	1 654	1 640
Italy	1 949	1 922	1 857	1 843	1 831	1 826	1 826	1 815	1 800
Japan	2 126	2 095	1 898	1 809	1 798	1 799	1 787	1 775	1 784
Korea	..	2 923	2 667	2 506	2 465	2 434	2 394	2 354	2 305
Luxembourg	..	1 779	1 709	1 646	1 634	1 614	1 585	1 570	1 604
Mexico	..	..	..	1 864	1 888	1 857	1 849	1 909	1 883
Netherlands	..	1 710	1 411	1 372	1 348	1 363	1 362	1 375	1 391
New Zealand	..	..	1 849	1 817	1 817	1 813	1 827	1 810	1 787
Norway	1 580	1 553	1 505	1 429	1 414	1 399	1 417	1 421	1 407
Poland	..	..	..	1 974	1 979	1 984	1 983	1 994	1 985
Portugal	..	..	1 838	1 769	1 767	1 742	1 763	1 752	1 758
Slovak Republic	..	..	1 854	1 799	1 746	1 673	1 708	1 741	1 749
Spain	2 022	1 912	1 816	1 817	1 798	1 800	1 799	1 769	1 764
Sweden	1 530	1 532	1 621	1 603	1 580	1 562	1 585	1 588	1 583
Switzerland	1 819	1 760	1 725	1 646	1 629	1 639	1 629	1 659	..
Turkey	..	..	..	..	..	..	1 918	1 918	..
United Kingdom	1 818	1 717	1 740	1 714	1 696	1 677	1 672	1 676	1 669
United States	1 834	1 825	1 842	1 819	1 814	1 806	1 809	1 804	1 804
Dependent employment									
Austria	..	..	..	1 520	1 493	1 481	1 485	1 488	1 501
Belgium	..	1 562	1 510	1 457	1 451	1 449	1 441	1 450	1 460
Canada	1 801	1 762	1 769	1 751	1 738	1 727	1 744	1 734	1 734
Czech Republic	..	..	1 974	1 922	1 896	1 882	1 900	1 923	1 922
Denmark	..	1 523	1 420	1 447	1 410	1 422	1 405	1 420	1 423
Finland[b]	..	..	1 670	1 616	1 609	1 596	1 622	1 605	1 608
France	1 711	1 609	1 564	1 482	1 444	1 441	1 456	1 446	1 468
Germany	..	..	1 474	1 375	1 365	1 360	1 364	1 357	1 355
Western Germany	1 689	1 621	1 435	1 352	1 345	1 341	1 347	1 341	1 340
Greece	..	1 766	1 792	1 826	1 818	1 812	1 803	1 811	1 797
Hungary	..	1 829	1 759	1 766	1 766	1 777	1 806	1 802	1 799
Iceland	..	..	1 774	1 779	1 740	1 782	1 823	1 816	..
Ireland	..	1 702	1 652	1 598	1 583	1 576	1 570	1 562	1 557
Japan[d]	2 114	2 098	1 904	1 848	1 837	1 846	1 840	1 829	1 842
Japan[e]	..	..	1 910	1 836	1 825	1 828	1 816	1 802	1 811
Korea	..	2 734	2 471	2 447	2 410	2 390	2 380	2 351	2 302
Luxembourg	..	1 638	1 598	1 577	1 582	1 542	1 535	1 524	1 580
Mexico	..	..	..	1 916	1 945	1 908	1 919	1 970	1 944
Netherlands	1 591	1 530	1 388	1 330	1 317	1 309	1 312	1 322	1 336
New Zealand	..	..	1 772	1 761	1 758	1 758	1 787	1 777	1 759
Poland	..	..	..	1 957	1 958	1 956	1 957	1 970	1 958
Portugal	..	..	1 690	1 683	1 686	1 677	1 690	1 680	1 694
Slovak Republic			1 942	1 993	1 950	1 898	1 913	1 942	1 944
Spain	1 936	1 837	1 749	1 759	1 743	1 747	1 746	1 728	1 718
United Kingdom	1 753	1 655	1 696	1 689	1 674	1 655	1 649	1 655	1 648
United States	1 839	1 837	1 850	1 822	1 819	1 809	1 813	1 809	1 809

Table F. **Average annual hours actually worked per person in employment**[a] *(cont.)*

a) The concept used is the total number of hours worked over the 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. Part-time workers are covered as well as full-time workers.

b) Data estimated from the Labour Force Survey.

c) Data estimated from national accounts.

d) Data refer to establishments with 30 or more regular employees.

e) Data refer to establishments with five or more regular employees.

Sources and definitions:

The series on annual hours actually worked per person in **total employment** presented in this table for all 30 OECD countries are now consistent with the series retained for the calculation of productivity measures in the OECD Productivity database (*www.oecd.org/statistics/productivity/compendium*). Hours actually worked per person in employment are according to National Accounts concepts for 15 countries: Austria, Canada, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Korea, Norway, the Slovak Republic, Sweden, Switzerland and Turkey. Two major revisions have been undertaken. Annual hours worked in Australia have been revised downward following a change in the methodology to account for non random-events such as public holidays. Secretariat estimates for Belgium, Ireland, Luxembourg, Netherlands and Portugal have been revised to reflect annual leave actually declared by self-employed in the European Labour Force Survey (ELFS). For the remaining countries, the sources and methodologies are the same as those presented in the previous edition of the *OECD Employment Outlook*, as are estimates reported for **dependent employment** for 26 countries.

Country specific notes can be found at: *www.oecd.org/els/employmentoutlook/2007*.

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Table G. **Incidence of long-term unemployment**[a, b, c, d, e]

As a percentage of total unemployment

	1994		2003		2004		2005		2006	
	6 months and over	12 months and over	6 months and over	12 months and over	6 months and over	12 months and over	6 months and over	12 months and over	6 months and over	12 months and over
Australia	52.6	36.1	34.8	21.3	33.5	20.5	30.2	17.7	30.6	17.8
Austria	31.8	18.4	41.0	24.5	46.3	27.6	43.2	25.3	44.2	27.3
Belgium	75.2	58.3	64.7	46.3	68.9	49.6	68.3	51.6	69.0	55.6
Canada	32.7	17.9	18.3	10.0	17.8	9.5	17.2	9.6	16.0	8.7
Czech Republic	41.9	22.3	69.9	49.9	71.6	51.8	72.7	53.6	75.0	55.2
Denmark	54.0	32.1	40.9	19.9	45.0	22.6	43.8	25.9	33.7	20.4
Finland	..	..	41.4	24.7	40.8	23.4	41.8	24.9	39.7	24.8
France	61.7	38.5	62.0	42.9	61.3	41.6	61.2	42.5	62.6	44.0
Germany	63.8	44.3	68.5	50.0	67.6	51.8	70.9	54.0	73.1	57.2
Greece	72.8	50.5	74.3	56.3	74.4	54.8	72.6	53.7	75.2	55.6
Hungary	62.6	41.3	65.4	42.2	61.7	45.1	63.4	46.1	62.9	46.1
Iceland	(32.2)	(15.1)	(21.0)	(8.1)	(21.3)	(11.2)	(21.7)	(13.3)	(13.6)	(7.3)
Ireland	80.7	64.3	57.0	35.5	55.0	34.3	52.6	34.3	53.2	34.3
Italy	79.5	61.5	74.1	58.2	65.5	49.7	67.7	52.2	68.5	52.9
Japan	36.1	17.5	50.9	33.5	50.0	33.7	49.1	33.3	48.1	33.0
Korea	20.7	5.4	10.0	0.6	11.4	1.1	11.6	0.8	11.3	1.1
Luxembourg[f]	(54.7)	(29.6)	(41.9)	(24.7)	(44.9)	(21.0)	(51.1)	(26.4)	..	..
Mexico	..	..	4.7	0.9	5.1	1.1	6.8	2.3	6.2	2.5
Netherlands	77.5	49.4	49.3	29.2	55.1	32.5	59.9	40.1	62.7	45.2
New Zealand	50.4	32.7	27.4	13.5	23.9	11.7	21.5	9.4	20.0	7.1
Norway	43.7	28.8	20.6	6.4	25.3	9.2	25.3	9.5	32.3	14.1
Poland	65.2	40.4	70.2	49.7	68.7	47.9	71.6	52.2	69.1	50.4
Portugal	57.2	43.4	57.8	32.8	65.0	43.2	69.3	48.6	70.5	51.8
Slovak Republic	63.9	42.6	76.4	61.1	77.0	60.6	81.4	68.1	84.3	73.1
Spain	73.4	56.2	59.6	39.8	58.0	37.7	47.7	32.6	44.4	29.5
Sweden	46.7	25.7	35.4	17.8	37.3	18.9	29.3	14.1	27.8	14.2
Switzerland	50.1	29.0	47.7	26.1	53.9	33.5	59.1	39.0	58.6	39.1
Turkey	68.9	45.9	39.9	24.4	56.9	39.2	55.6	39.6	51.4	35.8
United Kingdom	63.4	45.4	37.2	22.8	38.8	21.4	38.2	22.4	40.9	22.1
United States	20.3	12.2	22.0	11.8	21.9	12.7	19.6	11.8	17.6	10.0
EU-15[g]	67.6	48.4	61.5	43.4	60.4	42.4	60.5	43.5	60.9	44.2
EU-19[g]	66.9	47.0	63.7	45.1	62.5	44.1	63.1	45.7	62.8	45.9
OECD Europe[g]	66.9	46.7	60.6	42.4	61.6	43.3	62.0	44.8	61.2	44.5
Total OECD[g]	52.6	35.5	46.1	30.9	46.9	31.8	46.8	32.7	45.9	32.2

Table G. **Incidence of long-term unemployment among men**[a, b, c, d, e] *(cont.)*

As a percentage of male unemployment

	1994		2003		2004		2005		2006	
	6 months and over	12 months and over	6 months and over	12 months and over	6 months and over	12 months and over	6 months and over	12 months and over	6 months and over	12 months and over
Australia	56.9	39.9	38.7	24.9	37.0	23.4	33.8	20.2	33.1	20.1
Austria	30.8	18.4	40.6	25.0	46.5	28.6	42.9	25.6	46.2	29.5
Belgium	72.4	53.4	63.5	44.8	70.7	50.4	65.7	50.4	68.1	54.7
Canada	34.5	19.5	19.8	11.4	18.9	10.4	17.8	10.1	16.1	9.1
Czech Republic	40.4	21.7	67.2	47.4	69.2	49.3	71.9	52.9	72.7	53.9
Denmark	52.1	31.9	43.6	21.8	47.4	22.5	49.3	29.7	36.3	20.7
Finland	..	..	45.3	27.7	43.7	25.3	44.9	27.9	42.3	28.0
France	60.3	37.4	61.7	43.0	61.2	41.5	60.2	41.8	62.5	44.8
Germany	60.4	41.2	67.2	48.3	65.7	50.5	70.1	53.7	72.7	57.8
Greece	65.8	41.3	70.2	48.9	67.1	47.2	64.5	43.1	72.4	48.1
Hungary	65.0	43.6	66.0	42.2	62.6	47.0	64.0	47.9	62.9	47.1
Iceland	(29.7)	(14.0)	(20.4)	(8.2)	(16.2)	(8.8)	(17.5)	(10.5)	(15.4)	9.2)
Ireland	83.0	68.5	62.2	41.2	61.7	40.8	60.0	42.4	59.2	40.8
Italy	77.4	59.6	73.1	57.5	63.8	47.3	66.2	50.5	66.2	50.8
Japan	40.2	21.4	56.9	38.9	56.1	40.2	56.3	40.3	55.5	40.9
Korea	22.8	6.4	12.5	0.7	13.4	1.4	12.9	1.0	12.2	1.2
Luxembourg[f]	(59.6)	(33.8)	(50.6)	(32.1)	(44.9)	(22.2)	(53.3)	(33.8)	..	..
Mexico	..	..	5.1	1.1	6.0	1.1	6.1	2.2	6.3	2.7
Netherlands	74.3	50.0	49.7	29.8	58.2	36.0	63.8	44.7	64.3	46.8
New Zealand	55.7	37.2	30.4	15.6	26.8	13.7	24.3	12.6	21.9	8.8
Norway	43.5	28.1	23.3	7.1	28.2	10.7	27.0	10.4	35.9	16.8
Poland	61.8	36.8	69.3	48.6	67.9	46.9	70.4	51.3	68.3	49.0
Portugal	54.2	42.3	56.2	31.3	64.7	43.8	66.5	47.1	68.0	50.3
Slovak Republic	63.8	41.7	76.0	60.2	76.5	60.8	81.0	68.7	84.3	73.9
Spain	68.5	49.5	54.5	34.3	53.8	33.2	42.9	28.2	40.3	25.9
Sweden	50.0	29.1	38.4	19.6	39.7	20.9	32.5	16.6	30.0	16.1
Switzerland	47.4	22.9	42.9	21.5	50.2	31.5	58.8	37.1	54.4	35.0
Turkey	66.8	43.7	36.3	22.1	55.0	37.0	53.0	36.9	48.6	32.6
United Kingdom	68.6	51.2	40.9	26.4	43.0	25.0	43.2	26.2	46.4	27.5
United States	22.2	13.9	23.1	12.5	23.0	13.7	20.7	12.6	18.6	10.7
EU-15[g]	66.0	46.9	60.3	42.1	59.5	41.6	60.0	43.1	61.1	44.8
EU-19[g]	65.3	45.4	62.6	43.8	61.6	43.2	62.4	45.3	62.8	46.2
OECD Europe[g]	65.2	45.0	58.1	40.1	60.3	42.0	60.7	43.7	60.3	43.7
Total OECD[g]	52.0	34.9	45.5	30.2	47.0	31.9	46.7	32.7	45.9	32.4

Table G. **Incidence of long-term unemployment among women**[a, b, c, d, e] *(cont.)*
As a percentage of female unemployment

	1994		2003		2004		2005		2006	
	6 months and over	12 months and over	6 months and over	12 months and over	6 months and over	12 months and over	6 months and over	12 months and over	6 months and over	12 months and over
Australia	46.3	30.5	30.0	16.9	29.4	17.1	26.2	14.9	27.7	15.2
Austria	33.1	18.5	41.6	23.9	46.1	26.5	43.5	24.9	42.1	25.1
Belgium	77.7	62.6	66.2	48.2	67.0	48.8	71.0	52.7	70.0	56.5
Canada	30.1	15.6	16.4	8.2	16.4	8.4	16.4	9.1	15.9	8.3
Czech Republic	43.1	22.8	72.1	51.9	73.8	54.1	73.4	54.2	77.0	56.3
Denmark	55.8	32.4	38.1	17.9	42.5	22.7	39.1	22.7	31.6	20.2
Finland	..	..	37.0	21.4	37.8	21.4	38.6	21.9	37.2	21.8
France	63.1	39.5	62.2	42.8	61.3	41.8	62.1	43.2	62.7	43.3
Germany	67.1	47.2	70.3	52.3	70.3	53.7	71.9	54.5	73.5	56.5
Greece	78.0	57.2	76.9	60.9	78.7	59.2	77.2	59.6	77.0	60.1
Hungary	58.9	37.6	64.6	42.2	60.7	42.8	62.7	44.2	62.8	45.1
Iceland	(34.9)	(16.3)	(21.8)	(7.8)	(26.9)	(14.0)	(26.9)	(16.6)	(11.7)	(5.3)
Ireland	76.8	57.4	48.1	25.9	42.7	22.3	40.4	21.1	44.0	24.5
Italy	81.5	63.3	74.9	58.9	67.0	52.0	69.1	53.8	70.7	54.8
Japan	30.5	12.2	40.8	24.6	40.2	23.1	38.3	22.6	36.8	20.8
Korea	16.1	3.2	6.0	0.3	8.2	0.6	9.3	0.4	9.6	0.9
Luxembourg[f]	(48.9)	(24.6)	(34.1)	(18.2)	(45.0)	(20.1)	(49.4)	(20.5)	..	..
Mexico	..	..	4.3	0.6	4.1	1.1	7.8	2.6	6.1	2.3
Netherlands	80.9	48.7	48.8	28.4	51.7	28.8	55.6	35.0	61.1	43.6
New Zealand	42.8	26.2	24.3	11.3	21.3	9.9	18.7	6.2	18.1	5.5
Norway	43.9	29.8	16.8	5.4	21.3	7.0	23.2	8.5	28.1	11.1
Poland	68.4	43.8	71.1	50.8	69.5	49.0	72.9	53.1	70.0	52.0
Portugal	60.1	44.3	59.1	34.1	65.2	42.6	72.0	49.9	72.7	53.3
Slovak Republic	64.1	43.5	76.7	62.1	77.6	60.3	82.0	67.4	84.3	72.3
Spain	78.4	63.0	63.4	43.9	61.1	41.1	51.4	36.0	47.5	32.2
Sweden	41.8	20.5	31.4	15.3	34.2	16.4	25.7	11.3	25.6	12.2
Switzerland	53.0	35.4	52.7	30.8	57.5	35.6	59.4	40.7	62.2	42.6
Turkey	74.7	51.9	50.0	30.9	62.5	45.6	63.1	47.4	58.6	44.2
United Kingdom	53.3	33.9	31.4	17.1	33.0	16.4	31.0	16.9	33.5	14.9
United States	18.1	10.2	20.7	11.0	20.5	11.4	18.4	10.8	16.5	9.2
EU-15[g]	69.4	50.0	62.9	44.8	61.4	43.3	61.0	43.9	60.7	43.6
EU-19[g]	68.7	48.7	64.9	46.5	63.5	45.0	63.7	46.2	62.8	45.6
OECD Europe[g]	68.8	48.6	63.6	45.1	63.2	44.7	63.4	46.0	62.4	45.4
Total OECD[g]	53.2	36.2	46.9	31.7	46.7	31.7	46.9	32.7	45.9	32.0

a) While data from labour force surveys make international comparisons easier, compared to a mixture of survey and registration data, they are not perfect. Questionnaire wording and design, survey timing, differences across countries in the age groups covered, and other reasons mean that care is required in interpreting cross-country differences in levels.

b) The duration of unemployment database maintained by the OECD Secretariat is composed of detailed duration categories disaggregated by age and sex. All totals are derived by adding each component. Thus, the total for men is derived by adding the number of unemployed men by each duration and age group category. Since published data are usually rounded to the nearest thousand, this method sometimes results in slight differences between the percentages shown here and those that would be obtained using the available published figures.

c) Data are averages of monthly figures for Australia, Canada, Sweden and the United States, averages of quarterly figures for the Czech Republic, Hungary, Norway, New Zealand, Poland, the Slovak Republic and Spain, averages of semi annual figures for Turkey until 1999 and quarterly averages since 2000. The reference period for the remaining countries is as follows (among EU countries it occasionally varies from year to year): Austria, March, and since 2004 all weeks of the first quarter; Belgium, April, and since 1999 all weeks of the second quarter; Denmark, April-May; Finland, autumn prior to 1995, spring between 1995 and 1998, and averages of monthly figures since 1999; France, March and since 2003 all weeks of the first quarter; Germany, April, and since 2005 all weeks of the second quarter; Greece, March-July; Iceland, April; Ireland, May; Italy, April and since 2004 all weeks of the second quarter; Japan, February; Luxembourg, April and since 2003 all weeks of the year; Mexico, April; the Netherlands, March-June; Portugal, February-April; Switzerland, second quarter; and the United Kingdom, March-May.

d) Data refer to persons aged 15 and over in Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, Mexico, the Netherlands, New Zealand, Poland, Portugal, the Slovak Republic, Switzerland and Turkey; and aged 16 and over in Iceland, Spain, the United Kingdom and the United States. Data for Finland refer to persons aged 15-64. Data for Hungary refer to persons aged 15-74, for Norway to persons aged 16-74 and for Sweden to persons aged 16-64.

e) Persons for whom no duration of unemployment was specified are excluded.

f) Data in brackets are based on small sample sizes and, therefore, must be treated with care.

g) For above countries only.

Source: OECD database on Labour Force Statistics (see URLs at the beginning of the Annex).

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Table H. **Earnings dispersion[a], gender wage gap[b] and incidence of low pay[c]**

	Ratio of						Gender wage gap		Incidence of low pay	
	9th to 1st earnings deciles		9th to 5th earnings deciles		5th to 1st earnings deciles					
	1995	2005	1995	2005	1995	2005	1995	2005	1995	2005
Australia	2.91	3.12	1.77	1.85	1.65	1.69	0.86	0.84	13.8	15.9
Austria	..	..	..	..	..	..	0.74	0.79	..	..
Canada	3.50	3.74	1.74	1.87	2.01	2.00	0.74	0.79	22.0	22.2
Czech Republic	2.78	3.01	1.71	1.77	1.63	1.70	0.78	0.82	..	..
Denmark	2.47	2.64	1.69	1.73	1.46	1.53	0.86	0.88	..	..
Finland	2.34	2.42	1.66	1.70	1.41	1.43	0.78	0.80	..	7.0
France	3.08	3.10	1.93	2.01	1.59	1.54	0.90	0.89	..	..
Germany	2.79	3.13	1.79	1.84	1.56	1.70	0.77	0.76	11.1	15.8
Hungary	3.88	4.46	2.08	2.30	1.86	1.94	0.84	0.96	19.9	..
Ireland	4.01	3.57	1.98	2.07	2.02	1.72	0.76	0.82	20.4	17.6
Japan	3.01	3.12	1.85	1.86	1.63	1.68	0.63	0.69	15.4	16.1
Korea	3.64	4.51	1.87	2.14	1.95	2.11	0.57	0.61	22.9	25.4
Netherlands	2.77	2.91	1.71	1.76	1.62	1.65	0.77	0.80	13.8	..
New Zealand	3.04	3.49	1.74	1.98	1.75	1.76	0.85	0.91	14.9	11.5
Norway	1.89	2.21	1.40	1.50	1.35	1.48	..	..	..	..
Poland	3.40	4.31	1.97	2.18	1.72	1.98	0.80	0.89	17.3	23.5
Spain	4.22	3.53	2.10	2.14	2.01	1.65	0.71	0.83	15.2	16.2
Sweden	2.20	2.33	1.59	1.68	1.39	1.39	0.81	0.85	5.7	6.4
Switzerland	2.39	2.61	1.58	1.79	1.51	1.46	0.75	0.78	..	..
United Kingdom	3.48	3.51	1.88	1.96	1.85	1.79	0.73	0.79	20.0	20.7
United States	4.59	4.86	2.17	2.31	2.11	2.10	0.75	0.81	25.2	24.0
OECD unweighted average	3.12	3.39	1.81	1.93	1.70	1.73	0.77	0.82	17.0	17.1

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.

b) The gender wage gap is calculated as the ratio of median earnings of female workers relative to male workers.

c) The incidence of low pay refers to the share of workers earning less than two-thirds of median earnings. Data refer to 1997 (instead of 1995) for Canada, Hungary, Ireland and Sweden and 2002 (instead of 2005) for Germany and Spain.

Note: Estimates of earnings used in the calculations refer to gross earnings of full-time wage and salary workers. Further information on the national data sources and earnings concepts used in the caculations can be found at: *www.oecd.org/els/employmentoutlook/2007.*

Source: OECD database on Earnings Distribution.

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Table I. **Average annual wages in the total economy**

Average gross annual wages per full-time and full-year equivalent dependent employee in the total economy[a]

	Level of average wages in 2005 in current USD	Level of average wages in 2005 in USD PPPs	Average annual growth rates of real average wages[b] (%)		
			1990-1995	1995-2000	2000-2005
Australia	43 294	40 878	0.7	2.3	1.5
Austria	39 404	35 981	1.3	0.6	0.9
Belgium	43 579	38 910	1.8	1.3	0.3
Canada	35 494	34 391	-0.2	2.0	1.0
Czech Republic	10 034	16 195	6.6	3.0	4.8
Denmark	54 074	36 462	0.7	1.6	1.4
Finland	38 436	29 415	0.2	1.3	2.4
France	38 580	32 981	0.9	1.1	1.4
Germany	38 001	34 310	2.1	0.8	0.2
Greece	25 085	26 877	4.9	2.7	3.8
Hungary	11 962	17 835	5.9	0.8	6.9
Ireland	52 911	40 111	2.5	2.3	2.9
Italy	31 051	27 724	-0.7	0.8	0.2
Japan	38 929	29 119	1.3	0.5	0.3
Korea	22 782	26 363	4.5	-0.1	2.2
Luxembourg	56 711	50 634	1.9	1.2	1.2
Netherlands	44 037	39 318	0.4	0.2	0.6
Norway	54 151	36 245	1.1	1.8	3.5
Poland	10 571	16 502	4.7	5.0	2.1
Portugal	18 453	20 038	1.8	2.7	0.6
Spain	26 926	27 388	1.9	-0.5	-0.3
Slovak Republic	7 608	12 623	5.9	5.1	2.8
Sweden	38 244	30 351	-0.2	3.3	1.4
Switzerland	58 205	39 792	0.8	1.3	0.7
United Kingdom	44 974	40 520	0.9	2.5	1.7
United States	45 563	45 563	1.0	2.9	0.2
OECD Europe[c]	36 211	32 346	1.5	1.4	1.1
EU-15[c]	37 409	33 357	1.0	1.1	0.8
EU-19[c]	35 456	32 125	1.5	1.5	1.1
Total OECD[c]	39 303	36 537	1.2	1.8	0.7

a) 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/els/employmentoutlook/2007*.

b) Average annual wages are deflated by a price deflator for private final consumption expenditures.

c) Aggregates are computed on the basis of 2000 GDP weights expressed in 2000 purchasing power parities and include the countries shown.

Source: OECD estimates based on OECD National Accounts database and OECD (2006), *OECD Economic Outlook,* No. 80, December.

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Table J. **Public expenditure and participant stocks in labour market programmes in OECD countries**[a]

Programme categories and sub-categories	Australia[b] Public expenditure as a percentage of GDP			Australia[b] Participant stocks as a percentage of the labour force			Austria Public expenditure as a percentage of GDP			Austria Participant stocks as a percentage of the labour force			Belgium Public expenditure as a percentage of GDP			Belgium Participant stocks as a percentage of the labour force			Canada[l] Public expenditure as a percentage of GDP[m]			Canada[l] Participant stocks as a percentage of the labour force		
	2003-04	2004-05	2005-06	2003-04	2004-05	2005-06	2003	2004	2005	2003	2004	2005	2003	2004	2005	2003	2004	2005	2003-04	2004-05	2005-06	2003-04	2004-05	2005-06
1. PES and administration[a]	**0.19**	**0.22**	**0.26** [c]				**0.17**	**0.17**	**0.17**				**0.22** [i]	**0.23** [i]	**0.23** [i]				**0.19**	**0.18**	**0.16**			
of which: 1.1. Placement and related services[a]	0.12	0.16	0.13				0.07	0.07	0.07				0.02	0.03	0.04				0.04 [n]	0.04 [n]	0.04 [n]			
1.2. Benefit administration[a]	0.03	0.03	0.08 [c]				0.02 [f]	0.02 [f]	0.02 [f]				0.06 [i,j]	0.07 [i,j]	0.06 [i,j]				0.05	0.04	0.04			
2. Training	**0.03** [d]	**0.04** [d]	**0.04** [d]	**0.45**	**0.47**	**0.28**	**0.31** [g]	**0.29** [g]	**0.33** [g]	..	..	**1.89** [g,h]	**0.18**	**0.19**	**0.20**	**2.47** [h]	**2.70** [h]	**2.74** [h]	**0.09**	**0.09**	**0.08**	**1.29**	**1.48**	**1.58**
2.1. Institutional training	0.02	0.02	0.02	0.20	0.20	-	0.24	0.22	0.25	2.50	2.49	2.85	0.17	0.19	0.20	1.53	2.18	2.74	0.07	0.07	0.07	0.90	1.08	1.15
2.2. Workplace training	-	-	-	0.18	0.17	0.17	0.03	0.03	0.03	..	..	0.34	-	-	-	0.40	0.28	0.21	0.01	0.01	0.01	0.08	0.10	0.14
2.3. Alternate training	-	-	-	0.08	0.11	0.11							-	-	-									
2.4. Special support for apprenticeship[a]	0.01	0.01	0.01				0.02	0.02	0.02	0.17	0.23	0.31	-	-	-	0.54	0.55	0.12	0.01	0.01	0.01	0.31	0.30	0.29
4. Employment incentives[a]	**0.01**	**0.01**	**0.01**	**-**	**-**	**-**	**0.06**	**0.06**	**0.05**	**1.22**	**1.09**	**1.11**	**0.21** [k]	**0.16** [k]	**0.17** [k]	**3.16**	**1.50**	**1.47**	**0.01**	**0.01**	**0.01**	**0.18**	**0.17**	**0.15**
4.1. Recruitment incentives	0.01	0.01	0.01	-	-	-	0.04	0.04	0.04	0.37	0.34	0.35	0.15	0.10	0.10	2.20	1.05	1.00	0.01	0.01	0.01	0.18	0.17	0.15
4.2. Employment maintenance incentives	-	-	-	-	-	-	0.02	0.02	0.02	0.85	0.75	0.77	-	-	-	-	-	-	-	-	-	-	-	-
5. Supported employment and rehabilitation	**0.05**	**0.05**	**0.05**	**0.68**	**0.83**	**0.75**	**0.03**	**0.04**	**0.04**	..	..	..	**0.11**	**0.11**	**0.12**	**0.64**	**0.64**	**0.65**	**0.02**	**0.02**	**0.02**	..	..	..
5.1 Supported employment	0.03	0.04	0.04	0.49	0.67	0.60	0.03	0.04	0.04	..	..	..	-	-	0.09	-	-	0.46	-	-	-	0.04	0.07	0.06
5.2 Rehabilitation	0.02	0.02	0.02	0.17	0.17	0.15	-	-	-										0.02	0.02	0.02			
6. Direct job creation	**0.09** [d]	**0.09** [d]	**0.08** [d]	**0.71**	**0.70**	**0.69**	**0.04**	**0.04**	**0.04**	**0.13**	**0.12**	**0.14**	**0.49** [i]	**0.46** [i]	**0.36** [i]	**2.56**	**2.27**	**2.06**	**0.03**	**0.02**	**0.02**	**0.08**	**0.07**	**0.06**
7. Start-up incentives	**0.01**	**0.01**	**0.01**	**0.05**	**0.05**	**0.05**	**-**	**-**	**0.01**	**0.02**	**0.02**	**0.06**	**-**	**-**	**-**	**0.03**	**0.02**	**0.02**	**0.01**	**0.01**	**0.01**	**0.13**	**0.12**	**0.12**
8. Out-of-work income maintenance and support[a]	**0.72**	**0.64**	**0.61**	**6.80**	**6.01**	**5.51**	**1.12**	**1.10**	**1.23**	**5.56**	**5.67**	**5.67**	**2.03**	**1.97**	**1.94**	**13.63**	**13.62**	**13.26**	**0.77**	**0.69**	**0.62**	..	..	..
8.1. Full unemployment benefits	0.71 [e]	0.62 [e]	0.60 [e]	6.80	6.01	5.51	0.94	0.94	1.09	5.50	5.60	5.60	1.77	1.76	1.74	12.74	12.86	12.51	0.77	0.69	0.62	..	..	..
of which: Unemployment insurance	-	-	-	-	-	-	0.60	0.58	0.67	3.23	3.19	3.21	1.77	1.76	1.74	12.74	12.86	12.51	0.77	0.69	0.62	..	..	..
8.2, 8.3. Partial and part-time unemployment benefits	-	-	-	-	-	-	0.01	0.02	0.01	0.05	0.06	0.07	0.16	0.14	0.14	0.89	0.76	0.75	-	-	-	-	-	-
8.4, 8.5. Redundancy and bankrupcy compensation	0.01	0.01	0.01	-	-	-	0.16	0.14	0.13	-	-	-	0.10	0.07	0.06	-	-	-	-	-	-	-	-	-
9. Early retirement[a]	**-**	**-**	**-**	**-**	**-**	**-**	**0.25**	**0.30**	**0.28**	**1.43**	**1.72**	**1.57**	**0.44**	**0.43**	**0.42**	**2.48**	**2.43**	**2.33**	**-**	**-**	**-**	..	..	..
TOTAL (1-9)	**1.10**	**1.05**	**1.06**				**1.99**	**2.00**	**2.13**				**3.69**	**3.57**	**3.45**				**1.14**	**1.04**	**0.95**			
Active measures (1-7)	0.38	0.42	0.45				0.62	0.60	0.62				1.22	1.16	1.08				0.37 [o]	0.36 [o]	0.32 [o]			
of which: Categories 1.1 plus 2-7	0.31	0.35	0.32				0.52	0.51	0.53				1.02	0.96	0.89				0.22 [o]	0.21 [o]	0.20 [o]			
Categories 2-7 only	0.19	0.19	0.19	1.90	2.06	1.77	0.45	0.43	0.46	..	..	..	1.00	0.93	0.85	8.86	7.13	6.95	0.18 [o]	0.17 [o]	0.16 [o]	2.25 [o,p]	2.23 [o,p]	2.45 [o,p]
Passive measures (8-9)	0.72	0.64	0.61	6.80	6.01	5.51	1.37	1.40	1.51	6.98	7.39	7.24	2.47	2.41	2.37	16.11	16.05	15.59	0.78	0.69	0.62	..	..	..

a) See the introductory note about scope, comparability, the coverage of particular programme categories and participant statistics at *www.oecd.org/els/employmentoutlook/2007*. Sub-categories 1.1 and 1.2 refer only to separately-identified spending.

b) Fiscal years starting on July 1st.

c) In 2005-06, following institutional changes, includes the administration costs of most major working-age benefits although only unemployment and related benefits are included in Category 8.

d) Income support payments to participants in training (Category 2) and Work for the Dole (Category 6) are usually unemployment benefits, reported in Category 8. Payments to participants in measures for Indigenous Australians CDEP are reported in Category 6.

e) Includes Mature Age and Partner Allowances, excludes Youth and Widow Allowances.

f) Staff costs of the unemployment insurance service.

g) Includes Employment Foundations established by enterprises in cases of large-scale manpower reductions, which have not been allocated across sub-categories.

h) Adjustments for double-counting (relevant in cases of simultaneous participation in two or more programmes *e.g.* the budget for training centres and training subsistence allowances) are applied to database totals for the main categories (*e.g.* 2. "Training" or 8. "Out-of-work income maintenance and support"), but not to sub-category data.

i) ONEM administration costs for "local employment agencies" are included in Category 6; costs of the new measure "titres-services" are excluded.

j) Does not include administration costs of union benefit payment organisations.

k) Includes the income guarantee allowance for part-time workers. This resembles regular unemployment benefit paid at a reduced rate in the case of part-time work or part-time earnings. It has not been allocated across sub-categories.

l) Fiscal years starting on April 1st.

m) The distribution of expenditure across categories is revised from that published previously. Totals for active and passive measures are not affected.

n) Employment Assistance Service.

o) Includes the Aboriginal Human Resources Development Agreement, which has not been allocated across sub-categories.

p) Participant stocks for Category 5.2 "Rehabilitation and training" are not included.

Table J. **Public expenditure and participant stocks in labour market programmes in OECD countries**[a] *(cont.)*

Programme categories and sub-categories	Czech Republic Public expenditure as a percentage of GDP			Czech Republic Participant stocks as a percentage of the labour force			Denmark Public expenditure as a percentage of GDP			Denmark Participant stocks as a percentage of the labour force			Finland Public expenditure as a percentage of GDP			Finland Participant stocks as a percentage of the labour force			France Public expenditure as a percentage of GDP			France Participant stocks as a percentage of the labour force		
	2003	2004	2005	2003	2004	2005	2003	2004	2005	2003	2004	2005	2003	2004	2005	2003	2004	2005	2003	2004	2005	2003	2004	2005
1. PES and administration[a]	**0.08**	**0.12**	**0.13**				**0.29**	**0.34**	**0.31**				**0.16**[g]	**0.18**[g]	**0.18**[g]				**0.24**	**0.23**	**0.24**			
of which: 1.1. Placement and related services[a]	0.04	0.04	0.04				0.01	0.05	0.04				0.08	0.10	0.10				0.15	0.15	0.16			
1.2. Benefit administration[a]	..	..	..				0.18[b]	0.17[b]	0.16[b]				0.05[g]	0.05[g]	0.05[g]				0.09	0.08	0.08			
2. Training	**0.02**	**0.02**	**0.01**	**0.14**	**0.15**	**0.12**	**0.62**	**0.54**	**0.51**	**1.87**	**1.78**	**1.79**	**0.35**	**0.40**	**0.37**	**1.83**	**1.92**	**1.86**	**0.30**[i]	**0.31**[i]	**0.29**[i]	**..**	**1.94**	**1.98**
2.1. Institutional training	-	-	-	-	-	-	0.59[c]	0.52[c]	0.49[c]	1.64	1.56	1.57	0.28	0.32	0.29	1.23	1.25	1.18	0.09	0.09	0.13	..	0.62	0.88
2.2. Workplace training	-	-	-	-	-	-	0.01	-	-	-	-	-	0.05	0.06	0.06	0.45	0.50	0.51	-	-	-	-	-	-
2.3. Alternate training	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04	0.04	-	0.30	0.32	0.01
2.4. Special support for apprenticeship[a]	-	-	-	-	-	-	0.02	0.02	0.02	0.21	0.21	0.21	0.01	0.01	0.02	0.15	0.17	0.17	0.08	0.08	0.08	0.99	1.01	1.00
4. Employment incentives[a]	**0.03**	**0.05**	**0.04**	**0.53**	**0.47**	**0.45**	**0.50**	**0.47**	**0.45**	**1.32**	**1.26**	**1.27**	**0.19**[h]	**0.17**[h]	**0.16**[h]	**1.12**[h]	**1.05**[h]	**1.00**[h]	**0.11**	**0.12**	**0.13**	**..**	**..**	**..**
4.1. Recruitment incentives	0.03	0.05	0.04	0.53	0.46	0.41	0.50	0.47	0.45	1.32	1.26	1.27	0.13	0.12	0.11	0.77	0.77	0.74	0.10	0.12	0.13	..	..	..
4.2. Employment maintenance incentives	-	-	-	-	0.02	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5. Supported employment and rehabilitation	**0.03**	**0.03**	**0.04**	**..**	**..**	**0.31**	**0.51**	**0.51**	**0.48**	**2.05**	**2.13**	**2.14**	**0.10**	**0.10**	**0.10**	**0.36**	**0.30**	**0.32**	**0.07**	**0.06**	**0.07**	**0.42**	**0.45**	**0.46**
5.1 Supported employment	0.03	0.03	0.04	..	..	0.31	0.19	0.23	0.22	1.06	1.24	1.25	0.02	0.02	0.02	0.11	0.10	0.12	0.07	0.06	0.07	0.42	0.45	0.46
5.2 Rehabilitation	-	-	-	-	-	-	0.31	0.28	0.26	0.99	0.89	0.89	0.08	0.08	0.08	0.25	0.20	0.20	-	-	-	-	-	-
6. Direct job creation	**0.03**	**0.03**	**0.03**	**0.21**	**0.19**	**0.18**	**-**	**-**	**-**	**-**	**-**	**-**	**0.09**	**0.08**	**0.07**	**0.44**	**0.42**	**0.37**	**0.34**	**0.23**	**0.18**	**1.56**	**1.15**	**0.96**
7. Start-up incentives	**0.01**	**0.01**	**-**	**0.11**	**0.12**	**0.11**	**-**	**-**	**-**	**-**	**-**	**-**	**0.01**	**0.01**	**0.01**	**0.08**	**0.10**	**0.14**	**0.01**	**-**	**-**	**0.17**	**0.19**	**0.24**
8. Out-of-work income maintenance and support[a]	**0.27**	**0.25**	**0.24**	**3.56**	**3.29**	**2.68**	**1.89**[d]	**1.95**[d]	**1.83**[d]	**6.85**	**6.96**	**7.00**	**1.55**	**1.56**	**1.47**	**11.26**	**11.45**	**9.70**	**1.63**	**1.63**	**1.57**	**9.51**	**9.73**	**9.32**
8.1. Full unemployment benefits	0.27	0.25	0.24	3.56	3.29	2.68	1.86[e]	1.93[e]	1.81[e]	6.85	6.96	7.00	1.42	1.43	1.35	10.03	10.22	8.57	1.63	1.63	1.57	9.49	9.71	9.30
of which: Unemployment insurance	0.27	0.25	0.24	3.56	3.29	2.68	1.59[e]	1.56[e]	1.47[e]	5.91	5.85	5.89	0.85	0.89	0.85	4.64	4.86	4.02	1.48	1.48	1.39	8.00	8.22	7.77
8.2, 8.3. Partial and part-time unemployment benefits	-	-	-	-	-	-	-	-	-	-	-	-	0.11	0.11	0.11	1.23	1.22	1.13	-	-	-	0.02	0.01	0.01
8.4, 8.5. Redundancy and bankrupcy compensation	0.01	-	-	-	-	-	0.03	0.02	0.02	-	-	-	0.02	0.01	0.01	-	-	-	-	-	-	-	-	-
9. Early retirement[a]	**0.03**	**-**	**-**	**0.41**	**-**	**-**	**0.77**[f]	**0.72**[f]	**0.68**[f]	**2.88**	**2.75**	**2.76**	**0.50**	**0.48**	**0.44**	**2.04**	**1.96**	**1.82**	**0.09**	**0.08**	**0.06**	**0.47**	**0.45**	**0.38**
TOTAL (1-9)	**0.50**	**0.51**	**0.49**				**4.57**	**4.53**	**4.26**				**2.95**	**2.98**	**2.79**				**2.79**	**2.66**	**2.52**			
Active measures (1-7)	0.19	0.26	0.25				1.91	1.86	1.74				0.90	0.95	0.89				1.06	0.95	0.90			
of which: Categories 1.1 plus 2-7	0.15	0.17	0.16				1.63	1.57	1.48				0.82	0.87	0.81				0.97	0.88	0.82			
Categories 2-7 only	0.12	0.13	0.12	..	..	1.16	1.62	1.52	1.43	5.25	5.17	5.20	0.74	0.77	0.71	3.82	3.80	3.69	0.82	0.72	0.66	..	3.74[j]	3.64[j]
Passive measures (8-9)	0.31	0.25	0.24	3.97	3.29	2.68	2.66	2.67	2.51	9.73	9.70	9.76	2.06	2.03	1.90	13.30	13.40	11.52	1.73	1.71	1.62	9.97	10.17	9.70

a) See the introductory note about scope, comparability, the coverage of particular programme categories and participant statistics at *www.oecd.org/els/employmentoutlook/2007*. Sub-categories 1.1 and 1.2 refer only to separately-identified spending.

b) Three-quarters of the administration costs of independent unemployment insurance funds (the last quarter is an estimate for administration of benefits outside the scope of this database), which provide some placement-related services.

c) Includes income support paid to participants in "Specially arranged activation", but not the corresponding services.

d) Includes social assistance benefits paid to unemployed but not inactive recipients.

e) Includes part-time and partial benefits.

f) Early retirement benefits (efterløn) only when paid to recipients who entered the scheme from unemployment.

g) Includes the administration costs of independent unemployment insurance funds.

h) The totals shown for Category 4 include non-zero spending on Eurostat Category 3 "Job rotation and sharing" in Finland, Germany, Italy, Spain and Sweden.

i) Includes training allowances which have not been allocated across sub-categories.

j) Participants stocks for Category 4.1 "Recruitment incentives" are not included.

Table J. **Public expenditure and participant stocks in labour market programmes in OECD countries**[a] *(cont.)*

Programme categories and sub-categories	Germany Public expenditure as a percentage of GDP 2003	2004	2005	Germany Participant stocks as a percentage of the labour force 2003	2004	2005	Greece[d] Public expenditure as a percentage of GDP 2003	2004	2005	Hungary Public expenditure as a percentage of GDP 2003	2004	2005	Hungary Participant stocks as a percentage of the labour force 2003	2004	2005	Ireland Public expenditure as a percentage of GDP 2003	2004	2005	Ireland Participant stocks as a percentage of the labour force 2003	2004	2005
1. PES and administration[a]	**0.30**	**0.29**	**0.35**				**..**	**..**	**..**	**..**	**0.10**	**0.09**				**0.13**[e]	**0.13**[e]	**0.12**[e]			
of which: 1.1. Placement and related services[a]	0.04	0.12	0.13				..	0.02	0.01	..	-	-				0.04	0.05	0.04			
1.2. Benefit administration[a]	..	0.06	0.06				..	..	..	..	..	..				0.03[f]	0.03[f]	0.03[f]			
2. Training	**0.46**[b]	**0.36**[b]	**0.25**[b]	**3.11**[b]	**2.69**[b]	**2.35**[b]	**0.02**	**0.03**	**0.03**	**0.08**	**0.05**	**0.04**	**0.62**	**0.50**	**0.34**	**0.24**[g]	**0.24**[g]	**0.24**[g]	**1.33**[g]	**1.47**[g]	**..**
2.1. Institutional training	0.33	0.24	0.14	1.51	1.20	0.94	0.01	0.01	0.01	0.08	0.05	0.04	0.62	0.49	0.34	0.13	0.13	0.12	0.81	0.87	0.80
2.2. Workplace training	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-	-	0.02	0.01	-
2.3. Alternate training	-	-	-	0.01	0.01	-	-	0.01	0.02	-	-	-	-	-	-	0.07	0.07	0.07	0.31	0.36	0.35
2.4. Special support for apprenticeship[a]	0.07	0.07	0.06	0.59	0.57	0.57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4. Employment incentives[a]	**0.11**[c]	**0.09**[c]	**0.05**[c]	**0.65**[c]	**0.48**[c]	**0.27**[c]	**0.03**	**0.05**	**0.02**	**..**	**0.10**	**0.10**	**..**	**..**	**..**	**0.10**	**0.07**	**0.05**	**0.60**	**0.43**	**0.31**
4.1. Recruitment incentives	0.11	0.08	0.05	0.64	0.47	0.26	0.03	0.05	0.02	..	0.09	0.09	..	..	..	0.10	0.07	0.05	0.60	0.43	0.31
4.2. Employment maintenance incentives	-	-	-	-	-	-	-	-	-	0.01	0.01	0.01	0.08	0.07	0.10	-	-	-	-	-	-
5. Supported employment and rehabilitation	**0.15**[b]	**0.15**[b]	**0.13**[b]	**0.46**[b]	**0.42**[b]	**0.39**[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.01**	**0.01**	**0.01**	**0.07**	**0.06**	**0.09**
5.1 Supported employment	0.01	0.01	0.01	0.07	0.05	0.05	-	-	-	-	-	-	-	-	-	0.01	0.01	0.01	0.07	0.06	0.09
5.2 Rehabilitation	0.14	0.13	0.11	0.36	0.35	0.32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6. Direct job creation	**0.14**	**0.13**	**0.10**	**0.63**	**0.68**	**0.89**	**-**	**-**	**-**	**0.06**	**0.05**	**0.06**	**0.50**	**0.44**	**0.39**	**0.24**	**0.21**	**0.21**	**1.21**	**1.26**	**1.21**
7. Start-up incentives	**0.09**	**0.13**	**0.09**	**0.33**	**0.63**	**0.83**	**0.03**	**0.05**	**-**	**0.01**	**0.01**	**-**	**0.14**	**0.13**	**0.10**	**-**	**-**	**-**	**0.53**	**0.36**	**0.26**
8. Out-of-work income maintenance and support[a]	**2.24**	**2.28**	**2.30**	**11.01**	**10.73**	**16.47**	**0.32**	**0.35**	**0.35**	**0.35**	**0.37**	**0.38**	**2.74**	**2.98**	**3.08**	**0.82**	**0.84**	**0.77**	**8.63**	**8.05**	**7.29**
8.1. Full unemployment benefits	2.12	2.17	1.21	10.30	10.15	10.96	0.28	0.30	0.30	0.35	0.37	0.38	2.74	2.98	3.08	0.75	0.73	0.67	8.63	8.05	7.29
of which: Unemployment insurance	1.35	1.32	1.21	5.12	4.61	4.21	0.27	0.30	0.30	0.34	0.34	0.35	2.59	2.64	2.66	0.34	0.32	0.26	4.26	3.74	3.12
8.2, 8.3. Partial and part-time unemployment benefits	0.04	0.04	0.04	0.71	0.57	0.48	0.04	0.05	0.05	-	-	-	-	-	-	-	-	-	-	-	-
8.4, 8.5. Redundancy and bankrupcy compensation	0.08	0.06	0.05	-	-	-	-	-	-	-	-	-	-	-	-	0.07	0.11	0.10	-	-	-
9. Early retirement[a]	**0.04**	**0.04**	**0.05**	**0.18**	**0.20**	**0.22**	**-**	**-**	**-**	**0.01**	**0.01**	**0.01**	**0.14**	**0.14**	**0.13**	**0.06**	**0.06**	**0.06**	**0.59**	**0.58**	**0.55**
TOTAL (1-9)	**3.53**	**3.47**	**3.32**				**..**	**..**	**..**	**..**	**0.68**	**0.68**				**1.60**	**1.56**	**1.46**			
Active measures (1-7)	1.25	1.15	0.97				..	..	..	..	0.30	0.29				0.71	0.65	0.63			
of which: Categories 1.1 plus 2-7	0.99	0.98	0.75				..	0.14	0.06	..	0.20	0.20				0.63	0.57	0.55			
Categories 2-7 only	0.95	0.86	0.62	5.18	4.91	4.73	0.08	0.12	0.05	..	0.20	0.20	..	..	..	0.59	0.52	0.51	3.74	3.58	..
Passive measures (8-9)	2.28	2.32	2.35	11.18	10.93	16.68	0.32	0.35	0.35	0.36	0.37	0.39	2.87	3.12	3.21	0.89	0.90	0.83	9.22	8.63	7.84

a) See the introductory note about scope, comparability, the coverage of particular programme categories and participant statistics at *www.oecd.org/els/employmentoutlook/2007*. Sub-categories 1.1 and 1.2 refer only to separately-identified spending.

b) Includes Länder spending which has not been allocated across sub-categories.

c) The totals shown for Category 4 include non-zero spending on Eurostat Category 3 "Job rotation and sharing" in Finland, Germany, Italy, Spain and Sweden.

d) OECD has adopted a recent revision of GDP figures (which increased GDP by 25.7% in the year 2000), hence expenditure data as a percentage of GDP significantly differ from those published by Eurostat.

e) Category 1 includes the Local Employment Service, Job Clubs, and the overheads, pension and staff costs of the employment and training organisation FÁS, except for Training Services (which are allocated to Category 2: OECD estimate for 2004 and 2005) and Services to Business.

f) Secretariat estimate based on the ratio of benefit administration costs to benefits paid for a wider range of benefits (as reported in annual reports of DSFA, the Social Affairs ministry).

g) Includes the Local Training Initiative and Specialist Training Providers programmes which have not been allocated across sub-categories.

Table J. **Public expenditure and participant stocks in labour market programmes in OECD countries[a]** *(cont.)*

Programme categories and sub-categories	Italy Public expenditure as a percentage of GDP			Italy Participant stocks as a percentage of the labour force			Japan[f] Public expenditure as a percentage of GDP			Korea Public expenditure as a percentage of GDP			Luxembourg Public expenditure as a percentage of GDP			Luxembourg Participant stocks as a percentage of the labour force			Mexico Public expenditure as a percentage of GDP		
	2003	2004	2005	2003	2004	2005	2003-04	2004-05	2005-06	2003	2004	2005	2003	2004	2005	2003	2004	2005	2003	2004	2005
1. PES and administration[a]	..	**0.09**	**0.08**				**0.23**	**0.21**	**0.19**	**0.02**	**0.03**	**0.03**	**0.07**[k]	**0.07**[k]	**0.06**[k]				**-** [m]	**-** [m]	**-** [m]
of which: 1.1. Placement and related services[a]	0.01	0.01	0.01				0.12[g]	0.11[g]	0.10[g]	0.01	0.01	0.01	..	..	..				-	-	-
1.2. Benefit administration[a]	0.04[b]	0.05[b]	0.05[b]				0.05[g]	0.05[g]	0.04[g]	0.01	0.01	0.01	..	..	..				..	..	..
2. Training	**0.25**	**0.22**	**0.20**	..	..	..	**0.04**	**0.04**	**0.04**	**0.05**	**0.04**	**0.04**	**0.10**	**0.11**	**0.13**	**1.04**	**1.12**	**1.22**	**0.01**[n]	**0.01**[n]	**0.01**[n]
2.1. Institutional training	0.01	0.01	-	..	..	..	0.04[h]	0.04[h]	0.04[h]	0.05[j]	0.04[j]	0.04[j]	0.01[l]	0.01[l]	0.02[l]	0.23	0.20	0.20	..	..	..
2.2. Workplace training	0.04	0.03	0.01	0.78	0.52	0.30	-	-	-	-	-	-	0.08	0.08	0.09	0.67	0.71	0.78	..	..	..
2.3. Alternate training	-	-	-	..	..	..	-	-	-	-	-	-	0.01	0.01	0.01	0.07	0.11	0.13	..	..	..
2.4. Special support for apprenticeship[a]	0.15[c]	0.14[c]	0.15[c]	..	..	..	-	-	-	-	-	-	-	-	0.01	0.08	0.09	0.10	..	..	..
4. Employment incentives[a]	**0.34**[d]	**0.25**[d]	**0.20**[d]	..	**3.21**[d]	**2.78**[d]	**0.02**	**0.02**	**0.02**	**0.01**	**0.01**	**0.02**	**0.07**	**0.13**	**0.19**	..	..	..	**-**	**-**	**-**
4.1. Recruitment incentives	0.33[e]	0.25[e]	0.20[e]	..	3.13	2.70	0.02	0.02	0.02	0.01	0.01	0.02	0.01	0.01	0.01	..	..	..	-	-	-
4.2. Employment maintenance incentives	-	-	-	0.01	0.01	-	0.01	-	-	-	-	-	-	-	0.03	-	-	..	-	-	-
5. Supported employment and rehabilitation	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.03**	**0.03**	**0.02**	**0.01**	**0.01**	**0.01**	..	..	**-**	**-**	**-**	**-**
5.1 Supported employment	-	-	-	-	-	-	-	-	-	0.02	0.02	0.02	0.01	0.01	0.01	..	..	-	-	-	-
5.2 Rehabilitation	-	-	-	-	-	-	-	-	-	0.01	0.01										
6. Direct job creation	**0.03**	**0.01**	**0.01**	..	**0.21**	**0.18**	**-**	**-**	**-**	**0.01**	**-**	**-**	**0.18**[l]	**0.16**[l]	**0.13**[l]	**1.27**[l]	**1.09**[l]	**0.96**[l]	**0.01**	**0.01**	**-**
7. Start-up incentives	**0.05**	**0.05**	**0.05**	**0.12**	..	..	**-**	**-**	**-**	**0.01**	**0.01**	**0.01**	**-**	**-**	**-**	**-**	**-**	**-**	**0.01**[o]	**0.01**[o]	**0.01**[o]
8. Out-of-work income maintenance and support[a]	**0.54**	**0.64**	**0.72**	**2.49**	**2.56**	**2.83**	**0.48**[i]	**0.46**[i]	**0.44**[i]	**0.14**	**0.19**	**0.22**	**0.40**	**0.45**	**0.47**	..	..	**3.57**	**-**	**-**	**-**
8.1. Full unemployment benefits	0.46	0.54	0.61	1.95	2.02	2.26	0.48	0.46	0.43	0.14	0.19	0.22	0.35	0.41	0.41	2.02	2.38	2.43	-	-	-
of which: Unemployment insurance	0.41	0.47	0.53	1.92	1.97	2.20	-	-	-	0.14	0.19	0.22	..	..	..	..	..	..	-	-	-
8.2, 8.3. Partial and part-time unemployment benefits	0.08	0.10	0.11	0.54	0.54	0.58	-	-	-	-	-	-	0.03	0.02	0.03	..	..	1.14	-	-	-
8.4, 8.5. Redundancy and bankrupcy compensation	-	-	-	-	-	-	0.01	0.01	-	-	-	-	0.02	0.02	0.03	-	-	-	-	-	-
9. Early retirement[a]	**0.10**	**0.10**	**0.10**	**0.42**	**0.36**	**0.39**	**-**	**-**	**-**	**-**	**-**	**-**	**0.20**	**0.21**	**0.20**	**0.64**	**0.66**	**0.65**	**-**	**-**	**-**
TOTAL (1-9)	..	**1.36**	**1.36**				**0.78**	**0.73**	**0.68**	**0.27**	**0.31**	**0.35**	**1.03**	**1.13**	**1.19**				**0.03**	**0.03**	**0.02**
Active measures (1-7)	..	0.62	0.54				0.30	0.27	0.25	0.13	0.12	0.13	0.43	0.47	0.52				0.03	0.03	0.02
of which: Categories 1.1 plus 2-7	0.67	0.54	0.47				0.19	0.17	0.16	0.12	0.11	0.11	..	..	..				0.03	0.03	0.02
Categories 2-7 only	0.67	0.53	0.46	..	..	..	0.07	0.06	0.06	0.11	0.09	0.10	0.36	0.41	0.46	..	..	..	0.03	0.03	0.02
Passive measures (8-9)	0.65	0.74	0.82	2.91	2.92	3.22	0.47[i]	0.45[i]	0.43[i]	0.14	0.19	0.22	0.60	0.65	0.67	..	..	4.22	-	-	-

a) See the introductory note about scope, comparability, the coverage of particular programme categories and participant statistics at *www.oecd.org/els/employmentoutlook/2007*. Sub-categories 1.1 and 1.2 refer only to separately-identified spending.

b) Secretariat estimate based on data for total administration costs and human resources administering income support payments within the National Social Security Institute (reported in INPS General Accounts and Annual Report 2005).

c) Mainly exemptions from employer social security contributions, not restricted to the unemployed or those at risk. "Training post compulsory education and post diploma" is included in Category 2 but not in this sub-category.

d) The totals shown for Category 4 include non-zero spending on Eurostat Category 3 "Job rotation and sharing" in Finland, Germany, Italy, Spain and Sweden.

e) Much spending in this category refers to tax relief for firms that have increased total employment and for the conversion of temporary contracts into permanent ones, not otherwise conditional on employment status.

f) Fiscal years starting on April 1.

g) Secretariat estimate based on the distribution of PES staff in 2005 (approximately 6 400 staff working on placement and counselling and 2 700 on benefit administration, from a total 12 000).

h) Includes education and training grants, but not unemployment benefits paid to programme participants.

i) Education and training grants paid to participants in institutional training (Category 2.1) are included in the total for Category 8 but excluded from the total for "Passive measures (8-9)".

j) Refers to expenditure on training programmes for the unemployed. In the case of mixed programmes, an estimated share of expenditure relating to training for employed workers is not included.

k) Secretariat estimate for i) ADEM (main state budget line plus the value of personnel, computing services and accomodation financed via other budgets), ii) the national social assistance service and iii) some local employment services.

l) Includes Secretariat estimates in Category 2.1 for "Training for entering or re-entering the labour market" and "Vocational retraining" and in Category 6 for "Special measures" and "Compensated Temporary Assignments" (ATI).

m) 0.002% of GDP.

n) Includes a number of programmes not allocated across sub-categories.

o) Refers to the Productive Options programme which provides business start-up support and is targeted on poverty, not necessarily unemployment.

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Table J. **Public expenditure and participant stocks in labour market programmes in OECD countries**[a] *(cont.)*

Programme categories and sub-categories	Netherlands Public expenditure as a percentage of GDP			Participant stocks as a percentage of the labour force			New Zealand[g] Public expenditure as a percentage of GDP			Participant stocks as a percentage of the labour force			Norway Public expenditure as a percentage of GDP			Participant stocks as a percentage of the labour force			Poland[n] Public expenditure as a percentage of GDP			Participant stocks as a percentage of the labour force		
	2003	2004	2005	2003	2004	2005	2003-04	2004-05	2005-06	2003-04	2004-05	2005-06	2003	2004	2005	2003	2004	2005	2003	2004	2005	2003	2004	2005
1. PES and administration[a]	**0.46**	**0.50**	**0.49**				**0.12**	**0.12**	**0.12**				**0.12**	**0.13**	**0.12**				**..**	**..**	**0.07**			
of which: 1.1. Placement and related services[a]	0.13 [b]	0.18 [b]	0.18 [b]				0.02	0.02	0.02				0.05	0.06	0.06				..	..	-			
1.2. Benefit administration[a]	0.24	0.24	0.23				0.07	0.07	0.06				0.02 [k]	0.02 [k]	0.02 [k]				..	..	..			
2. Training	**0.17** [b,c]	**0.14** [b,c]	**0.13** [b,c]	**3.47** [b]	**1.66** [b]	**1.31** [b]	**0.20** [h]	**0.18** [h]	**0.17** [h]	**0.92**	**0.91**	**0.57**	**0.43**	**0.41**	**0.37**	**1.74**	**1.76**	**1.64**	**..**	**..**	**0.10**	**..**	**..**	**0.65**
2.1. Institutional training	0.06	0.03	0.03	0.32	0.19	0.22	0.08	0.08	0.07	0.30	0.27	0.19	0.41 [l]	0.39 [l]	0.36 [l]	1.52	1.52	1.42	..	..	0.02	..	..	0.08
2.2. Workplace training	-	-	-	0.11	0.09	0.07	0.01	-	0.01	-	-	-	0.02	0.02	0.02	0.22	0.24	0.22	..	..	0.02	..	..	0.15
2.3. Alternate training	0.05	0.01	-	1.78	0.37	0.09	0.11	0.10	0.10	0.63	0.64	0.38	-	-	-	-	-	-	..	..	-	..	..	-
2.4. Special support for apprenticeship[a]	0.04 [d]	0.04 [d]	0.04 [d]	1.02	0.97	0.90	-	-	-	-	-	-	-	-	-	-	-	-	..	..	0.06	..	..	0.43
4. Employment incentives[a]	**0.03**	**0.03**	**0.17**	**0.77**	**0.54**	**0.78**	**0.04**	**0.03**	**0.02**	**..**	**..**	**..**	**0.05**	**0.05**	**0.03**	**0.24**	**0.25**	**0.23**	**..**	**..**	**0.04**	**..**	**..**	**..**
4.1. Recruitment incentives	0.03	0.03	0.17	0.76	0.54	0.78	0.03	0.03	0.02	..	..	..	0.05	0.05	0.03	0.24	0.25	0.23	..	..	0.03	..	..	..
4.2. Employment maintenance incentives	-	-	-	-	-	-	..	..	..	..	..	..	-	-	-	-	-	-	..	..	0.01	..	..	0.27
5. Supported employment and rehabilitation	**0.59**	**0.56**	**0.53**	**2.33**	**2.13**	**2.08**	**0.05**	**0.06**	**0.06**	**1.31**	**1.27**	**1.35**	**0.13**	**0.14**	**0.15**	**0.39**	**0.42**	**0.47**	**..**	**..**	**0.16**	**..**	**..**	**..**
5.1 Supported employment	0.45	0.45	0.44	1.17	1.19	1.19	0.02	0.02	0.02	0.57	0.65	0.73	0.09	0.10	0.12	0.29	0.32	0.39	..	..	0.16	..	..	..
5.2 Rehabilitation	-	-	-	-	-	-	0.02	0.03	0.03	0.73	0.62	0.62	0.04	0.03	0.03	0.11	0.09	0.08	..	..	-	..	..	0.01
6. Direct job creation	**0.23**	**0.18**	**-**	**0.86**	**0.61**	**-**	**0.01**	**0.01**	**-**	**..**	**..**	**..**	**0.06**	**0.06**	**0.07**	**0.29**	**0.26**	**0.33**	**..**	**..**	**0.03**	**..**	**..**	**0.06**
7. Start-up incentives	**-**	**-**	**-**	**-**	**-**	**-**	**0.03**	**0.02**	**0.01**	**-**	**-**	**-**	**-**	**-**	**-**	**0.01**	**0.01**	**0.02**	**..**	**..**	**0.03**	**..**	**..**	**0.02**
8. Out-of-work income maintenance and support[a]	**1.97** [e]	**2.09** [e]	**2.02** [e]	**8.95** [f]	**9.60**	**9.22**	**0.77** [i]	**0.54** [i]	**0.44** [i]	**4.71**	**3.23**	**2.44**	**0.87** [m]	**0.86** [m]	**0.87** [m]	**4.41**	**4.79**	**4.36**	**..**	**..**	**0.31**	**..**	**..**	**2.18**
8.1. Full unemployment benefits	1.97 [e]	2.09 [e]	2.02 [e]	9.19	9.60	9.22	0.77 [i]	0.54 [i]	0.44 [i]	4.71	3.23	2.44	0.63	0.66	0.72	4.41	4.79	4.36	..	..	0.31	..	..	2.18
of which: Unemployment insurance	1.01	1.10	1.08	4.63	5.05	4.80	-	-	-	-	-	-	0.48	0.45	0.36	3.75	3.78	3.22	..	..	..	..	..	-
8.2, 8.3. Partial and part-time unemployment benefits	-	-	-	-	-	-	-	-	-	-	-	-	0.12	0.12	0.10	-	-	-	..	..	-	..	..	-
8.4, 8.5. Redundancy and bankrupcy compensation	-	-	-	-	-	-	-	-	-	-	-	-	0.12	0.08	0.05	-	-	-	..	..	-	..	..	-
9. Early retirement[a]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**..**	**..**	**0.55**	**..**	**..**	**2.92**
TOTAL (1-9)	**3.46**	**3.49**	**3.35**				**1.21**	**0.96**	**0.83**				**1.67**	**1.64**	**1.62**				**..**	**..**	**1.29**			
Active measures (1-7)	1.49	1.40	1.33				0.45	0.42	0.39				0.80	0.79	0.75				..	..	0.43			
of which: Categories 1.1 plus 2-7	1.15	1.09	1.02				0.34	0.32	0.29				0.72	0.71	0.68				..	..	0.36			
Categories 2-7 only	1.03	0.91	0.84	7.43 [b]	4.94 [b]	4.17 [b]	0.32	0.30	0.27	2.23 [j]	2.17 [j]	1.91 [j]	0.67	0.66	0.63	2.66	2.70	2.68	..	..	0.36	..	..	..
Passive measures (8-9)	1.97	2.09	2.02	8.95	9.60	9.22	0.77	0.54	0.44	4.71	3.23	2.44	0.87	0.86	0.87	4.41	4.79	4.36	..	..	0.86	..	..	5.10

a) See the introductory note about scope, comparability, the coverage of particular programme categories and participant statistics at *www.oecd.org/els/employmentoutlook/2007*. Sub-categories 1.1 and 1.2 refer only to separately-identified spending.

b) "Comprehensive reintegration/flexible reintegration" is mainly included in Category 1.1 (included in Category 2 in figures previously published); this change reduces the number of participants reported for Categories 2-7.

c) Unemployment benefits paid to participants in training are included from 2004 on.

d) Employer tax reductions payable for every apprentice who does not earn more than 130% of the minimum wage.

e) Includes social assistance benefits paid to inactive individuals as well as unemployed recipients. In 2003, includes unemployment and social assistance benefits paid to participants in active programmes.

f) See note h) for Austria.

g) Fiscal years starting on July 1st.

h) Includes training benefits (often paid to participants in integrated training, Category 2.3) and Training Incentive Allowance which covers course fees and related expenses, but not unemployment benefits which are paid to many other participants.

i) Excludes training benefits and includes unemployment benefits paid to participants in active programmes.

j) Participant stocks for categories 4 "Employment incentives", 6 "Direct job creation" and 7 "Start-up incentives" are not included.

k) Includes the administration costs of rehabilitation benefits.

l) Mainly rehabilitation benefits paid to participants in education in regular schools (included in Category 5 in figures previously published).

m) Includes rehabilitation benefits paid in between rehabilitation measures, but excludes unemployment and rehabilitation benefits paid to participants in active programmes.

n) Based on Eurostat data which incorporate changes in coverage and classification from those published previously, and separate information for Category 1 expenditure, not divided between benefit administration and other measures.

Programme categories and sub-categories	Portugal Public expenditure as a percentage of GDP			Portugal Participant stocks as a percentage of the labour force			Slovak Republic Public expenditure as a percentage of GDP			Slovak Republic Participant stocks as a percentage of the labour force			Spain[d] Public expenditure as a percentage of GDP			Spain[d] Participant stocks as a percentage of the labour force[g]			Sweden Public expenditure as a percentage of GDP			Sweden Participant stocks as a percentage of the labour force		
	2003	2004	2005	2003	2004	2005	2003	2004	2005	2003	2004	2005	2003	2004	2005	2003	2004	2005	2003	2004	2005	2003	2004	2005
1. PES and administration[a]	**0.15**	**0.14**	**0.17**				**..**	**..**	**..**				**0.07**	**0.12**	**0.13**				**0.25**	**0.24**	**0.23**			
of which: 1.1. Placement and related services[a]	0.04	0.03	0.04				..	-	0.01				0.03	0.03	0.03				0.09	0.09	0.08			
1.2. Benefit administration[a]	0.03 [b]	0.03 [b]	0.03 [b]				..	..	..				..	0.02	0.02				0.05 [h]	0.04 [h]	0.04 [h]			
2. Training	**0.27**	**0.29**	**0.29**	**0.80**	**0.69**	**0.92**	**..**	**0.01**	**0.02**	**..**	**0.18**	**0.17**	**0.14**	**0.15**	**0.17**	**1.15**	**0.99**	**1.41**	**0.37** [i]	**0.32** [i]	**0.34** [i]	**1.05**	**1.06**	**1.07**
2.1. Institutional training	0.15	0.17	0.17	0.33	0.27	0.39	..	0.01	0.02	..	0.18	0.17	0.10	0.10	0.09	0.94	0.84	0.69	0.24	0.20	0.20	0.55	0.54	0.52
2.2. Workplace training	0.03	0.03	0.04	0.11	0.14	0.16	..	-	-	..	-	-	-	0.01	0.06	0.03	0.04	0.71	-	-	-	0.01	0.01	-
2.3. Alternate training	0.01	-	-	0.03	0.01	-	..	-	-	..	-	-	0.01	-	-	0.01	-	-	-	-	-	-	-	-
2.4. Special support for apprenticeship[a]	0.08	0.08	0.08	0.27	0.26	0.36	..	-	-	..	-	-	0.03	0.03	0.01	0.14	0.11	-	-	-	-	-	-	-
4. Employment incentives[a]	**0.16**	**0.17**	**0.16**	**..**	**..**	**..**	**..**	**0.01**	**0.03**	**..**	**0.22**	**0.59**	**0.25** [e]	**0.27** [e]	**0.31** [e]	**8.78** [e]	**7.86** [e]	**..**	**0.40** [e]	**0.42** [e]	**0.50** [e]	**1.97** [e]	**2.20** [e]	**2.45** [e]
4.1. Recruitment incentives	0.15	0.16	0.15	..	..	..	..	0.01	0.03	..	0.22	0.59	0.24 [f]	0.24 [f]	0.24	8.58 [f]	7.71 [f]	10.86	0.40	0.42	0.45	1.96	2.17	2.25
4.2. Employment maintenance incentives	-	-	-	-	-	-	..	-	-	..	-	-	..	0.01	0.06	-	0.06	..	-	-	-	-	-	-
5. Supported employment and rehabilitation	**0.04**	**0.04**	**0.04**	**..**	**..**	**..**	**..**	**-**	**0.01**	**..**	**..**	**0.27**	**0.07**	**0.07**	**0.02**	**0.51**	**0.51**	**0.20**	**0.22**	**0.23**	**0.22**	**0.75**	**0.78**	**0.74**
5.1 Supported employment	-	-	-	0.01	0.01	0.01	..	-	0.01	..	..	0.27	0.06	0.07	0.02	0.50	0.51	0.19	0.20	0.20	0.20	0.63	0.61	0.56
5.2 Rehabilitation	0.04	0.04	0.04	..	..	..	..	..	..	..	..	..	-	-	-	-	-	-	0.02	0.02	0.02	0.12	0.18	0.19
6. Direct job creation	**0.04**	**0.04**	**0.03**	**0.42**	**0.43**	**0.38**	**..**	**0.03**	**0.06**	**..**	**3.78**	**4.02**	**0.11**	**0.11**	**0.09**	**..**	**..**	**..**	**..**	**..**	**..**	**-**	**-**	**-**
7. Start-up incentives						0.11	**..**	**0.02**	**0.05**	**..**	**0.11**	**0.43**	**0.05**	**0.04**	**0.06**	**..**	**..**	**..**	**0.04**	**0.03**	**0.03**	**0.12**	**0.12**	**0.12**
8. Out-of-work income maintenance and support[a]	**1.04**	**1.10**	**1.19**	**4.59**	**5.33**	**5.46**	**..**	**0.30** [c]	**0.17** [c]	**..**	**2.82**	**1.46**	**1.43**	**1.47**	**1.42**	**6.41**	**6.26**	**6.20**	**1.21**	**1.32**	**1.20**	**7.28**	**7.90**	**7.64**
8.1. Full unemployment benefits	1.03	1.08	1.16	4.59	5.33	5.45	..	0.29	0.17	..	2.82	1.46	1.40	1.43	1.40	6.40	6.25	6.19	0.80	0.89	0.82	4.12	4.50	4.33
of which: Unemployment insurance	0.79	0.89	0.96	3.04	3.92	4.14	..	0.29	0.17	..	2.82	1.46	1.04	1.07	1.04	3.34	3.28	3.28	0.80 [j]	0.89 [j]	0.82 [j]	4.12 [j]	4.50 [j]	4.33 [j]
8.2, 8.3. Partial and part-time unemployment benefits	-	-	-	..	..	..	..	-	-	..	-	-	0.01	-	0.01	0.01	0.01	0.01	0.34	0.38	0.35	3.15	3.40	3.31
8.4, 8.5. Redundancy and bankrupcy compensation	0.01	0.02	0.03	..	..	..	..	0.01	0.01	..	-	-	0.02	0.03	0.02	-	-	-	0.06	0.05	0.03	-	-	-
9. Early retirement[a]	**0.05**	**0.05**	**0.09**	**0.20**	**0.11**	**0.22**	**..**	**0.04**	**0.09**	**..**	**0.48**	**0.62**	**0.02**	**0.03**	**0.03**	**0.09**	**0.12**	**..**	**-**	**-**	**-**	**-**	**-**	**-**
TOTAL (1-9)	**1.75**	**1.83**	**1.98**				**..**	**..**	**..**				**2.14**	**2.24**	**2.23**				**2.49**	**2.57**	**2.52**			
Active measures (1-7)	0.66	0.68	0.69										0.68	0.75	0.78				1.28	1.25	1.32			
of which: Categories 1.1 plus 2-7	0.55	0.58	0.55				..	0.07	0.18				0.64	0.66	0.68				1.12	1.09	1.18			
Categories 2-7 only	0.51	0.54	0.52	..	..	..	..	0.07	0.17	..	..	5.47	0.62	0.63	0.65	..	..	..	1.03	1.01	1.10	3.88	4.16	4.39
Passive measures (8-9)	1.09	1.15	1.29	4.79	5.44	5.68	..	0.34 [c]	0.27 [c]	..	3.30	2.07	1.45	1.49	1.45	6.50	6.37	..	1.21	1.32	1.20	7.28	7.90	7.64

a) See the introductory note about scope, comparability, the coverage of particular programme categories and participant statistics at *www.oecd.org/els/employmentoutlook/2007*. Sub-categories 1.1 and 1.2 refer only to separately-identified spending.

b) Secretariat estimate based on the ratio of benefit administration costs to benefits paid (2.2 %) for a wider range of benefits (reported in IGFSS, *Conta da Segurança Social 2005*).

c) Does not include social assistance, which is the form of income support received by the majority of registered unemployed.

d) Categories 1 to 7 include expenditure by the autonomous communities and municipalities (additional to data published by Eurostat).

e) The totals shown for Category 4 include non-zero spending on Eurostat Category 3 "Job rotation and sharing" in Finland, Germany, Italy, Spain and Sweden.

f) Includes an employer subsidy for the conversion of temporary contracts into permanent contracts, not otherwise conditional on employment status.

g) Participant stock data do not include participants in municipal programmes.

h) Administration costs of independant unemployment insurance funds.

i) Includes income support paid to participants in "Activities within counselling, guidance and placement services" but not the corresponding services. This expenditure is not allocated across sub-categories.

j) Includes "basic insurance" which is not a contribution-based benefit.

Table J. **Public expenditure and participant stocks in labour market programmes in OECD countries**[a] *(cont.)*

Programme categories and sub-categories	Switzerland						United Kingdom[d]						United States[g]		
	Public expenditure as a percentage of GDP			Participant stocks as a percentage of the labour force			Public expenditure as a percentage of GDP			Participant stocks as a percentage of the labour force			Public expenditure as a percentage of GDP		
	2003	2004	2005	2003	2004	2005	2002-03	2003-04	2004-05	2002-03	2003-04	2004-05	2003-04	2004-05	2005-06
1. PES and administration[a]	**0.13**	**0.13**	**0.14**				**0.38**	**0.38**	**0.38**				**0.04**	**0.03**	**0.03**
of which: 1.1. Placement and related services[a]	..	..	..				0.24	0.20	0.21				0.01	0.01	0.01
1.2. Benefit administration[a]	0.04	0.04	0.04				0.15 [e]	0.09 [e]	0.07 [e]				0.03 [h]	0.02 [h]	0.02 [h]
2. Training	**0.28**	**0.30**	**0.29**	**0.84**	**0.94**	**0.91**	**0.13**	**0.13**	**0.09**	**..**	**1.21**	**0.74**	**0.05**	**0.05**	**0.05**
2.1. Institutional training	0.27	0.29	0.28	0.82	0.91	0.88	0.01	0.01	0.01	..	0.03	0.04	0.02	0.02	0.02
2.2. Workplace training	0.01	0.01	0.01	0.02	0.03	0.04	0.01	-	-	..	-	-	-	-	-
2.3. Alternate training	-	-	-	-	-	-	0.01	0.02	0.01	0.07	0.09	0.06	0.03	0.03	0.02
2.4. Special support for apprenticeship[a]	-	-	-	-	-	-	0.10 [f]	0.10 [f]	0.07 [f]	1.03	1.10	0.64	-	-	-
4. Employment incentives[a]	**0.07**	**0.08**	**0.08**	**0.56**	**0.66**	**0.68**	**0.01**	**0.01**	**0.01**	**..**	**..**	**..**	**-**	**-**	**-**
4.1. Recruitment incentives	0.07 [b]	0.08 [b]	0.08 [b]	0.56	0.66	0.68	0.01	0.01	0.01	..	..	..	-	-	-
4.2. Employment maintenance incentives	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5. Supported employment and rehabilitation	**0.24**	**0.25**	**0.25**	**1.37**	**0.84**	**0.87**	**0.01**	**0.01**	**0.01**	**..**	**..**	**..**	**0.03**	**0.03**	**0.03**
5.1 Supported employment	0.24	0.25	0.25	1.37	0.84	0.87	0.01	0.01	0.01	0.02	..	..	-	-	-
5.2 Rehabilitation	-	-	-	-	-	-	-	-	-	-	-	-	0.03	0.03	0.03
6. Direct job creation	**-**	**-**	**-**	**-**	**-**	**-**	**0.01**	**-**	**-**	**0.01**	**0.02**	**0.02**	**0.01**	**0.01**	**0.01**
7. Start-up incentives	**0.01**	**0.01**	**0.01**	**0.02**	**0.02**	**0.02**	**-**	**-**	**-**	**..**	**-**	**-**	**-**	**-**	**-**
8. Out-of-work income maintenance and support[a]	**1.08**	**1.03**	**0.93**	**3.75**	**3.76**	**3.62**	**0.23**	**0.19**	**0.19**	**3.18**	**2.88**	**2.99**	**0.37**	**0.27**	**0.24**
8.1. Full unemployment benefits	1.01 [c]	0.99 [c]	0.89 [e]	3.38	3.55	3.39	0.23	0.19	0.19	3.18	2.88	2.99	0.37	0.27	0.24
of which: Unemployment insurance	0.95	0.94	0.84	3.38	3.55	3.39	..	..	..	..	..	..	0.37	0.26	0.24
8.2, 8.3. Partial and part-time unemployment benefits	0.06	0.03	0.03	0.35	0.19	0.21	-	-	-	-	-	-	-	-	-
8.4, 8.5. Redundancy and bankrupcy compensation	0.01	0.01	-	0.02	0.02	0.02	-	-	-	-	-	-	-	-	-
9. Early retirement[a]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
TOTAL (1-9)	**1.80**	**1.80**	**1.69**				**0.77**	**0.73**	**0.68**				**0.53**	**0.41**	**0.38**
Active measures (1-7)	0.72	0.78	0.76				0.54	0.54	0.49				0.15 [i]	0.14 [i]	0.13 [i]
of which: Categories 1.1 plus 2-7	..	..	..				0.39	0.35	0.32				0.13 [i]	0.12 [i]	0.11 [i]
Categories 2-7 only	0.59	0.64	0.63	2.78	2.46	2.48	0.16	0.16	0.12	..	..	..	0.12 [i]	0.11 [i]	0.10 [i]
Passive measures (8-9)	1.08	1.03	0.93	3.75	3.76	3.62	0.23	0.19	0.19	3.18	2.88	2.99	0.37	0.27	0.24

a) See the introductory note about scope, comparability, the coverage of particular programme categories and participant statistics at *www.oecd.org/els/employmentoutlook/2007* . Sub-categories 1.1 and 1.2 refer only to separately-identified spending.

b) Mainly the "intermediate earnings" programme, which resembles partial unemployment benefits paid subject to an earnings taper.

c) Excludes unemployment benefits paid to participants in active programmes.

d) Excluding Northern Ireland. Fiscal years starting on April 1st.

e) Includes the administration of unemployment benefits (JSA) and other benefits for persons of working age (incapacity benefit, income support and certain supplementary benefits), although only JSA is included in Category 8.

f) Work-based training for people not continuing in full-time education at age 16, not necessarily unemployed.

g) Fiscal years starting on October 1st.

h) Mainly costs of running unemployment insurance offices. Also includes various national activities such as information, research and evaluation.

i) Includes TANF work-related activities (estimated as 0.02% of GDP). Other TANF expenditure (0.20% of GDP) on child care, transport, family and social work, etc., administration and cash benefits is not included.

Source: For EU countries and Norway, Eurostat (2007), *Labour Market Policy and Participants: Data 2005* and detailed underlying data supplied to OECD by Eurostat with certain Secretariat adjustments. For other countries: OECD database on labour market programmes.

StatLink 📊 *http://dx.doi.org/10.1787/025107683100*

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