Employment in Europe 2008

European Commission

Directorate-General for Employment, Social Affairs and Equal Opportunities

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List of acronyms

BLS	US Bureau of Labour Statistics
CA	Cluster analysis
CEDEFOP	European Centre for the Development of Vocational Training
CVT	Continuing vocational training
CVTS	Continuous Vocational Training Survey
DG EMPL	Directorate-General for Employment, Social Affairs and Equal Opportunities
ECHP	European Communities' Household Panel
EEA	European Economic Area
EMCO	Employment Committee
EPL	Employment protection legislation
EPSCO	Employment, Social Policy, Health and Consumer Affairs Council
ESAW	European Statistics of Accidents at Work
ETUI	European Trade Union Institute
EU	European Union
EU-10	All Member States that joined the EU on 1 May 2004
EU-12	All Member States that joined the EU on 1 May 2004 and 1 January 2007 (EU-10 + EU-2)
EU-15	All Member States forming part of the EU before 1 May 2004
EU-25	All Member States forming part of the EU before 1 January 2007
EU-27	All Member States
EU-8	EU-10 Member States except for Malta and Cyprus
EU-SILC	European Union Statistics on Income and Living Conditions
EWCS	European Working Conditions Survey
FA	Factor analysis
GDP	Gross domestic product
GNI	Gross national income
ILO	International Labour Organization
IMF	International Monetary Fund
ISCED	International Standard Classification of Education
ISCO	International Standard Classification of Occupations
LFS	Labour Force Survey
NAWRU	Non-accelerating wage rate of unemployment
OECD	Organisation for Economic Co-operation and Development
OMC	Open method of coordination
PCA	Principal component analysis
PPS	Purchasing power standards
PPSN	Personal Public Service Numbers
TLM	Transitional labour market
VET	Vocational education and training
WRS	Workers' registration scheme

Executive summary

Panorama of EU labour markets

Solid economic growth in 2007…

Building on strong growth in 2006, the gross domestic product (GDP) in the European Union (EU) continued to expand at a solid rate, averaging 2.9% in 2007 as a whole, compared with 3.1% in 2006. Nevertheless, towards the end of 2007 growth started to slow down following the turmoil in financial markets and soaring commodity and energy prices.

…kept labour markets in the EU in an overall favourable situation

Employment in the EU grew by 1.6% in 2007 – the same rate as the year before. The total net increase of 3.5 million people in employment last year reflects a lagged response to the strong GDP growth until the second quarter of 2007, the continued positive impact of EU accession in most new Member States, and the effect of structural reforms implemented in some Member States in recent years.

…but the ongoing turmoil in financial markets and soaring commodity and energy prices pose significant downside risks to future developments

Although economic activity in the EU is expected to slow down markedly in the short run, it is expected that the EU economy will continue to do relatively well in the medium run due to structural reforms and growth-oriented macroeconomic policies. However, it should be recognised that due to the uncertainty concerning commodity and energy prices, as well as financial market volatility, the prospects for 2008 and 2009 are subject to significant downside risks.

It seems increasingly unlikely that the Lisbon targets for employment will be achieved by 2010

In 2007, the overall EU employment rate averaged 65.4% – up from 64.5% a year earlier, but still 4.6 percentage points below the Lisbon target. At the same time, the employment rate for female workers stood at 58.3% and that for older workers at 44.7%, compared with the targets for 2010 of 60% and 50%, respectively. It is thus unlikely that the Lisbon targets for employment, other than for women, will be achieved by 2010.

In 2007, employment growth was positive in all Member States, except Hungary …

Employment growth was positive in all EU Member States, except Hungary, where employment slightly decreased. Poland experienced the strongest employment growth, while Estonia underwent the greatest deceleration in its growth rate. Among the large Member States, employment growth strengthened further in France, and especially in Germany, while it weakened in Italy and Spain.

…but it is expected that employment growth will decelerate markedly in 2008 and 2009

As adverse shocks are expected to persist, employment growth is projected to decelerate markedly in 2008 and 2009. Nevertheless, it is also projected that the EU economy will be more resilient to shocks than during past economic downturns due to the combined effect of ongoing and past structural reforms and growth-oriented macroeconomic policies.

Disparities across the Member States persist, notably in employment rates …

In 2007, the overall employment rate stood at above 70% in seven Member States while in six others it lay within three percentage points of the target. However, in Romania, Italy, Hungary, Poland and Malta, the overall employment rate remained more than 10 percentage points below the 70% target. The 60% target for female workers, however, was met in 15 Member States, while two others were within 3 percentage points of the target. In Greece, Italy and Malta, the rate was still more than 10 percentage points below the target. The 50% target for older workers was met in 12 Member States, but for 10 others, including the big Member States – France, Italy and Poland – the gap from the target exceeded 10 percentage points.

… unemployment rates …

The unemployment rate was at single-digit level in all Member States, except Slovakia. The lowest rate was in the Netherlands where it stood at 3.2%, while in Slovakia it reached 11.1%.

…and labour productivity growth

Labour productivity growth (in terms of real GDP per employed person) was below or equal to 0.5% in Denmark, Italy, Luxembourg and Sweden, while strong growth was recorded in most of the new Member States, with the highest rates (above 6.5%) in Estonia, Latvia, Lithuania and, especially, Slovakia. Among the larger old Member States, labour productivity growth weakened significantly in Germany and France, also remaining weak in Spain and Italy.

Adequate polices have the potential to mitigate the short-term trade-off between employment and labour productivity growth

The EU should focus on simultaneously increasing both its employment rate and its labour productivity in order to achieve its social and economic objectives. Although no inverse relation is to be expected between employment and labour productivity growth in the long run, various factors (including changes in multi-factor productivity, the capital intensity of production, the stock of human capital and aggregate demand) may cause a trade-off between employment and productivity growth in the short to medium run. Nevertheless, the implementation of adequate polices has the potential to mitigate this trade-off. Such policies require not only structural reforms in the labour market but also in the services, product and financial markets and a stable macroeconomic environment.

The labour market situation and impact of recent third country migrants

Immigration from third countries brings both opportunities and challenges

Against a background of ageing European societies and growing labour market needs, immigration is set to increase over the coming decades. While immigration provides several opportunities – in particular to alleviate the effects of population ageing, help deal with labour and skill shortages, and more generally to fuel economic growth – it also brings challenges, especially regarding developing appropriate integration policies.

Past and recent experiences of immigration across Member States are varied

Member States are characterised by diverse immigration histories and recent migration patterns, with varied migrant population compositions regarding region of origin, cultural background, skill level, socio-economic characteristics and channels of entry into the EU. All this, together with the existing heterogeneity in the Member States in terms of institutional frameworks and attitudes of society towards migrants has an impact on the variation in the labour market integration and outcomes of migrants across countries.

Immigration has increased markedly over recent years, with changing patterns of flow

A much more significant phenomenon than intra-EU mobility, migration from third countries has seen a substantial increase in recent years, rising threefold between the mid-1990s and early 2000s. Indeed, recent non-EU migrants who arrived within the last seven years account for almost one third of all non-EU migrants of working age. At the same time, inflows have become more diversified, with a greater influx of people from Central and South America and much greater migration to countries in Southern Europe than previously.

Migrants have made a strong contribution to recent labour market performance, addressing labour and skill shortages and increasing flexibility

Recently arrived immigrants have made a significant contribution to overall economic growth and employment expansion (around a quarter) in the EU since 2000, with only limited impacts on domestic wages and employment. They have clearly helped to alleviate labour and skill shortages, tending to be employed in those sectors where demand has been greatest, in particular at the low-skill end of the jobs spectrum. Evidence suggests they have generally been complementary to EU-born workers rather than substitutes and have contributed to greater labour market flexibility. However, the EU still tends to attract mainly less-skilled immigrants: 48% of recent working-age migrants are low-skilled and only one in five is high-skilled.

Nevertheless, there remain considerable challenges regarding the adequate integration of migrants into the labour market …

Access to employment is a key element for successful integration into host societies; yet in many Member States the labour market situation for migrants is substantially worse than that of those born in the EU – they tend to have lower employment rates and are often more likely to be unemployed, or are employed in jobs of lower quality or for which they are over-qualified. In the new migration countries of Southern Europe that have received high flows of labour migration over recent years, migrants perform better than non-migrants on the labour markets. In the remaining old Member States with long traditions of family-related or humanitarian immigration, migrants tend to have poorer overall labour market outcomes relative to the EU-born. In most Member States recent migrants, in particular women and those from certain regions of origin, face significant delays in establishing a sufficient foothold in the labour market, which can have longer-term impacts on migrants' labour market outcomes.

…in particular with regard to quality of employment and effective use of their human capital

Migrants tend to be more likely to have jobs of lower quality and precarious employment; work more often in low-skilled sectors and occupations; are frequently involved in undeclared work; and have a higher frequency of transitions between different labour statuses. Additionally, they encounter greater difficulties in achieving effective use of their human capital, often suffering from large job mismatches and working in jobs for which they are over-qualified.

Contrasting situations between northern and southern Member States

In general, countries of Southern Europe seem to be more successful at getting migrants into employment, but with a greater risk of their being over-qualified and exposed to lower quality and precarious employment. In contrast, northern Member States show a lower rate of migrant over-qualification but have greater gaps in participation and employment rates, and higher unemployment rates, for migrants compared with those born in the EU.

Key factors affecting migrants' labour market performance suggest where to focus policy measures

The main factors affecting immigrants' labour market integration and differences across Member States include the immigration channel for entry, country of origin, host-country language proficiency, availability of support schemes at entry, labour market rigidities and access restrictions in the host country, incomplete recognition of qualifications acquired outside of the EU, lack of information on labour market functioning and discrimination. These suggest where policy measures to raise migrants' labour market integration and improve outcomes should focus.

Geographical labour mobility in the context of EU enlargement

Positive overall impact of post-enlargement mobility

Four years after the EU's 2004 enlargement and over a year after the accession of Bulgaria and Romania, practically all of the available evidence suggests that the economic impact of recent intra-EU mobility has been positive on balance, and that it has not led to serious disturbances on the labour market, even in those Member States that have seen a relatively large inflow of migrants from new Member States.

Significant mobility flows …

Available data suggests that the number of EU-10 residents in the EU-15 may have increased by around 1.1 million and that of Romanians and Bulgarians by over 900 000 since 2003. These are significant numbers, particularly given the relatively short time span.

…to Ireland and the UK from the EU-10 and to Spain and Italy from Romania

In terms of recent mobility from the EU-10, Ireland and the UK have been the main 'receiving countries', and to a lesser extent Austria and Germany. Concerning Bulgaria and Romania, flows have been directed mainly towards Spain and Italy, involving mostly Romanian nationals – a process which started well before the EU accession of Romania and Bulgaria in 2007.

High and low mobility countries among the old and new Member States

Relative to their population size, Romania and Bulgaria have also been the main 'sending countries', together with Lithuania, Cyprus, Poland, Latvia, Slovakia, Estonia, and Portugal, while the outflow from the other new Member States has been much less significant.

A limited number of residents from the new Member States are living in the EU-15

Despite their significant size, intra-EU mobility flows since enlargement never reached the dimensions of a 'tidal wave' initially feared by some observers. Between 2003 and 2007, the average population share of EU-10 foreigners resident in the EU-15 increased from around 0.2% to 0.5%. In the same period, the population share of Romanian and Bulgarian nationals resident in the EU-15 rose from 0.2% to 0.4% – a process that already started well before 2007. By comparison, the population share of EU-15 nationals resident in another EU-15 country grew from 1.6% to about 1.7% and that of non-EU-27 nationals from 3.7% to 4.5%.

The impact of east-west intra-EU mobility on local workers' wages and employment is very small

Moreover, there is no indication that recent intra-EU mobility flows have exceeded labour markets' absorption capacities. In both the main receiving and sending countries, local workers' wages have continued to rise and unemployment has declined since enlargement. Even when analysing the isolated effects of migration and mobility on wages and unemployment, empirical studies have consistently found very small impacts on local workers' wages and employment.

Income convergence and a shrinking pool of potential mobile workers are likely to contribute to declining flows in the future from new Member States

A further surge of labour mobility from the new Member States seems unlikely. Evidence suggests that increasing convergence in income and employment between old and new Member States is already lowering the economic incentive to move and is likely to contribute to a further decline in labour supply from the new Member States. In addition, due to a substantial shrinking in young cohorts, the pool of potential mobile workers from central and eastern Member States is reducing, which is likely to reduce geographical mobility flows within the EU in the future.

There are indications that the peak of east-west mobility flows has already passed

In fact, mobility flows to the UK and Ireland, which appear to have peaked in 2006, declining significantly in 2007 and the first quarter 2008. Moreover, there are indications of increasing return flows, particularly from the UK. Furthermore, the opening of labour markets for EU-8 workers in most other EU-15 countries since 2006 may have led to a limited diversion of migration flows to other Member States. Even in the case of Bulgaria and Romania, many people from these countries have already moved and have been working elsewhere in the EU over recent years. This suggests that many of those who wanted to move have already done so and that the potential of additional migration from Bulgaria and Romania is limited.

Brain drain represents a challenge for some new Member States, but also an opportunity

From the perspective of new Member States, in particular the 'high-mobility' ones, substantial outflows of workers are often perceived as a mixed blessing. On the one hand, outflows have helped to reduce unemployment in some Member States by allowing unemployed people to look for jobs in others. On the other hand, outflows of predominately young and high-skilled people have raised concerns about 'brain drain' and labour shortages in sending countries. Yet, a number of factors may help to alleviate these problems, such as a significant recent rise in higher enrolment rates for university education in most new Member States, the temporary nature of much of the mobility observed, and the fact that many of those who do come back often do so with improved working skills and international contacts which can be of benefit to the home country.

Measuring the quality of employment in the EU

The European Employment Strategy is not only about more jobs but also better jobs

Job quality is fully enshrined in the European Employment Strategy as reflected by the call to achieve more and better jobs. However, significant employment growth in the EU over the last decade has gone together with widespread concerns about the quality of a large share of European jobs. These concerns have related to the rising incidence of temporary work, the increased exposure of jobs to competitive pressures and perceptions of deteriorating working conditions and higher work intensity. This calls for job quality outcomes and trends in the EU to be re-assessed.

Job quality is a multi-dimensional concept going beyond wages and encompassing both objective and subjective variables

The quality of jobs cannot be fully captured by wages due to market failures and incomplete information concerning, for instance, the level of human capital. Moreover, job satisfaction appears to depend not only on a job's outcomes, such as wages, but also on the conditions and processes leading to them, including work organisation, autonomy, work intensity and health implications of work. Taking a lifelong perspective, the possibility to reconcile work with private and family responsibilities, together with the probability of positive labour market transitions and career progress, are also key dimensions of job quality.

Some room for improvement of the current EU job quality definition seems possible in light of recent theoretical developments

Recent theoretical developments provide an opportunity for reviewing the current EU concept of job quality. While the EU concept acknowledges the multi-dimensionality of job quality, incorporating both objective and subjective variables, there is room for improvement. The current concept does not include important variables such as wages and work intensity, and only partially covers certain dimensions such as training and education. On the other hand, it includes aggregate economic variables not directly related to specific job and worker characteristics.

An enriched framework structured along four dimensions is proposed…

Based on this assessment, it is possible to formulate an enriched framework for analysing job quality, centred around four dimensions:

i) socio-economic security (including levels and distribution of wages);
ii) education and training;
iii) working conditions (including work intensity);
iv) reconciliation of working and non-working life/gender balance.

…based on which four job quality regimes are identified, highlighting significant heterogeneity within the EU

Reflecting this framework and based on a dataset covering the EU-27 in 2005–06, a taxonomy of typical combinations of job quality can be identified, consisting of four groupings:

i) *Nordic*, including the Netherlands and the UK – high wages, good working conditions, high educational attainment and participation in training, high job satisfaction but also high work intensity;
ii) *Continental*, including Ireland, Cyprus and Slovenia – close to the average EU situation for most of the indicators;
iii) *Southern* – relatively low wages, low participation in education and training, unfavourable working conditions and relatively large gender employment gaps;
iv) *New Member States* – low wages, unfavourable working conditions, but also relatively high educational attainment and low gender employment gaps.

Compared with the EU definition, the proposed framework better characterises job quality in Europe

Results based on the enriched framework are compared with those derived from the EU definition of job quality. The enlarged framework better characterises job quality outcomes for two main reasons:

i) the inclusion of measures on wages and work intensity;
ii) the exclusion of contextual and redundant variables from the set of quality indicators.

Preliminary evidence suggests a slight improvement in job quality since the mid-1990s

Although based on a relatively narrow set of indicators, a dynamic analysis of job quality since the mid-1990s suggests a slight improvement across the EU. Furthermore, job quality groupings tend to be quite stable over time in terms of their geographical composition.

The number of jobs, their quality and labour productivity tend to go hand in hand

Characterisation of job quality combinations in terms of economy-wide indicators highlights synergies, rather than trade-offs, between overall labour market performance, labour productivity and job quality. In fact Member States with more favourable job quality outcomes are also those which rank high in terms of employment rates and productivity levels.

Education and employment: different pathways across occupations

The quality of job matching has a high profile in the European Employment Strategy

A recurrent concern of policy-makers in the fields of education and employment is the perceived mismatch between workers' education and skill levels, and actual job requirements in the labour market.

New challenges call for adequate policies…

Globalisation, technological change, an ageing population, and wider societal changes have all served to increase uncertainty about the future and contribute to a sense of insecurity. Policy-makers have responded with a variety of initiatives aiming at better anticipating future labour market needs and at ensuring a better management of the process of change.

…such as the* New skills for new jobs *initiative

Job matching is particularly affected by market failures due to insufficient information or incorrect expectations. In fact, workers often lack information about the best job opportunities available. The *New skills for new jobs* initiative aims to map current and future demand for occupations and the corresponding skill requirements, while recognising that the links between the two are more complex than usually assumed.

Labour market inefficiencies negatively affect both the quality of job matching and incentives to invest in the acquisition of skills

Addressing these issues requires an integrated policy strategy that facilitates transitions, fosters a highly educated workforce, and modernises labour market institutions. Flexicurity is such an integrated strategy. A regular assessment of future skill needs will be critical for designing adequate lifelong learning strategies and efficient labour market policies, therefore facilitating the implementation of flexicurity policies.

An empirical analysis of the relationships between education and occupations at the EU level is carried out using a wide range of variables, including some that characterise firms' human resource policies

An empirical analysis of the relationships between education and occupations at the EU level is carried out based on previous work undertaken on the French economy. In the latter case, findings suggest that a 'close' link between (subjects of) education and occupations exists for approximately only one third of total employment. A 'close' link means that the qualifications predominant in an occupation are relatively rare in the whole economy. Unfortunately, the work carried out in this chapter does not allow an unbiased estimate to be obtained for the EU as a whole, because European Labour Force Survey data only provides a limited breakdown by subjects of education when compared with French national data.

The empirical analysis identifies a rich typology…

However, the methodology employed enables a richer characterisation of the different relationships between education and occupations, partly depending on firms' human resource policies. The analysis tentatively identified eight different ways for workers to accumulate skills over the lifecycle (e.g. formal education, vocational training and work-related experience) that combine with different forms of gaining access to employment.

…raising a number of policy issues

Workers are increasingly more likely to undergo numerous transitions and performing different tasks during their working lives. Consequently, they need to be supported during such frequent transitions by a series of measures, such as income transfers, training, counselling and career orientation.

…and calling for adequate initiatives

At the heart of the *New skills for new jobs* initiative is the objective to improve the availability of information on present and future occupational demand and the corresponding skill requirements, in order to enhance the quality of job matching. One possible way to gather and disseminate such information would be the development of a harmonised EU 'career exploration tool' inspired by best international practices. Such a tool could be used by many individuals and organisations for various purposes (e.g. job counselling and seeking, and occupational projections).

such as occupational projections

Despite the usual caveats associated with occupational projections, such exercises constitute an indispensable tool to better inform policy-makers and eventually secure an adequate matching between demand and supply, particularly in occupations with 'close' links to education.

But a combination of various measures is necessary (both quantitative and qualitative)

In addition to occupational demand and skill requirement projections, more qualitative exercises should be carried out, such as foresight analyses, employer surveys, case studies or job competence modelling exercises. More qualitative exercises are essential to identifying new trends in competence requirements and changes in the content of occupations. An adequate combination of both quantitative and qualitative methods, covering different time spans and updated at regular intervals, would be ideally suited to better inform policy-makers taking the necessary measures to improve the quality of job matching in the EU and adapt education and training systems to new needs.

Conclusions

Strong employment performance continued in 2007, but deteriorating economic conditions will test the expected higher resilience of labour markets resulting from recent reforms

Despite the gradually increasing signs of moderation in economic growth, the strong performance of EU labour markets continued in 2007, leading to a net increase of 3.5 million in total employment. The deteriorating economic environment, particularly the turbulence in financial systems, increases the downside risks for employment in the near future. Over recent years most Member States have implemented important structural reforms in the area of employment and the current cyclical downturn will put the robustness of these reforms to the test.

Third-country immigration and intra-EU mobility have made a significant contribution to growth in recent years, but also pose important policy challenges

Increasing uncertainty and rapidly changing conditions are becoming the standard environment for EU labour markets and related policy-making. Growing inflows of migrant workers from outside the EU, together with the rise in intra-EU mobility flows following the two most recent enlargements, have been major factors driving economic growth and employment outcomes in recent years, but are also shaping economic and social conditions in the EU in a broader sense. Looking at these phenomena, this year's *Employment in Europe* report highlights their largely positive contribution and identifies a number of important policy challenges resulting from this new situation.

Flexicurity needs to be seen in the broader and complementary context of job quality; improved assessment of skill needs could contribute to the overall flexicurity goals

Flexicurity has been an important recent EU policy response to the vanishing old certainties in European labour markets. Previous issues of *Employment in Europe* have made an analytical contribution to assessing the merits of flexicurity policies. By revisiting the issue of job quality, this year's report puts flexicurity into a broader context and finds not only complementarities between these two concepts, but also important synergies between job quality and overall economic and employment performance. Finally, improved matching and smoother transitions in the labour market are among the key aims of the flexicurity approach. This report thus stresses the importance of the correct understanding of the links between education and occupations in this respect. It highlights the role of public bodies in better identifying current and future job opportunities and related skill requirements, as envisaged by the *New skills for new jobs* initiative.

Chapter 1

Panorama of EU labour markets

1. Introduction

Describing recent developments in European Union (EU) labour markets, this chapter starts with a summary of the major changes at the level of the EU and compares them with those in the United States (US) and Japan. A short-term outlook for these areas is also briefly presented.[1]

Next, an overview of the labour markets in the various Member States is provided, whereby special attention is paid to the progress made with regard to the Lisbon and Stockholm targets. These require that by 2010 the overall average EU employment rate increases to 70%, the employment rate of female workers to 60% and that for older workers to 50%.

Finally, the chapter addresses the question of how employment and labour productivity growth interact with each other. A clear understanding of this issue is important as the realisation of higher sustainable economic growth in Europe depends to a large extent on the ability to boost employment and productivity growth simultaneously. A brief analysis shows that sustained achievement of full employment and high labour productivity growth is a very complex challenge that requires not only structural reforms in the labour market but also in the services, product and financial markets, together with a stable macroeconomic environment, as reflected in the *Integrated guidelines for growth and jobs (2005–08)*[2] and proposed *Integrated guidelines for growth and jobs (2008–10)*.[3]

2. EU labour market performance from a global perspective

Building on strong growth in 2006, economic activity in the EU continued to expand at a solid rate during the first months of 2007. By the end of the year, economic activity lost momentum due to the impact of continued turmoil in the international financial markets, soaring commodity and energy prices, an appreciating euro and weakening global trade growth. However, thanks to solid domestic demand growth and the absence of increases in inflation caused by second-round effects on price- and wage-setting, growth in the gross domestic product (GDP) in the EU remained strong averaging 2.9% for 2007 as a whole, compared with 3.1% in 2006, as shown in Table 1.

By early 2008, economic growth in the EU remained resilient, primarily reflecting temporary factors such as an unusually mild winter in many parts of Europe. More particularly, in the beginning of 2008 overall growth in the EU was supported by robust progress in Germany – the largest economy in the EU – but somewhat tempered by a strong slowdown in the Baltic Member States and by less buoyant economic activity in Spain. The good performance in Germany during the first quarter of the year was mainly due to weather-related effects on the profile of construction activity while private consumption remained solid as employment growth was strong. Nevertheless, following the exceptional strong activity in the first quarter, the seasonal pick-up in spring was weak and German GDP contracted in the second quarter of 2008. In Estonia, Latvia and Lithuania, growth continued to decelerate from earlier very high growth rates – caused by EU-accession – as inflationary pressures and decline in house prices eroded household purchasing power. In Spain, growth tempered as domestic demand suffered from a deteriorating housing market and rising inflation.

In 2007, the EU's main trading partners experienced a slowdown in economic activity. In the US, GDP grew by an average of 2.2% in 2007, down from 2.9% the year before and 3.1% in 2005. However, in the second half of 2007, growth started to weaken

1 The recent developments reported in this chapter are based on data available up to June 2008, while the forecasts are based on information available up to April 2008.

2 Available at http://ec.europa.eu/growthandjobs/guidelines/index_en.htm#gl1.

3 Available at http://ec.europa.eu/growthandjobs/pdf/european-dimension-200712-annual-progress-report/200712-annual-report-integrated-guidelines_en.pdf.

noticeably in response to continued turbulence in the financial markets, soaring commodity and energy prices, and negative wealth effects stemming from falling house and stock prices. By early 2008, domestic economic activity in the US slowed down sharply as confidence deteriorated further and lending conditions tightened significantly. At the same time, net exports improved considerably as the dollar continued to weaken and economic activity in the US's main trading partners remained solid. In Japan, GDP growth decelerated from 2.4% in 2006 to 2.1% in 2007 as export growth remained very robust due to strong demand from Asia – notwithstanding a further weakening in gross fixed capital formation.

2.1. Recent developments in the EU labour market

Despite the slowdown in GDP growth, overall employment in the EU increased by 3.5 million people in 2007 – i.e. an increase by 1.6% which is the same rate as in 2006 and significantly higher than those attained between 2001 and 2005. See Chart 1 and Table 2. This continued strong employment growth reflected a lagged response to the strong GDP growth up to the second quarter of 2007, the continued positive impact of EU accession for most of the new Member States, and the impact of structural reforms implemented in some Member States in recent years. These reforms include lower labour taxes (general or targeted at specific groups), changes in unemployment benefits (level and duration), increased spending on and better targeting of active labour market policies and training, and increased access to part-time and temporary work.[4] Although EU GDP growth decelerated further in the first half of 2008, the impact of the slowdown on the labour market has remained modest so far.

Table 1: International comparison of key indicators, 2005–07

	2005	2006	2007
Population (millions)			
EU-27	491	493	495
EU-15	387	390	392
US	297	299	302
Japan	128	128	128
GDP (in 1 000 million PPS, current prices)			
EU-27	11 072	11 679	12 343
EU-15	9 856	10 354	10 901
US	10 499	11 072	11 600
Japan	3 288	3 450	3 611
GDP growth, at constant prices (annual % change)			
EU-27	1.9	3.1	2.9
EU-15	1.7	2.9	2.7
US	3.1	2.9	2.2
Japan	1.9	2.4	2.1
Employment rate (as % of working-age population)			
EU-27	63.5	64.5	65.4
EU-15	65.4	66.2	66.9
US	71.5	72.0	71.8
Japan	69.3	70.0	70.7
Employment growth (annual % change)			
EU-27	0.9	1.6	1.6
EU-15	0.9	1.5	1.6
US	1.7	1.9	1.1
Japan	0.4	0.4	-0.2
Unemployment rate (as % of civilian labour force)			
EU-27	8.9	8.2	7.1
EU-15	8.1	7.7	7.0
US	5.1	4.6	4.6
Japan	4.4	4.1	3.9

Source: GDP and employment growth from national accounts, Eurostat (employment growth for Japan from AMECO database, Commission Services). GDP in purchasing power standards from AMECO database, Commission Services. Employment rate from Eurostat (annual averages) and OECD data for US and Japan. Unemployment rate from the harmonised unemployment series, Eurostat. Population from demographic statistics, Eurostat, and for US and Japan from AMECO database, Commission Services.
Note: Employment rates for the EU and Japan refer to persons aged 15–64; US employment rate refers to persons aged 16–64.

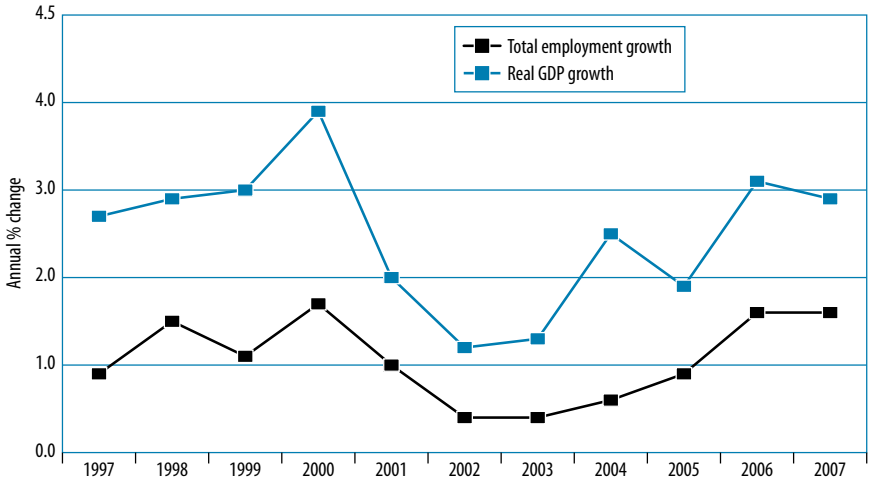
In line with the slowdown in economic activity, employment growth in the US fell from 1.9% in 2006 to 1.1% in 2007. In Japan, total employment shrunk by 0.2% in 2007, having posted a 0.4% increase in 2006, reflecting rapid population ageing and a lack of increase in female labour participation. See Chart 2.

Following the solid rise in employment, the average employment rate in the EU increased by 0.9 percentage points to reach 65.4% of the working-age population (15–64 years). This rise was primarily driven by the ongoing increase in the employment rate for women – up by 1.0 percentage point and reaching 58.3% in 2007. It also reflects strong rises for older people (aged 55–64 years) for whom the employment rate rose by 1.2 percentage points to 44.7% in 2007. Nevertheless, there remains a strong disparity among older workers between men and women as 53.9% of men compared with 36% of women were employed in 2007. See Chart 3. Compared with the US where the employment rate stood at 71.8%, the EU employment rate is relatively low, primarily because of significant lower participation of female and older workers.[5] See Chart 4.

The EU unemployment rate fell from 8.2% (of the labour force) in 2006 to 7.1% in 2007, further down from the

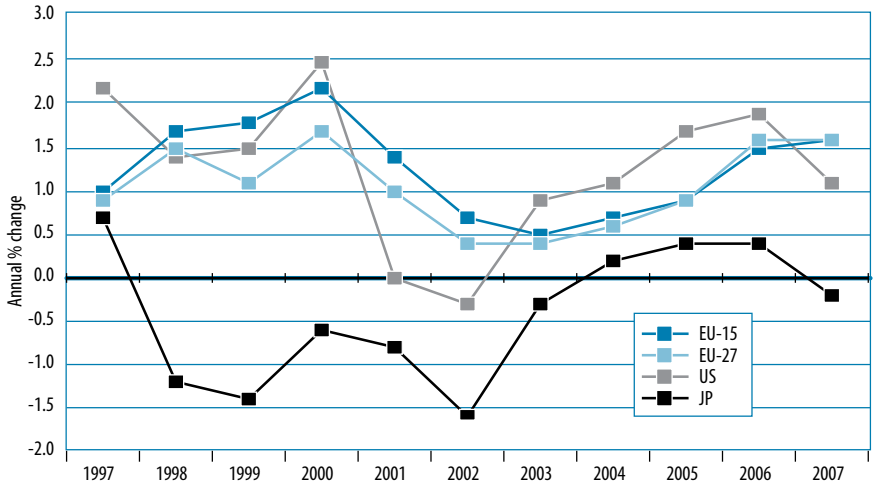
4 For a detailed overview of recent labour market reforms, see for instance the Commission's labour market reforms database (LABREF), available at http://ec.europa.eu/economy_finance/db_indicators/db_indicators8638_en.htm.
5 In addition, it might also be noted that for the 65–69 age group 28.7% is in employment in the US, compared with 8.6% in EU-15.

Chart 1: Real GDP and employment growth in the EU, 1997–2007



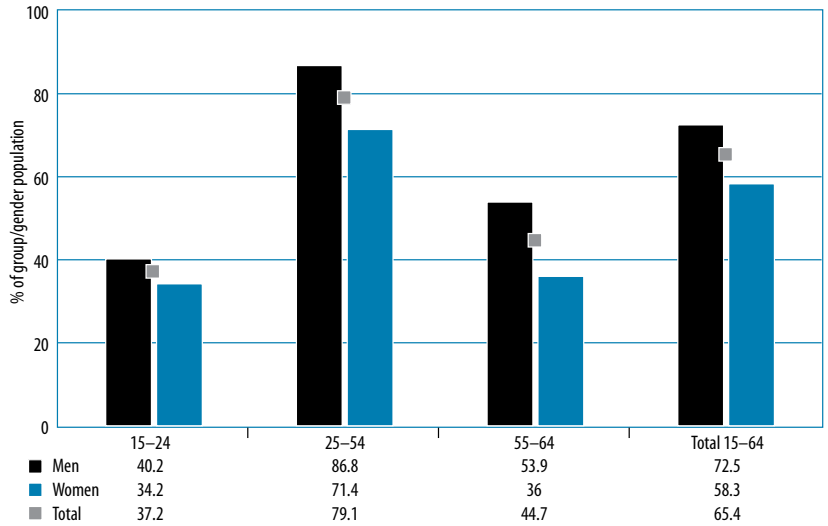
Source: Eurostat, national accounts.

Chart 2: Employment growth in the EU, US and Japan, 1997–2007



Source: EU and US data from national accounts, Eurostat; Japan data from AMECO database, Commission Services.

Chart 3: Employment rates in the EU by age group and gender, 2007



Source: Eurostat, EU Labour Force Survey, annual averages.

high 9% attained in 2004. Yet despite these improvements, the EU unemployment rate was still significantly higher than the rate observed in the US and Japan. After a slight decline during the first quarters of 2007, the unemployment rate in the US edged up, averaging 4.6% in 2007, followed by further increases in early 2008 due to adverse developments in financial and housing markets. In Japan the unemployment rate fell from 4.1% in 2006 to 3.9% in 2007. See Chart 5.

The gradual fall in the EU unemployment rate partly reflected favourable cyclical developments, but also improvements in the underlying economic fundamentals. Indeed, the structural unemployment rate, which measures the non-cyclical part of unemployment[6], continued to decline in recent years and is estimated at 7.4% in the EU-27 and at 7.1% in the EU-15 in 2007, compared with 8.9% and 8.3% in 2000 respectively. See Chart 6. Moreover, the long-term unemployment rate[7] also continued to fall, down to 3% in the EU-27 and 2.8% in the EU-15, compared with 4% and 3.4% in 2000 respectively. See Chart 7. As long-term unemployment may create hysteresis effects due to the fact that it causes a loss of skills for the long-term unemployed, the recent decline in the long-term unemployment rate may contribute to a further fall in the structural unemployment rate.

Nonetheless, although there has been a noticeable decline in the structural and long-term unemployment rates in recent years, it should also be recognised that these rates are still well above those obtained in other areas

6 One indicator of the structural unemployment rate is the non-accelerating wage rate of unemployment (NAWRU) – i.e. the unemployment rate that is consistent with a stable rate of wage growth, obtained when, among others, output is equal to potential output and expected inflation is equal to actual inflation. Source: the AMECO database, Commission Services, available at http://ec.europa.eu/economy_finance/indicators/annual_macro_economic_database/ameco_en.htm.

7 The long-term unemployment rate measures those who are unemployed for a duration of 12 months or more as a percentage of the labour force.

such as the US, where the structural and long-term unemployment rates stood at 5% and 0.5% in 2007 respectively.

Finally, labour productivity growth (in terms of real GDP per employed person) decelerated in the EU from 1.7% in 2006 to 1.3% in 2007, which was still slightly higher than the growth recorded for the US (1.0%) but significantly lower than the growth rate observed in Japan (2.3%). See Chart 8 and Table 3. A similar result is observed for productivity growth in terms of GDP per hour worked. See Chart 9 and Table 3. Overall, in 2007 as a whole the EU outperformed the US both in productivity and employment growth – which is rather exceptional.[8]

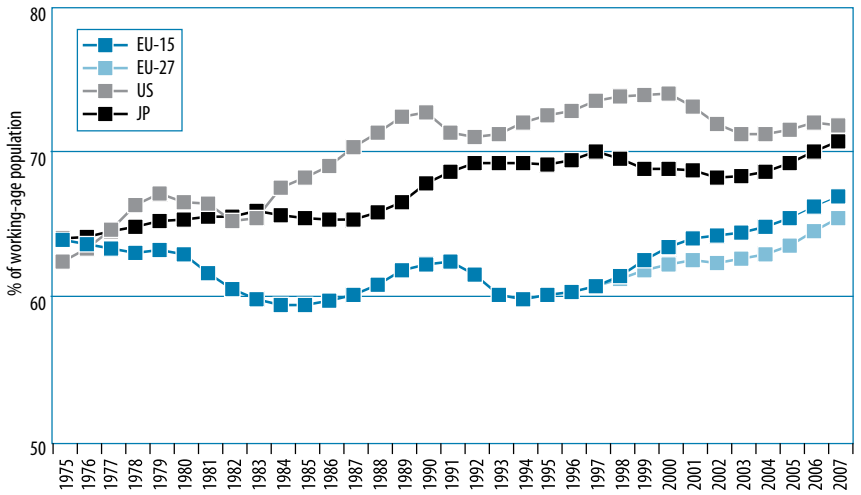
2.2. Short-term prospects for EU labour markets

According to the European Commission's 2008 Spring Economic Forecasts[9], GDP growth in the EU will decelerate due to a noticeable slowdown in global activity, the continued turmoil in the financial markets, and high commodity and energy prices.

In line with the projected slowdown in GDP growth, EU labour markets are expected to weaken. On average, overall employment growth in the EU is projected to decelerate from 1.6% in 2007 to 0.8% in 2008 and 0.5% in 2009. This is still much better, however, than employment growth in the US where employment is expected to contract by 0.2% in 2008 and 0.3% in 2009. Nevertheless, in Denmark, Latvia and Lithuania, employment is also projected to contract, while employment growth is expected to decelerate noticeably in the big Member States, especially in Germany (to 0.3% in 2009), France (0.3%) and the United Kingdom (UK, 0%).

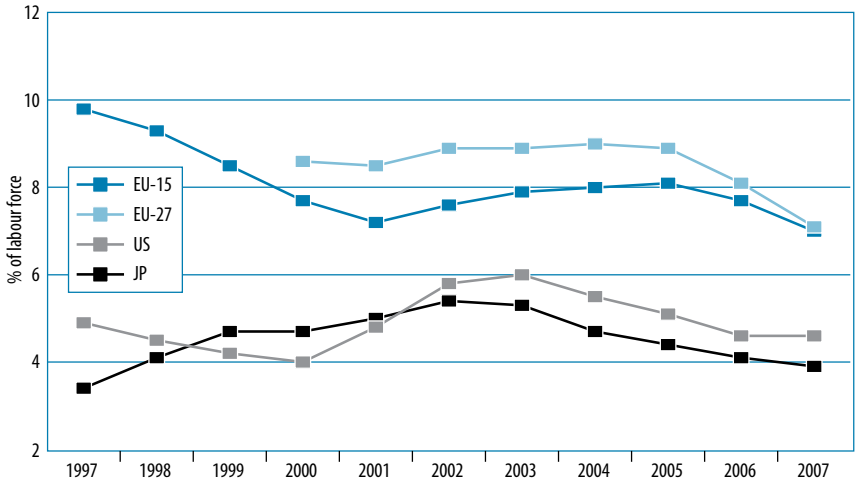
8 See section 4 below for a more detailed discussion of the complex interaction between employment and productivity growth.
9 The overall cut-off date for taking new information into account was 15 April 2008. More detail about this forecast is available in European Commission (2008).

Chart 4: Employment rates in the EU, US and Japan, 1975–2007



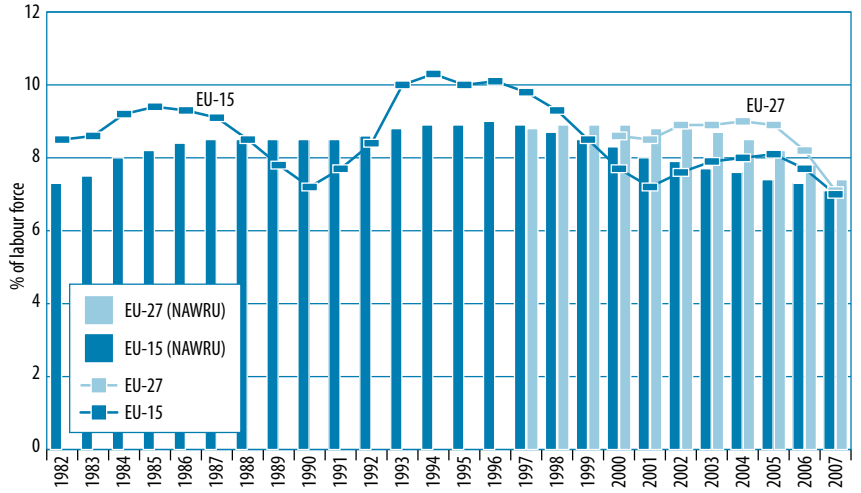
Source: DG Employment calculations based on long-term trends in employment and population, Commission Services.

Chart 5: Unemployment rates in the EU, US and Japan, 1997–2007



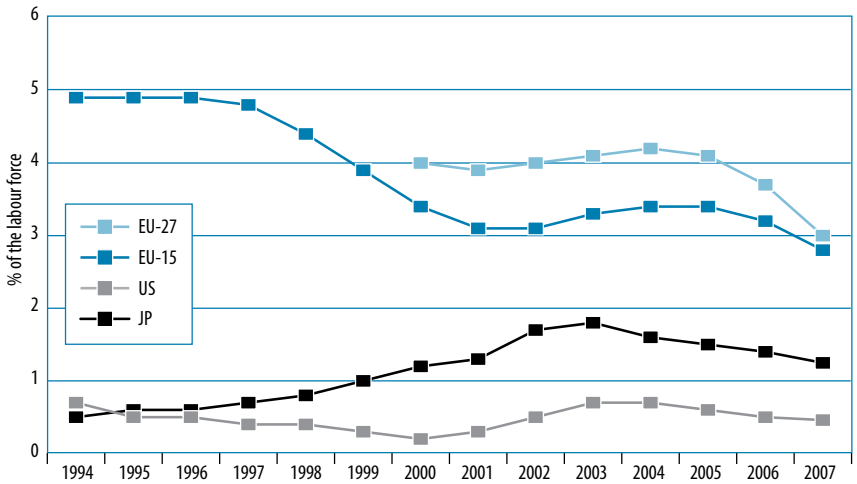
Source: Eurostat, harmonised series on unemployment.

Chart 6: Actual unemployment rate and NAWRU in the EU-15 and EU-27, 1982–2007



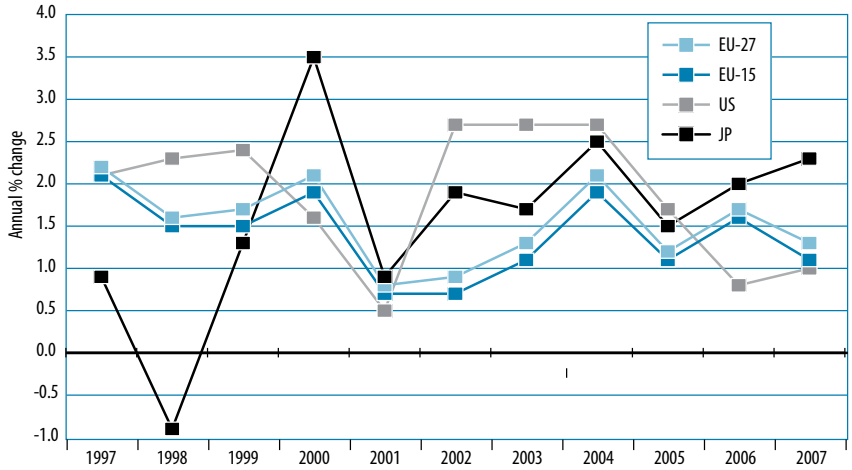
Source: AMECO database, Commission Services
Note: NAWRU, non-accelerating wage rate of unemployment.

Chart 7: Long-term unemployment rate in the EU, US and Japan, 1994–2007



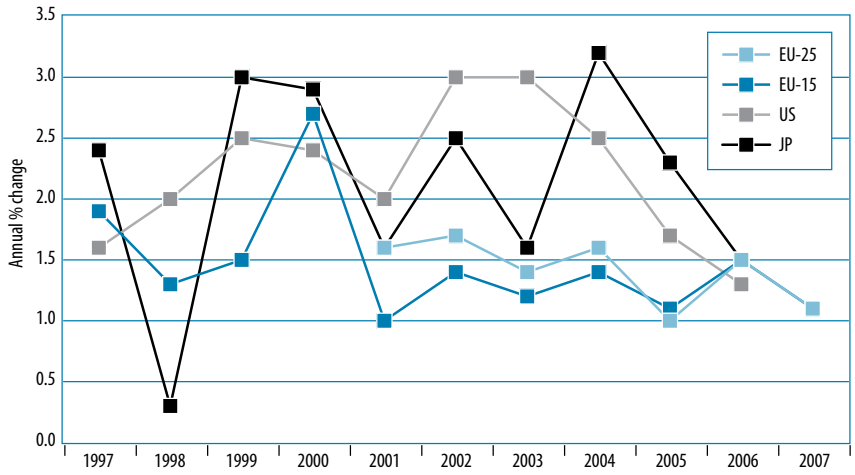
Source: Eurostat, harmonised series on unemployment; and OECD for US and Japan.

Chart 8: Growth in productivity per person employed in the EU, US and Japan, 1997–2007



Source: AMECO database, Commission Services.

Chart 9: Growth in productivity per hour worked in the EU, US and Japan, 1997–2007



Source: AMECO database, Commission Services.

Employment growth is expected to recover in Estonia, Ireland, Italy and Hungary in 2009.

On average, the EU unemployment rate is expected to stabilise at 6.8% in 2008–09, but to increase in the Baltic States, Hungary, Ireland, Spain, Sweden and the UK. With a 66% rate for the working-age population in 2009, the employment rate is projected to fall short of the target of 70% by 2010 which Europe had set itself in the Lisbon Agenda.

Labour productivity (in terms of real GDP per occupied person) is projected to grow by 1.3% in the EU in 2009, compared with 1% in the US and 0.9% in Japan. Growth in productivity is expected to be particularly low in Luxembourg and Italy (around 0.2% in 2009), but still robust in most of the other Member States – albeit in the Baltic countries at a significantly lower level than recorded in recent years.

All in all, in 2007 the EU experienced a period of solid employment growth and in the first half of 2008 employment creation continued, although at a reduced pace. Nevertheless, there are significant downside risks to the near-term outlook due to the ongoing concerns about financial markets stability, high commodity and energy prices, widening housing market corrections and weakening global trade growth.

Table 2: Employment growth for Member States, US and Japan, 2007 (%)

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
BE	0.5	1.6	1.3	2.0	1.4	-0.1	0.0	0.7	1.2	1.2	1.4
BG	-3.9	-0.2	-2.1	4.9	-0.8	0.2	3.0	2.6	2.7	3.3	2.8
CZ	0.2	-1.5	-3.4	-0.2	0.5	0.6	-1.3	0.3	1.0	1.9	1.8
DK	1.4	1.4	0.8	0.5	0.9	0.0	-1.1	-0.6	0.9	1.6	1.8
DE	-0.1	1.2	1.4	1.9	0.4	-0.6	-0.9	0.4	-0.1	0.6	1.7
EE	0.0	-1.9	-4.4	-1.5	0.9	1.3	1.4	0.0	2.0	5.4	0.7
IE	5.6	8.6	6.2	4.6	3.0	1.8	2.0	3.1	4.7	4.3	3.6
EL	-0.5	2.9	0.3	0.5	0.2	2.0	1.9	0.9	1.5	2.5	1.2
ES	3.6	4.5	4.6	5.1	3.2	2.4	3.1	3.5	4.1	3.7	3.1
FR	0.4	1.5	2.0	2.7	1.8	0.6	0.1	0.1	0.4	0.8	1.2
IT	0.3	1.0	1.1	1.9	2.0	1.7	1.5	0.4	0.6	2.0	1.1
CY	0.6	1.6	1.9	1.7	2.2	2.1	3.8	3.8	3.6	1.8	3.2
LV	4.4	-0.3	-1.8	-2.9	2.2	2.3	1.0	1.1	1.5	4.8	3.5
LT	0.6	-0.8	-2.2	-4.0	-3.8	3.6	2.2	0.0	2.5	1.7	1.9
LU	3.1	4.5	5.0	5.6	5.6	3.2	1.8	2.2	2.9	3.7	4.0
HU	0.2	1.8	3.4	1.3	0.3	0.0	1.3	-0.7	0.0	0.7	-0.1
MT	:	:	:	8.4	1.8	0.6	1.0	-0.6	1.3	1.2	2.7
NL	3.1	2.6	2.6	2.2	2.1	0.5	-0.5	-0.9	0.2	1.8	2.0
AT	0.9	1.3	1.6	1.0	0.6	-0.1	0.0	0.2	0.8	1.2	2.2
PL	1.4	1.2	-3.9	-1.6	-2.2	-3.0	-1.2	1.3	2.3	3.3	4.4
PT	2.6	2.8	1.4	2.1	1.8	0.6	-0.6	-0.1	-0.3	0.7	0.3
RO	:	:	:	:	:	:	0.0	-1.7	-1.5	2.8	1.2
SI	-1.9	-0.2	1.4	1.9	0.5	1.5	-0.4	0.3	0.2	1.2	2.7
SK	-1.0	-0.5	-2.5	-2.0	0.6	0.1	1.1	-0.2	1.4	2.3	2.1
FI	3.3	2.0	2.5	2.2	1.5	1.0	0.1	0.4	1.4	1.8	2.2
SE	-1.3	1.7	2.1	2.5	2.1	0.0	-0.6	-0.7	0.3	1.7	2.3
UK	1.7	0.9	1.2	1.4	1.0	0.6	1.0	1.0	1.3	0.7	0.7
EU-27	0.9	1.5	1.1	1.7	1.0	0.4	0.4	0.6	0.9	1.6	1.6
EU-15	1.0	1.7	1.8	2.2	1.4	0.7	0.5	0.7	0.9	1.5	1.6
US	2.2	1.4	1.5	2.5	0.0	-0.3	0.9	1.1	1.7	1.9	1.1
JP	0.7	-1.2	-1.4	-0.6	-0.8	-1.6	-0.3	0.2	0.4	0.4	-0.2

Source: EU and US data from national accounts, Eurostat; and Japan data from AMECO database, Commission Services.
Note: ":" data not available. PL, 1997–2007; EL, 1997–99 estimate; BE, LU, NL and US, 2007; PT and RO, 2006–07 forecast.

Table 3: Productivity growth in Member States, US and Japan, 2000–07 (%)

	Growth in GDP per person employed								Growth in GDP per hour worked							
	2000	2001	2002	2003	2004	2005	2006	2007	2000	2001	2002	2003	2004	2005	2006	2007
BE	1.7	-0.6	1.7	0.9	2.3	0.4	1.6	1.1	3.5	-2.1	1.5	1.2	4.0	-0.6	1.2	1.0
BG	0.5	4.9	4.3	2.0	3.9	3.5	2.9	3.3	:	4.1	4.3	2.7	2.5	3.8	3.5	3.3
CZ	4.1	2.1	1.6	4.7	4.3	5.2	4.5	4.6	3.9	6.7	2.4	4.9	3.7	4.7	4.5	4.7
DK	3.0	-0.2	0.4	1.5	2.9	1.6	2.2	0.0	2.0	-0.7	0.8	1.7	2.7	2.6	1.6	1.4
DE	2.3	1.4	1.1	1.5	1.5	1.3	2.7	1.0	2.6	1.8	1.5	1.2	0.5	1.3	2.4	0.8
EE	12.8	6.8	6.3	6.4	8.2	8.3	5.3	6.6	:	7.2	6.4	5.6	7.7	7.2	6.0	6.4
IE	4.5	3.0	4.7	2.4	1.2	1.3	1.4	1.6	4.9	3.4	5.8	3.3	1.4	1.3	1.7	1.9
EL	4.6	4.2	1.9	3.1	3.7	2.3	1.7	2.7	4.0	4.3	2.4	3.5	4.8	2.0	-1.3	1.6
ES	0.0	0.4	0.4	0.7	0.6	0.4	0.7	0.8	0.1	0.7	0.6	0.9	0.7	0.9	0.8	1.1
FR	1.0	-0.2	0.2	1.0	2.3	1.3	1.4	0.8	3.7	0.9	3.1	1.3	0.6	2.0	2.1	1.0
IT	1.8	0.0	-0.8	-0.6	1.2	0.4	0.1	0.5	2.5	0.8	-0.6	-1.2	1.1	0.4	0.1	-0.2
CY	3.3	1.8	0.0	-1.8	0.4	0.3	2.3	1.1	-1.9	0.5	1.4	-1.4	2.4	2.0	1.4	2.4
LV	10.1	5.7	4.8	5.4	7.5	8.7	7.2	6.6	9.4	6.2	5.2	4.4	10.5	9.0	7.0	6.4
LT	8.4	10.9	3.2	7.9	7.3	5.3	5.9	6.7	1.6	11.8	4.8	8.9	6.0	1.9	6.7	5.6
LU	2.7	-2.9	0.8	0.3	2.6	2.1	2.3	0.2	3.2	-1.9	1.6	1.5	4.5	3.1	0.2	-0.5
HU	3.7	3.6	4.4	3.3	5.4	3.7	3.0	1.5	4.2	6.0	4.0	4.3	5.6	4.2	3.5	1.6
MT	4.0	-3.3	2.0	-1.3	0.8	2.0	2.2	1.1	:	0.0	1.3	-0.5	-0.9	4.9	2.5	2.9
NL	2.0	0.3	0.3	1.4	3.3	1.8	1.2	1.1	1.8	0.7	0.7	1.4	3.3	1.8	1.2	1.1
AT	2.3	0.3	1.1	1.0	2.0	1.2	1.7	1.4	2.7	0.4	0.9	0.7	1.4	1.0	2.0	1.6
PL	5.9	3.5	4.6	5.1	4.0	1.3	2.9	1.9	:	4.2	4.3	4.9	4.0	0.7	3.4	2.0
PT	1.6	0.2	0.3	-0.4	1.4	0.9	0.6	1.7	4.5	0.0	0.3	1.2	0.4	1.5	0.3	1.4
RO	-0.3	6.6	8.1	5.3	10.3	5.8	4.9	4.7	:	:	:	7.0	9.8	5.4	:	:
SI	2.8	2.6	2.1	3.2	4.1	4.0	4.5	3.3	2.7	2.3	3.3	2.8	6.3	3.7	3.5	3.3
SK	3.4	2.8	4.7	3.6	5.5	5.1	6.1	8.1	3.2	4.1	8.0	7.3	2.4	3.0	6.8	6.4
FI	2.7	1.1	0.7	1.7	3.3	1.4	3.0	2.1	3.6	2.1	1.0	2.1	3.1	1.8	3.3	3.1
SE	1.9	-1.0	2.4	2.5	4.9	3.0	2.3	0.5	3.3	0.4	3.9	3.4	3.3	3.1	2.6	-0.4
UK	2.6	1.5	1.3	1.8	2.2	0.8	2.0	2.3	3.3	1.4	2.4	2.9	2.5	0.7	2.3	3.0
EU-27	2.1	0.8	0.9	1.3	2.1	1.2	1.7	1.3	:	:	:	1.5	1.7	1.1	:	:
EU-15	1.9	0.7	0.7	1.1	1.9	1.1	1.6	1.1	2.7	1.0	1.4	1.2	1.4	1.1	1.5	1.1
US	1.6	0.5	2.7	2.7	2.7	1.7	0.8	1.0	2.4	2.0	3.0	3.0	2.5	1.7	1.3	:
JP	3.5	0.9	1.9	1.7	2.5	1.5	2.0	2.3	2.9	1.6	2.5	1.6	3.2	2.3	1.5	:

Source: AMECO database, Commission Services.
Note: ':' data not available.

3. Labour market situation in the Member States

3.1. Employment

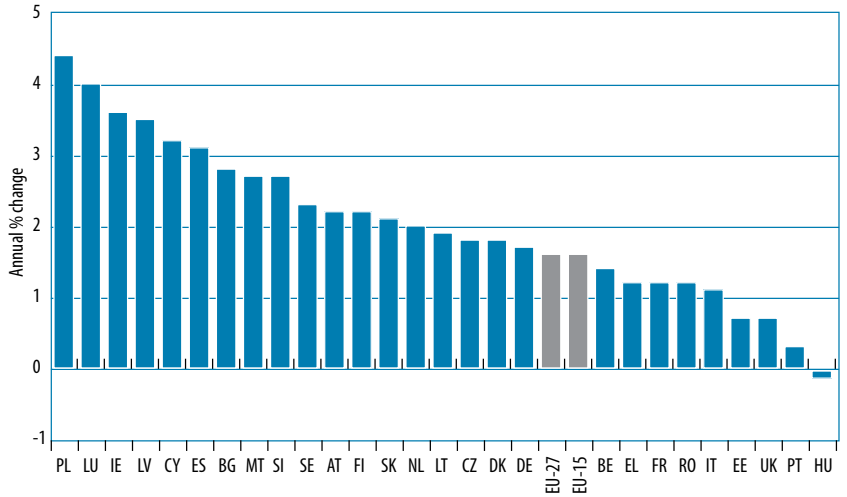
3.1.1. Employment growth

In 2007, employment growth was positive in all Member States, except Hungary where employment decreased by 0.1%. See Chart 10. Following the strong performance in 2006, this solid outcome is in sharp contrast with the years before when employment growth was negative for at least two consecutive years in several countries including Denmark, Germany, the Netherlands, Portugal and Sweden. See Table 2 for more details.

The strongest growth occurred in Poland where employment grew by 4.4%. Estonia experienced the strongest deceleration in its employment growth, falling from 5.4% in 2006 to 0.7%, while in Malta and Slovenia employment growth accelerated strongest, up by 1.5 percentage points, from 1.2% to 2.7% in both countries. Among the big Member States, employment growth in France and especially in Germany strengthened respectively to 1.2% (up from 0.8%) and 1.7% (up from 0.6%), it weakened in Italy and Spain to 1.1% (down from 2.0%) and 3.1% (down from 3.7%) respectively, while it stabilised in the UK at 0.7%.

Tables 4 and 5 show in greater detail the main features of employment growth over the preceding year and the 2000–07 period. In 2007, employment growth in the EU was primarily dominated by prime-aged workers (aged 25–54 years), who contributed 57.5% of the increase in total employment, while young workers (aged 15–24), and older workers (aged 55–64) contributed 5.5% and 31.9% respectively. See Table 4. The contribution of women to total employment creation was somewhat stronger than that of men. Regarding the type of employment, 93.9% of employment growth was made up of employees, while full-time jobs accounted for 78.2% and permanent jobs for 81.3% of the employment growth.

Chart 10: Employment growth for Member States, 2007



Source: Eurostat, national accounts.
Note: PL, estimate. BE, LU, NL, PT and RO, forecast.

Table 4: Contribution to employment creation in the EU-27 by age, gender and type of employment, 2006–07

		% contribution to employment creation 2006–07		
		Total	Men	Women
Age and gender				
	Total		47.0	53.0
	15–24	5.5	2.6	2.9
	25–54	57.5	23.6	33.8
	55–64	31.9	17.9	14.0
	65+	5.1	2.9	2.2
Type of employment and gender				
Employee versus self-employed	Employee	93.9	42.5	51.4
	Self-employed	6.1	4.4	1.7
Full-time versus part-time	Full-time job	78.2	42.2	35.9
	Part-time job	21.8	4.7	17.1
Permanent versus fixed-term employees	Permanent	81.3	40.8	40.5
	Fixed-term	18.7	4.5	14.2

Source: DG Employment calculations based on Eurostat, national accounts, breakdown based on EU Labour Force Survey annual averages.
Note: Full-time/part-time indicators do not include IE.

Table 5 shows that in the EU as a whole, employment increased by 6.7% between 2000 and 2007 – i.e. an increase by 14 million people. However, this rise was not uniform with respect to gender, age and type of employment. The increase in female employment was more than twice that in male employment. Moreover, growth was strongest for older workers, where employment grew by 34.0%, compared with 4.6% for prime-aged workers and –2.2% for young workers. The significant increase for older workers indicates that, in addition to cohort effects, the recent measures related to active aging are taking effect. However, as noted earlier, a considerable distance to the 50% target remains; thus, further policy actions are needed to overcome the barriers and disincentives faced by older workers regarding employment.[10] The decline in the employment level of young workers partly reflects increased participation in education. Finally, in terms of type of employment, the relative growth in part-time and fixed-term employment since 2000 has been substantial, with increases of 17.7% and 24.6% respectively.

10 See Chapter 2 of the *Employment in Europe 2007* report.

Table 5: Change in employment in the EU-27 by age, gender and type of employment, 2000–07

		2000–07
		Relative (as % of 2000 level)
Total		6.7
Gender	Men	4.3
	Women	9.8
Age	15–24	-2.2
	25–54	4.6
	55–64	34.0
	65+	9.1
Type of employment		
Employee versus self-employed	Employee	7.5
	Self-employed	2.7
Full-time versus part-time	Full-time job	4.9
	Part-time job	17.7
Permanent versus fixed-term employees	Permanent	5.4
	Fixed-term	24.6

Source: DG EMPL calculations based on Eurostat, national accounts, breakdown based on EU Labour Force Survey annual averages.
Note: Breakdowns based on data for RO, 2002. Breakdown for full-time/part-time and permanent/ temporary indicators based on data for BG, 2001.

3.1.2. Employment rates

The strong employment growth recorded in recent years strengthened the progress in the employment rates. The overall employment rate in the EU-27 rose from an average 64.5% (of the working-age population) in 2006 to 65.4% in 2007, while in the EU-15 it increased by 0.7 percentage points to 66.9%. Nevertheless, while the employment rate in the EU-27 is 3.2 percentage points above its 2000 level[11] and 3.5 percentage points in the EU-15, it remains 4.6 percentage points from the Lisbon target in the EU-27 and 3.1 percentage points in the EU-15. See Table 6.

At EU level, the employment rate for men stood at 72.5% in 2007, compared with 70.8% in 2000, the rate for women was 58.3%, compared with 53.7% in 2000, while that for older workers was 44.7%, compared with 36.9% in 2000. These figures indicate that despite the progress made in recent years, the employment rates, especially those for older workers, are still far from the Lisbon and Stockholm targets, which require that by 2010 the average EU employment rate for female workers is raised to 60% and that for older workers to 50%.

In 2007, the overall employment rate was above 70% in seven Member States – i.e. Denmark (77.1%), the Netherlands (76%), Sweden (74.2%), Austria (71.4%), the UK (71.3%), Cyprus (71%) and Finland (70.3%) – while it was within three percentage points of the target in six other Member States – Germany (69.4%), Estonia (69.4%), Ireland (69.1%), Latvia (68.3%), Portugal (67.8%) and Slovenia (67.8%). Nevertheless, the overall employment rate remained more than 10 percentage points short of the 70% target in five Member States – Romania (58.8%), Italy (58.7%), Hungary (57.3%), Poland (57.0%) and Malta (55.7%). See Chart 11.

In Bulgaria and Poland the overall employment rate showed the strongest increase in 2007, rising by 3.1 and 2.5 percentage points, respectively. See Table 6. Nevertheless, despite these increases, the employment rate remained at a relatively low level in Bulgaria (61.7%) and Poland (57%). Moreover, in Hungary and Italy, where the employment rate has been stagnating since 2004, the overall employment rate is now barely higher than that in Poland. Compared with the situation in 2000, the employment rate decreased in Denmark, Portugal and the UK. See Chart 12.

Developments in overall employment rates reflect to a large extent the ability of Member States to keep their older workers in work and to encourage women to enter the labour market. Nevertheless, Charts 13 and 14 show that on these issues some important differences across Member States exist.

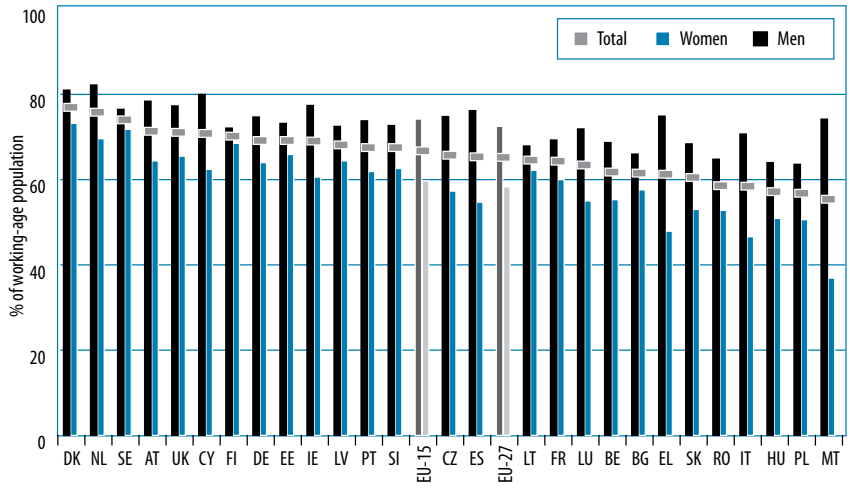
In 2007, 15 Member States met the 60% target for female workers, while two Member States fell within 3 percentage points of the target – the Czech Republic and Bulgaria. However, in Greece, Italy and Malta, the rate was still more than 10 percentage points from the target. By contrast, in Denmark and Sweden the employment rate for female workers stood above 70%. Compared with the situation in 2000, the employment rates for female workers rose in all Member States, with the largest increases observed in Spain, Bulgaria and Latvia. See Table 6. Overall, in 2007 the employment rate of women was 14.2 percentage points lower than that for men in the EU-27 and 14.5 percentage points in the EU-15.

12 Member States, primarily in the northern part of the EU, met the 50% target for older workers in 2007, but for 10 other Member States, including the big Member States France, Italy and Poland, the gap from the target exceeded 10 percentage points. In all Member States the employment rate of the older workers was higher in 2007 than in 2000, except in Malta where it decreased by 0.2 percentage points. By far the strongest increases were found in Bulgaria and Latvia, which both started from relatively low rates in 2000, while the rise in Poland is very modest even though it started from a low rate in 2000. See Table 6. All in all, these statistics show that older workers still represent one of the largest target groups for increasing employment, especially if one takes into account that their numbers will continue to grow during the coming decades.[12]

11 2000 was the year when the EU-15 launched the Lisbon strategy and established the main employment targets.

12 See Chapter 2 of the *Employment in Europe 2007*.

Chart 11: Employment rates for Member States by gender, 2007



Source: Eurostat, EU Labour Force Survey, annual averages.

Table 6: Employment rates in EU Member States in 2007 and progress towards Lisbon and Stockholm targets for 2010

	Total employment rate				Female employment rate				Older people's employment rate			
	2007	Change 2007–06	Change 2007–00*	Gap below 2010 target	2007	Change 2007–06	Change 2007–00*	Gap below 2010 target	2007	Change 2007–06	Change 2007–00*	Gap below 2010 target
BE	62.0	1.0	1.5	8.0	55.3	1.3	3.8	4.7	34.4	2.4	8.1	15.6
BG	61.7	3.1	11.3	8.3	57.6	3.0	11.3	2.4	42.6	3.0	21.8	7.4
CZ	66.1	0.8	1.1	3.9	57.3	0.5	0.4	2.7	46.0	0.8	9.7	4.0
DK	77.1	-0.3	0.8	>	73.2	-0.2	1.6	>	58.6	-2.1	2.9	>
DE	69.4	1.9	3.8	0.6	64.0	1.8	5.9	>	51.5	3.1	13.9	>
EE	69.4	1.3	9.0	0.6	65.9	0.6	9.0	>	60.0	1.5	13.7	>
IE	69.1	0.5	3.9	0.9	60.6	1.3	6.7	>	53.8	0.7	8.5	>
EL	61.4	0.4	4.9	8.6	47.9	0.5	6.2	12.1	42.4	0.1	3.4	7.6
ES	65.6	0.8	9.3	4.4	54.7	1.5	13.4	5.3	44.6	0.5	7.6	5.4
FR	64.6	0.8	2.5	5.4	60.0	1.2	4.8	>	38.3	0.2	8.4	11.7
IT	58.7	0.3	5.0	11.3	46.6	0.3	7.0	13.4	33.8	1.3	6.1	16.2
CY	71.0	1.4	5.3	>	62.4	2.1	8.9	>	55.9	2.3	6.5	>
LV	68.3	2.0	10.8	1.7	64.4	2.0	10.6	>	57.7	4.4	21.7	>
LT	64.9	1.3	5.8	5.1	62.2	1.2	4.5	>	53.4	3.8	13.0	>
LU	63.6	0.0	0.9	6.4	55.0	0.4	4.9	5.0	32.9	-0.3	6.2	17.1
HU	57.3	0.0	1.0	12.7	50.9	-0.2	1.2	9.1	33.1	-0.5	10.9	16.9
MT	55.7	0.9	1.5	14.3	36.9	2.0	3.8	23.1	28.3	-1.7	-0.2	21.7
NL	76.0	1.7	3.1	>	69.6	1.9	6.1	>	50.9	3.2	12.7	>
AT	71.4	1.2	2.9	>	64.4	0.9	4.8	>	38.6	3.1	9.8	11.4
PL	57.0	2.5	2.0	13.0	50.6	2.4	1.7	9.4	29.7	1.6	1.3	20.3
PT	67.8	-0.1	-0.6	2.2	61.9	-0.1	1.4	>	50.9	0.8	0.2	>
RO	58.8	0.0	1.2	11.2	52.8	-0.2	1.0	7.2	41.4	-0.3	4.1	8.6
SI	67.8	1.2	5.0	2.2	62.6	0.8	4.2	>	33.5	0.9	10.8	16.5
SK	60.7	1.3	3.9	9.3	53.0	1.1	1.5	7.0	35.6	2.5	14.3	14.4
FI	70.3	1.0	3.1	>	68.5	1.2	4.3	>	55.0	0.5	13.4	>
SE	74.2	1.1	1.2	>	71.8	1.1	0.9	>	70.0	0.4	5.1	>
UK	71.3	-0.2	0.1	>	65.5	-0.3	0.8	>	57.4	0.0	6.7	>
EU-27	65.4	0.9	3.2	4.6	58.3	1.0	4.6	1.7	44.7	1.2	7.8	5.3
EU-15	66.9	0.7	3.5	3.1	59.7	1.0	5.6	0.3	46.6	1.3	8.8	3.4
2010 target	70%				More than 60%				50%			

*Note: * Data for RO 2002.*
The column "Gap below 2010 target" is for illustrative purposes only, since the 2010 target is a collective for the EU and not individual Member States.
The symbol ">" indicates that the respective target has already been exceeded by the Member State concerned.

Lisbon and Stockholm targets and the relaunched Lisbon Strategy

The 2000 Lisbon European Council set a strategic goal, over the decade 2000–10, for the EU:

> to become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion.*

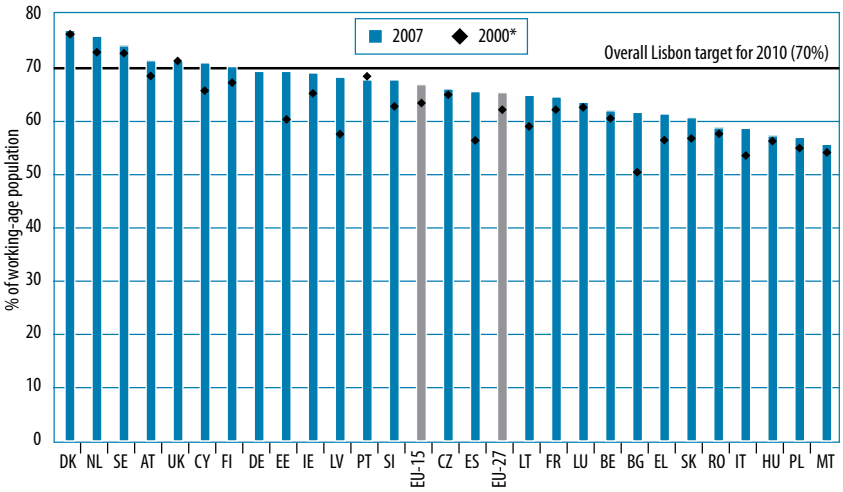
It specifically stated that the overall aim of employment and economic policies should be to raise the employment rate to as close to 70% as possible by 2010 and to increase the employment rate for women to more than 60% by the same year, not least in order to reinforce the sustainability of social protection systems. In addition to the 2010 Lisbon targets, the 2001 Stockholm European Council set a new target of raising the average EU employment rate for older men and women (aged 55–64) to 50% by 2010.

Recognising the limited progress achieved so far towards these targets, the European Council decided in 2005 to relaunch the Lisbon Strategy without delay and refocus priorities on economic growth and employment. As part of this, a new set of employment guidelines for the period 2005–08 was adopted by the Council in July 2005 to reflect the renewed focus on jobs. These form part of the integrated guidelines package also adopted in 2005, which lays out a comprehensive strategy of macroeconomic, microeconomic and employment policies to redress Europe's weak growth performance and insufficient job creation. The employment guidelines continue to reflect the EU's overall goal of achieving full employment, quality and productivity at work, and social and territorial cohesion, and advocate a life-cycle approach to work that tackles the problems faced by all age groups. The eight employment guidelines fall under three broad areas for action, namely to:

- attract and retain more people in employment, increase labour supply and modernise social protection systems;
- improve adaptability of workers and enterprises;
- increase investment in human capital through better education and skills.

* The Presidency Conclusions of the Lisbon European Council of 23 and 24 March 2000 are available at http://www.europarl.europa.eu/summits/lis1_en.htm.

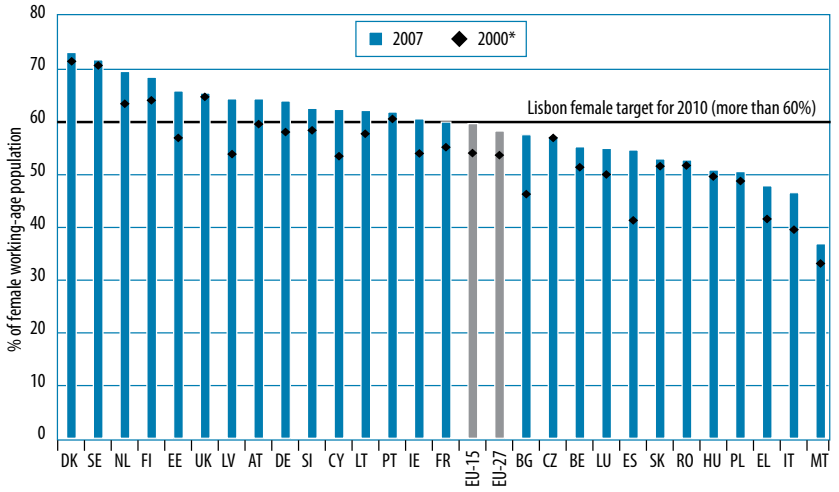
Chart 12: Overall employment rates for Member States, 2000 and 2007



Source: Eurostat, EU Labour Force Survey, annual averages.
*Note: * Data for RO, 2002.*

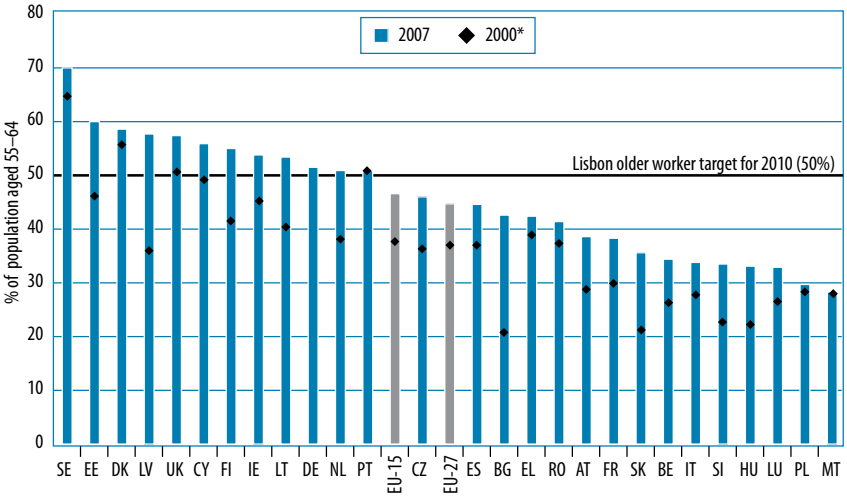
Chart 15 shows that for the EU as a whole, the youth employment rate in 2007 was slightly lower than in 2000. However, across the Member States the situation differs somewhat. In Hungary, Luxembourg, Portugal and Malta, there was a quite significant fall in the youth employment rate, while it noticeably increased in Latvia, Spain and Estonia. The latter Member States are also among those that had the strongest increases in the overall employment rate.

Chart 13: Female employment rates for Member States, 2000 and 2007



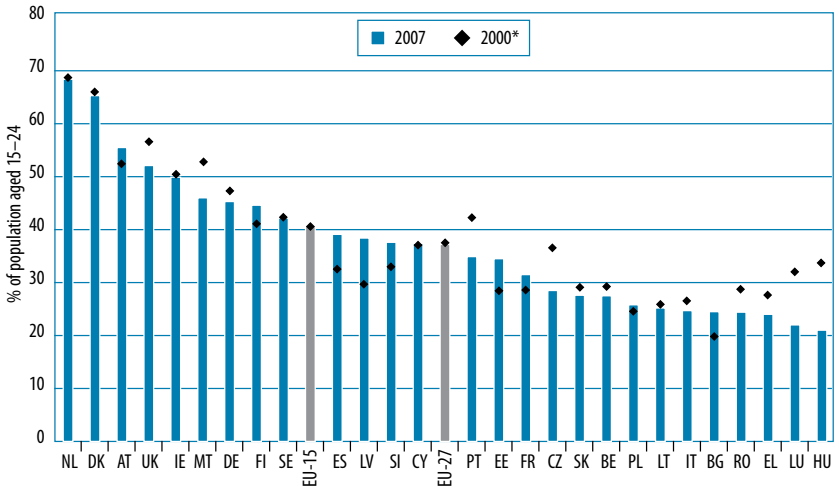
Source: Eurostat, EU Labour Force Survey, annual averages.
*Note: * Data for RO, 2002.*

Chart 14: Older worker employment rates for Member States, 2000 and 2007



Source: Eurostat, EU Labour Force Survey, annual averages.
*Note: * Data for RO, 2002.*

Chart 15: Youth employment rates for Member States, 2000 and 2007



Source: Eurostat, EU Labour Force Survey, annual averages.
*Note: * Data for RO, 2002.*

3.1.3. Activity rates

In 2007 the proportion of people in the EU who were working or looking for work stood as a whole at 70.5% (of the working-age population) compared with 68.5% in 2000. Disaggregated for gender, the activity rate for men was at 77.6%, and that for women at 63.3%. Moreover, in all age groups the former was higher than the activity rate of women. However, while the difference in the activity rate between men and women amounted to 19 percentage points, the difference between the rates for older workers (aged 55–64) and young people (aged 15–24) was only 6.7 percentage points. See Chart 16.

Chart 17 shows that in most Member States the 2007 activity rate was higher than that observed in 2000, except in the Czech Republic, Slovakia, Lithuania, Romania, Poland and the UK. Compared across Member States, the activity rates ranged from just under 60% in Malta to 80% in Denmark. In Bulgaria, Italy, Hungary, Luxembourg, Poland and Romania the activity rates were also substantially (5 percentage points or more) below the EU average.

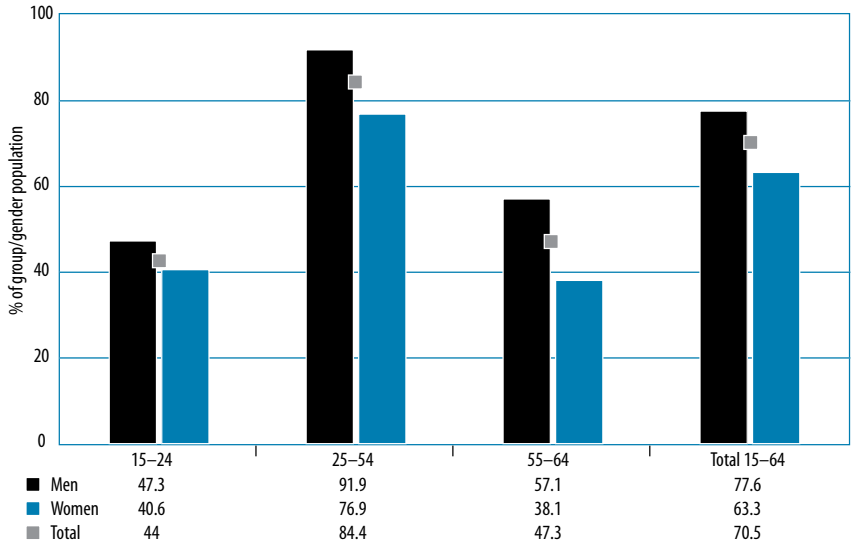
The largest disparities between the activity rates of men and women were found in Greece, Italy and especially Malta, while the lowest were in Finland, Sweden and Denmark. See Chart 18.

3.2. Contractual and working-time arrangements

The developments described above in the employment and activity rates of female and older workers partly reflect the increased occurrence of part-time and fixed-term work arrangements.

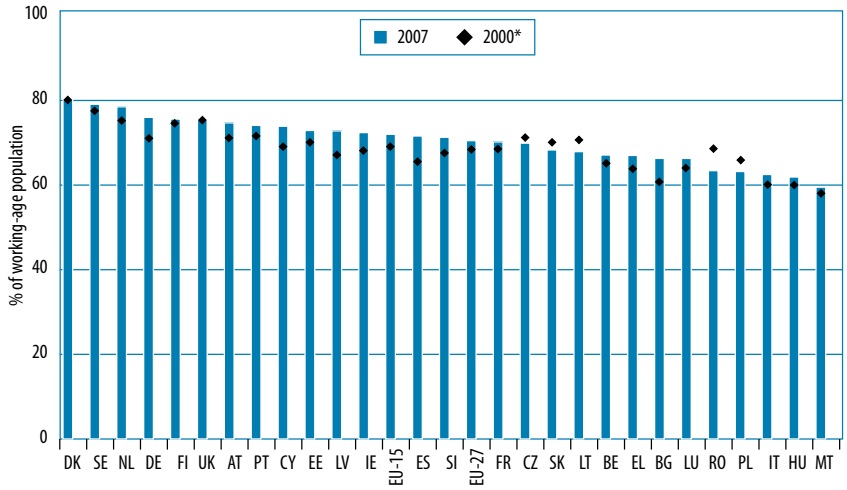
In 2007, 18.2% of the workers in the EU were in part-time employment – an increase of 2 percentage points compared with the situation in 2000. At the same time, the use of fixed-term, as opposed to open-ended, permanent contracts stood at 14.5% in 2007 – a rise of 2.2 percentage points since 2000.

Chart 16: Activity rates in the EU by age group and gender, 2007



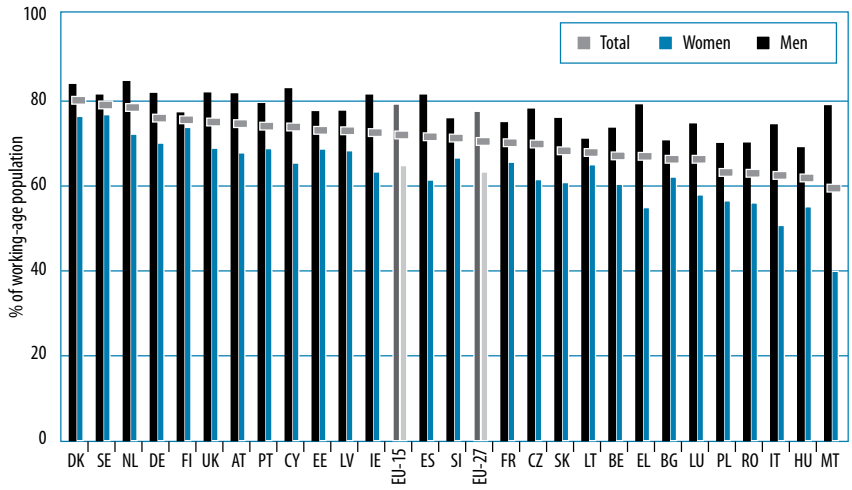
Source: Eurostat, EU Labour Force Survey, annual averages.

Chart 17: Activity rates for Member States, 2000 and 2007



Source: Eurostat, EU Labour Force Survey, annual averages.
*Note: * Data for RO, 2002.*

Chart 18: Activity rates for Member States by gender, 2007



Source: Eurostat, EU Labour Force Survey, annual averages.

The incidence of part-time employment varied significantly across Member States. The highest share was found in the Netherlands where 46.8% of total employment is part-time, while the lowest shares are predominantly found in the new Member States. See Chart 19. Compared with the situation in 2000, there was a moderate rise in the use of part-time contracts between 2000 and 2007 in most Member States, except in several of the new Member States where the share declined, with by far the largest fall observed in Latvia. See Chart 20.

Part-time work is predominantly carried out by women, with 31.2% of women in the EU in part-time contracts compared with only 7.7% of men. The proportion of women working part-time is highest in the Netherlands at 75%, and lowest in Bulgaria at 2.1%. See Chart 19.

In 2007 the incidence of fixed-term work varied significantly across the EU, but unlike part-time employment, fixed-term employment does not show large differences between men and women at the level of the EU. See Chart21. In most Member States, the use of fixed-term contracts rose moderately between 2000 and 2007, except in Poland where it grew from 5.8% in 2000 to 28.2% in 2007.[13] See Chart 22.

13 Since 2000, job creation in Poland has primarily been driven by an increase in temporary jobs, reflecting a persistent strong discrepancy in employment protection legislation between regular and temporary workers. However, with the introduction of some important amendments to the labour code (e.g. the re-instatement of the third fixed-term contract rule), the growth of fixed-term jobs started to slow down in recent years.

Although the increased occurrence of part-time and fixed-term work arrangements can allow for a better synchronisation of employees' and employers' working requirements and a better balancing of work and private life (in the case of part-time contracts), they may also pose the risk of driving employees involuntarily into such arrangements. Chart 23 suggests that part-time work is largely voluntary. However, Chart 24 shows that fixed-term work is to a large extent done on an involuntary basis from the perspective of the employee.[14]

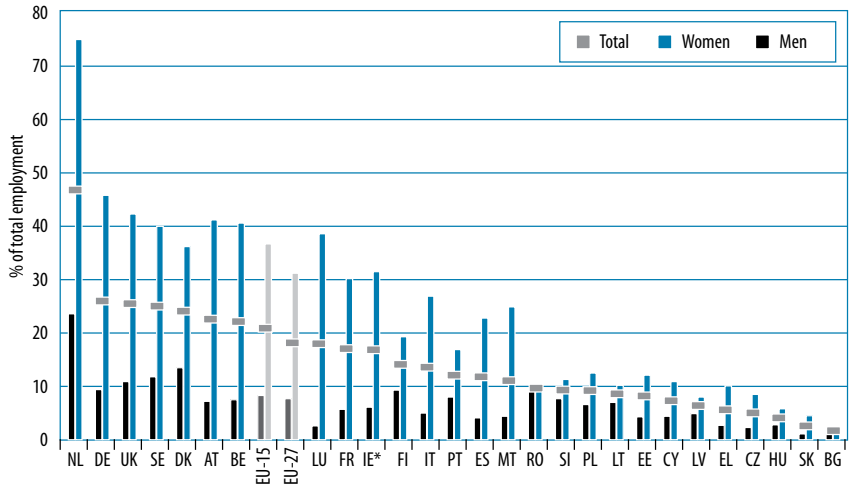
It should also be recognised that a higher incidence of fixed-time contracts carries the risk of further labour market segmentation. In principle, these contracts can act as stepping stones to enter employment and to progress subsequently into better contractual arrangements. However, as the risk exists that workers get trapped in a series of fixed-term contracts for a long period, there is a clear need to distribute flexibility and security more evenly over the workforce in some Member States.[15]

In 2007, the average usual weekly working hours of employees (worked full time in their main job) in the EU as a whole was 40.5 hours. See Chart 25. Compared across Member States, average weekly working hours are generally higher in the new Member States than in the EU-15 countries (with the exception of the UK and Austria). The lowest number of working hours was in the Netherlands with 38.9 hours and the highest in the UK and Austria with 42.5 and 42.4 hours respectively. Men work on average 2 hours more than women.

Between 2000 and 2007 the average weekly working hours of employees in EU-27 rose only slightly. However, a notable increase is to be found in Austria, while the Czech Republic showed the strongest decline.

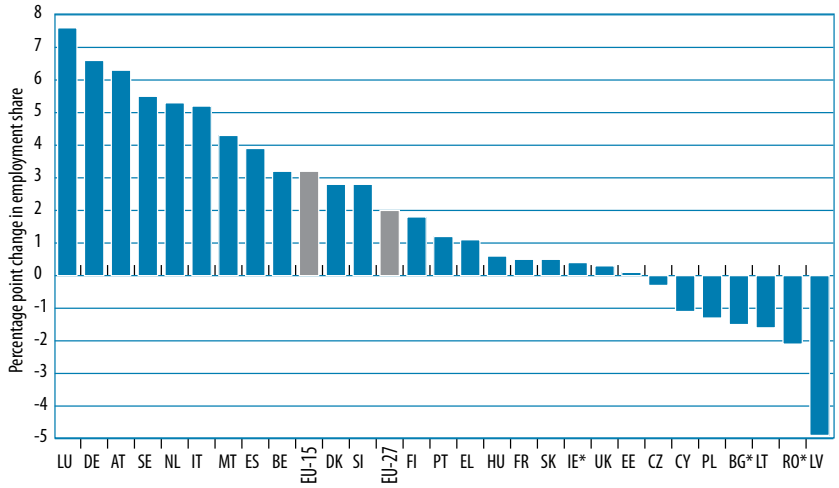
14 Chart 24 shows people who could not find a permanent job plus people in education or training or in a probationary job.
15 See also European Commission (2007b).

Chart 19: Part-time employment for Member States by gender, 2007



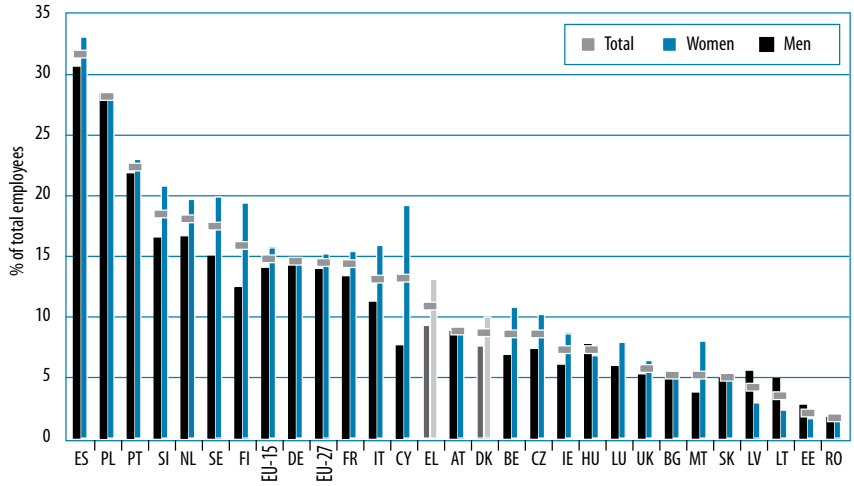
Source: Eurostat, EU Labour Force Survey, annual averages.
Note: Data for IE, 2004.

Chart 20: Change in the share of part-time employment in total employment in the Member States, 2000–07



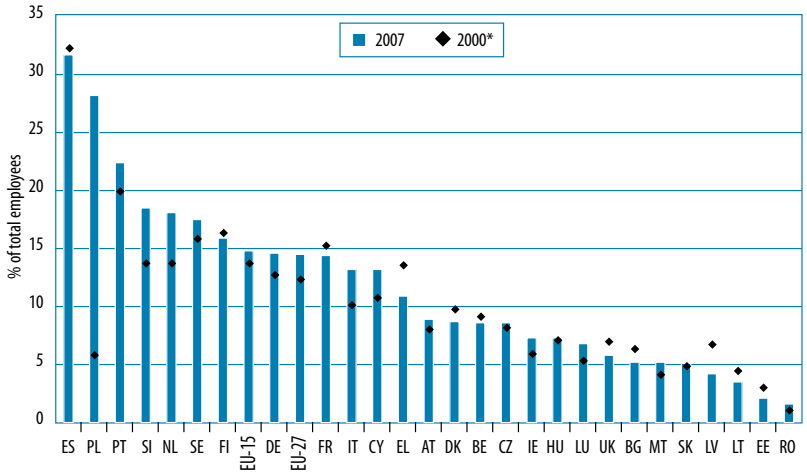
Source: Eurostat, EU Labour Force Survey, annual averages.
Note: Changes for BG, 2001–07; IE, 2000–04; and RO, 2002–07.

Chart 21: Fixed-term employment for Member States by gender, 2007



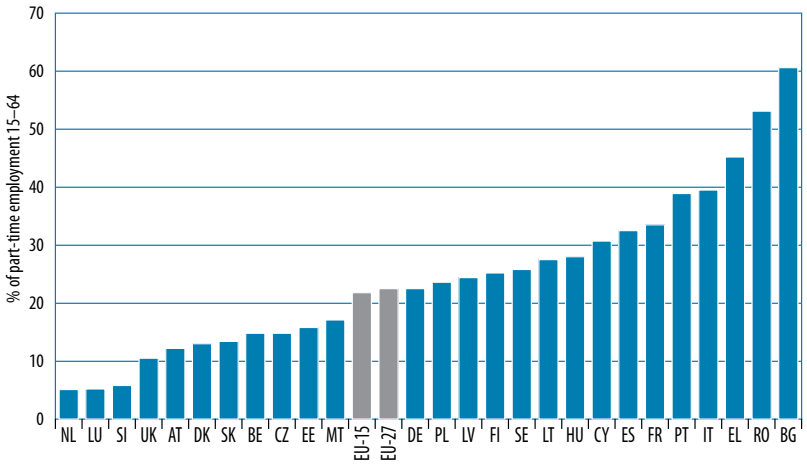
Source: Eurostat, EU Labour Force Survey, annual averages.

Chart 22: Changes in the share of fixed-term employment in total employment in Member States, 2000–07



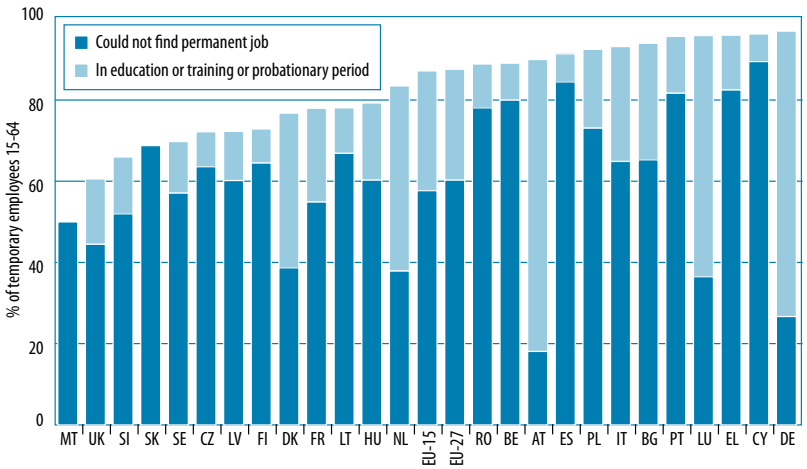
Source: Eurostat, EU Labour Force Survey, annual averages.
Note: Data for BG, 2001; and RO, 2002.

Chart 23: Part-time work on an involuntary basis, 2007



Source: Eurostat, EU Labour Force Survey, annual averages.
Note: Data for IE not reliable. Data for EE, FR, LU, MT, NL and SI uncertain.

Chart 24: Fixed-term work on an involuntary basis, 2007



Source: Eurostat, EU Labour Force Survey, annual data.
Note: Data for BE, DE, IE, EL, ES, NL, AT, EU-27 and EU-15 uncertain due to small sample size.
No data available in LV, LT, MT, SK and RO for one or more of the types of fixed-term work in the chart.

3.3. Unemployment

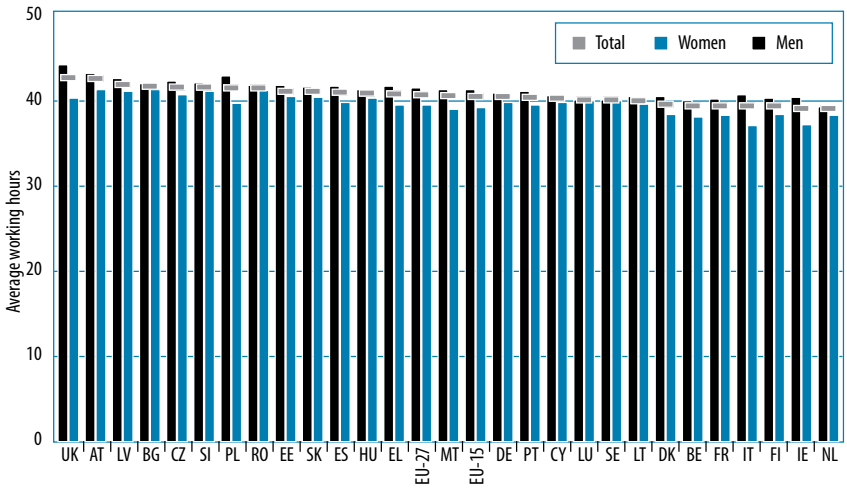
In 2007 the situation with regard to unemployment improved further in most Member States. This development was in line with the structural labour market reforms which have been implemented in most Member States in recent years and the favourable economic conditions in the first half of 2007. Nevertheless, as the international economic situation started to falter in the second half of 2007, the outlook for future developments in unemployment started to look less favourable.

In 2007, the overall unemployment rate was at a single-digit level in all Member States, except Slovakia where it stood at 11.1% (of the labour force). See Chart 27. The lowest rates were reached in the Netherlands, Denmark and Cyprus, where the unemployment rate stood at 3.2%, 3.7% and 3.9% respectively. Compared with 2006, when the unemployment rates had already declined substantially in most Member States, the unemployment rates fell further in all Member States, except Ireland and Portugal where it rose by 0.2 and 0.3 percentage points, respectively. The largest decline was to be found in Poland where the unemployment rate fell by 4.2 percentage points, partly reflecting labour mobility to old Member States.

The differences in the unemployment rates across Member States reflect to a large extent differences in structural and long-term unemployment rates. On average, the structural unemployment rate in the EU is 7.1%, but the highest structural unemployment rate amounts to 12% in Slovakia and the lowest to 3.2% in the Netherlands. See Chart 28. Moreover, in some Member States the long-term unemployment rate (i.e. unemployment for a duration of 12 months or more) remains high, especially in Slovakia where it reached 8.3% (of the labour force) in 2007, compared with 3% for the EU as a whole. See Chart 29.

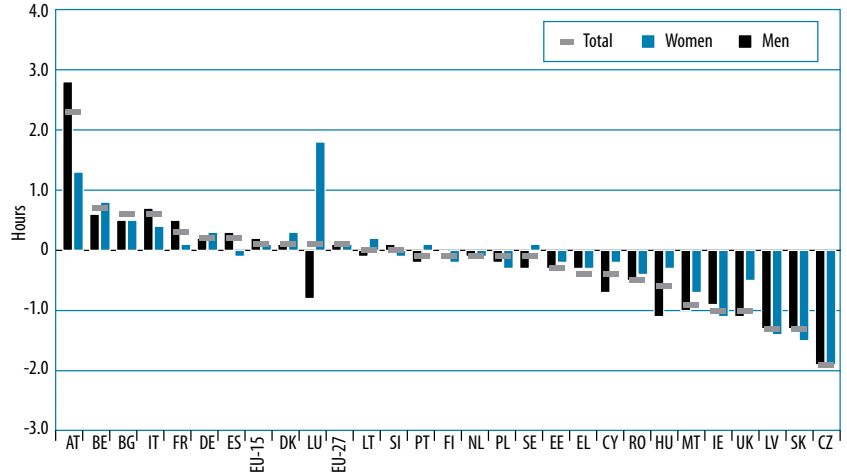
In 2007, the EU unemployment rate for men stood at 6.6% and that for woman at 7.8%. See Chart 27.

Chart 25: Average usual weekly working hours (in main job, full-time) of all employees in the Member States by gender, 2007



Source: Eurostat, EU Labour Force Survey, annual data.

Chart 26: Change in working hours (in main job) of all employees in the Member States, 2000-07



Source: Eurostat, EU Labour Force Survey, annual averages.
Note: CZ and PL, 2001; AT, 2004; and RO, 2002.

Except for Ireland, Estonia, the UK, Latvia, Romania and Germany, the unemployment rate for men was lower than the rate for women with the largest difference in Greece at 7.6%.

Youth unemployment (aged 15–24) remains a serious concern and efforts to integrate young people into the labour market and to support them as they pursue careers alternating between employment, study and unemployment should remain high on the policy agenda. Youth unemployment stood at 15.3% in the EU in 2007, down from 16.9% in 2006, but still more than twice the prime-age adult unemployment rate. In many Member States youth unemployment remains a severe problem, with rates in excess of 20% found in Romania, Italy, Slovakia, Poland and Greece, which are usually also countries with a high overall unemployment rate. See Chart 30.

All in all, the previous figures indicate that there remains considerable scope for raising employment in the EU, especially among such groups as women, older people and youth. Nevertheless, it should also be recognised that the further integration of these people requires the implementation of adequate policies as reflected in the *Integrated guidelines for growth and jobs*.

3.4. Labour productivity growth

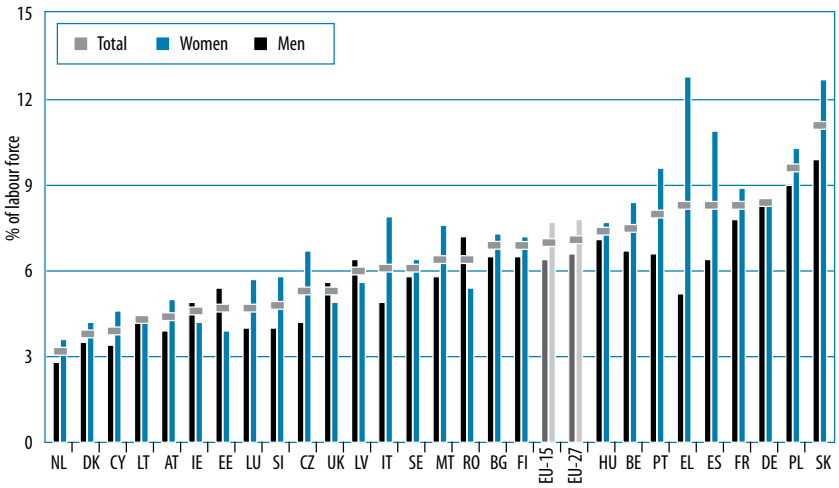
Some noticeable differences regarding labour productivity growth continued to exist across Member States. See Chart 31. In 2007, labour productivity growth (in terms of real GDP per employed person) was lowest in Denmark (0%), Italy (0.5%), Luxembourg (0.2%) and Sweden (0.5%), while strong growth was recorded in most of the new Member States, with the highest rates in Estonia (6.6%), Latvia (6.6%), Lithuania (6.7%) and, especially, Slovakia (8.1%).

Compared with previous years, when some new Member States attained double-digit growth rates, these high growth rates for the new Member States are not exceptional, reflecting a continued catching-up towards the EU average. This process is expected to continue until the productivity levels of the new Member States have converged towards the levels attained in the old Member States – provided that the new Member States implement policies that promote the reallocation of labour towards sectors with high productivity, facilitate the diffusion of technology (including the modernisation of work organisation and working conditions), promote the investment in human capital, and accommodate further capital deepening[16].

Among the larger of the old Member States, the UK recorded the highest productivity growth at 2.3% – the highest for this country since the beginning of the decade. Productivity growth weakened significantly in Germany (down from 2.7% in 2006 to 1.0% in 2007) and France (down from 1.4% in 2006 to 0.8% in 2007), remaining weak in Spain (at 0.8% in 2007) and Italy (at 0.5% in 2007). The highest productivity growth in the old Member States was attained in Greece where it stood at 2.7%.

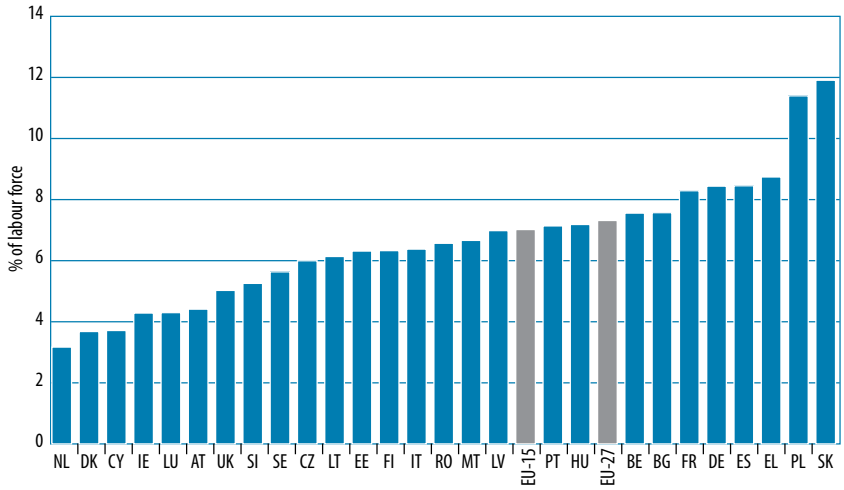
16 i.e. increase in the capital stock per employee.

Chart 27: Unemployment rates for Member States by gender, 2007



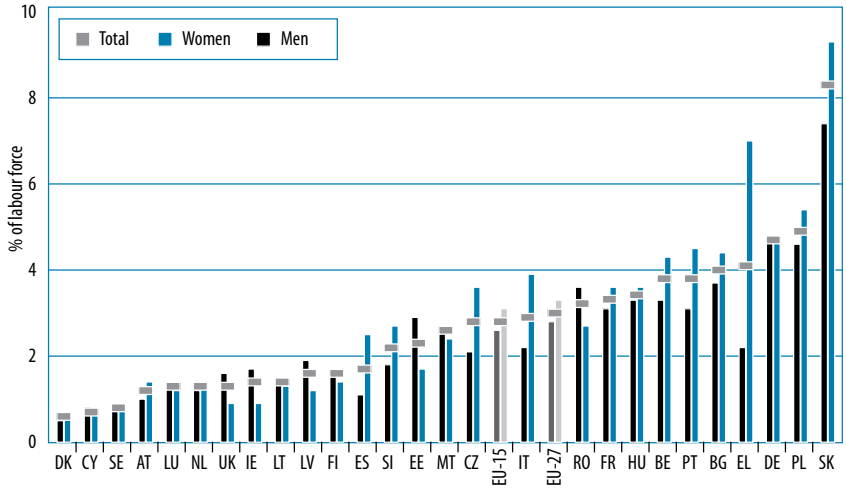
Source: Eurostat, harmonised series on unemployment.

Chart 28: Structural unemployment rate in the EU Member States, 2007



Source: AMECO database, Commission Services.

Chart 29: Long-term unemployment rates for Member States by gender, 2007



Source: Eurostat, harmonised series on unemployment.

4. Employment and productivity growth

The previous analysis shows how the dynamics of employment and labour productivity growth varied across the Member States between 2000 and 2007. Chart 32 summarises these findings by plotting the average annual growth of employment and productivity per Member State.

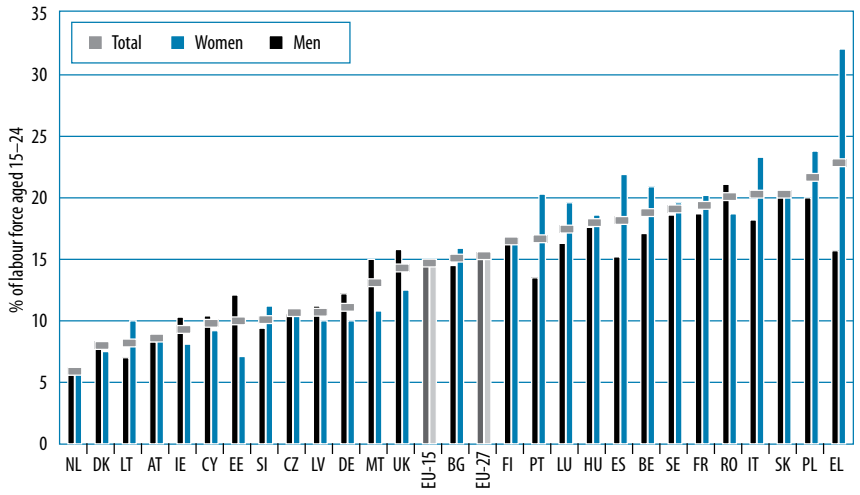
On average, high productivity growth was obtained in the Baltic Member States, as well as Romania and Slovakia. By contrast, a low average productivity growth rate was realised in France, Spain, Italy, Malta, Portugal and Cyprus. At the same time, high employment growth occurred in Luxemburg, Ireland and Spain, with low employment growth in Poland, Germany, Hungary, and Romania. All in all, a negative short-run relationship between employment growth and productivity growth emerges, with no Member State obtaining simultaneously very high employment and productivity growth.

This evidence raises then the question as to how employment growth and labour productivity growth interact with each other and how policies and labour market institutions influence this interaction. Answering this question is important as the EU and Member States should try to realise both strong employment and productivity growth in order to reach their social and economic objectives in the face of the various challenges arising from rapid technological change, an ageing population, accelerating globalisation, rising energy and commodity prices and climate change.

Economic theory suggests that, at the macro-level, there should be no long-run trade-off between employment and labour productivity growth. In the long term, the latter is primarily determined by technological change (including efficiency gains due to the modernisation of work organisation and working conditions)[17], while

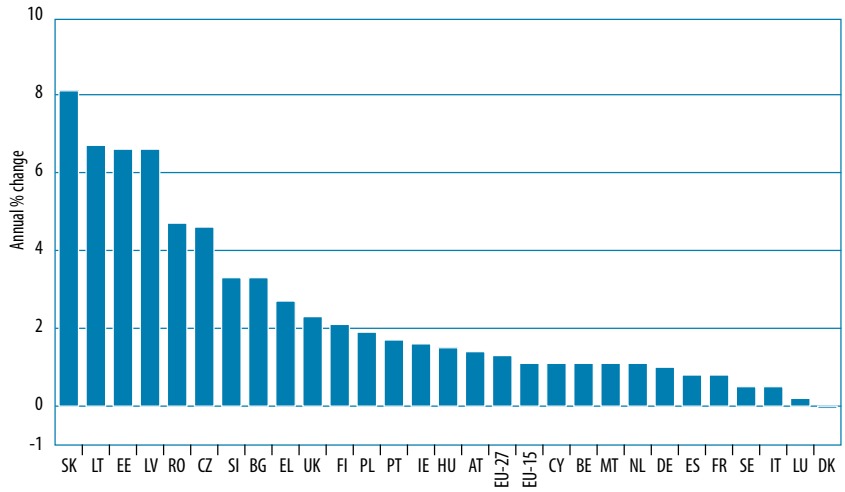
17 At least in the neo-classical growth models, where the accumulation of human and physical capital is subject to diminishing returns. See for instance Barro and Sala-i-Martin (1995) and Denis et al. (2005).

Chart 30: Youth unemployment rates for Member States by gender, 2007



Source: Eurostat, harmonised series on unemployment.

Chart 31: Growth in productivity per person employed across Member States, 2007



Source: AMECO database, Commission Services.

changes in employment essentially reflect changes in the size and composition of the labour force, together with factors that affect the functioning of the labour market, including (labour market) policies and institutions.

Although no (significant) trade-off between employment and labour productivity growth is to be expected at the macro level in the long run, such a trade-off may exist at the level of the enterprises (or industries) or at the macro level in the short to medium run. Nonetheless, appropriate policy responses have the potential to temper the extent of such trade-offs.

At the level of the enterprises (or industries), Nordhaus (2005) argues that the impact of productivity growth on employment depends on the bias of technological change, the prices of competing goods and the price elasticity of demand. For instance, in agriculture where price elasticities are low, employment is likely to decline when productivity increases, because as prices decrease demand will remain almost unchanged.

By contrast, in industries producing goods for which demand is price-elastic, employment is likely to rise if productivity increases because demand will also increase as a result of declining prices – provided that the prices of substitutes (for instance goods produced in other countries) do not fall to an even greater extent as a result of the adaptation of the same technological progress.

In such circumstances, policies to facilitate the workers' transition to new jobs rather than to protect the old jobs are going to be more effective in raising both productivity and employment. Such policies include:

- the modernisation of labour laws that allow for sufficiently flexible work arrangements and reduce labour market segmentation and undeclared work
- the provision of adequate active labour market policies
- the promotion of lifelong learning throughout the lifecycle
- the implementation of modern social security systems that combine the provision of adequate income support with the need to facilitate labour market mobility[18].

In the short to medium term, labour productivity growth is determined by changes in total factor productivity, the capital intensity of production[19], the stock of human capital[20] and aggregate demand. Total factor productivity growth is primarily shaped by innovation and the adoption of new technologies. Changes in the capital-to-labour ratio are determined by changes in relative factor prices and the speed at which the production factors are adjusted to their desired level, while changes in human capital are to a large

18 See for instance European Commission (2007b).

19 i.e. the capital-to-labour ratio.

20 Consider the following Cobb-Douglas type production function with constant returns to scale:

(1) $Y = AL^{(1-\alpha-\beta)} H^{\alpha} K^{\beta}$

where Y is output; A, total factor productivity; L, the number of workers; H, the stock of human capital; and K, the stock of physical capital; and where it is assumed that a skilled worker supplies both one unit of L and some amount of H. The parameter α is the human capital elasticity of output, while the parameter ß is the physical capital elasticity of output. For these elasticities it holds that $0 < \alpha < 1$, $0 < ß < 1$ and $0 < \alpha + ß < 1$. See for instance Romer (1996).

extent established by education, training and lifelong learning. This breakdown of labour productivity growth into its components indicates that several factors may affect the interaction between productivity and employment growth at the macro-level. In the context of the EU, the following factors and policy responses seem to be of particular importance[21].

Firstly, an inverse relationship between employment and productivity growth will be observed when the capital intensity of production changes due to, for example, an increase in the supply of labour (e.g. through targeted tax cuts or wage subsidies for low-skilled workers, migrants or disabled workers) and where investments are unable to adjust immediately so that the capital-to-labour ratio falls in the short run.

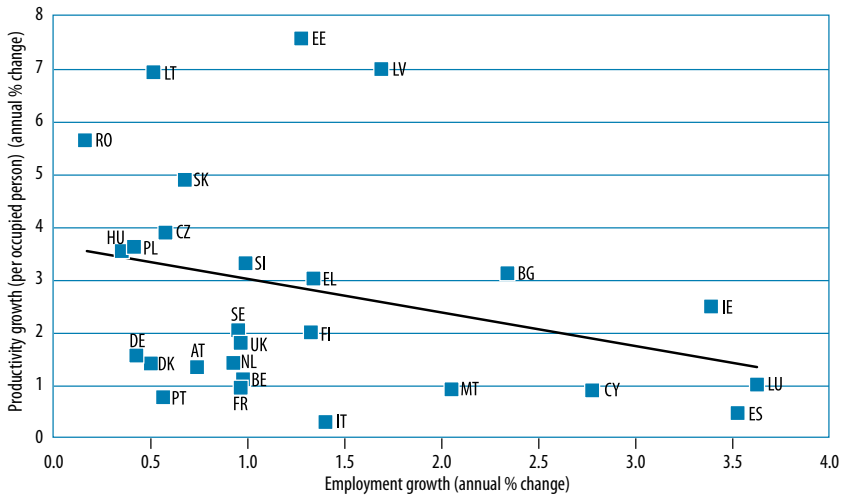
Over the longer term, this decline in the capital-to-labour ratio may be tempered as additional investments are made in order to match the increased level of employment. Nevertheless, the inverse relationship between employment and labour productivity growth may persist if the skills and experience of the new entrants are below those of the average worker already employed. In that case there is a need to implement appropriate accommodating policies that provide the new workers with the opportunities and incentives to learn new skills (including investments in education, training and lifelong learning) and assist them in their working life transitions. See the Employment Committee Working Group on Productivity (2006).

Secondly, labour productivity growth in the EU may be low – relative to other developed economies such as the US - if there are insufficient incentives to innovate, adopt new technologies or shift labour (and capital) to sectors with strong productivity growth. See von Wachter (2001) and Kolasa (2005). Such incentives may be absent due to a lack of competitive pressures or an integrated internal market (creating economies of scale).

The channels through which increased competition improves employment and productivity are manifold[22], covering, inter alia, reductions in the cost of entering new markets, reductions in price mark-ups[23] and subsequent re-allocations of inputs, improvements in the utilisation of production factors through introducing better production methods within the firm, and, over a longer time-horizon, the development of new products and process innovations.

In this context, it is sometimes argued that employment protection legislation (EPL) will have a negative impact on productivity growth if it hinders the smooth reallocation of labour to sectors with strong productivity growth[24]. However, on balance the

Chart 32: Employment and labour productivity growth in the EU-27, average annual growth rates, 2000–07



Source: DG EMPL calculations based on Eurostat and AMECO database, Commission Services.

Dividing both sides of equation (1) by L, taking log differences and rearranging terms yields:

(2) $d\log\left(\frac{Y}{L}\right) = d\log(A) + \alpha\, d\log\left(\frac{H}{L}\right) + \beta\, d\log\left(\frac{K}{L}\right)$

i.e. labour productivity growth, $d\log\left(\frac{Y}{L}\right)$, is equal to total factor productivity growth, $d\log(A)$, plus growth in human capital per employee, $d\log\left(\frac{H}{L}\right)$, (adjusted for a fraction equal to the human capital elasticity of output) plus growth in physical capital per employee, $d\log\left(\frac{K}{L}\right)$, (adjusted for a fraction equal to the physical capital elasticity of output). Total factor productivity growth measures technological change and efficiency gains, i.e. the productivity gains that are not accounted for by changes in factor inputs.

Three remarks. First, the labour input in equation (1) could be further refined by also considering the hours worked and the effort delivered. Second, in the long run, when a balanced growth path is attained, i.e. when $d\log\left(\frac{Y}{L}\right) = d\log\left(\frac{H}{L}\right) = d\log\left(\frac{K}{L}\right)$, we get:

(3) $d\log\left(\frac{Y}{L}\right) = \frac{d\log(A)}{(1-\alpha-\beta)}$

i.e. labour productivity grows at the rate of total factor productivity. See for instance Barro and Sala-i-Martin (1995). Third, in case we do not assume constant returns to scale, the employment level will also have an impact on labour productivity.

21 See also Bassanini and Venn (2007), Cavelaars (2005), Dew-Becker and Gordon (2008), European Commission (2007a) and OECD (2007 and 2008) for a discussion of the interaction between employment and productivity growth.

22 See European Commission (2004a, Chapter 5) for a comprehensive discussion of this issue. See also Arpaia et al. (2007) for an assessment of the positive interaction between structural reforms in different areas and the spillovers between reforms at EU and national level.

23 i.e., the mark-up between marginal costs and market prices.

24 See Nickell and Layard (1999) for some cross-country empirical evidence on a positive relationship between productivity growth and EPL. See also Bartelsman et al. (2007) who illustrate on the basis of firm-level datasets that those industries where experimentation is the required path for innovation, stringent EPL reduces productivity. Moreover, Belot et al. (2007) find on the basis of cross-country time-series data that EPL has a nonlinear relationship with economic growth, and conclude that at low levels of EPL an increase in protection stimulates growth and that at high levels of EPL an increase in protection is harmful to growth. Moreover, the positive effects of EPL are larger in sectors where firm-specific skills matter more.

See also Hartman et al. (2007) who argue that the main determinant for the speed with which capital is reallocated from declining to rising sectors is the overall capital market size and that further financial sector reforms promoting the size of financial markets may be a valuable complement to reforms in the labour markets. See also Barrel et al. (2008) for an analysis as to how EMU affected employment and productivity growth by creating more opportunities to trade and specialise.

impact of EPL is less clear-cut as it may also encourage existing enterprises to raise productivity (e.g. through innovation or the provision of firm-specific training to their employees) in order to remain competitive and avoid paying redundancy costs as a result of output loss[25].

In the same way, the impact of unemployment benefits on the relation between employment and productivity growth is also ambiguous. On the one hand, generous unemployment benefits tend to prolong the duration of the unemployment, thereby depreciating the human capital stock. On the other hand, generous unemployment benefits give workers the opportunity to search longer for a job that matches their skills and to take more risks in a business environment where experimentation is the required path for innovation. There is insufficient empirical evidence to make a clear statement about the impact of unemployment benefits and EPL on the interaction between employment and productivity growth[26].

Thirdly, an inverse relation between employment and productivity growth may emerge over the business cycle due to the existence of adjustment costs – e.g. EPL and costs associated with employee training – which encourage enterprises to hoard labour during periods of a slowdown (thereby reducing measured productivity) and utilise labour more extensively during periods of expansion (thereby increasing measured productivity).

Finally, any potential trade-off between employment and productivity growth is likely to be limited over the medium term if synergies between quality at work, productivity and employment are fully exploited in a positive way. This is because improvements in work quality increase productivity through higher worker effort, efficiency, reciprocity and fairness in work relationships, as well as employment, in particular of older workers and people with care responsibilities.[27]

All in all, the previous analysis demonstrates how various factors tend to cause an inverse relation between employment and labour productivity growth in the short to medium run. However, the analysis indicates also that the implementation of appropriate polices has the potential to ensure a positive outcome with respect to both employment and productivity in the short to medium term. Such policies should not only cover structural reforms in the labour market but also in the services, product and financial markets and a stable macroeconomic environment, as is reflected in the *Integrated guidelines for growth and jobs (2005–08)* and the proposed *Integrated guidelines for growth and jobs (2008–10)* (European Commission, 2007d).

25 See for instance Koeniger (2005) and Kessing (2006).

26 See for instance OECD (2007).

27 See the *Employment in Europe 2002* (Chapter 3) and *Employment in Europe 2008* (Chapter 4).

5. Summary and conclusions

Following the noticeable recovery in employment in 2006, labour markets in the EU remained robust in 2007. Overall, EU employment grew by 1.6% in 2007 – the same rate as the preceding year and 0.5 percentage points higher than the growth rate attained in the US. This strong performance reflects a lagged response to the strong GDP growth up until the second quarter of 2007, the continued positive impact of EU accession for most of the new Member States, and the impact of structural reforms implemented in some Member States in recent years.

In addition, the data showed that, in 2007, employment growth was positive in all EU Member States, except Hungary where employment decreased slightly. The strongest growth occurred in Poland. Among the large Member States, employment growth in France and especially in Germany strengthened further, while it weakened in Italy and Spain.

The overall EU employment rate in 2007 reached 65.4% – still some 4.6 percentage points off the 2010 Lisbon target employment rate of 70% for the EU as a whole. At the same time, the employment rate for women reached 58.3%, compared with the 60% target, and the employment rate for older workers grew to 44.7%, compared with the 50% target. This indicates that the target for female workers is well within reach but that the fulfilment of the target for older workers will prove to be quite a challenge.

The incidence of part-time and fixed-term employment continued to vary significantly across the Member States. Part-time work is predominantly carried out by women, with 31.2% of women in the EU with part-time contracts compared with only 7.7% of men. In contrast, fixed-term employment does not show large differences between men and women at the level of the EU. Moreover, part-time work is largely voluntary while fixed-term work is to a large extent involuntary (from the perspective of the employees).

The unemployment rate was in single digits in all Member States in 2007, with the exception of Slovakia. The structural and long-term unemployment rates in the EU as a whole continued to decline, falling to 7.4% and 3% respectively. Nevertheless, significant differences across the Member States persist, with the highest structural unemployment rate in Slovakia at 12% and the lowest in the Netherlands at 3.2%, and with the highest long-term unemployment rate in Slovakia at 8.3% and the lowest in Denmark at 0.6%, indicating that in some Member States there is still significant room for structural reforms.

Labour productivity growth in the EU was, for the second year in a row, strong and higher than in the US, despite the already robust increases in employment.

Finally, the chapter examined how employment and labour productivity interact with one another and how policies and institutions can influence this interaction. In general the analysis demonstrated how various factors (including changes in multi-factor productivity, the capital intensity of production, human capital stock and aggregate demand) may tend to cause an inverse relation between employment and labour productivity growth in the short to medium run. However, the overview also concluded that the implementation of appropriate policies has the potential to ensure a positive outcome with respect to both employment and productivity.

Overshadowing the positive evidence for 2007, however, is the mounting evidence of economic difficulties and uncertainties in the EU as well as the rest of the world for 2008 and 2009. If confirmed, this suggests that there is unlikely to be any further improvement in the EU's overall employment performance in the immediate future, with a risk of some serious deterioration.

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The labour market situation and impact of recent third country migrants

Chapter 2

1. Introduction

Immigration remains of high political importance on European Union (EU) and Member States' agendas. Since the end of the 1990s, issues related to international migration, and in particular labour migration, have received increasing attention from policy-makers. As highlighted in the recent European Commission Communication *Towards a common immigration policy* (European Commission, 2007e), immigration has an impact on the economy, society and external relations. Moreover, against the background of ageing European societies and growing labour market needs, demand for immigration in the EU is set to increase over the coming decades.

Indeed, the shrinking working-age population in Europe, in combination with various push factors in developing countries, is likely to generate a sustained flow of immigrants over the coming decades. Furthermore, Europe looks likely to increasingly rely on immigration from third (i.e. non-EU) countries to help balance supply and demand in labour markets, and more generally to fuel economic growth. In summary – although no substitute for structural reforms – well-managed immigration can play a role in alleviating the effects of population ageing and help European societies deal with labour and skill shortages.

Increased immigration, however, brings with it new demands, in particular regarding developing appropriate integration policies that allow immigrants to participate more fully in society and contribute to social cohesion. Access to the labour market remains one of the main conditions for successful integration. Indeed, as highlighted in the Commission's Communication on the *Third annual report on migration and integration* (European Commission, 2007a), employment is a key part of the integration process. Furthermore, the effective integration of immigrants into the labour market constitutes an important contribution to reaching the Lisbon targets for jobs and growth. However, current figures show that, in many Member States, the labour market situation for third country migrants is substantially worse than that for non-migrants and even that of migrants from other EU countries. In particular, they tend to have lower employment rates, higher unemployment rates and are often more likely to have jobs of lower quality or for which they are over-qualified.

1.1. Focus of the chapter

This chapter focuses mainly on post-2000 immigration and the related, more recent policy framework (post-Tampere) rather than the total migration history of EU Member States (which is reflected in their overall migrant populations). In addition, it recognises that recent and more established migrant populations generally face different labour market challenges, and may have very different features and composition (e.g. skill structure, composition by country of origin, etc.).

The chapter provides, from an EU perspective, a detailed and up-to-date review of the labour market situation, integration and characteristics of recent third country migrants to the EU* (i.e. immigrants resident in the EU who have arrived since 2000) – with the caveat that results for Bulgaria, Ireland and Germany are generally not included as data was unavailable on migrants' specific country of birth.[1] It includes a special focus on issues related to gender and skills of this migrant population, together with outcomes according to region of origin. Furthermore, it examines migrants' impact on EU labour markets, in particular how they are helping to address labour market shortages, and compares the relative success of labour market integration of recent migrants across Member States. It also briefly examines key factors affecting migrants' labour market performance, as well as inactivity among recent migrants and their labour market transitions. A discussion of the impact of migration on countries of origin, however, lies beyond the scope of this chapter.

In parallel to immigration from outside the EU, the EU is also experiencing in-

1 The label EU* refers throughout this chapter to the aggregate of EU Member States excluding Bulgaria, Germany and Ireland. The absence of data on Germany is an important drawback.

creasing movements of people within its territory. The advantages created by the EU have stimulated Europeans to move inside its borders, with more and more people taking advantage of this possibility. These internal movements fundamentally differ from immigration from outside the EU[2] and are not covered in this chapter; rather they are addressed separately in Chapter 3, which focuses on labour mobility within the EU in the context of enlargement.

2. Policy context

2.1. Common immigration policy and EU framework for the integration of migrants

As a way of helping address the demographic and economic challenges faced by the EU, especially regarding labour supply, immigration has gained renewed importance over recent years, particularly in the context of developments over the last decade to lay the foundations for a common immigration policy.

The entry into force of the Amsterdam Treaty in May 1999 and the subsequent special European Council in Tampere, represented turning points in the EU's commitment to work together in the fields of immigration and asylum. The dimension of integration policies was effectively introduced by the June 2003 Thessaloniki European Council, which considered that the successful integration of migrants contributes to social cohesion and economic welfare as well as to addressing the demographic and economic challenges faced by the EU. Furthermore, it explicitly called for an accurate and objective analysis of these issues to help devise and promote policy initiatives for more effective management of migration in Europe.

The need for further developing integration policies was again stressed in the *Hague programme* adopted by the Brussels European Council of November 2004. This deals with all aspects of policies relating to the area of freedom, security and justice, including fundamental rights and citizenship, asylum and migration, and integration. In this context, the European Council emphasised the need to develop effective policies for the successful integration of legally resident third country nationals and their descendents in society, calling for obstacles to integration to be effectively eliminated. Employment is recognised as a key part of the integration process and central to the participation of immigrants in the host society.

At Hampton Court in October 2005, Heads of State and Government identified immigration as a key area for future work, inviting the EU and Member States to further elaborate a common approach. This led to the adoption of the *Global approach to migration* by the European Council in December 2005. At their December 2007 meeting, the European Council emphasised that further developing a comprehensive European migration policy, including its employment and social dimension, remained a fundamental priority in order to meet the challenges and harness the opportunities that migration represents in a new era of globalisation.

More recently, the Commission's Communication on *The European interest: succeeding in the age of globalisation* (European Commission, 2007g), confirmed that 'in a Europe with no internal borders, the changing demands of an ageing society and a labour market in constant evolution have challenged established assumptions about migration from outside the EU'. It is recognised that in the globalised environment, migration is likely to be a permanent feature, meaning that migration policies have to take a long-term perspective. Particular issues include whether to try to stem low-skilled migration or to implement a system to attract specific categories of immigrants. The needs of the labour market are clear: there is special urgency with regard to highly qualified workers, but also a need for unskilled and seasonal workers in certain sectors of the economy.

In this context, consolidating the legal framework on the conditions for entry and stay of third country nationals is essential for devising a coherent EU approach. Legislative instruments are already in place concerning family reunification, long-term residents[3] and qualification of third country nationals or stateless persons as persons in need of international protection.[4] These instruments recognise rights such as access to employment and to education/training, and equality of treatment. EU legislation on anti-discrimination supports this legal framework.[5] Recently the Commission also made proposals for a general framework directive defining the basic rights of immigrant workers in the EU and for a directive on the conditions of entry and residence of highly

2 In the case of Europe, two types of migration have to be distinguished: cross-border movements within the EU, and immigration from non-EU countries. Intra-EU migration is regulated by Article 39 of the EC Treaty and belongs to the fundamental 'freedoms' on which the European Union is based, though with an extended transition period currently in effect for the recently acceded members in several EU countries (for further detail, see Chapter 3). In contrast to intra-EU migration, immigration from non-EU countries is regulated by national law which differs between the Member States of the EU. However, the Member States have agreed to develop a legal framework for a common immigration policy at EU level in the future.

3 After five years of legal residence, the person can apply for the status of long-term resident, which gives a set of rights, in particular, intra-EU mobility, subject to certain conditions.

4 Council Directive 2003/86 on the right to family reunification, Council Directive 2003/109 concerning the status of third country nationals who are long-term residents and Council Directive 2004/83 on minimum standards for the qualification and status of third country nationals or stateless persons as refugees or as persons who otherwise need international protection.

5 The work of the Commission in 2000 to combat discrimination produced two important Directives which reflect the Commission's efforts to enhance migrants' labour market integration. The Directive 2000/43/EEC lays down a framework for combating discrimination based on race or ethnic origin both inside and outside the employment domain, while Directive 2000/78/EEC established a framework for combating, among others, discrimination based on religion or belief in the area of employment.

See ec.europa.eu/employment_social/fundamental_rights/legis/legln_en.htm.

skilled immigrants. In addition, the Commission has adopted a directive proposing sanctions against employers of third country nationals who stay illegally. These proposals are currently (July 2008) under examination by the Council. Other directives relating to seasonal workers, workers relocating within multinational companies and paid trainees are also foreseen.[6]

In June 2008, the Commission presented a Communication on *A common immigration policy for Europe: principles, actions and tools* (European Commission, 2008a). The Communication focuses on future policy developments, proposing 10 common principles on which the common immigration policy should be based and grouped under the three headings of *Prosperity*, *Security* and *Solidarity*. This includes, to illustrate their future implementation, examples of concrete actions to be pursued at either EU or Member State level as appropriate and designed to implement the principle in practice.

2.2. Labour market integration of migrants and the European Employment Strategy

As shown in the Commission's first *Annual report on migration and integration* (European Commission, 2004c), lack of access to employment has been identified as the greatest barrier to integration, making it the most important priority within national integration policies. Nevertheless, current figures still show that in many Member States, migrants tend to have much lower employment rates than EU nationals, have higher unemployment rates or hold lower-quality jobs. This is also the case for countries that have comparatively well-performing labour markets and which already meet the Lisbon employment targets.

The European Employment Strategy (EES) fully reflects the need to take into account labour aspects of immigration, in particular the need to improve the labour market situation of migrants. The *Employment Guidelines (2005-2008)*[7] adopted by the Council in July 2005 as an integral part of the *Integrated guidelines package* designed to spur growth and jobs in Europe in the context of the re-launched Lisbon Strategy, include as a general objective to significantly reduce the employment gaps for all people at a disadvantage, including migrants.

In the considerations with regard to Guideline 19, it is explicitly stated that combating discrimination and integrating immigrants and minorities are essential. Moreover, Guideline 20 refers, among other measures, to the appropriate management of economic migration to better match labour market needs, reflecting that full consideration must also be given on the national labour markets to the additional labour supply resulting from immigration of third country nationals. Apart from these specific references, a number of other guidelines contain elements relevant to the situation of migrants. Data to monitor these issues is therefore extremely important and relevant in the framework of the EES.

3. Definitional issues and analytical approach

3.1. Definitional and data issues

Before proceeding to the analysis it is necessary to clarify a few definitional issues. Firstly, 'integration' for immigrants means achieving a situation whereby labour force outcomes for migrants are similar to those of corresponding non-migrants. This is not to deny that there can be other factors like access to education, health and housing that need to be tackled in the context of their overall integration into society.

Secondly, it is necessary to define what is meant by the term '(im)migrant'. In most of the analysis in this chapter an (im)migrant is defined as an individual who resides in a country other than the one where they were born (i.e. a 'country of birth' approach rather than 'nationality' has been used to identify (im)migrants[8], see the annex for further discussion). The 'foreign-born' concept provides a more complete picture by including naturalised immigrants. In addition, it is in line with most of the more recent migration literature and research which favours an approach based on foreign-born over foreign-nationals when analysing migrant populations (see for example Münz and Fassmann, 2004).

If shares of foreigners are computed on the basis of nationality rather than actual migration experience, country differences will reflect differences in naturalisation practice and the ease with which migrants can become citizens, and in the population shares of non-national descendants of immigrants (see Table 1). For example, in countries with a high incidence of naturalisation, the official number of legal foreign residents largely underestimates the immigrant population compared with when the country of birth approach is used. Estimates based on the EU Labour Force Survey (LFS) of the overall number of foreign nationals of working age (15–64) residing in EU Member States amounts to approximately 20 million, compared with an estimate of almost 33 million for those born in another country.[9]

6 The Commission will present legislative proposals concerning seasonal workers and remunerated trainees in 2008 and intra-corporate transferees in 2009.

7 These provisions are also reiterated in the proposal for the 2008–10 Guidelines for growth and jobs (See European Commission, 2007h.)

8 Even though EU migration policies often refer to non-EU nationals as a target group, the chapter analyses the non-EU-born population as this concept allows for more comprehensive economic and labour market assessment of migration. The accompanying chapter on intra-EU mobility uses a definition of migrants based on nationality, mainly because it focuses on EU enlargement and the functioning of the transitional arrangements.

9 Taking for each Member State the figure based on the years of residence variable ('born in another country').

Table 1: LFS-based data on population aged 15–64 (total, foreign-nationals and foreign-born), 2007

	In thousands				As % of resident population 15–64		
	Total	Foreign-nationals	Foreign-born	Born in another country	Foreign-nationals	Foreign-born	Born in another country
BE	7 008	641	820	820	9.1	11.7	11.7
BG	5 198	8	:	16	0.2	:	0.3
CZ	7 347	67	143	142	0.9	1.9	1.9
DK	3 573	196	336	256	5.5	9.5	7.4
DE	54 213	4 417	:	7 876	8.2	:	14.6
EE	909	150	125	125	16.5	13.8	13.7
IE	2 978	:	:	438	:	:	14.7
EL	7 208	470	580	585	6.5	8.1	8.1
ES	30 937	3 978	4 749	4 749	12.9	15.3	15.3
FR	39 513	2 418	4 876	4 897	6.1	12.3	12.4
IT	38 946	2 230	3 136	3 137	5.7	8.1	8.1
CY	518	75	96	96	14.5	18.5	18.5
LV	1 573	21	192	191	1.3	12.2	12.2
LT	2 319	18	96	96	0.8	4.1	4.1
LU	316	140	132	131	44.3	41.8	41.5
HU	6 800	45	109	109	0.7	1.6	1.6
MT	278	8	13	13	2.7	4.5	4.5
NL	10 986	487	1 404	1 406	4.4	12.8	12.8
AT	5 551	640	973	973	11.5	17.5	17.5
PL	26 299	43	107	108	0.2	0.4	0.4
PT	7 135	271	549	549	3.8	7.7	7.7
RO	15 046	27	13	13	0.2	0.1	0.1
SI	1 412	12	115	115	0.8	8.1	8.1
SK	3 873	5	21	21	0.1	0.5	0.5
FI	3 503	59	111	111	1.7	3.2	3.2
SE	6 002	301	920	921	5.0	15.3	15.3
UK	38 963	3 051	4 974	4 933	7.8	12.8	12.7
EU-27	328 404	19 778	24 588	32 825	6.0	7.8	10.0

Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: ':' data not available. Column 'Foreign-born' is based on variable 'country of birth'; column 'Born in other country' is based on variable 'years of residence'. Therefore values for 'Foreign-born' and 'Born in other country' may differ due to different non-response rates.

However, a major practical drawback of this 'country of birth' approach is that harmonised LFS data for Bulgaria, Ireland and Germany available from the European statistical authority (Eurostat) does not include information on specific country of birth, making it impossible to fully identify non-EU-born migrants. Currently data for those Member States only includes detailed reference to the nationality of respondents. For this reason the aggregates appearing in this chapter do not include data for these three Member States, which has an impact on the representativeness of the results for the EU as a whole.[10] As soon as comparable data on country of birth is available for all EU-27 countries, which could be the case in 2009, a fully representative aggregate covering all Member States would be possible.

The total population resident in Member States can be divided into three basic groups based on place of birth:

- **Native-born** – those born in the Member State of residence
- **Other EU-born** – those born in another EU Member State
- **Non-EU-born** – those born outside of the EU.

The latter two groups – although both 'foreign-born' – may have different residence and labour market rights, and differ in terms of labour market outcomes. Given that this chapter focuses on the situation of migrants from third countries, outcomes for non-EU migrants (herein referred to as 'non-EU-born' or 'third country migrants', or simply 'migrants') are generally compared with those for the population born in the EU ('EU-born'). The latter group combines those born in the Member State of residence and those born in another EU Member State ('native-born' and 'other EU-born').

Moreover, in order to distinguish migrants who according to the LFS have been resident in the EU since 2000 from the overall stock of migrants, migrants have been divided into 'recent migrants' (defined as those who have been residing in the country for up to a maximum of seven years) and 'longer-established migrants'.[11] This does not imply that the 'recent migrants' category includes short-term migrants staying less than a year, since they are not covered by the EU LFS (see the annex for further details).

3.2. Limitations of the EU LFS

Two important data sources are available at European level: migration statistics and the EU LFS.[12] Migration statistics are compiled by the national statistical institutes from various data sources, in-

10 The lack of data for Germany in particular places an important limitation on the extension of the findings to the EU as a whole (since, for example, Germany accounts for around a quarter of all adult (aged 15 and over) non-EU nationals in the EU and has a very large share of Turkish immigrants, although its share of recently arrived (since 2000) non-EU nationals is substantially lower (around 12%).

11 For 2007 data 'recent migrants' refers to those who have been resident for seven years or less (i.e. 84 months or less) in the current Member State, while 'longer-established migrants' are those who have been resident for more than seven years (i.e. more than 84 months).

12 An initial comparison undertaken by Eurostat indicates major differences for some Member States between the LFS data on migrants and the migrant data reported by National Statistical Institutes from different data sources. In most Member States reviewed so far, the LFS tended to underestimate the numbers of migrants. The differences were particularly great for the young adult age groups. Further analyses are being carried out.

cluding administrative sources. The LFS is a household-based survey conducted in the Member States, and offers far more variables and possibilities for analysis, although it does not specifically target migrants (being aimed rather at the whole resident population).

In this chapter extensive use is made of the LFS for examining the labour market situation of migrants. Results derived from the LFS should, however, be treated with caution, since there are various technical limitations in the use of the survey with regard to migrant populations, in particular concerning coverage of very recent migrants and collective households, relative levels of non-response and small sample sizes (see the annex for further details).

4. The need for immigration – demographic, labour market and economic benefits

There are various reasons why in the coming decades Europe looks set to increasingly rely on immigration from third countries. Firstly, against the background of ageing European societies and a shrinking working-age population (currently defined as those aged 15–64), immigrants will be needed in future years to help attenuate and spread the effects of demographic change over a longer period. In particular, they could help address the issue of falling labour supply and more generally fuel economic growth. Secondly, Europe looks likely to increasingly rely on immigration from third countries to help balance supply and demand in labour markets, in particular through addressing labour shortages regarding specific skills.

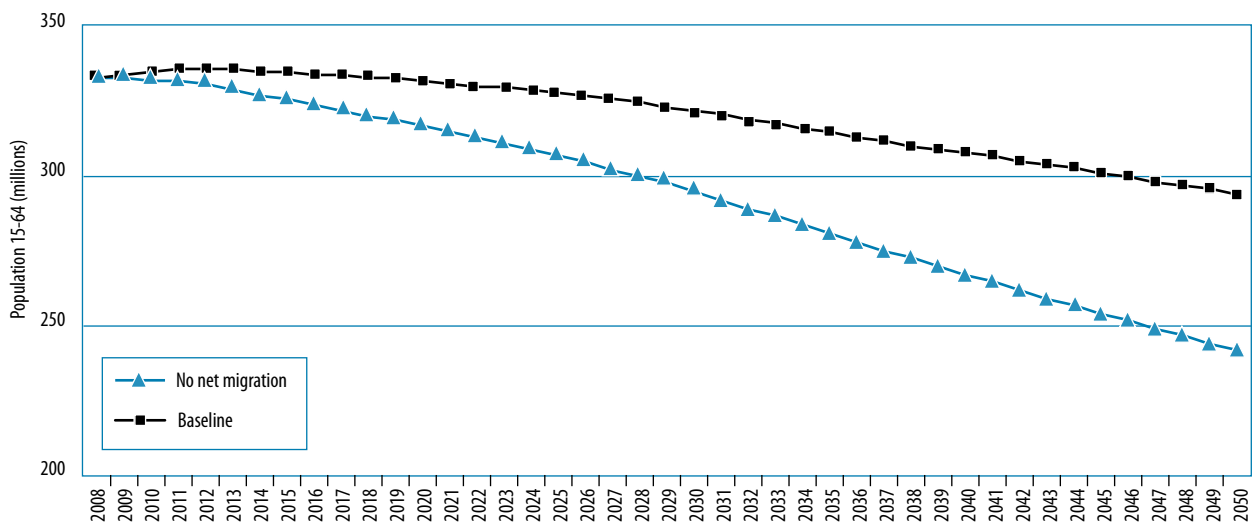
4.1. Alleviating effects of population ageing

In principle, migration from third countries could play a significant role in alleviating the effects of population ageing. Indeed, immigration to the EU currently remains the main element in demographic growth, as has been the case since 1992, and has far outweighed the contribution from natural change over recent years. Without continued migration, there would be an even more pronounced decline in the working-age population over future years as a result of current demographic trends. Furthermore, immigration could contribute not only in terms of overall population size but also by modifying the demographic structure through, for example, increasing the share of younger cohorts[13] and raising overall fertility rates. Nevertheless, as further explained below, migration inflows could only partially compensate for the massive departures from the labour market due to ageing particularly in the period 2020–50.

According to the 'baseline' scenario of Eurostat's 2008 population projections, the EU-27 population, and the working-age population in particular, is expected to decline over the first half of the century. The working-age population is foreseen to start falling from 2013 and decrease to 294 million by 2050, representing a decrease of around 39 million (or 12%) by 2050 compared with 2008 levels (333 million). This overall decline already reflects a substantial offset of around 53 million through continued immigration; otherwise (as shown in the 'zero net migration' variant) the working-age population would be expected to drop to 242 million (Chart 1).

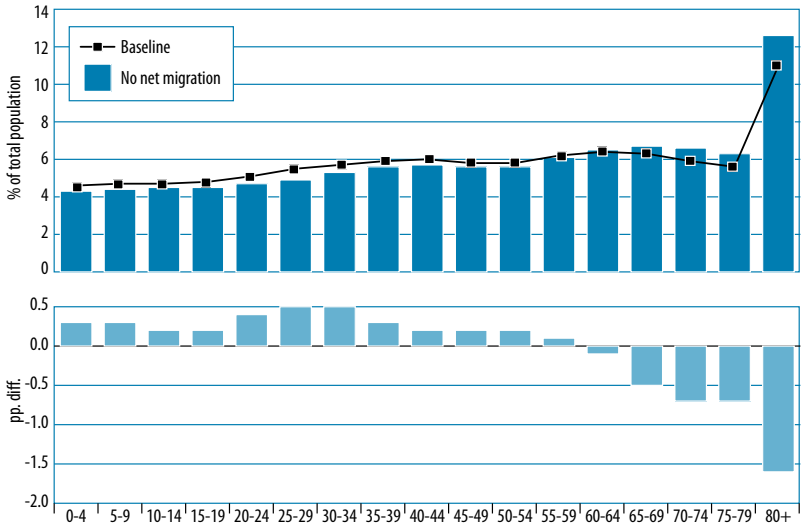
13 The non-EU-born currently increase the share of the working-age population within the total population by 0.9 percentage points, and decreases the share of those aged 65 and over by 0.3 percentage points.

Chart 1: Projected working-age population (aged 15–64) in the EU-27, 2008 to 2050



Source: Eurostat, EUROPOP2008 population projections.

Chart 2: Projected population structure in the EU-27, 2050



Source: Eurostat, EUROPOP2008 population projections.

If the working-age population declines as forecast, by 2050 there would be one (presumably inactive) person aged 65 or older for every two of working age. The old-age dependency ratio – i.e. the ratio of older people aged 65 or over to the working-age population – would approximately double to 50% in the baseline scenario, but would be even worse (59%) in the zero net migration scenario. Under the baseline scenario of continued immigration, migrants are foreseen to help favourably adjust the expected age structure, shifting the population shares of the five-year age groups below 55 up by 0.2–0.5 percentage points, and those of older age groups down considerably (Chart 2). As a result, it is projected that by 2050 continued migration would contribute to raising the share of the working-age population in the total population by 2.6 percentage points, and reduce the share of those aged 65 and over by 3.5 percentage points[14].

These projections suggest that even maintaining the net migration flows at levels of the order of 1.2 million per year on average from 2008 onwards[15] would result in significantly lower levels of working-age labour supply, although it should be noted that this assumed net inflow is substantially below the level actually observed since 2000. At the same time, using immigration to fully compensate the impact of demographic ageing on the labour market is not a realistic option. Maintaining the working-age population, and even more so maintaining the old-age dependency ratio, would require massive increases in immigration. Coppel et al. (2001) suggest that while increased immigration can limit the adverse impact on living standards and government budgetary positions due to declining and ageing populations, it cannot on its own resolve the problem.

Indeed, as highlighted in the Commission report *Europe's demographic future: facts and figures* (European Commission, 2007b), although international migration may play a crucial role in solving specific future labour market shortages, its impact on population ageing is likely to be small. Scenario calculations by the United Nations have shown that in order to halt – let alone reverse – population ageing, truly massive and increasing flows of young migrants would be required.[16] For example, to retain the same age structure in Germany, over 3 million migrants per year would have to be admitted.

A major limitation of such an approach in economic terms would be the fact that the immigrant population is itself also ageing. Therefore, any sharp rise in immigration over the coming decades would, under the same assumptions, result in a similar situation but at a later point in time (although clearly immigration can contribute to spreading the effects of the demographic transition between 2010 and 2030 over a longer period). From a social cohesion perspective, any massive rise in immigration would also increase the challenge of integration to a much larger extent.

Furthermore, as pointed out by Coleman (2007), the demographic-driven need for immigration is also dependent on whether very low levels of workforce participation in some Member States are allowed to persist or whether essential structural reforms to increase workforce participation, reduce segmented labour markets, encourage later retirement and increase productivity are carried out. Indeed, higher levels of labour force participation, including by extending working lives, could also help to partly address projected declines in the labour force due to demographic ageing. He contends that importing cheap and willing labour from overseas is a temporarily convenient way of evading the need to undertake necessary reforms to raise participation of the existing population.

Coleman (2007) also argues that, if continued, immigration would have a powerful, cumulative and permanent effect on the composition according to national origin or 'ethnicity' of the population of European countries, progressively diminishing the share of the native or indigenous population over time. In this context, he reports that there is widespread public concern about the scale of migration and its effects on the labour market, social cohesion and national culture, as well as on the economy, which must also be taken into account in developing a long-term strategy for immigration from third countries.

14 These results clearly depend on certain underlying assumptions such as the age structure and ageing pattern of the migrants themselves, their family sizes and family reunifications in the host country, their duration of stay and return migration, etc.

15 An assumption of the projections: net migration is assumed to be 1.2 million per year on average over the period 2008 to 2050.

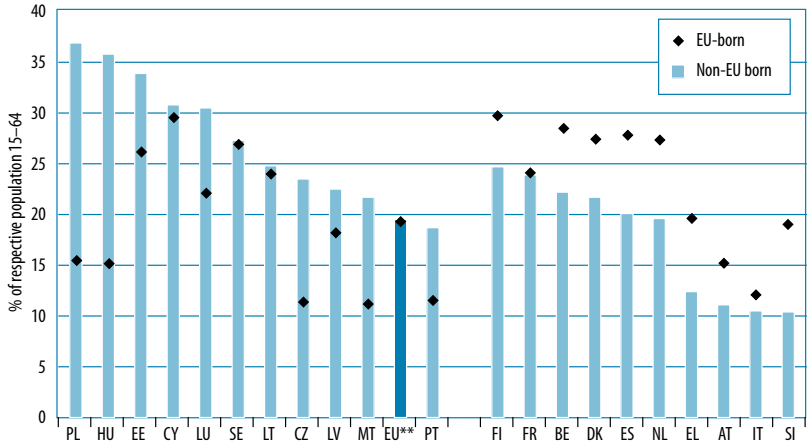
16 United Nations (2000).

4.2. Addressing labour and skill shortages

Increased immigration cannot prevent demographic ageing, but it can help alleviate labour market bottlenecks. Indeed, migration from third countries is often put forward as a key means to address specific labour shortages in the EU. For example, at the low-skill end, migrants may fill jobs that low-skilled native-born workers are not interested in taking up.

Focusing on the high-skilled, for many Member States, mainly the new ones, the shares of people with higher education are greater among non-EU-born than among EU-born (Chart 3), suggesting that in these Member States in particular, immigration acts in principle as an important source for meeting demands for high-skilled labour. Nevertheless, the overall share of high-skilled migrants in total employment in the EU**[17] remains low and does not compare favourably with the shares in other similarly developed economies; according to data from the Organisation for Economic Co-operation and Development (OECD)[18], the share of foreign-born workers aged 15 and over with tertiary education relative to total employment is 7.8% in Australia, 9.7% in Canada, 5.4% in Switzerland and 4.5% in the US, compared with only around 2.1% in the EU.[19] It is interesting to note that in many of the older Member States (such as Austria, Belgium, Denmark, Greece, Finland, the Netherlands and Spain) the share of tertiary-educated people among non-EU migrants is well below that for the EU-born, indicating a contrasting demand for migrant labour that is relatively less well-educated than the resident EU population.

Chart 3: High skill levels of EU-born and non-EU-born – shares of population with tertiary education across Member States, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
*Note: EU** excludes BG, DE, IE and UK. Data for MT (non-EU-born) uncertain due to small sample size. Data not available or reliable for countries which are not shown.*

4.2.1. Meeting sectoral and occupational needs

Third country migrants can play an important role in alleviating sectoral and occupational labour shortages. For example, according to Münz et al (2007b), many Member States have been experiencing labour market shortages in selected sectors, including in ICT, financial services, household services, agriculture, transportation, construction and tourism-related services such as the hotel and restaurant industries.

Looking ahead, according to recent medium-term forecasts[20] of skills supply and analyses of possible labour market imbalances in Europe over the period 2006–15[21] (CEDEFOP, 2008), substantial structural changes are in prospect, with continuing shifts away from the primary and traditional manufacturing sectors towards services and knowledge-intensive jobs. In total, the EU-25[22] (plus Norway and Switzerland) could expect to see a net increase of more than 13 million jobs between 2006 and 2015, despite losing well over 2 million jobs in the primary sector and half a million in manufacturing. Distribution, transport, hotels and catering together are projected to see employment grow by 3.5 million, while employment in non-marketed services, including health and education, is projected to show similar growth. Business and miscellaneous services have the greatest prospects for employment, with almost 9 million additional jobs expected to be created.

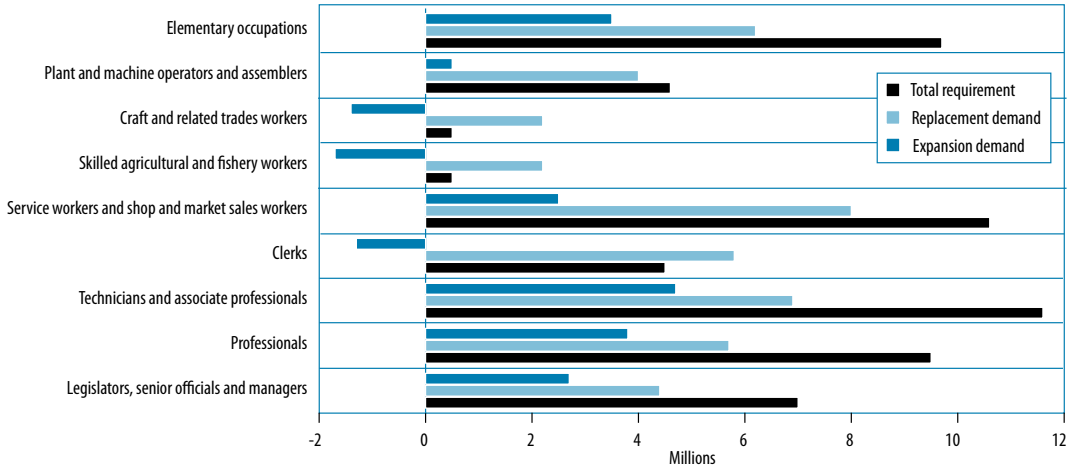
The projected sectoral changes taking place will have significant implications for future occupational skills needs, including continuing growth in demand not only for many high- and medium-skilled workers but also for some lower-skilled categories. In particular, demand for workers in high-skilled non-manual jobs such as management, professional work or technical support of those activities is expected to increase in the coming decade. There will, however, also be significant expansion in the numbers of jobs for many service workers, especially in retail and distribution, and also for some elementary occupations requiring little or no formal skills. Furthermore,

17 EU** also excludes the UK (in addition to Bulgaria, Germany and Ireland) due to incomplete coding of foreign qualifications with consequent problems in the classification of migrants' skill levels and because the skill level composition of migrant populations shows a clear break in series in 2004.
18 Source: OECD database on immigrants in OECD Countries (DIOC).
19 These OECD figures exclude Bulgaria, Cyprus, Estonia, Lithuania, Latvia, Malta, Romania, Slovenia, and cover both migrants from third countries and from other EU countries. According to the LFS 2007, the share of highly skilled foreign-born workers aged 15 and over in total employment is 2.1% (of which other-EU-born account for 0.7% and non-EU-born 1.4%).

20 For further discussion and details on forecasting demand for skills, see Chapter 5.
21 The CEDEFOP forecasts present – for the first time – a consistent and comprehensive medium-term forecast of employment and skill needs across the whole of Europe. It develops macroeconomic projections and alternative scenarios for each Member State and aggregate results at European level, and provides data on future employment developments by economic sector, occupation and skill level until 2015.

22 Data for Bulgaria and Romania were not yet available.

Chart 4: Projected change in demand by broad occupation groupings in the EU-25, Norway and Switzerland, 2006 to 2015 (change in millions)



Source: CEDEFOP, 2008.

even in areas where employment is expected to fall, significant numbers of job openings will remain, as reflected in estimates of replacement demand by occupation. While the projections suggest net job losses for a number of occupational categories, in particular for clerks and some skilled manual occupations, in all cases these losses are more than offset by the estimated need to replace most of those leaving employment because of retirement or other reasons (Chart 4).

The results emphasise that, against a background of a declining working-age population, policy-makers need to initiate measures in time to prevent, or at least alleviate, risks of skill mismatch and labour shortages arising from the projected occupational employment changes, in particular taking into account the possibility to resort to appropriate and well-managed immigration as part of an overall coordinated policy response.

4.3. Economic impact of migration – theory and empirical literature

A concern frequently raised regarding immigration is that migrants take away jobs from the native population, drive down local wages and burden the welfare systems of the host countries. Whether these concerns hold true is the subject of much theoretical and empirical economic literature.

Static economic theory suggests that migration contributes to economic growth although it is less conclusive on its impact in terms of per capita income. It should be added that efforts to assess the migration effects based on dynamic models also do not provide conclusive results. The overall effects of migration appear to be beneficial if labour is relatively scarce in the 'receiving country' and abundant in the 'sending country'. In such a situation, the former benefits from an increase in labour supply, reduced inflationary pressures from wage growth and more productive use of capital. The sending country, on the other hand, benefits from a decline in unemployment and the receipt of remittances, while the migrants themselves benefit through higher wages.

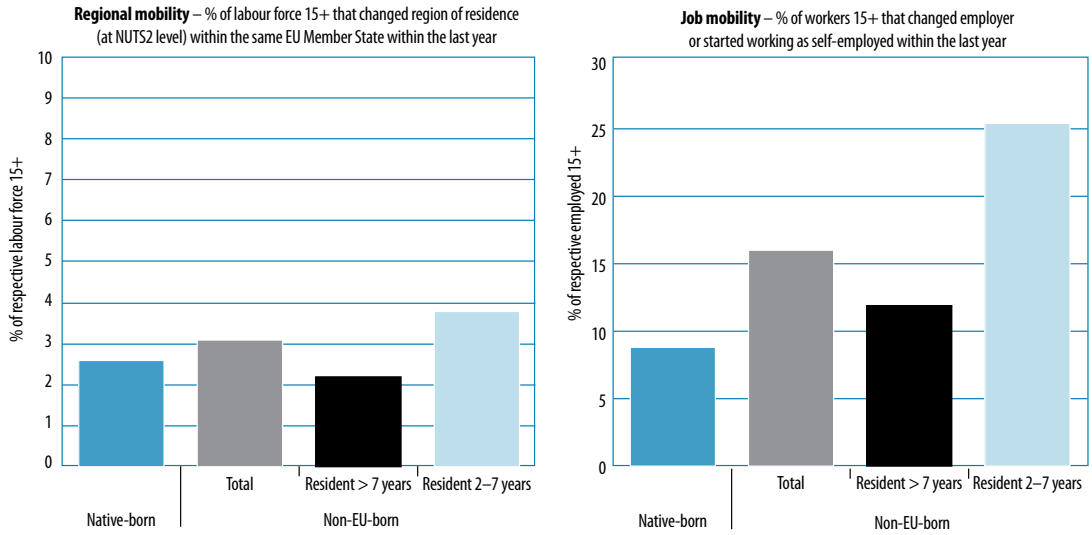
Immigration clearly increases the amount of available labour input in an economy, thereby raising potential output and allowing for faster economic growth. However, the positive impact of immigration is perhaps less evident for the already resident population, given that most of the income gains probably accrue to the immigrants themselves. In this context, a United Kingdom House of Lords report on the economic impact of recent immigration to the UK (House of Lords Select Committee on Economic Affairs, 2008) concluded that economic benefits to the resident population of net immigration are small, with the biggest beneficiaries being the migrants themselves.

Nevertheless, economic theory suggests that the international movement of labour tends to bring allocative improvements for the economy as a whole.[23] With immigrants increasing and/or complementing the skill pool, inflows of foreign workers could well help raise dynamic efficiency in the host economy. Furthermore, immigration can, at least in the short term, have a positive impact in restraining inflation. It may temporarily lower wages and tends to increase output, both of which boost aggregate supply in the economy and ease inflationary pressures.

As highlighted in the Commission's 2003 Communication *On immigration, integration and employment* (European Commission, 2003b), studies from across the world (e.g. by the International Labour Organization (ILO), International Monitory Fund (IMF) and OECD) generally confirm that immigration has a number of positive economic effects. Indeed, most studies find a small overall net gain from immigration for the host country – the 'immigration surplus' – although the benefits may not be distributed

23 It is true however, that equilibrium analysis would suggest that supply would act to mitigate these effects of migration in the long run.

Chart 5: Regional and employer mobility in the EU* for native-born and non-EU-born, between 2006 and 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: BG, DE and IE excluded.

evenly across the native population (see for example Coppel et al., 2001). A forthcoming European Commission report (European Commission, 2008b) provides an up-to-date analysis of the research literature evaluating the economic impact of migration.

4.3.1. Impact on labour markets

Diez Guardia and Pichelmann (2006) report that immigration may have positive effects on the labour market for various reasons. Firstly, it can help to relieve labour shortages in specific areas[24], especially those where jobs are increasingly avoided by native-born. Indeed, there may be some jobs that no native-born would do at any reasonable wage and for which recourse to migrants may be the only option. For example the construction, domestic services and hotels and restaurants sectors – where strong seasonal fluctuations or generally low levels of pay mean that jobs would probably not be taken up by the native-born – are heavily dependent on the labour supply of immigrants.

Secondly, immigration can contribute to entrepreneurship, diversity and innovation. For example, highly skilled immigrants may bring innovative abilities that expand the production capabilities of the economy, contributing to the creation of new industries and increasing long-term growth through human capital accumulation.

Thirdly, labour market efficiency may also increase with immigration, since, apart from the effect of the migration flows themselves in meeting demand across different geographical locations, immigrants are very responsive to regional differences in economic opportunities and have greater occupational mobility compared with the native-born, at least during the initial years of their residence. For example, regional mobility[25] and job mobility[26] are higher for recent non-EU migrants who have been resident for 2–7 years[27] than for the native-born; in 2007, 3.8% of the recent migrant labour force changed region of residence within a year, compared with 2.6% of the native-born, while a quarter of recent migrants changed employer within the last year, compared with 8.8% of the native-born (Chart 5). It is often argued that labour mobility in the EU is too low to function as an adequate adjustment mechanism to asymmetric shocks between different regions, so immigration could have a potential role in improving the efficiency of labour markets by compensating, at least partially, for the low mobility of native-born.

Immigration can also be beneficial to the extent that it increases labour market flexibility. Generally, employment and unemployment rates fluctuate more strongly for migrants than for non-migrants in response to changes in economic growth, suggesting not only that migrants' labour market outcomes are more sensitive to economic developments, but also that this provides an extra degree of flexibility (Chart 6). Immigrant labour can add considerable flexibility to labour markets because newly arrived migrants tend to have lower reservation wages, are more willing to accept precarious employment, and have higher potential occupational and geographical mobility.[28] This, however,

24 There are growing needs in the services sector, in particular in households, hotels and restaurants, construction and in sectors characterised by strong seasonality such as agriculture. These key sectors also face growing demands as an increasing proportion of women join the labour market and as the population ages, requiring greater labour in health and long-term care, nursing, child care and the care of the elderly.

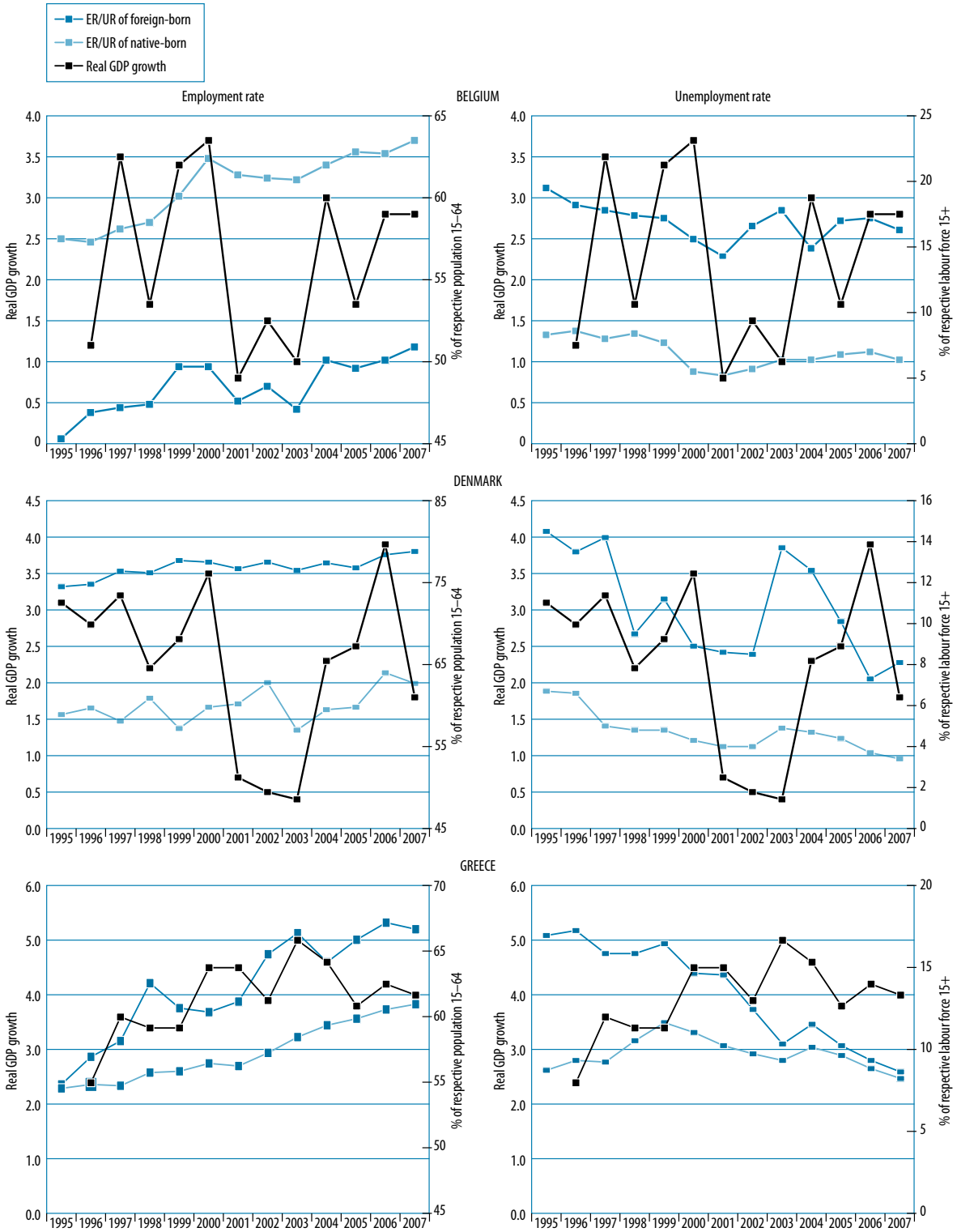
25 Change of region of residence within the same Member State at NUTS2 level within the last year.

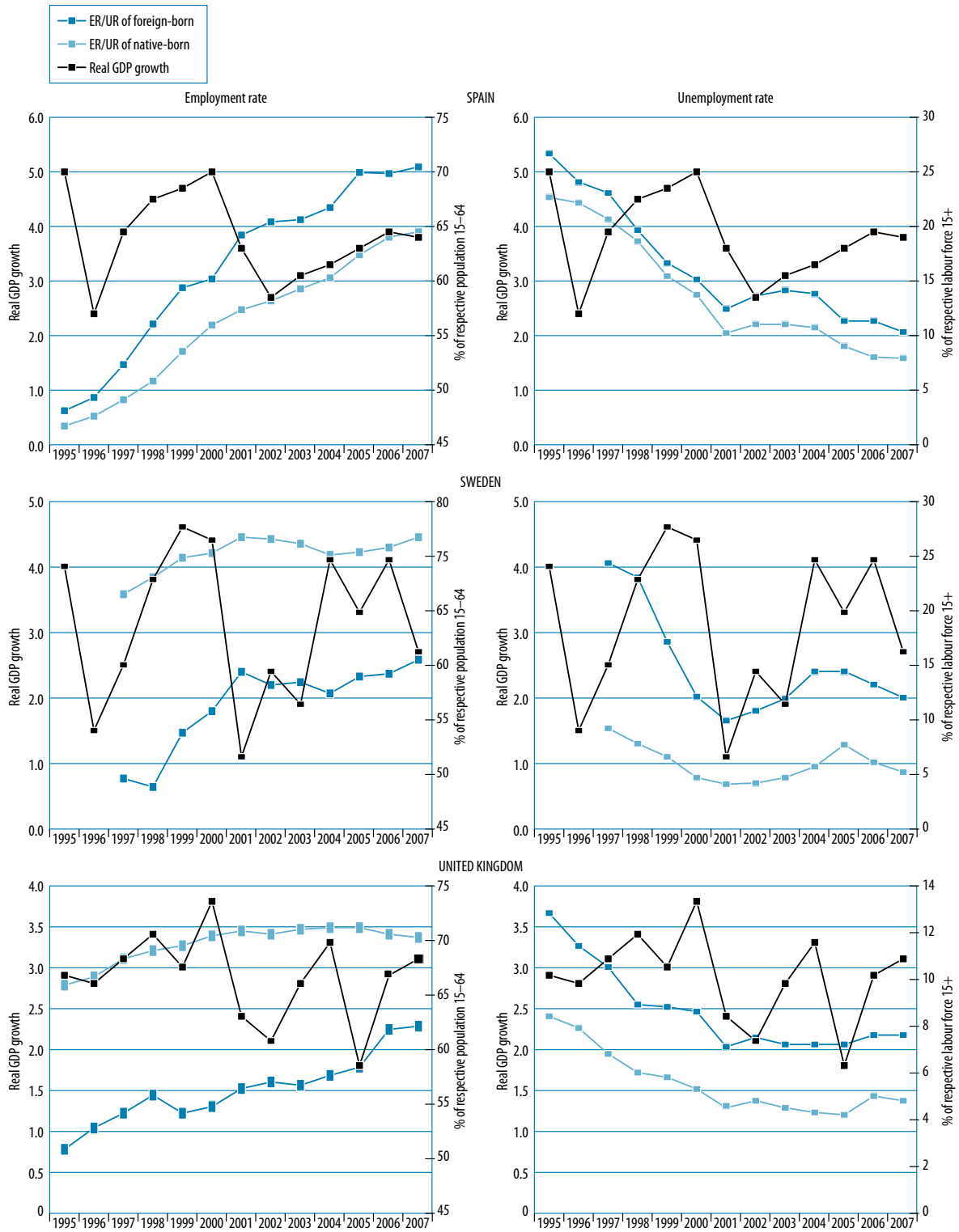
26 Workers who have changed their job (i.e. started to work for a new employer or as self-employed) within the last year.

27 The reference to residence of between 2 and 7 years excludes the first year of residence, and hence any effects related to the initial migration movement to the EU Member State itself.

28 In contrast, for certain migrants, work permits are frequently related to a specific work position and employer, which would make migrants less mobile and impact on the adaptability of the labour market.

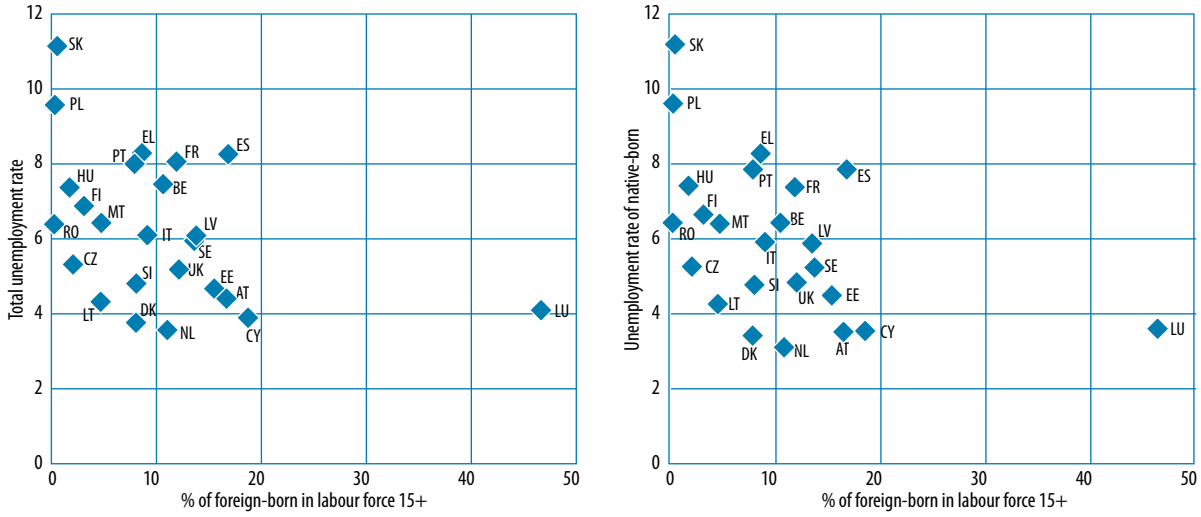
Chart 6: Employment and unemployment rates for native-born and foreign-born versus GDP growth in selected Member States, 1995–2007





Source: GDP growth: Eurostat, national accounts; employment and unemployment rates: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.

Chart 7: Unemployment rates (total and for native-born) versus share of foreign-born in the labour force in the Member States, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: Data for RO (share of foreign-born labour force) uncertain due to small sample size. Data not available for countries which are not shown.

has implications for the quality of their employment and increases the risk of labour market segmentation.

Finally, in terms of the impact on employment opportunities, there is little evidence that immigration leads to higher unemployment. Indeed, comparing across EU countries, there is little correlation – and if anything, it is negative – between the overall unemployment rate, or the unemployment rate of the native-born, and the share of foreign-born in the labour force (Chart 7). The existing evidence suggests that the skills of migrants in Member States are usually complementary to those of native-born workers, leading to positive overall effects on economic activity in the host country.

4.3.2. Impact on wages

With regard to the impact on wages, two important factors are the skill mix of immigrants and local workers and how quickly the economy adjusts to immigration. Simple short–run labour demand models[29] predict that extra labour supply through immigration leads to lower wages (or to unemployment, if wages are not downwardly flexible) if immigrants and local workers have identical skills and are perfect substitutes, and assuming fixed capital stocks and production technologies. Capital owners, on the other hand, will benefit if wages are flexible, as cheaper labour means higher profits. If migrants' skill composition differs from that of native-born workers, those of the native-born whose skills are relatively rare and complementary with those of immigrants will see their wages rise while wages of those who are substitutes to migrants will decline.

In the longer run, it is likely that capital stocks and production technologies will adjust to immigration. If this increases the return to capital, capital owners will invest at least part of their profits in new machinery and equipment. Businesses may also adjust their production techniques so that they complement the labour that is most abundant. In both cases, the need to operate new equipment will increase or shift demand for labour, thus moving wages back towards previous rates.[30] If capital is assumed to be fully elastic, the impact of migration depends entirely on how the skill distribution of immigrants compares with that of existing local workers. If both groups have an equal skill mix, immigration will not have any long-term impact on the wage structure of the destination country. If immigrants are relatively unskilled, the wages of unskilled workers decline while the skilled wages rise, and vice versa.[31]

Following from the above, a key issue in assessing the labour market effects of immigration is whether immigrants are complementary to, or substitutes for, native-born workers, as essentially reflected in their relative skill compositions. The higher the substitutability between immigrants and native-born workers, the more likely that immigration flows will cause a fall in the latter's wages. In contrast, inflows of immigrant workers that are complementary to native workers would, other things being equal, increase the productivity of native-born workers and raise their wages.[32]

Empirical studies (see for example Münz et al., 2007b; Glover et al., 2001; House of Lords Select Committee on Economic Affairs, 2008) generally report only limited overall impacts of immigration on domestic wages and employment, although negative effects are observed for some native workers, in particular those with low skill levels due to substitution effects[33], and positive effects for high-skilled workers.

29 See, for example, Borjas (1999).

30 See, for example, Cahuc and Zylberberg (2004), pp. 609–611.

31 Borjas (1999).

32 For a more detailed theoretical discussion see for example Borjas (2008).

33 Münz et al. (2007b) state that for the construction sector there does seem to be negative effects on native-born workers from immigration.

Borjas (2008) summarises the results from a recent study on the impact of Mexican immigration to the US during the period 1980–2000 as lowering the wage of the typical worker in the US by 3.4% in the short run, but with no reduction in the long run. However, effects vary for different types of worker, with low-skilled workers facing significant reductions in both the short and long run (of around 8% and 5% respectively), while effects for the medium- and high-skilled are lower, in some cases (for medium-skilled) leading to slight wage increases in the long term.

4.3.3. Impact on public finances and welfare dependency

Public attitudes to immigration are influenced to a large extent by the impact of immigration on public finances. Indeed, immigrants are often seen as a burden for the welfare state, placing an additional burden on unemployment and social assistance systems together with educational and health-care systems, which is not covered by their additional tax payments.

The Commission's 2003 Communication *On immigration, integration and employment* (European Commission, 2003b), reported that the net impact of immigration on the public finances of the host countries – i.e. both on government expenditures and revenues – seems to have been moderate to date.[34] Glover at al (2001) observe that overall, migrants are not a burden on the public purse. Diez Guardia and Pichelmann (2006) report that evidence on fiscal effects of immigration is mixed, concluding that overall the net budgetary impact appears to be fairly small in the long run, although local effects could be more significant where geographical clustering of migrants is substantial.[35] Most studies find that migrants are no more dependent on welfare than those parts of the native-born population that are in the same social and employment situation.

Nevertheless, there remains a specific concern that a significant part of non-EU immigration is illegal, with important negative consequences both for the social integration of immigrants and for their impact on the social security system, while asylum seekers are a further category that can stretch the resources of some countries (Begg et al., 2007). Indeed, in some of the new EU entry points (notably the Mediterranean Member States), a lack of experience of immigration and limited capacity to deal with it has become a growing social difficulty. Cyprus and Malta are currently very exposed in this regard, but Italy too is under growing pressure (Begg et al., 2007). However, in general the actual pressure on social systems resulting from these two categories of migrants is not so evident.[36]

5. Recent trends in third country migration

5.1. Stocks and flows of third country migrants

Münz et al. (2007b) estimates that overall[37] there are around 27 million non-EU-born people resident in the EU (or 5.6% of the population, which is around twice the share of people born in another EU country than the one where they currently reside) (Table 2). The highest shares of third country born immigrants are found in Austria (9.1%), Cyprus (8.6%) and the Netherlands (8.4%), as well as Estonia and Latvia (with shares of around 14–18%). In contrast, population shares are rather low (below 2%) in the Czech Republic, Finland, Hungary, Malta and Poland, and practically non-existent in Slovakia. For the large Member States of France, Spain and the UK, shares come to around 6–8%.

Turning to flows, net migration into the EU has seen a substantial increase in recent years, rising threefold between the mid-1990s and early 2000s to reach around 1.5–2 million from 2002 onwards (although a sizeable part of this can be attributed to the regularisation of illegal immigrants, notably in Spain[38]), and with a particularly marked rise in net migration post-2000 (Chart 8). Indeed, in 2007 recent migrants who arrived in the EU* within the last seven years accounted for more than one third of all resident working-age migrants, and 2.3% of the overall EU* working-age population.

The main migratory movement is still – and is likely to remain – immigration into the EU from neighbouring countries, Africa and, increasingly, South America. The general increase in net migration to countries in Southern Europe has accelerated in recent years, becoming as important as net migration to the more 'traditional' immigration countries of France, Germany and the UK. Indeed, most recent newcomers have settled in Italy and Spain, as well as France and the UK.

5.1.1. Comparing third country migration and internal EU mobility

It is important to appreciate the impact of third country immigration in the context of total inflows of all for-

34 Coppel et. al., (2001)

35 Glover et al. (2001) also report that the relative concentration of migrants in particular areas in the UK means they can contribute to increased pressure on housing markets, local infrastructure (e.g. transport, schools and hospitals) and exacerbate over-crowding and congestion.

36 For example in the specific case of access to health care, in terms of health insurance coverage, in most countries asylum seekers are entitled to at least basic treatment for acute diseases. Nevertheless, current regulations in some countries impose severe limitations on the entitlement of asylum seekers to health-care services under public programmes. Furthermore, a common feature across many countries is that illegal immigrants have the right to the provision of emergency and medically necessary health care only. However, the decision of what constitutes a medical emergency is usually left to the provider.

37 For all EU-27 Member States, including an estimate for Germany. Münz estimates that in total there are currently about 40 million foreign-born individuals resident in the EU-27 Member States, representing about 8.3% of the total population.

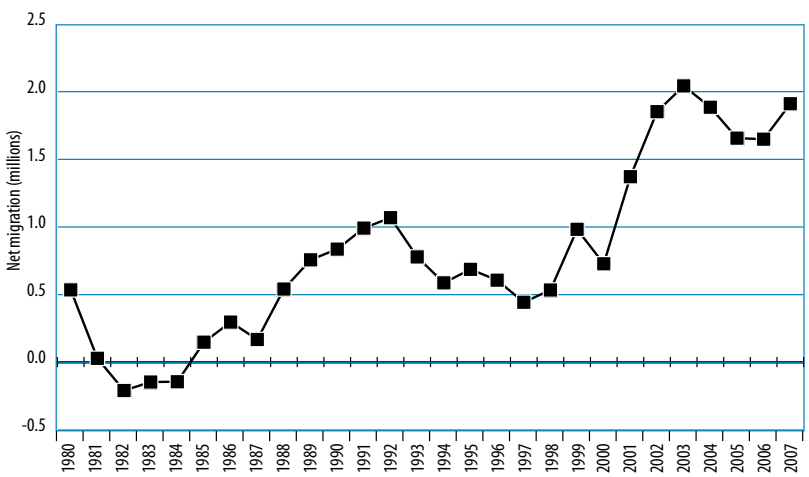
38 The increase for such Member States may, therefore, possibly be something of a statistical artefact. The number of immigrants on the territory would not have increased, but the regularisation would have been reflected in national migration statistics. Based on OECD SOPEMI (2006), Diez Guardia and Pichelmann (2006) report that around 2.12 million migrants were regularised in Greece, Italy, Portugal and Spain between 2000 and 2005 (including 0.63 million in Italy and 0.95 million in Spain).

Table 2: Foreign-nationals and foreign-born population in the EU (reproduced from Münz et al., 2007b)

	Foreign-nationals						Foreign-born					
	Total		Other EU-27 nationals		Non-EU-27 nationals		Total		Other EU-27 born		Non-EU-27 born	
	In thousands	%	In thousands	%	In thousands	%	In thousands	%	In thousands	%	In thousands	%
BE	871	8.4	618	6.0	253	2.4	1 186	11.4	611	5.9	575	5.5
BG	26	0.3	:	:	:	:	104	1.3	:	:	:	:
CZ	254	2.5	126	1.2	128	1.3	453	4.4	344	3.3	109	1.1
DK	268	4.9	91	1.7	177	3.2	389	7.2	116	2.2	273	5.0
DE	6 739	8.9	2 385	3.1	4 354	5.8	10 144	12.3	:	:	:	:
EE	95	6.9	(3)	(0.2)	92	6.7	202	15.2	(10)	(0.8)	192	14.4
IE	223	5.5	152	3.7	71	1.8	585	14.1	429	10.3	156	3.8
EL	762	7.0	163	1.5	599	5.5	974	8.8	214	1.9	760	6.9
ES	1 977	4.6	594	1.4	1 383	3.2	4 790	11.1	1 405	3.3	3 385	7.8
FR	3 263	5.6	1 278	2.2	1 985	3.4	6 471	10.7	2 125	3.5	4 346	7.2
IT	2 402	4.1	:	:	:	:	2 519	4.3	:	:	:	:
CY	65	9.4	35	5.1	30	4.3	116	13.9	44	5.3	72	8.6
LV	103	3.9	(10)	(0.4)	93	3.5	449	19.5	43	1.9	406	17.6
LT	21	0.6	(5)	(0.1)	16	0.5	165	4.8	11	0.3	154	4.5
LU	177	39.0	:	:	:	:	174	37.4	:	:	:	:
HU	142	1.4	92	0.9	50	0.5	316	3.1	200	2.0	116	1.1
MT	13	3.2	6	1.5	7	1.7	11	2.7	4	1.0	7	1.7
NL	699	4.3	261	1.6	438	2.7	1 736	10.6	354	2.2	1 382	8.4
AT	777	9.5	272	3.3	505	6.2	1 234	15.1	489	6.0	745	9.1
PL	49	0.1	(12)	(0.03)	37	0.1	703	1.8	241	0.6	462	1.2
PT	449	4.3	90	0.9	359	3.4	764	7.3	178	1.7	586	5.6
RO	26	0.1	:	:	:	:	103	0.6	:	:	:	:
SI	37	1.9	(4)	(0.2)	(33)	(1.7)	167	8.5	14	0.7	153	7.8
SK	22	0.4	(12)	(0.2)	(10)	(0.2)	124	2.3	106	2.0	18	0.3
FI	108	2.1	46	0.9	62	1.2	156	3.0	63	1.2	93	1.8
SE	463	5.1	205	2.3	258	2.8	1 117	12.4	558	6.2	559	6.2
UK	2 857	2.9	1 131	1.1	1 726	1.8	5 408	9.1	1 592	2.7	3 816	6.4
EU-27	22 888	4.7	8 462	1.7	14 426	2.9	40 501	8.3	13 222	2.7	27 279	5.6

Source: OECD (2006), UN (2006), EU Labour Force Survey ad hoc modules (2005) and national statistics.
Note: Data of the total foreign-national and foreign-born populations are from OECD (2006), UN (2006) and national statistics. The totals are split between 'Other EU-27' and 'Non-EU-27' on the basis of estimations computed with data from the EU LFS (2005). For the estimation of the EU-27 total, it is assumed that the foreign-nationals in BG, IT, LU and RO (for which there is no data available in the LFS) are distributed among 'Other EU-27' and 'Non-EU-27' in the same way as the average of the remaining EU-27. For the estimation of the EU-27 total, it is assumed that the foreign-born in BG, DE, IT, LU and RO (for which there is no data available in the LFS) are distributed among 'Other EU-27' and 'Non-EU-27' in the same way as the average of the remaining EU-27. CY includes only Greek part. Data in brackets are uncertain due to small sample size.

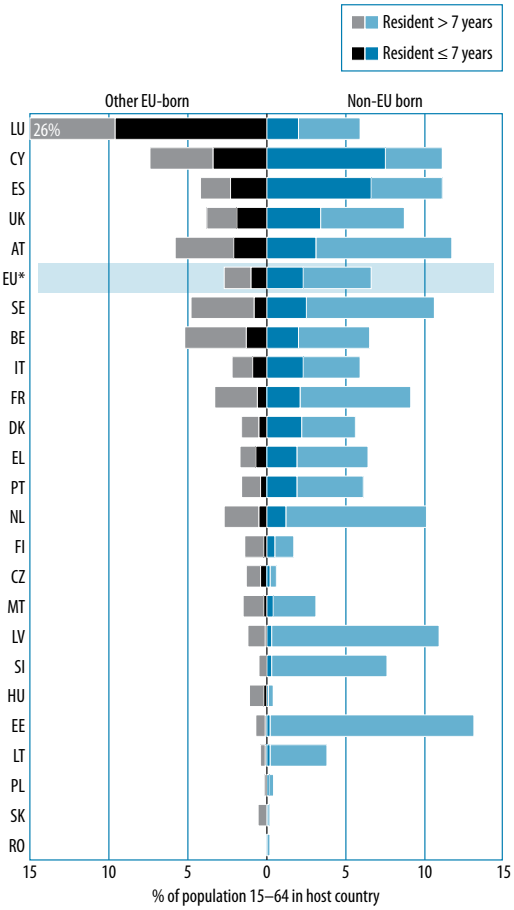
Chart 8: Net migration to the EU-25, 1980–2007



Source: Eurostat, demographic statistics.
Note: Data refers to net migration including corrections (estimated by the difference between population change and natural increase).

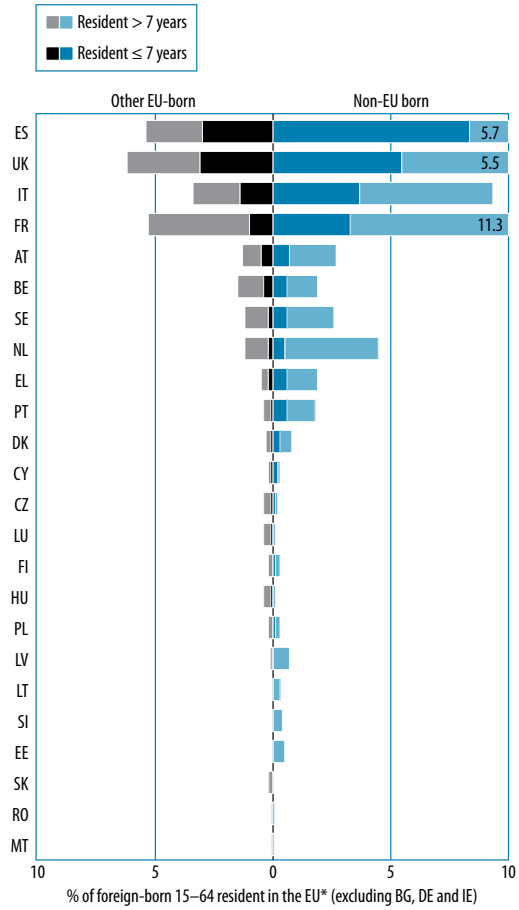
eign-born migrants, including those from other EU Member States. The shares of total foreign-born people in the working-age population varies significantly across countries (Chart 9a), from less than 1% in Poland, Romania and Slovakia to more than 15% in Austria, Cyprus, Spain, Sweden and most notably in Luxembourg (42%). Within these shares, for the vast majority of Member States, third country immigrants – both total stock and recent migrants – account for a more significant element than migrants from other EU countries. Only in the Czech Republic, Hungary, Poland, Romania and Slovakia does the share of third country migrants in the working-age

Chart 9a: Share of foreign-born in working-age population of host country, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: EU excludes BG, DE and IE.*

b: Distribution of foreign-born across the EU*, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: EU excludes BG, DE and IE.*

population appear to be negligible, while only in Luxembourg, Hungary and Slovakia is it dwarfed by the share of people from other EU Member States. In most Member States, therefore, immigration from third countries appears to be much more significant than immigration arising from intra-EU mobility.

Focusing on migrants who have arrived since 2000, the impact of recent third country migration within the overall working-age population is most noticeable for Austria, Cyprus, Spain and the UK, which have also seen relatively high recent immigration of working-age migrants from other EU Member States. At EU* level, the recent inflow of third country migrants of working age – measured as a share of the EU working-age population – has been notably higher (almost 2.5 times) than the recent internal flow of migrants from other EU countries (2.3% versus 1%). A similar pattern is also found for the total stock of migrants, with 6.6% of the EU* working-age population born in a third country compared with 2.6% for those born in another EU Member State.

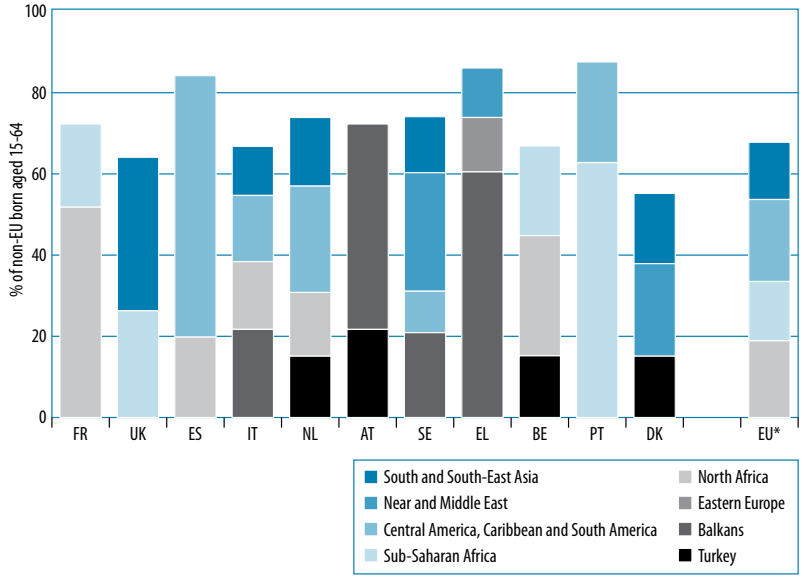
Within the EU*, the share of recent migrants within the total stock of working-age third country migrants averages around one third. However, it varies substantially across Member States, from around 5% or less in the Baltic States and Slovenia to more than 35% in the Czech Republic, Denmark, Italy and the UK and of the order of 60% or more in Cyprus and Spain. The latter two Member States stand out as countries where third country migration is mainly a relatively recent phenomenon. Within the total EU* population of recent working-age third country migrants, Spain has been the main destination country (accounting for a third of all recent migrants), followed by the UK, Italy and then France (Chart 9b). In total, these account for more than 80% of all recent arrivals to the EU* of working age since 2000.

5.2. Characteristics of migrant stocks and recent migration flows

5.2.1. Composition of stocks of third country migrants by region of origin

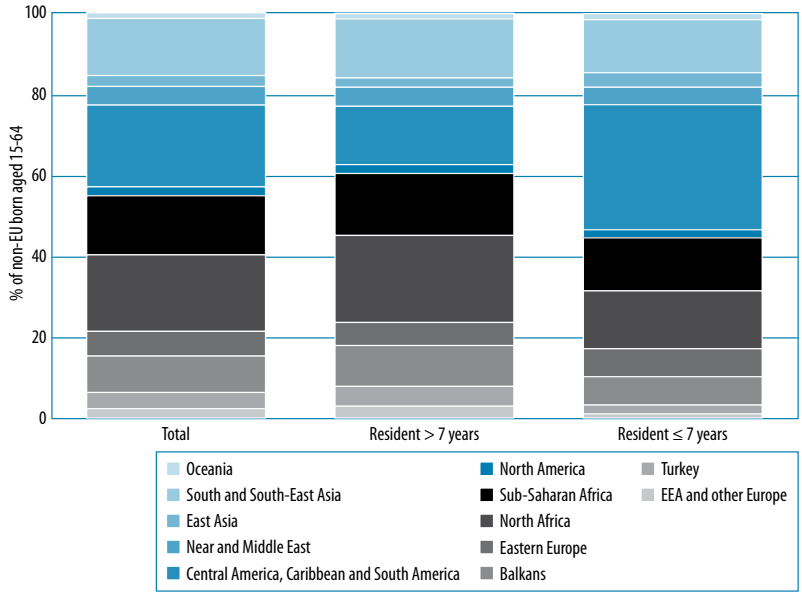
Member States are characterised by a diversity of past and recent immigration histories and include long-standing destination countries, new destination countries, new gateway or transit countries and emigration countries. At the same time immigrants to the EU display a wide heterogeneity as regards region of origin, cultural background, education and skill level, socio-economic and age

Chart 10: Composition of non-EU-born population by main region of origin in selected Member States, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: EU excludes BG, DE and IE. Main origin groups – migrants account for at least 10% of total non-EU migrants in host country.*

Chart 11: Composition of non-EU-born by region of origin in the EU*, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: BG, DE and IE excluded.

characteristics, family status, etc., and have varying reasons for migrating into the EU.

There are many examples of the diverse nature of immigrant populations within EU Member States. In the Baltic States, for example, large parts of the population belong to the Russian minority which traditionally has held a relatively high social and economic position in society. In the majority of EU-15 Member States, by contrast, a larger proportion of immigrants originate from Central and South America, the Balkans, Turkey, Africa or Asia,[39] (Chart 10) and hold a weaker position in society in various respects. Among longer-established migrants aged 15–64 within the EU*, almost two thirds of North Africans reside in France, almost a third of Sub-Saharan Africans in France and a third in the UK, almost half of Central and South Americans in Spain, and close to half of South and South East Asian migrants in the UK (Table 3).

In the EU*, more than two thirds of all non-EU-born working-age migrants originate from just four main source regions (Chart 11) – namely Central (including the Caribbean) and South America (accounting for 20%), North Africa (19%), Sub-Saharan Africa (15%), and South and South East Asia (14%). Immigrants from Balkan non-Member States (9%), Eastern Europe (6%), the Near and Middle East (5%) and Turkey (4%) also account for sizeable shares, while those from other developed countries such as North America and Oceania account for only relatively small shares.

The pattern of recent immigration to the EU* is somewhat different to that prior to 2000, in that the largest share (almost a third) of recent working-age immigrants originate from Central and South America. This reflects the large influx post-2000 from that particular region, although the traditional four largest groupings remain the same.

According to Münz (2007b), recent patterns of immigration indicate that inflows have become more diversified, with increasing numbers of immigrants from new countries of origin in Central and Eastern Europe, Asia, Africa and Central and South America (the latter mostly to Spain). The Ukraine and the Russian Federation have appeared as major new countries of origin since 2000. However, despite some increase in recent years, immigration from China and India still accounts for a relatively small part of overall immigration into the EU, except for the UK with regard to India where there are strong historical links.

39 Table 7 in Annex provides a list of countries belonging to the regional groupings mentioned.

Table 3: Main EU* destination countries for non-EU-born aged 15–64 by region of origin, 2007

	EEA and other Europe	Turkey	Balkans	Eastern Europe	North Africa	Sub-Saharan Africa	North America	Central America, Caribbean and South America	Near and Middle East	East Asia	South and South-East Asia	Oceania	Total non-EU-born
Non-EU born resident > 7 years													
BE	:	9.3	1.9	1.4	4.0	4.2	2.0	0.9	1.9	(1.6)	1.7	:	2.8
DK	2.5	5.0	0.6	:	0.2	0.4	3.8	(0.2)	3.9	2.7	1.4	:	1.0
EL	:	0.9	18.0	6.8	0.2	0.3	2.6	(0.2)	6.9	:	0.5	4.3	2.9
ES	15.2	:	0.5	5.9	14.8	4.7	5.8	45.3	5.8	12.3	3.2	:	12.4
FR	8.5	22.9	3.3	3.2	63.0	30.6	8.6	4.8	9.8	13.0	16.2	17.4	24.4
IT	54.3	1.4	24.6	6.5	9.4	7.4	17.6	13.8	3.4	18.9	10.7	10.4	12.3
NL	1.7	27.1	3.3	1.6	6.3	4.2	6.2	15.6	14.2	8.7	10.5	7.6	8.7
AT	2.3	19.9	24.2	1.3	0.4	0.5	(1.6)	0.5	2.4	3.2	1.6	:	4.2
PT	2.1	:	:	:	:	13.2	3.0	2.8	:	:	0.3	:	2.7
SE	7.6	5.3	10.0	1.7	0.3	1.7	3.3	3.2	25.1	3.0	3.9	:	4.3
UK	4.3	7.6	3.2	2.8	1.3	32.3	43.1	12.4	17.7	34.3	48.9	53.0	18.4
Baltic	:	:	:	53.3	:	:	:	:	4.7	:	:	:	3.2
Other	:	:	10.4	15.1	:	(0.6)	:	:	4.2	:	1.0	:	2.6
Non-EU-born resident ≤ 7 years													
BE	:	12.2	1.9	3.4	4.3	3.4	:	0.5	2.5	2.1	1.2	:	2.2
DK	13.3	3.5	(0.6)	(0.8)	:	0.7	3.6	(0.1)	10.2	(0.9)	1.5	:	1.2
EL	:	:	17.5	4.4	:	:	:	:	7.6	:	1.4	:	2.2
ES	8.3	:	(0.7)	18.7	36.7	8.5	:	77.9	3.6	14.2	4.6	:	33.2
FR	26.2	25.5	4.0	9.0	35.5	25.0	18.4	2.6	6.9	15.0	7.2	(8.5)	13.2
IT	12.3	3.6	51.0	33.3	17.7	9.3	3.3	7.9	3.8	18.2	12.7	:	14.8
NL	:	11.5	(0.5)	1.1	2.3	1.8	(3.0)	2.0	3.8	(1.8)	2.0	:	2.1
AT	:	21.6	12.5	3.8	(0.5)	1.1	:	0.4	4.7	3.0	3.2	:	2.8
PT	:	:	:	5.6	:	5.6	:	3.3	:	:	:	:	2.2
SE	11.0	3.8	4.3	1.9	0.3	1.4	2.5	0.7	20.2	2.3	2.8	:	2.4
UK	17.6	15.7	4.8	8.2	2.1	42.1	59.0	4.5	29.7	40.3	60.0	86.2	21.7
Baltic	:	:	:	(2.0)	:	:	:	:	:	:	:	:	(0.2)
Other	:	:	(2.0)	8.0	:	(0.9)	:	:	6.5	:	3.3	:	1.8

Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: ':' data not reliable. Data in brackets uncertain due to small sample size. BG, DE and IE excluded as destination countries.

In some cases there has also been a dispersion of flows from the same region of origin to different destination countries. For example, Eastern European migrants have increasingly switched to Italy and Spain as main destination countries. Recent arrivals from North Africa have migrated slightly less to France (just over one third) but increasingly to Spain (37%) and Italy (18%). In contrast, flows of migrants from certain other regions have recently become more concentrated on a particular destination country: Sub-Saharan Africans have increasingly gone to the UK (more than 40%), three quarters of Central and South Americans have moved to Spain, and 60% of South and South-East Asians have migrated to the UK (Table 3).

5.2.2. Gender, age and skills composition of third country migrants

At EU* level, there are broadly equal numbers of male and female third country migrants (48% men and 52% women), and similarly at Member-State level. Within migrant groups by region of origin, the shares of men and women migrants are also broadly similar at EU* level, but with more women than men in migrant populations from Eastern Europe, Central and South America and East Asia, and more men than women from the Near and Middle East. Recently the EU* has attracted even more women than men from Eastern European countries and East Asia, while at EU* level 54% of recent migrants were women.

In the EU*, third country migrants of working age are on average younger than those who are EU-born, with the age distribution of immigrants being relatively more skewed to younger adult ages (Chart 12). A higher share (63%) of the non-EU-born are of prime working age (25-54 years), compared with 42% of the EU-born population, while only 10% of the non-EU-born are aged 65 or over compared with 16% of the EU-born. This difference is even more pronounced for recent migrants, among whom two thirds of the adult population (i.e. those aged 15+) are aged less than 35.

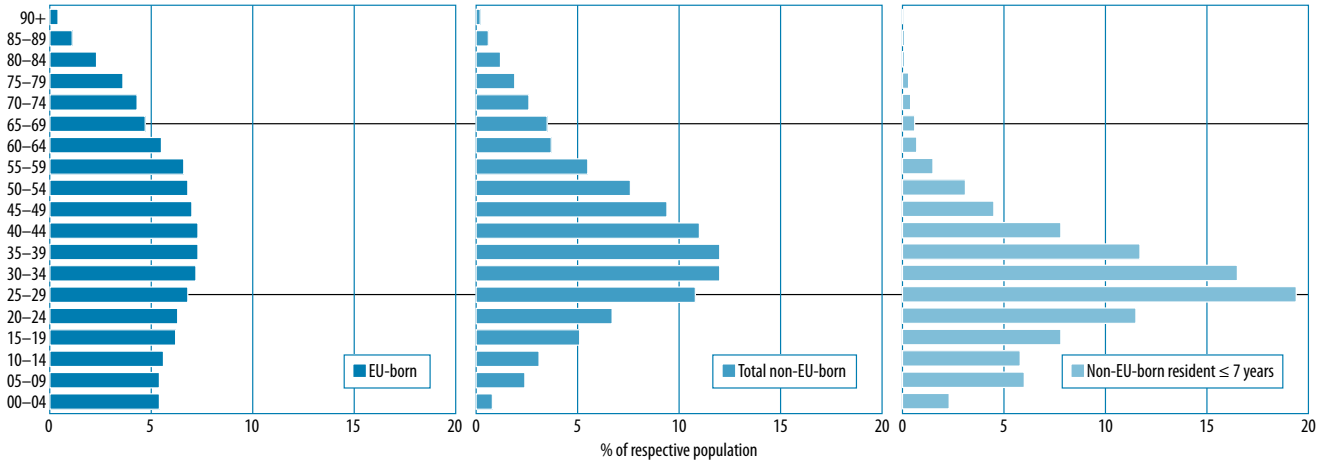
Overall, the EU**[40] tends to attract mainly less skilled immigrants. Although the proportion with tertiary-level education tends to be very similar among the EU-born and non-EU born, third country working-age migrants are more concentrated in the lower levels of the skill distribution (45% are low-skilled), whereas for the EU-born the medium-skilled account for the largest share (45% of EU-born are medium-skilled). This partly reflects past labour demand for low-skilled workers in the manufacturing sector. On average, therefore, most third country migrants (around 80%) tend to be low- or medium-skilled, while only one in five is high-skilled. This low-skill bias is also a feature among recent migrants, of whom 48% are low-skilled.

There are significant differences depending on region of origin. Among longer-established migrants, almost one in three originating from the Near and Middle East or Eastern Europe has a tertiary-level education, and close to half of migrants from North America. In contrast, much lower shares of migrants from the Balkans, Turkey and North Africa have a tertiary-level education, with more than half educated only to lower secondary level or below among the latter two groups. Recently, the EU** has attracted more highly skilled migrants from other European countries, East Asia and North America, but noticeably fewer from Sub-Saharan Africa (Chart 13). At the same time, the share of low-skilled increased significantly among migrants from the Balkans, Eastern Europe and South and South East Asia.

In summary therefore, recent third country immigration has seen a large influx of people from Central and South America, together with the other main 'traditional' sources of North and Sub-Saharan Africa and South and South East Asia. This recent inflow consists to a large degree of young adults (around two thirds of adults are aged 15–34), comprises more women than men,

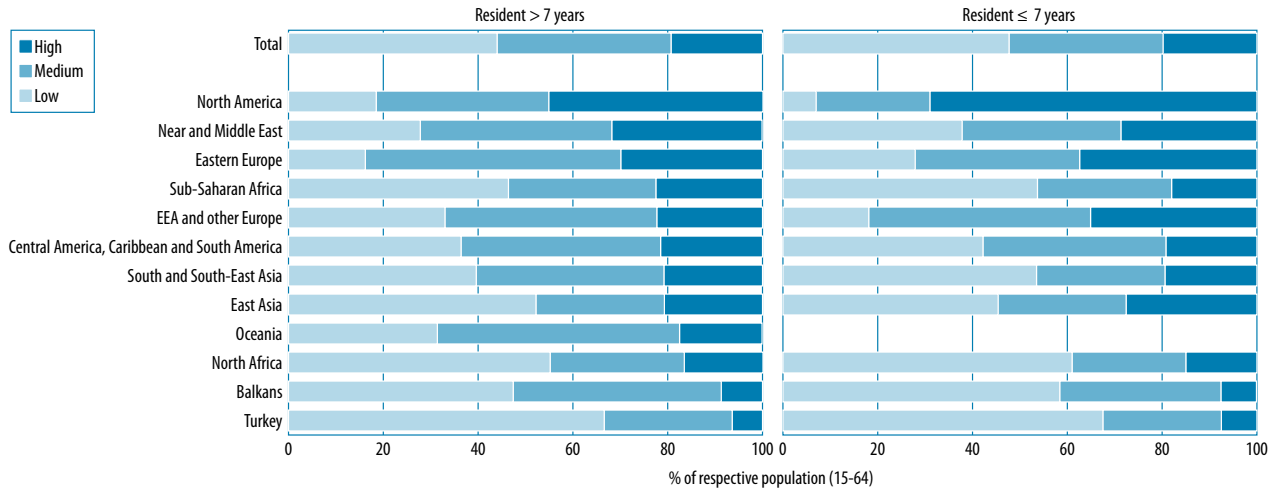
40 The EU** refers to the EU-27 excluding Bulgaria, Germany, Ireland and the UK (also excluded due to incomplete coding of foreign qualifications).

Chart 12: Age structure in the EU* of EU-born and non-EU-born migrants, 2007



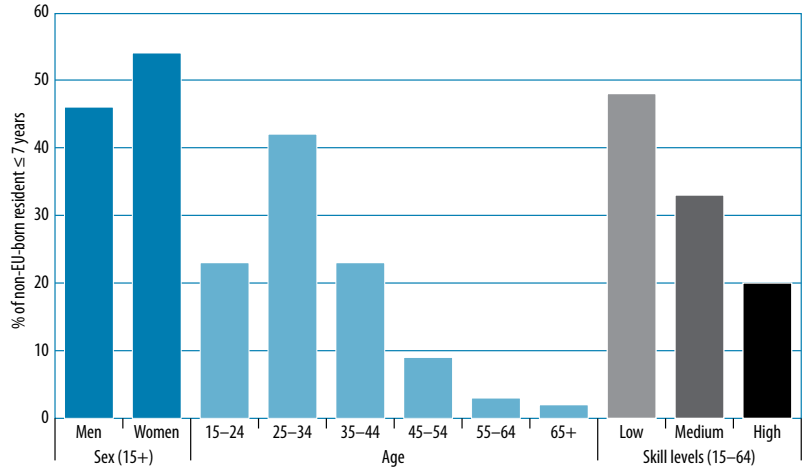
Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: BG, DE and IE excluded.

Chart 13: Skill level of non-EU-born aged 15–64 by region of origin in the EU**, 2007



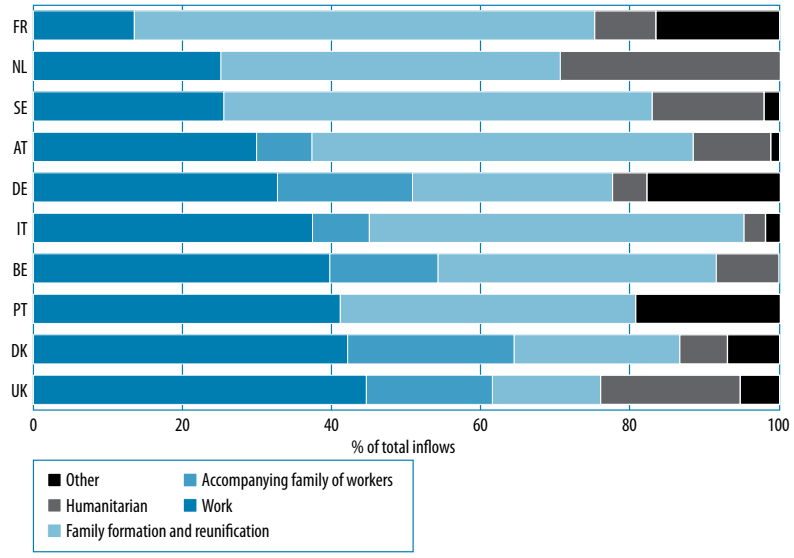
Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: BG, DE, IE and UK excluded. Data for non-EU-born resident ≤ 7 years from Oceania not reliable and from North America uncertain due to small sample size.

Chart 14: Non-EU-born migrants resident in the EU* for seven years or less, by sex, age and education attainment level, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: BG, DE, and IE excluded. UK excluded in distribution by skill levels.

Chart 15: International migration to selected Member States by category of entry, 2005



Source: OECD, SOPEMI 2007.

and includes a high share (almost half (48%)) of low-skilled working-age migrants (even higher than among more established migrants) (Chart 14).

5.3. Reasons for migration

In Europe, labour immigrants only constitute a fraction of total permanent-type[41] migration flows, as a significant number of entrants arrive via family-linked migration (covering both accompanying family members of workers and family formation/reunification) or as asylum seekers. However, with regard to the latter, the number of asylum applications in the EU has declined markedly in recent years: over the period from 2002 to 2006 applications fell by more than half, with under 200 000 asylum applications being lodged in all 27 EU Member States in 2006. This means that asylum applications have recently fallen back to the low levels of the mid-1990s and 1980s, following the rise at the end of the 20th century as a result of the conflicts in former Yugoslavia.

Member States differ widely according to the importance given to the various entry channels for permanent-type immigration. In most Member States a significant part of immigration continues to be labour migration, but family formation and reunification – and until recently immigration on humanitarian grounds – have been important in recent decades. Indeed, family-related migration has become the most important entry category of permanent-type immigrants in countries as diverse as Austria, Belgium, France, Germany, Italy and Sweden.

Recent OECD data (OECD, 2007a) confirms that the main reasons for immigration[42] into EU Member States in 2005 were family- and work-related. However, there were very wide variations across Member States as to the particular composition of migrant populations by category of entry (Chart 15). Family-related reasons for migration accounted for 30% of new arrivals in the UK, but around 60% in France. Labour migration (i.e. migration for work purposes) accounted for some 40% or more of migrants in Belgium, Denmark, Portugal and the UK, but only around a quarter in the Netherlands and Sweden, and under 15% in France. Humanitarian migration accounted for 15–20% of migrant inflow in Sweden and the UK, and almost 30% in the Netherlands. In some countries, other reasons accounted for a substantial share of arrivals, for example, ethnic-based immigration in Germany, and retirement in France and Portugal.

Hence, while, in some countries like Belgium, Denmark, Germany, Italy, Portugal and the UK, immigration for purposes of work was considerable,

41 Permanent-type migration generally refers to the type of migration where migrants remain permanently in the host country or for a long period, and who do not have a residence permit that is not renewable or only renewable on a limited basis. International students, trainees, seasonal and contract workers or any other persons the authorities expect will return to their home country after the end of the authorised stay are considered as temporary.

42 This refers to all immigration into the specified Member States, covering both migrants from other EU Member States and from third countries.

other Member States such as France, the Netherlands and Sweden had relatively low shares of labour migration but a high percentage of family-related and humanitarian immigration.[43]

6. Labour market situation of third country migrants

A key part of the integration process, employment is recognised as being central to the participation of immigrants in the host society. It is important therefore to assess the extent of non-EU migrants' integration into the labour market, through comparing their labour market performance with those of the EU-born population.

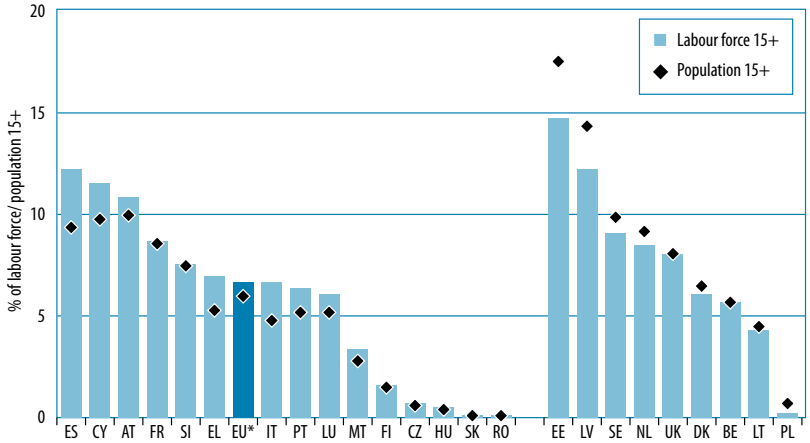
6.1. Labour market participation of migrants

Third country migrants make a significant contribution to overall labour input in the EU*, accounting for 6.7% of the labour force[44] on average, compared with their share of 6% in the total adult population. Their contribution to the labour force exceeds 10% in Austria, Cyprus, Estonia, Latvia and Spain, while only in the Czech Republic, Hungary, Poland, Romania and Slovakia is it negligible (Chart 16).

Furthermore, in a majority of Member States, as for the EU* overall, the share of migrants in the labour force is higher than their share in the total adult population. This over-representation in the labour force is especially marked in the southern countries of Cyprus, Greece, Italy, Portugal and Spain. In contrast, non-EU immigrants are noticeably under-represented in the labour force in the Baltic States and Poland (due to a large share of older migrants aged 65 and over), and in the Netherlands and Sweden, possibly reflecting the large share of humanitarian- and education-related migration in these countries. A similar pattern is found when focusing only on recent immigration (Chart 17). Once again there is a clear over-representation in the labour force in the southern Member States, though of lower magnitude, but this time with negligible differences for the Baltic States (which have seen very little recent immigration, and with recent migrants being much younger compared with the longer-established ones).

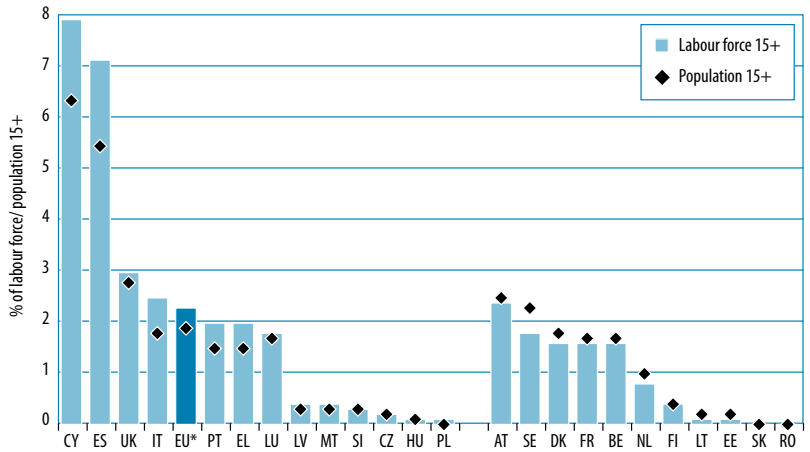
This picture of migrants' participation is confirmed when analysing the standard measure of labour market participation – the activity rate of the working-age population (Chart 18). In most EU* countries, non-EU-born persons have a higher participation rate than the EU-born population, with positive differences being most significant in the southern countries of Cyprus, Italy, Greece, Portugal and Spain, where labour migration is relatively high, and also in the Baltic States[45] and the Czech Republic.

Chart 16: Share of non-EU-born in adult population and in labour force across Member States, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: EU excludes BG, DE and IE. Data for RO uncertain due to small sample size. Data not available for countries which are not shown.*

Chart 17: Share of non-EU-born resident seven years or less in adult population and in labour force across Member States, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: EU excludes BG, DE and IE. Data for RO uncertain due to small sample size. Data not available for countries which are not shown.*

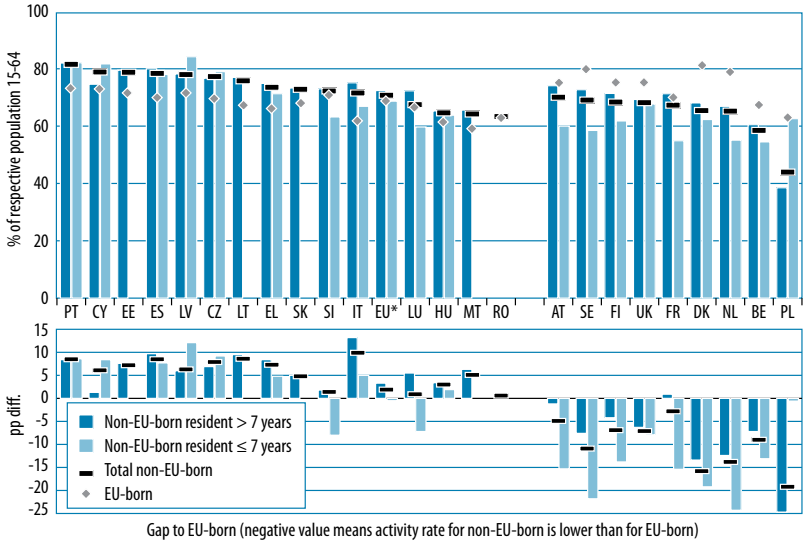
43 These figures, however, do not account for all relevant migration flows. For example, according to Münz (2007), in several EU countries economic migration takes place to a larger extent in the form of seasonal and temporary labour migration (some 600 000 persons admitted annually in EU 27) as well as in the form of irregular labour migration of at least the same magnitude.

44 The sum of those aged 15 and over in employment or unemployment.

45 The activity rates of migrants in the Baltic States are higher relative to the activity rates of the EU-born (or the total population). This gives different conclusions from ones based on comparison of shares of labour force aged 15 and over and the population aged 15 and over due to the high share of migrant population aged 65 and over (most likely inactive) in those countries (more than 30%).

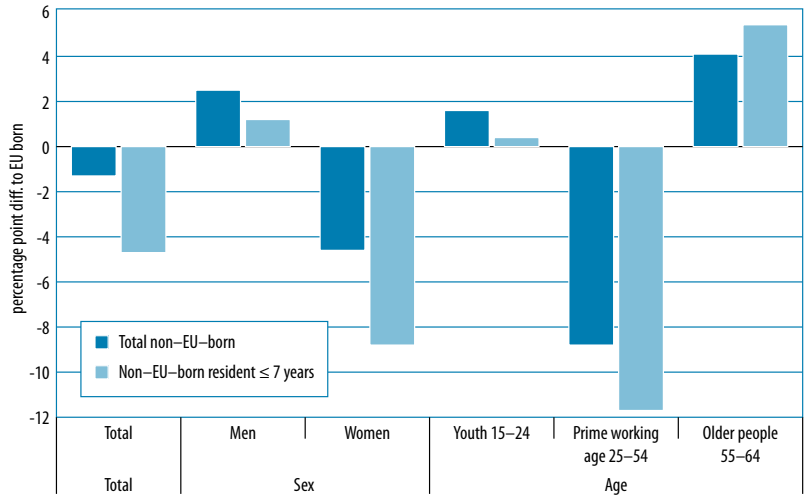
In addition, in most of these Member States, recent non-EU-born migrants aged 15–64 have substantially higher activity rates than the EU-born. However, in most old Member States, activity rates for recent non-EU migrants are considerably below those for both EU-born and more established migrants, suggesting that in general there are considerable delays for migrants to establish a sufficient foothold in the labour market. The difference in participation rates between the EU-born and non-EU migrants is particularly acute for recent migrants in Austria, Belgium, Denmark, Finland and France, and especially so in the Netherlands and Sweden where the gap exceeds 20 percentage points. In Northern Europe, this partially reflects high overall activity rates for the EU-born population, but also a relatively large share of migration related to asylum and family reunification (where associated labour market access restrictions often apply) and to education and training (i.e. there are relatively large numbers of students among migrants compared with the EU-born in northern Member States).

Chart 18: Activity rates for EU-born and non-EU-born, and gap in activity rates between them across Member States, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: EU excludes BG, DE and IE. Data for RO (non-EU-born), SK (non-EU-born resident > 7 years), PL and SI (non-EU-born resident ≤ 7 years) uncertain due to small sample size. Data not reliable for groups which are not shown. Data not available for countries which are not shown.*

Chart 19: Employment rate gap in the EU between non-EU-born and EU-born, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: BG, DE and IE excluded. Negative value means employment rate for non-EU-born is lower than for EU-born.

6.2. Migrant employment rates

6.2.1. Overall employment rates

At EU* level the average employment rate is in fact similar for the EU-born and non-EU-born, although the gap is larger for more recent migrants. However, underlying this similarity are significant differences regarding specific elements of the population. While employment rates for male and young migrants are comparable with their EU-born counterparts, and those for older workers noticeably higher, rates for migrant women and people of prime working age are considerably lower (Chart 19).

In line with the pattern for activity rates, in more than half of the Member States, non-EU-born persons have a higher employment rate than the EU-born population, while in the other half it is generally much lower (Chart 20). Consequently, two groupings of Member States can be identified (Chart 21):

- In the first group, positive differences in migrants' employment rates relative to those of the EU-born are observed in the 'new' immigration countries of Cyprus, Greece, Italy, Portugal and Spain, together with the new Member States (especially the Baltic countries, the Czech Republic and Hungary) except Poland.
- In contrast, the second group mainly consists of the remaining old Member States, where the employment rates of the non-EU-born are significantly below those of the EU-born, in particular in Belgium, Denmark, Finland, the Netherlands and Sweden where employment rate differentials relative to the EU-born are more than 15 percentage points.

The countries of Southern Europe therefore tend to exhibit relatively good labour market outcomes for immigrants. However, as pointed out in OECD (2007b), this may be specific to the rather atypical situation in these countries – i.e. strong labour demand, with immigration that is highly labour-oriented (these countries have received high flows of labour migration in recent years) but partly irregular, and where there is a ready availability of lesser-skilled jobs which the native-born workforce does not want. Furthermore, the strong demand for low-skilled workers in these countries appears to be linked to the marked increase in labour market participation of native women over recent years (Chart 22), which has been particularly strong in the southern Member States.

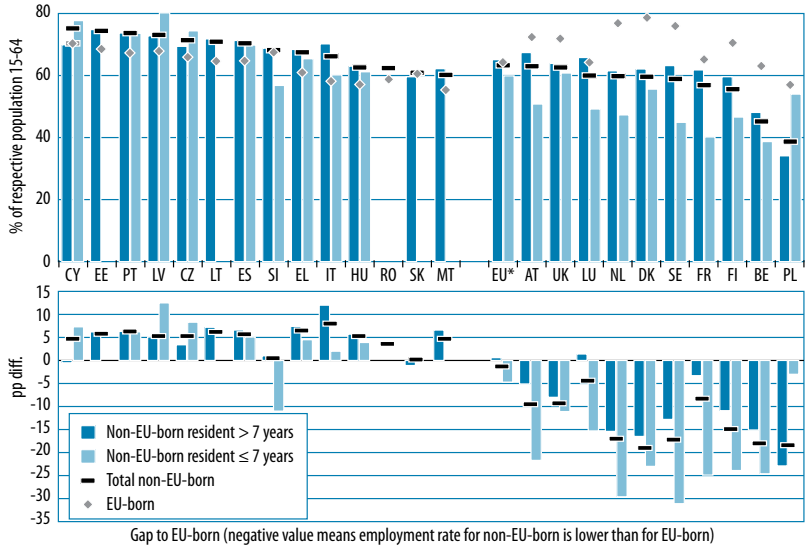
In contrast, in northern Member States, with a long tradition of immigration, lower employment rates of migrants probably reflects the impact of several factors, such as:

- relatively high shares of migration that is unrelated to employment – the Member States have seen large humanitarian and family-related flows for some decades
- tougher restrictions on access to employment[46] together with a lower acceptance of undeclared/irregular work
- different welfare state systems compared with Member States with higher employment rates for migrants (where less generous systems may put greater pressure on migrants to work).

Nevertheless, within each of the two groups, there is a high positive correlation between the employment rates of non-EU-born and EU-born people, which indicates that migrants' per-

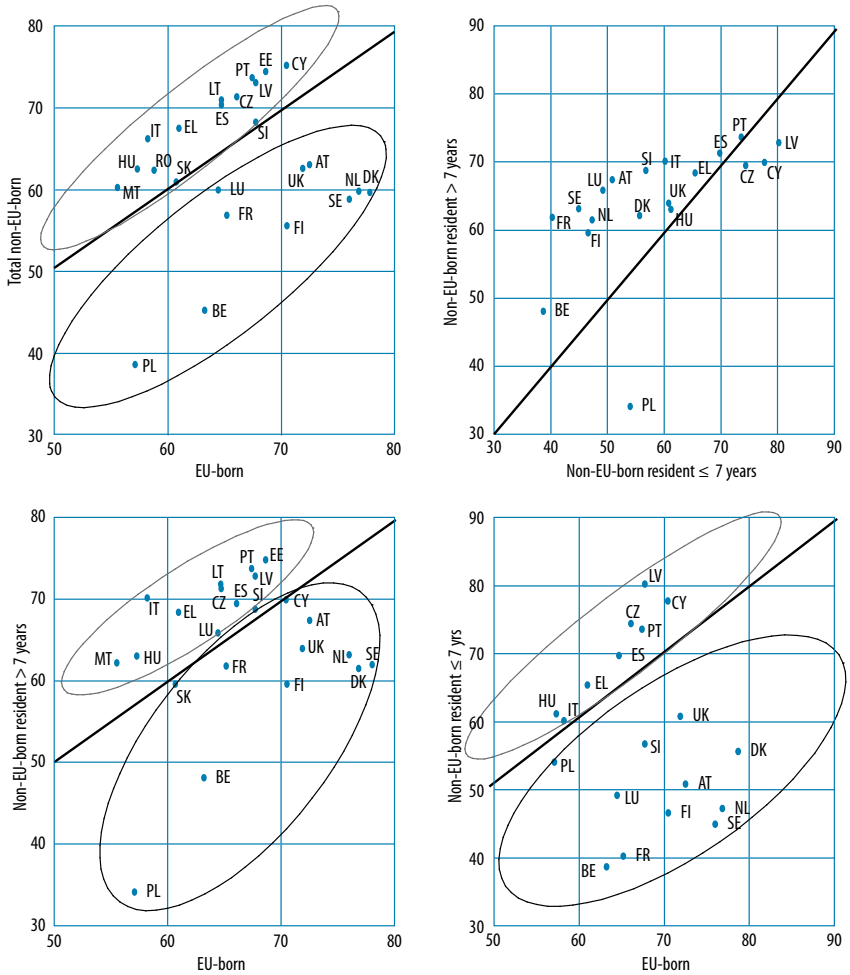
46 In most EU Member States asylum seekers and legal immigrants entering under the provision of family reunion may have restrictions on their access to domestic labour markets.

Chart 20: Employment rates for EU-born and non-EU-born, and gap in employment rates between them across Member States, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: EU excludes BG, DE and IE. Data for SK and RO (non-EU-born), PL and SI (non-EU-born resident ≤ 7 years) uncertain due to small sample size. Data not available or reliable for countries or groups which are not shown.*

Chart 21: Employment rates of non-EU-born (total, longer-established and recent migrants) versus EU-born across the EU*, 2007



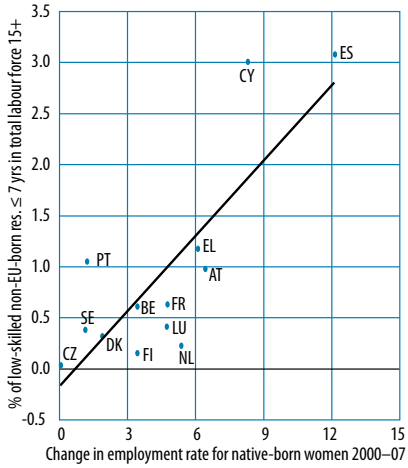
Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: Data for SK and RO (non-EU-born), PL and SI (non-EU-born resident ≤ 7 years) uncertain due to small sample size. Data not available or reliable for countries which are not shown.

formance in the labour market is also a reflection of the labour market situation in general.

This grouping is also apparent when comparing recent migrants with the EU-born: it remains the case that even for recent arrivals, employment rates are generally higher than or close to those for the EU-born in the southern and new Member States compared with the remaining old Member States. Nevertheless, only in very few countries do recent non-EU-born migrants have significantly higher (the Czech Republic, Cyprus, Latvia, Portugal and Spain) or broadly similar (Greece, Hungary and Italy) employment rates to the EU-born. In most Member States, employment rates for recent non-EU migrants are considerably lower, the difference being most marked in Austria, Belgium, Denmark, Finland, France, the Netherlands and Sweden (all with gaps of more than 20 percentage points). This suggests that, on the face of it, migrants' integration into the labour market may be particularly challenging in those Member States.

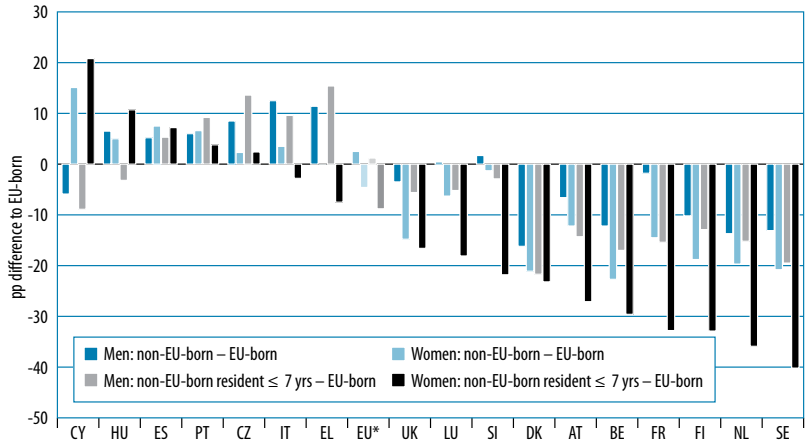
This is further highlighted by the fact that in these countries the employment rate for recent arrivals is also substantially lower than that for more established migrants, which is also generally the case in most other Member States apart from Cyprus, the Czech Republic, Greece, Hungary, Latvia, Poland, Portugal, Spain and the UK. The latter appear relatively more successful in achieving a more rapid labour market integration of migrants, which may also have important effects on the labour market situation of migrants in later years. The apparent correlation between employment rates of recent and more established non-EU migrants suggests that relative performance in terms of the ease and rapidity of migrants' integration into employment has effects which persist into the longer-term labour market outcomes for migrants.

Chart 22: Share of low-skilled recent non-EU-born migrants (resident for seven years or less) in labour force versus changes in employment rates of native women across the EU**, 2000–07



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: Data for LU and FI (share of non-EU-born) uncertain due to small sample size. Data not available or reliable for countries which are not shown.

Chart 23: Differences in employment rates between non-EU and EU-born by gender across Member States, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: EU excludes BG, DE and IE. Data for HU, SI, FI (non-EU-born resident ≤ 7 years), MT and PL (non-EU-born) uncertain due to small sample size. Data not available or reliable for countries which are not shown. Negative value means employment rate for non-EU-born is lower than for EU-born.*

6.2.2. Gender gaps in employment rates

As a result of the mixed picture across Member States, average employment rates in the EU* for the EU-born and non-EU-born are rather similar – at 64.6% and 63.3% respectively. Nevertheless the average rate of 59.9% for recent non-EU migrants is considerably lower. The difference is concentrated among recent female migrants, for whom the gap compared with their EU-born counterparts is almost 9 percentage points, reflecting the particular difficulties migrant women face in integrating into the labour market. However, it is not universally the case that employment rates for recent female migrants are always below those of EU-born women – in the Czech Republic, Cyprus, Hungary, Portugal and Spain their rates are actually higher (Chart 23), which suggests that these countries have attracted female workers in particular.

In many Member States, however, the integration of recent female immigrants appears particularly problematic, with employment rate gaps relative to EU-born women exceeding

25 percentage points in Austria, Belgium, Finland, France, the Netherlands and Sweden. Although in these countries they tend to moderate with time of residence in the host country, the gaps persist and remain of the order of 10–20 percentage points. This is also the case in Denmark and the UK, highlighting the importance of addressing the distinct disadvantage that migrant women appear to face in the labour market in many Member States (Box 1).

Indeed, Dayton-Johnson et al. (2007) report that even if, on the whole, the employment rates of female immigrants have grown over the past decade in parallel with those of the native-born, female immigrants still participate disproportionately less in the labour market than their male counterparts and native-born females. Furthermore, they highlight that even controlling for levels of education and age, migrant women's employment has tended to decline relative to that of native-born women in several countries (including Austria, Germany and the Netherlands).

Box 1: Migrant women in the European labour market

Migrant women are at a distinct disadvantage in many areas of their lives, compared with both migrant men and native-born women (the so-called 'double disadvantage'). This is one of the main findings of a recent study, carried out by RAND Europe on behalf of the European Commission, on the role of migrant women in the EU labour market.

The study aimed at improving the overall understanding of the labour market situation of migrant women and the policies that can affect them. It assesses the relative disadvantages experienced by migrant women, compared with native-born women and migrant men across a range of areas including housing, health, access to services and, crucially, employment.

The analysis of EU LFS data shows that migrant women tend to fare worse than both native-born women and migrant men across a range of indicators, including participation rates, employment, unemployment and whether employment is commensurate with skill levels. There are, however, considerable differences in the situation of various groups of migrant women in the labour market. For instance, one of the main findings is that, disaggregating migrant women into those born within the EU and those from third countries, it becomes apparent that migrant women from third countries are at an even greater disadvantage in the EU labour force than other groups such as EU-born migrant women, migrant men and native-born women.

Supporting, in-depth analysis carried out in Spain has provided a deeper understanding of the apparent greater parity of labour force performance with native-born women in Southern Europe, and of the large-scale programmes that have regularised the legal statuses of migrant women in those countries. In-depth analysis of the work–life balance of third country migrant women highlights the connection between the very low rates of employment of third country migrant women with young children and labour market disadvantage and differences in migrant integration policies.

By highlighting the unsatisfactory labour force situation of third country migrant women, the research raises pivotal questions for policy. If migration is to play a role in mitigating some of the current and expected shortages in labour supply (and improving the matching of skills to jobs), then the low participation rates, high unemployment levels and incidence of 'de-skilling' of third country migrant women need to be addressed as urgent policy concerns. However, as the policy discussion in this study indicates, disparate policies around immigration or integration are unlikely to address these issues effectively on their own. Instead, the research suggests there is a need for integrated and coordinated policies to improve the labour force situation of migrants, especially migrant women, and to realise the benefits that such improvements would bring.

The report is available at

http://ec.europa.eu/employment_social/employment_analysis/index_en.htm

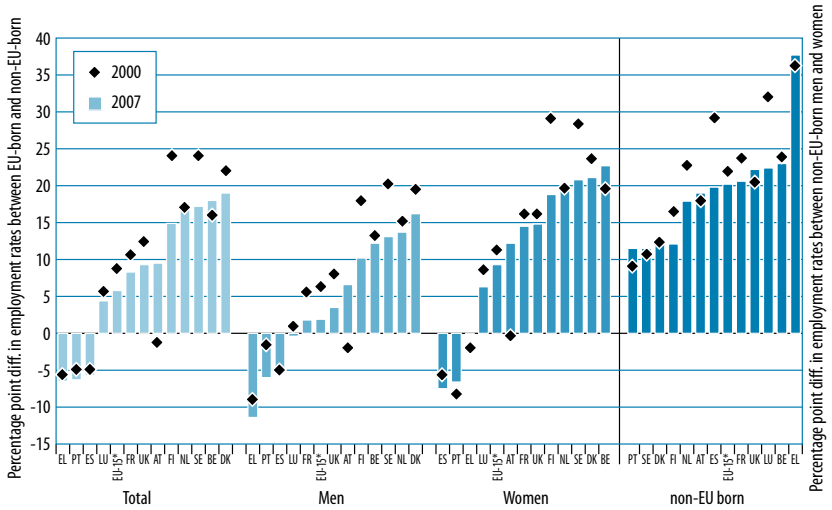
6.2.3. Developments in the employment rate gap between EU-born and non-EU-born

In the old Member States (excluding Germany, Ireland and Italy), the share in employment of non-EU-born migrants has increased significantly since 2000, from around 5.4% to around 8.4%. At the same time, the overall employment rate for third country migrants has risen in most of these Member States (averaging 3 percentage points for these countries), reducing the gap relative to the employment rate of the EU-born. This employment rate differential decreased in all countries except Austria and Belgium, falling most significantly (more than 5 percentage points) in the northern Member States of Finland and Sweden (Chart 24).

Men contributed more than women to the decrease in the overall gap in employment rates. Male employment rate differentials declined everywhere except Austria, while that for females decreased substantially only in the northern countries of Finland, Denmark, Sweden, in Luxembourg, and slightly in France and the UK. The overall gender gap in employment rates for the non-EU-born also decreased slightly, with significant declines in Finland, Luxembourg, the Netherlands, and Spain, but it rose in some Member States, most notably in Greece, Portugal and the UK.

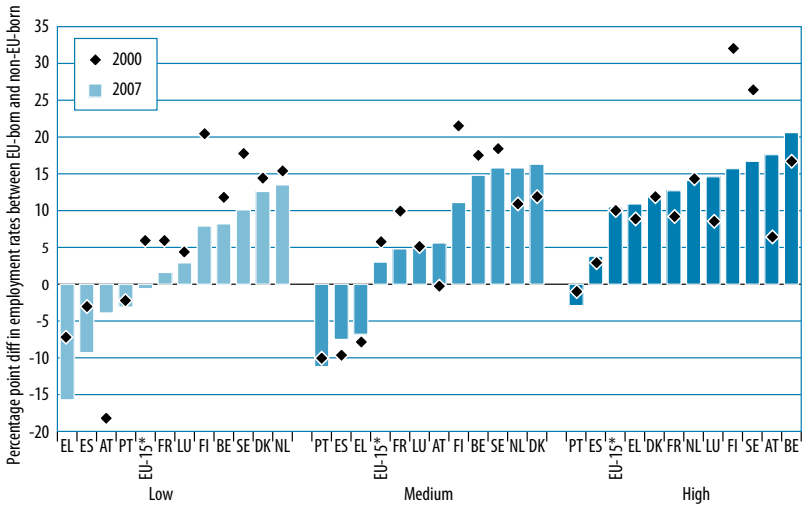
Focusing on skills, overall in the old Member States (excluding Germany, Ireland, Italy and the UK), the employment rate gap between the non-EU-born and the EU-born shrank significantly for the low-skilled, and to a lesser extent for the medium-skilled, but remained unchanged for the high-skilled. Positive gaps in employment rates of the low-skilled narrowed in all cases (Chart 25). However, the changes varied for medium- and high-skilled, ranging from significant reductions in the differential for both in Finland and Sweden, and for the medium-skilled in Belgium and France, to the gap widening considerably for both skill groups in Austria, in Luxembourg for the high-skilled, and in Denmark and the Netherlands for the medium-skilled.

Chart 24: Changes in employment rate gaps between EU-born and non-EU-born, and between non-EU-born men and women across the EU-15, 2000–2007



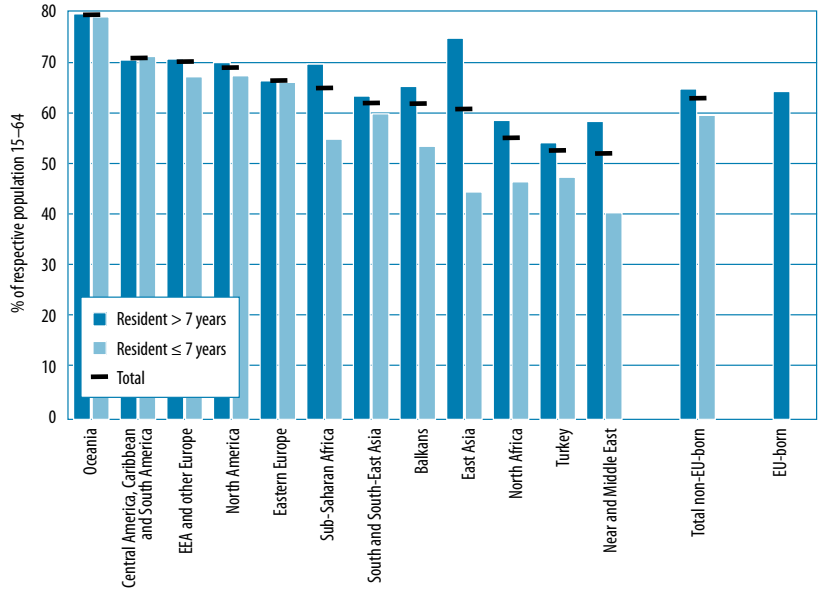
Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: EU-15 excludes DE, IE and IT. Positive value means employment rate for non-EU-born is lower than for EU-born, or employment rate for women is lower than for men.*

Chart 25: Changes in employment rate gaps between EU-born and non-EU-born by skill level across the EU-15, 2000–07



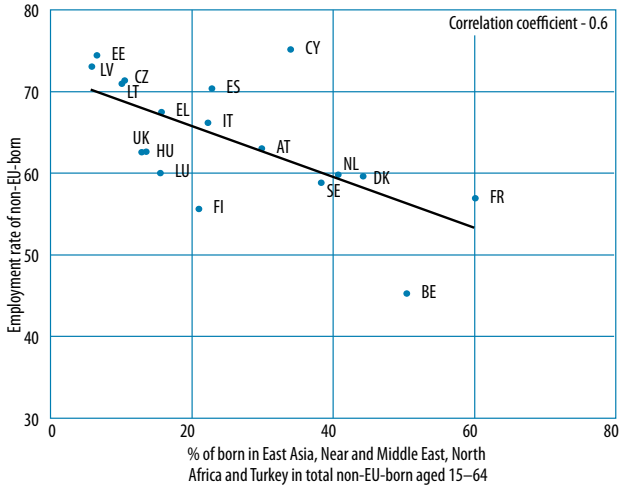
Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data. EU-15 excludes DE, IE, IT and UK. Positive value means employment rate for non-EU-born is lower than for EU-born.*

Chart 26: Employment rates for non-EU-born in the EU* by region of origin, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: BG, DE and IE excluded.

Chart 27: Employment rates for non-EU-born versus share of non-EU-born from the four worst-performing regions of origin across the EU*, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: Data not available or reliable for countries which are not shown.

6.2.4. Employment rate performance by region of origin

Examining employment rates for third country migrants according to their region of origin tends to suggest that, at the aggregate EU* level, migrants from East Asia, the Near and Middle East, North Africa and Turkey have worse labour market outcomes than migrants from other regions (Chart 26). Furthermore, differences in employment rates between recent and more established immigrants tend to be among the highest for these origin groups, with rates for recent immigrants lower than 50%. This implies that migrants from these regions face particular difficulties in integrating into European labour markets.

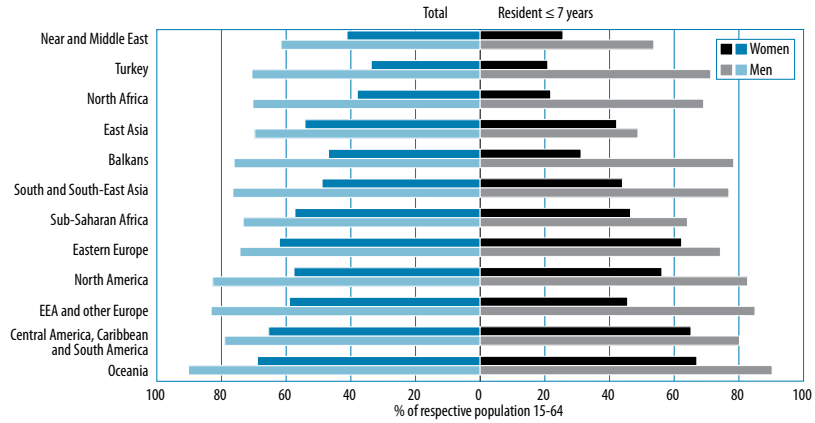
In contrast, apart from immigrants from other western societies, third country immigrants from Central and South America, Eastern Europe, South and South East Asia not only have overall rates similar to or higher than those of the EU-born but also show little difference in rates between recent and more established migrants, suggesting that they are able to achieve a much more rapid integration into European labour markets. Reflecting the above, there is a clear negative correlation across EU Member States between the employment rate of non-EU-born migrants and the share of migrants from the four 'worst-performing regions' identified above within the overall population of third country migrants (Chart 27).

The worse labour market outcomes for migrants from East Asia, North Africa, the Near and Middle east and Turkey appear to be due, on the one hand, to relatively low employment rates for men compared with other regions of origin, particularly for recent male migrants from East Asia and the Near and Middle East, and, on the other, to extremely low rates for recently arrived migrant women, especially those from Turkey and North Africa.

With regard to the latter, although these tend to improve markedly with increasing time of residence in the host country, they nevertheless remain well below the rates for migrant women from other regions (Chart 28). This may well reflect cultural attitudes which are more opposed to the labour market participation of women, with migrant women from middle- and low-income countries much more likely than men to remain outside the labour market, and which only moderate with increasing time spent in the new country of residence. Consequently, gender and cultural background seem to be important determinants of migrants' overall employment outcomes.

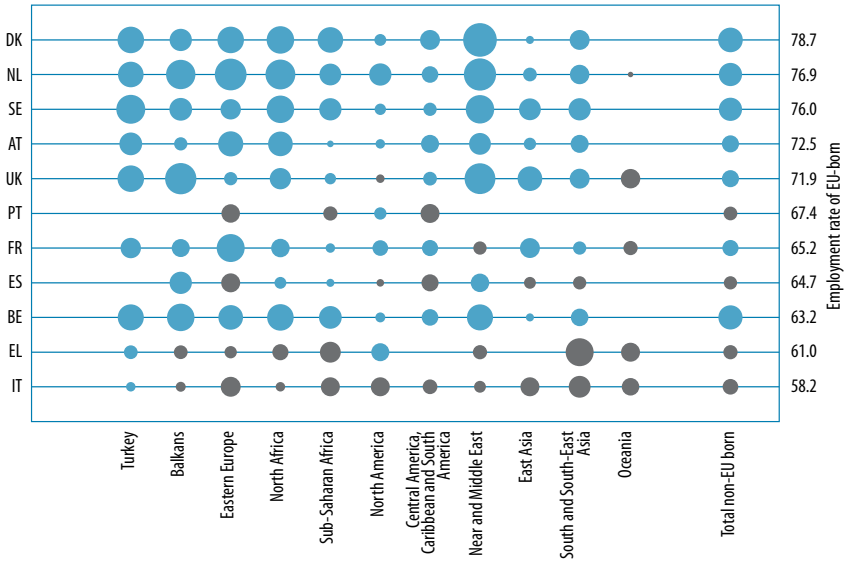
Looking at employment rate gaps according to region of origin across the individual Member States (Chart 29) indicates that some migrant groups tend to do better relative to the EU-born in certain Member States than

Chart 28: Employment rates for non-EU-born people in the EU* by gender and region of origin, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
*Note: * BG, DE and IE excluded.*

Chart 29: Difference between employment rates of EU-born and non-EU-born by region of origin in selected Member States, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: Data not reliable for groups which are not shown. The size of the bubble reflects the difference between employment rate of EU-born compared with the non-EU-born population. Light bubbles correspond to positive differences, dark bubbles to negative ones.

in others. For example, for migrants from Sub-Saharan Africa differences relative to the EU-born are positive in some Member States and negative in others: in Greece and Italy their employment rate is 10 percentage points or more higher than rates for the EU-born, while it is more than 15 percentage points lower in Belgium, Denmark, the Netherlands and Sweden. Similarly, Eastern European migrants do relatively well in Greece, Italy, Portugal and Spain, but relatively worse in Austria, Belgium, Denmark, France, the Netherlands and Sweden.

In the UK, the employment rate gap between the EU-born and people born in non-EU Eastern European countries is negligible, whereas for persons born in the Near and Middle East it is substantial, yet the opposite is true in France.

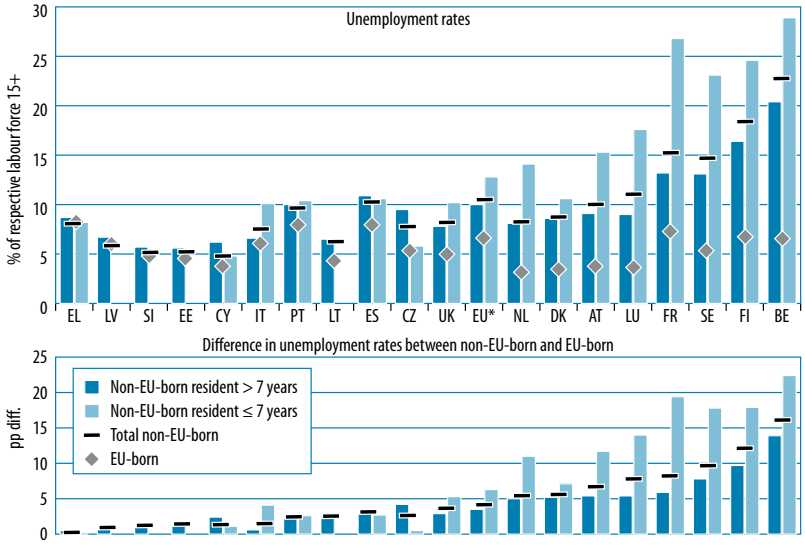
Overall, countries with the highest employment rates for the EU-born (the long-standing immigration countries of northern Europe and Austria) generally exhibit worse relative employment performance across all groups of migrants (except those from Oceania and North America). However, in the southern, new migration Member States where employment rates of the EU-born are lower (Greece, Italy, Portugal and Spain), nearly all migrant groups have higher employment rates than the EU-born. In contrast, Belgium and France display relatively low employment rates for the EU-born and even lower ones for non-EU-born from almost all regions.

6.3. Unemployment rates

Perhaps the most visible indicator of the problems faced by migrants in integrating in European labour markets is the unemployment rate. In most Member States, but not all, third country migrants are much more likely to be unemployed than the EU-born (Chart 30). In most of the traditional immigration countries of northern Europe (Belgium, Luxembourg, the Netherlands, Denmark, Finland and Sweden) and Austria, the unemployment rates for non-EU-born migrants are around three times higher than those for the EU-born. In other Member States such as Cyprus, Estonia, Greece, Latvia and Slovenia however, unemployment rates are broadly similar. On average, in the EU* the unemployment rate for non-EU migrants is 4.4 percentage points higher than that for the EU-born, with differences higher than 10 percentage points in Belgium and Finland.

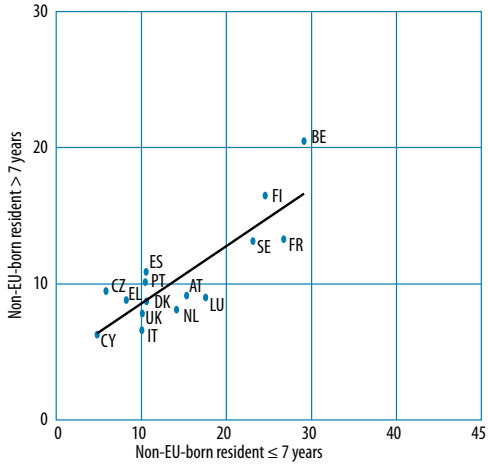
In most of the Member States (except the Czech Republic, Cyprus, Greece, Portugal and Spain), the more serious problems faced by recent non-EU migrants in integrating into EU labour markets are largely reflected in unemployment rates which are significantly higher than those of both the EU-born and more established migrants. For non-EU-born migrants resident seven years or less, the likelihood of being unemployed is more than four times higher compared with the EU-born in Austria, Belgium, Luxembourg, the Netherlands and Sweden. In absolute terms, their unemployment rates are more than 15 percentage points higher than those for the EU-born in Belgium, Finland,

Chart 30: Unemployment rates for EU-born and non-EU-born, and gap in unemployment rates between them across Member States, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: EU excludes BG, DE and IE. Data for LT and LU (non-EU-born), CY (non-EU-born res. > 7 years) and FI (non-EU-born res. ≤ 7 years) uncertain due to small sample size. Data not available or reliable for countries or groups which are not shown.*

Chart 31: Unemployment rates of recent and more established non-EU-born migrants across the EU*, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: Data for LT and LU (non-EU-born), CY (non-EU-born res. > 7 years) and FI (non-EU-born res. ≤ 7 years) uncertain due to small sample size. Data not available or reliable for countries which are not shown.

France and Sweden. The correlation between unemployment rates of recent non-EU migrants and more established migrants (Chart 31) again suggests that greater difficulties in achieving early integration into employment may subsequently be reflected in outcomes for longer-established migrants.

In most EU countries, third country migrants are also relatively more likely to be long-term unemployed than the EU-born, with differences in long-term unemployment rates especially pronounced in Belgium, Finland, France, Luxembourg and the Netherlands. However, in the southern Member States of Greece, Italy, Portugal and Spain the incidence of long-term unemployment among third country migrants is similar to or lower than for the EU-born (Chart 32).

6.4. Quality aspects of migrant employment

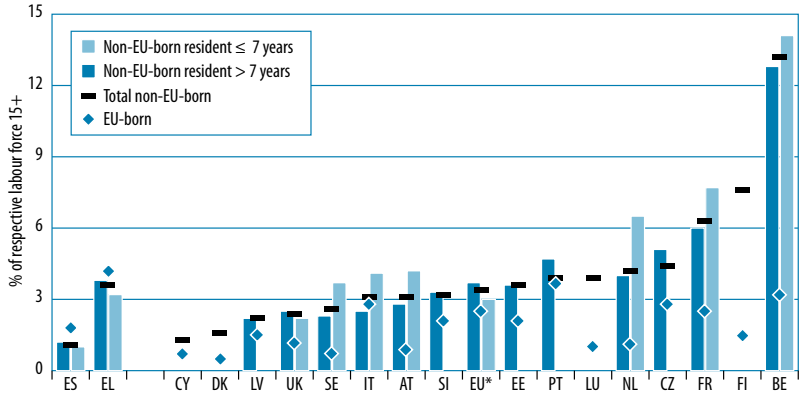
Overall labour market outcomes can give some quantitative indications of the labour market situation of migrants, but it is also important to examine other aspects of their employment. Such aspects include the quality of the jobs they hold and issues such as whether high employment rates for migrants in some Member States come at the expense of their concentration in lower quality employment and greater exposure to precarious work.

6.4.1. Types and conditions of employment

Overall, at EU* level, third country migrants tend to be employed in jobs of lower quality, defined in terms of their employment security and general working conditions (Chart 33). Precarious employment is significantly more widespread among third country migrants, with almost a quarter (22%) of non-EU-born employees in temporary contracts as opposed to 14% of the EU-born. Additionally, 90% of migrant employees with temporary contracts hold them involuntarily, as opposed to 85% of EU-born, meaning that overall one in five migrant employees is in involuntary fixed-term employment compared with 12% of the EU-born. The incidence of precarious employment is even more marked among recent migrants: 34% of recent migrant employees are in temporary work, a share around 2.5 times higher than for the EU-born. However, this partly reflects the fact that the activities in which many migrants work (e.g. agriculture, construction, and hotels and restaurants) are very seasonal industries with a high incidence of temporary jobs.

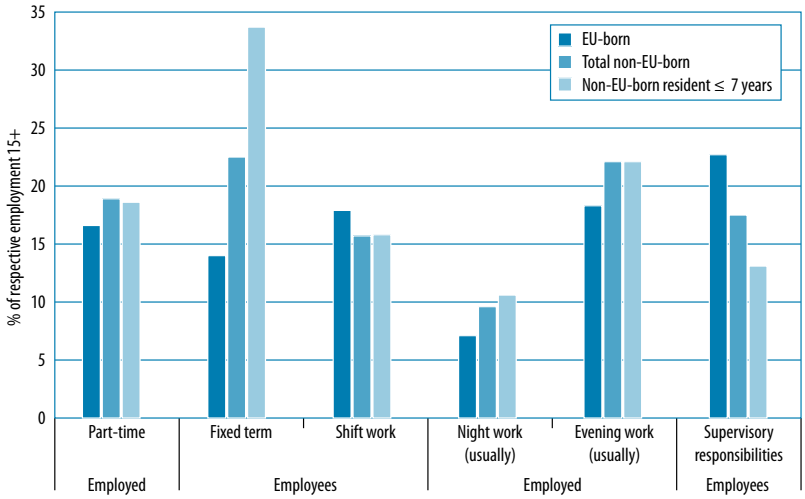
Across Member States, it is clear that recent migrants in many southern Member States especially face a high incidence of precarious employment (more than half of recent migrant employees in Cyprus, Portugal and Spain are in temporary employment). This is also the case in several northern countries such as Finland, the Netherlands and Sweden, and also in Slovenia (all around 40–50%) (Chart 34).

Chart 32: Long-term unemployment rates of non-EU-born versus EU-born across Member States, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: EU excludes BG, DE and IE. Data for DK, CY, LU, SI and FI (non-EU-born), and EL and AT (non-EU-born res. ≤ 7 years) uncertain due to small sample size. Data not available or reliable for countries or groups which are not shown.*

Chart 33: Prevalence of types of work arrangement in the EU* among EU-born and non-EU-born, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: BG, DE and IE excluded.

Nevertheless, for some recent arrivals, temporary employment may act as a stepping stone towards more permanent employment; at EU* level, the share of employees in temporary contracts subsequently drops from 34% to around 17% for more established non-EU migrants. However, in Spain there is more limited evidence of such a progression, as the incidence of temporary employment declines much less than in most other Member States, remaining high for more established migrants and much greater than for the EU-born.

At the same time, LFS data also indicates that in most southern Member States, the participation of migrants in lifelong-learning activities[47] is low and is less frequent than for the EU-born, while in contrast in most northern countries migrants participate to a much greater degree, and generally even more than the EU-born, especially recent migrants. The relatively low opportunities for migrants with regard to training or education in southern Member States have implications for their future prospects in the labour market and chances to progress into better quality jobs (Chart 35).

47 The percentage of the population aged 25–64 who participated in education or training activities in the previous four weeks.

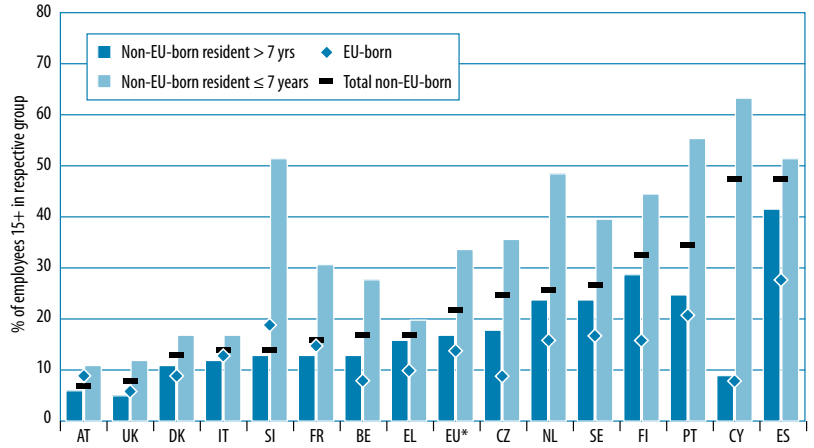
Focusing on working time, on average almost 20% of non-EU-born workers are in part-time employment – an incidence not much higher than that for the EU-born. Indeed, on average, there are no significant differences in average working hours in the main job between EU-born and non-EU-born workers (around 38 hours a week for both). In addition, there are no major differences in the share of those in full-time employment working long hours (more than 48 hours per week), while the share of workers holding more than one job is higher for the EU-born. Nevertheless, significantly more third country migrants than EU-born, particularly recent ones, express a desire to work more hours than they usually do (16% of the non-EU-born compared with 9% of the EU-born). Indeed, around 40% of migrants working in part-time employment do so involuntarily (i.e. they could not find full-time work), compared with 20% of EU-born part-time workers.

With regard to atypical forms of work, at EU* level migrants are not more likely to be employed in jobs involving shift work, including recent migrants. They are, however, slightly more likely to be in jobs which require them to usually work at night (10% of their employment versus 7% for EU-born) or during the evening (22% versus 18%). In terms of holding more responsible positions, third country migrants are clearly under-represented in positions with supervisory responsibilities, this being especially the case for recent migrants (although this may partly be explained by their relative youth compared with the EU-born population).

6.4.2. Sectoral and occupational features of migrant employment

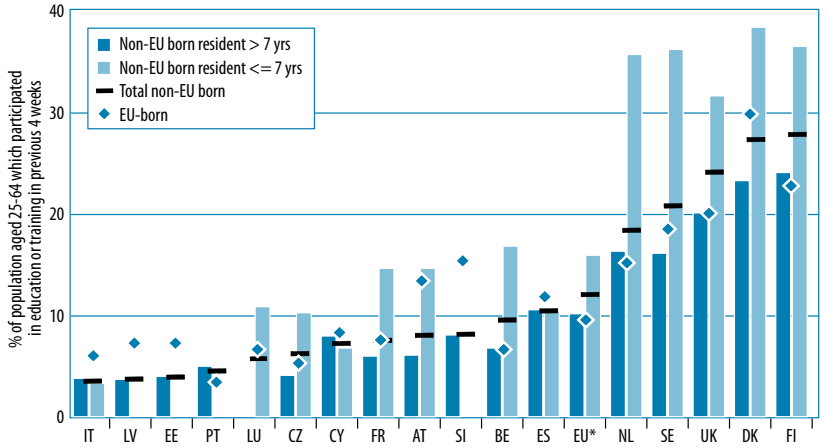
Compared to the EU-born, third country migrants' employment is relatively more concentrated in the hotels and restaurants, private household and construction sectors, and also, although to a lesser extent, in real estate renting and business activities (Chart 36). Recent non-EU migrants also tend to work in these sectors more often than EU-born people, but generally also much more often

Chart 34: Incidence of temporary employment for EU-born and non-EU-born employees across Member States, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: EU excludes BG, DE and IE. Data for CY (non-EU-born resident > 7 years) and SI and FI (non-EU-born resident ≤ 7 years) uncertain due to small sample size. Data not available or reliable for other countries which are not shown.*

Chart 35: Participation in lifelong-learning activities for the EU-born and non-EU-born across Member States, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: EU excludes BG, DE and IE. Data for CY (non-EU-born resident ≤ 7 years). LU (non-EU-born) uncertain due to small sample size. Data not available or reliable for countries or groups which are not shown.*

than more established migrants. This is most notably the case regarding the first three sectors, which seem to be 'gateway' sectors for non-EU migrants to enter the labour market. Of particular note is the high share of recent non-EU migrants in the private household sector – a feature which is likely to continue in the future as demographic ageing and greater labour market participation of women continue to create demand for childcare and elderly care services.

In contrast, recent migrants are significantly under-represented in the public administration and education sectors (clearly reflecting the exclusion of third country nationals from important parts of the public sector), in agriculture[48] and also in the manufacturing and wholesale/retail trade sectors, although the latter two do account for a notable proportion of recent migrant employment.

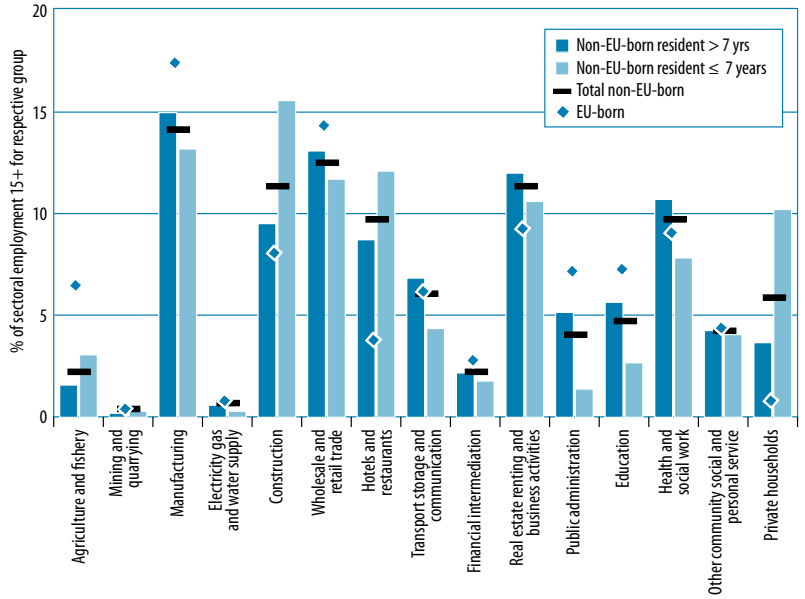
Overall, the vast majority of recent third country migrants are employed in the services sector, which accounts for around two thirds of their employment, with industry accounting for almost one third and agriculture around 3%. The service sectors where recent migrants have mainly found work are the lower-skilled, less knowledge-intensive ones such as hotels and restaurants, wholesale and retail trade, and private households.

The sectoral breakdown of third country migrants' employment varies considerably across countries, however (Table 4). For example, 32% of more established migrants (and 41% of recent migrants) work in construction in Greece compared with 2% in Sweden, while in contrast 20% are employed in health and social work in Sweden compared with only 2.6% in Greece. 16% of recent migrants to Spain work in private households, but only 3.4% in France. The main sector of migrants' employment within countries also varies across Member States. For example, third country migrants work mainly in manufacturing in Austria, Italy and the Netherlands, and in construction in Greece, Spain and in Portugal (for recent migrants). More established migrants work principally in wholesale and retail in Belgium and Portugal; in real estate, renting and business activities in France and the UK; and in health and social work in Denmark and Sweden. Recent migrants, however, work mainly in wholesale and retail trade in Belgium; in real estate, renting and business activities in France and Sweden; and in health and social work in Denmark and the UK.

With regard to the occupational structure of employment, compared with the EU-born, a notably higher share of third country migrants hold jobs in elementary occupations, and – although to a lesser extent – as service workers or shop and market sales workers, and craft and related trades workers – i.e. jobs which require low- to medium-skill levels (Chart 37). Recent non-EU migrants tend to work in these occupations even more often, being further over-represented most notably in the elementary occupations (where they are three times more likely to be employed than the EU-born). Indeed, around a third (29%) of recent migrants are employed in elementary occupations, one fifth as service workers and shop and market sales

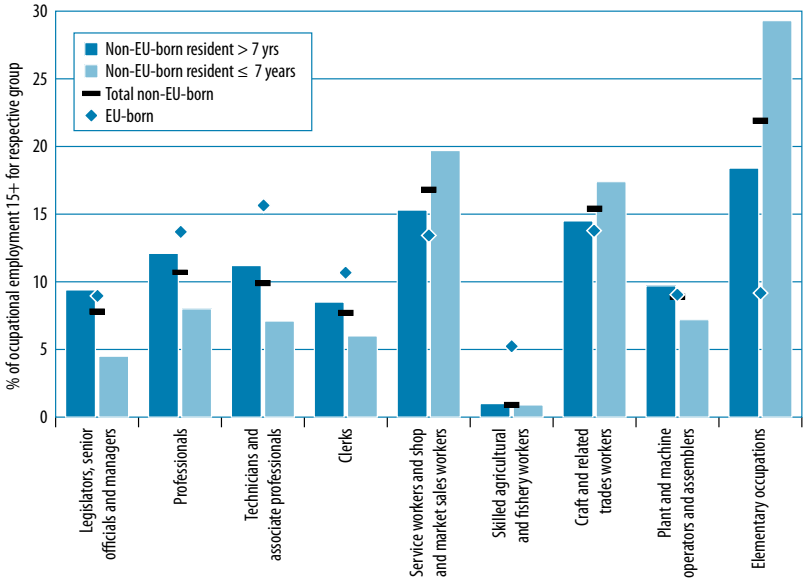
48 LFS-based results for this sector may be affected by the fact that much employment in agriculture is seasonal and very short term, and as such may not be well covered in the LFS.

Chart 36: Sectors of employment in the EU* of non-EU and EU-born, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: BG, DE and IE excluded.

Chart 37: Occupational distribution in the EU* of non-EU and EU-born, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: BG, DE and IE excluded.

workers, and around 17% in craft and related trades workers occupations. In total these three occupational groupings account for two thirds of all employment among recent migrants. For all other occupation groupings, the shares are under 10%.

This emphasises once again that recent migrants help to address in particular labour market shortages at the 'low end' of the jobs spectrum, including those for basic services to cover the increasing need for care and household-based activities and to fill the vacuum for low-skilled labour supply as the EU-born population continues to improve its skill base.

In contrast, non-EU-born migrants are strongly under-represented in the more skilled non-manual occupations, especially in the technicians and associate professionals category, but also in the medium-skilled occupations of clerks, and skilled agricultural and fishery workers. Although migrants are also under-represented in the occupational grouping requiring the highest skill levels (the professionals category), there is no significant difference in shares of employment as legislators, senior officials and managers between the more established migrants and the EU-born, although the gap for recent immigrants is substantial.

Comparing the situation of recent and established migrants indicates that in general there is an adjustment over time in migrants' occupational employment structure towards that of the EU-born population, most notably through movement out of the elementary occupations (although their share remains relatively high compared with the EU-born) and the other low- to medium-skilled occupations, and into the higher-skilled professions.

In conclusion, the sectoral and occupational structure of recent migrants' employment generally corresponds to low barriers to entry and requirements in terms of specific skills. As such, it can provide third country migrants with an entry point to the labour market and a means to acquire necessary skills such as language proficiency. However, comparison with the sectoral and occupational concentration of longer-established migrants suggests that, even though there is some 'normalisation' to patterns for the EU-born population, there may be restricted scope for movement between main occupational groupings for third country migrants, since differences in patterns of sectoral and occupational employment generally persist.

Table 4: Sectoral distribution of employment of non-EU-born in selected Member States, 2007

	Agriculture (A) Fishery (B)	Mining and quarrying (C) Manufacturing (D) Electricity gas and water supply (E)				Construction (F)	Wholesale and retail trade (G) Hotels and restaurants (H) Transport storage and communication (I)				Financial intermediation (J) Real estate renting and business activities (K)			Public administration (L) Education (M) Health and social work (N) Other community social and personal service (O) Private households (P)					
		C	D	E	Total	F	G	H	I	Total	J	K	Total	L	M	N	O	P	Total
Non-EU-born resident > 7 years																			
BE	:	:	13.8	:	14.7	6.0	15.2	9.2	8.7	33.0	(2.1)	12.5	14.6	7.4	4.9	12.3	4.8	:	30.5
DK	:	:	16.0	:	16.4	:	13.7	8.4	8.6	30.6	:	11.2	13.3	(3.7)	8.1	19.8	5.4	:	37.1
EL	4.4	:	16.7	:	16.9	31.9	9.9	10.1	2.6	22.5	:	3.0	3.4	:	:	2.6	2.7	13.7	20.9
ES	2.0	(0.4)	9.9	0.4	10.8	19.5	16.6	15.4	4.8	36.8	1.4	7.7	9.1	2.4	2.8	6.6	2.7	7.3	21.9
FR	0.9	:	12.9	0.8	13.7	6.1	11.7	7.8	8.0	27.5	2.4	14.6	17.0	8.6	6.7	12.7	4.0	2.8	34.8
IT	3.1	(0.2)	23.8	(0.2)	24.1	12.4	12.9	7.4	4.4	24.7	0.8	9.3	10.1	1.6	2.7	4.9	5.6	10.8	25.5
NL	1.2	:	17.7	(0.6)	18.4	4.7	11.9	6.8	7.1	25.8	2.8	15.8	18.7	7.0	5.1	15.2	3.9	:	31.2
AT	:	:	23.2	:	23.6	11.9	15.8	10.9	5.9	32.6	(1.0)	12.4	13.4	2.4	(1.8)	7.8	5.3	:	17.7
PT	:	:	10.7	:	11.3	11.4	15.8	7.2	5.8	28.8	3.1	10.3	13.4	8.6	9.2	9.2	4.0	2.9	33.9
SE	:	:	16.6	:	16.8	2.0	11.4	8.7	7.8	27.9	0.7	13.2	13.9	3.8	11.6	19.9	3.7	:	39.0
UK	:	:	10.5	:	11.3	4.2	12.6	8.0	8.3	28.9	4.5	15.6	20.1	6.7	8.2	14.8	4.9	0.5	35.2
EU*	1.6	0.2	15.1	0.6	15.9	9.6	13.2	8.8	6.9	28.9	2.2	12.1	14.3	5.2	5.7	10.8	4.3	3.7	29.7
Non-EU-born resident ≤ 7 years																			
BE	:	:	14.3	:	14.4	(7.4)	15.9	12.0	(6.8)	34.7	:	14.1	16.1	(6.0)	(6.1)	(6.7)	:	:	25.5
DK	:	:	16.7	:	16.7	:	12.3	10.3	(7.3)	29.9	:	14.9	15.8	:	(6.7)	19.9	:	:	32.8
EL	5.3	:	13.0	:	13.6	41.4	10.3	9.8	:	22.5	:	:	:	:	:	:	:	13.8	15.2
ES	5.4	:	10.9	0.3	11.3	21.6	12.1	15.6	3.0	30.7	0.8	6.4	7.2	0.4	1.1	3.0	3.1	16.2	23.8
FR	:	:	14.2	:	14.7	13.5	14.7	9.4	5.4	29.5	(1.7)	16.1	17.8	3.3	4.1	8.1	5.0	3.4	23.9
IT	3.2	(0.4)	24.1	:	24.5	17.2	8.4	8.6	4.4	21.4	:	8.4	8.4	(0.3)	(0.3)	3.4	5.2	16.0	25.2
NL	(3.9)	:	21.6	:	22.5	(6.1)	15.5	11.7	(3.5)	30.7	(2.8)	16.0	18.8	:	:	11.2	(3.2)	:	18.0
AT	:	:	22.3	:	22.8	9.5	14.4	19.9	(6.9)	41.2	:	11.0	11.7	:	:	(4.5)	(5.0)	:	13.2
PT	:	:	10.0	:	10.5	26.8	9.9	12.7	:	25.9	:	9.9	10.1	:	:	:	8.3	12.2	25.2
SE	:	:	10.8	:	11.0	4.3	9.6	15.5	6.4	31.5	:	19.0	19.8	:	9.9	17.1	4.7	:	32.9
UK	:	0.8	8.9	:	10.1	4.4	11.8	9.5	6.4	27.7	5.4	17.3	22.7	3.4	6.2	19.9	4.6	:	34.7
EU*	3.1	(0.3)	13.3	(0.3)	13.9	15.7	11.8	12.2	4.4	28.4	1.8	10.7	12.5	1.4	2.7	7.9	4.1	10.3	26.4

Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: EU excludes BG, DE and IE. ':' data not reliable. Data in brackets uncertain due to small sample size.*

6.4.3. Wages

A particular aspect of job quality where migrants may do significantly worse than non-migrants concerns wages. Based on a survey of the literature analysing migrants' economic performance, Dustmann (2008) finds that for all countries and most immigrant groups, initial earnings for migrants are lower than those for comparable native-born individuals. He reports that for some groups and countries, this gap slowly closes over time, but that in some cases, the initial disadvantage remains.

Furthermore, he reports various study findings, based on analysis of microdata, which confirm that immigrants have lower earnings. For example, for Sweden, Rooth and Ekberg (2003) find that immigrants' annual earnings are lower than those of comparable native-born workers, with differentials of up to 15%. For Spain, Carrasco et al. (2008) report that in 2002, mean wages of male immigrants were about 40% lower than those of male native-born workers. For the UK, Dustmann and Fabbri (2005) conclude that while immigrants from most white immigrant communities have on average higher wages than British-born whites, immigrants from all ethnic minority communities have lower wages, with differentials being substantial for some groups (for instance they reach about 40% for male Bangladeshis).

Nevertheless, migrants' comparatively low wages at entry may not necessarily be a result of discrimination but rather may reflect the fact that their skills are not fully transferable to the host country (e.g. they may be limited in using their skills effectively because of a lack of proficiency in the host country language). Hence, given that they will be less productive to start with than their skills level would imply, it is understandable that there would be a wage disadvantage at entry and that over time migrants' wages would catch up with those of non-migrants.

An important caveat is that much depends on the intended time of stay of immigrants, since migrants who do not intend to stay for a long period may not have the incentives and desire to invest in the skills needed to allow full adaptation to the host country labour market. Furthermore, an important limitation in examining the developments in migrants' wages over time is the effect of return and onward migration, which can be substantial in some countries, and its impact on the stocks of remaining migrants.

6.4.4. Undeclared work and illegal employment

Undeclared work[49] and illegal employment are the main pull factors of illegal immigration. Indeed one of the main factors encouraging illegal immigration into the EU is the possibility of finding such work[50].

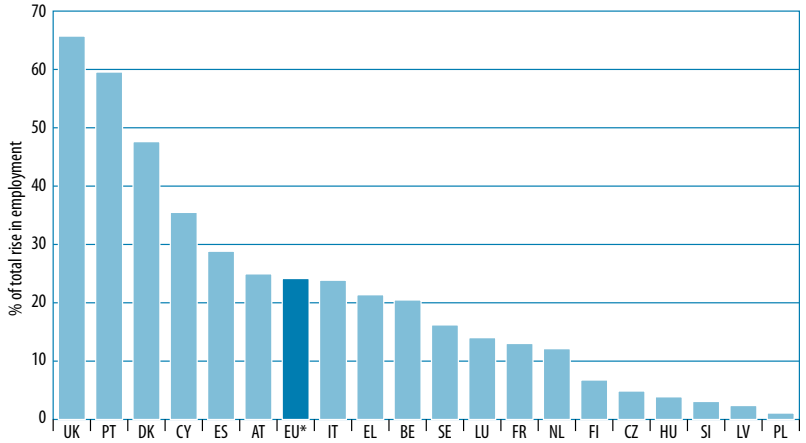
Within the EU, undeclared work was estimated[51] to account for between 7% and 16% of EU GDP[52] in 2004, although the extent and characteristics of undeclared work appear to differ widely in the Member States. For example, it can account for as much as 20% of GDP or more in some Southern and Eastern European countries. A recent stocktaking by the European Employment Observatory network[53] indicates that undeclared work is still on the rise in several Member States, while the growing demand for household and care services could contribute to extend it further.

Illegally staying migrants work mostly in the low-skilled sector such as in construction, agriculture, catering or cleaning and housekeeping services. Often they are hired for the so-called '3D'-jobs (dirty, dangerous and demanding work), which are rejected by the domestic labour force, and their wages are frequently below the official minimum. Such work not only results in poor quality employment for migrants, but also has negative implications for their future labour market prospects. The ILO (2008) points out the importance of regularisation of informal work especially for migrant women, highlighting in particular that the lack of education and training opportunities has implications for the sustainability of migrants' employment.

High levels of taxation and social security contributions, a high administrative burden and the low awareness of sanctions are traditionally seen as the drivers of undeclared work, as confirmed by a recent survey (Eurobarometer, 2007b), but the increasing trend towards sub-contracting and false self-employment also calls for special attention. A recently adopted Commission Communication (European Commission, 2007f) recommends how to step up the fight against undeclared work, through a combination of measures intended to reduce its attractiveness (e.g. through reforms of tax and social protection systems), to lower the cost of compliance with regulations and to raise awareness.

49 Undeclared work is defined as 'any paid activities that are lawful as regards their nature but not declared to public authorities, taking into account differences in the regulatory system of Member States'.
50 Of course such work is only partly performed by illegally residing third-country nationals or legal third-country nationals working in breach of their residence status.
51 The best available estimates so far, based on indirect methods, of the overall level of undeclared work in the Member States were collected through a study carried out for the Commission in 2004 (European Commission, 2004b.)
52 Council Resolution on transforming undeclared work into regular employment, October 2003.
53 www.eu-employment-observatory.net.

Chart 38: Share of employment of recent non-EU-born migrants in total employment expansion 2000–07 across Member States



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: EU excludes BG, DE, IE and RO. Data for PL and SI uncertain due to small sample size. Data not available or reliable for countries which are not shown.*

7. Labour market impact of recent immigration – empirical evidence

7.1. Contribution to economic and employment expansion

According to recent estimates (European Commission, 2007c) using a growth-accounting framework[54] to examine the key drivers and sources of growth in Europe, migration is estimated to have accounted for 21% of the average GDP growth in the EU-15 over the period 2000-2005. For the EU-15 as a whole, net migration contributed 0.4 percentage points to the average annual growth rate of 2% over this period – well above the contribution from more traditional policy fields such as youth or female participation.

Underlying this, third country migrants have made an important contribution to overall employment growth in the EU*. The annual rate of growth in employment of third country migrants reached 12% in 2007, compared with employment growth of 1.3% for the EU-born population.[55] However, the importance of the contribution of third country migrants to recent employment expansion varies substantially across Member States. Non-EU-born workers who arrived within the last seven years account for less than 0.5% of total employment in most of the new Member States and Finland, but represent more substantial shares in the UK (3%), Spain (7%) and Cyprus (8%).

At EU* level, the contribution of recent third country migrants to the expansion in employment over 2000–07 has been substantial, accounting for an employment increase of almost 3.7 million[56] or around a quarter of the overall rise in employment. In absolute terms, the largest rises in employment for recent migrants occurred in Spain (1.4 million), the UK (0.8 million) and Italy (0.5 million), with the old EU Member States (excluding Germany and Ireland) accounting for the vast majority (98%) of all recent third country migrants in employment. However, in terms of their relative share of the employment expansion within individual Member States (Chart 38), recent migrants' contribution has been most significant in the UK and Portugal, where they have played a dominant role in employment expansion, comprising 66% and 60% respectively of the overall in rise in employment since 2000, followed by Denmark (48%) and Cyprus (36%). For the new immigration countries of Italy and Spain, the shares were a more moderate 24% and 29%, indicating that recent migrants have been part of a broad employment expansion which mostly affected the existing population.

7.2. Impact on unemployment rates and wages

Most recent empirical studies point to only limited effects of immigration on the labour market situation of native workers. For example, Dustmann et al. (2003) argue that if there is an impact of immigration on unemployment then it is statistically poorly determined and probably small in size. The general finding that migration has little impact on unemployment is supported by the fact that across EU Member States there is no clear link between changes in overall unemployment rates, or those specifically for native-born workers, between 2000 and 2007 and the share of recent non-EU-born migrants in the labour force (Chart 39). Only in the Belgium, Luxembourg, the Netherlands, Sweden and most noticeably Portugal do changes in the unemployment rate correlate positively with the labour force share of recent migrants.

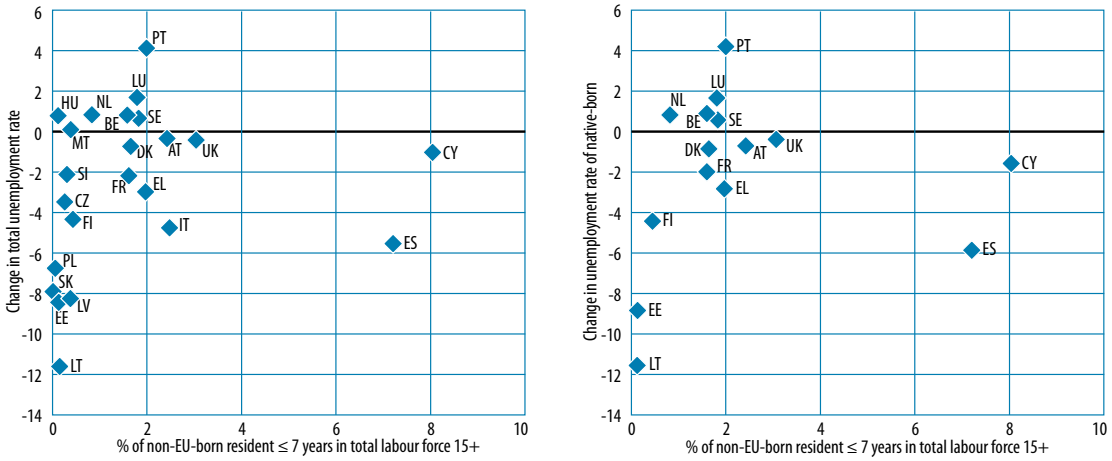
Münz et al. (2007b) review the existing empirical evidence and find that the impact on wages and employment in the EU is on average negative, but very small. This suggests that the potential downward effect is offset by additional creation of employment due to economies of scale and spillovers (which increase productivity)

54 The growth-accounting analysis mechanically considers the role of migration in the change in overall population size. There is no breakdown of migrants by age, gender, or educational attainment. While the analysis highlights an increasing role of migration as a source of growth, it cannot assess the full economic impact of migration, which operates through a range of channels.

55 As pointed out in OECD (2007) the growth in immigrant employment can be explained in part by the increase in the employment rate of immigrants but it is without doubt the new entries of foreign workers which have played the bigger role over the period since 2000.

56 Excluding Bulgaria, Germany, Ireland and Romania. Romania is excluded from the analysis of changes between 2000 and 2006 due to a substantial break in the employment series during this period. In any case, immigration to that Member State has been negligible.

Chart 39: Change in total unemployment rate (total and of native-born), 2000–07 versus the share of recent migrants in the labour force 15+ across the EU, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: Data for PL and SI (share of non-EU-born) uncertain due to small data size. Data not available or reliable for countries which are not shown.

as well as higher demand for goods and services. However, they also report that this effect is not necessarily the same across EU Member States. In Greece, Italy, Spain and the UK, it is found to be negligible or slightly positive, with immigrants apparently acting as complements to native-born workers. In contrast, negative effects were observed in Belgium, where new immigrants competed with immigrants who had arrived during earlier periods for available low-skilled jobs, and in Germany, reportedly due to the rigidity of the labour market and the comparatively low mobility of German workers.

A simple comparison of the relative changes in sectoral wages since 2000 and the share of recent migrants in sectoral employment, for selected countries and within NACE sectors C to K[57], indicates that generally there is no clear relationship across all Member States (Chart 40). However, there does appear to be signs of a negative correlation in Austria, the Netherlands, and to a lesser extent Spain, although this is in all cases heavily influenced by the rather atypical situation in the hotels and restaurants sector. In contrast, there are signs of a positive relationship in Italy, Portugal and the UK, pointing to signs of greater complementarity of recent migrants with existing workers.

Several studies (see for example Longhi et al., 2004) conclude that the wages of earlier immigrants are much more affected by new immigrants than the wages of the native-born workers. This finding is in line with the theoretical expectation, as recent and earlier immigrants tend to be closer substitutes in the labour market than recent immigrants and native-born workers.

In conclusion, most empirical studies find that immigration creates winners and losers in the short term. Winners are mainly the immigrants themselves and their employers, but consumers may also benefit through wider choice, reduced inflationary pressure and lower prices.[58] Losers are mainly those employed in low-paid jobs and in direct competition with newly arrived migrants (several studies find this is likely to include a significant share of migrants already established in the host country). However, in the long run, the economic impact of immigration on the existing population is likely to be small on average.

7.3. Main features of recent migrants' employment

7.3.1. Broad features of recent migrants' employment

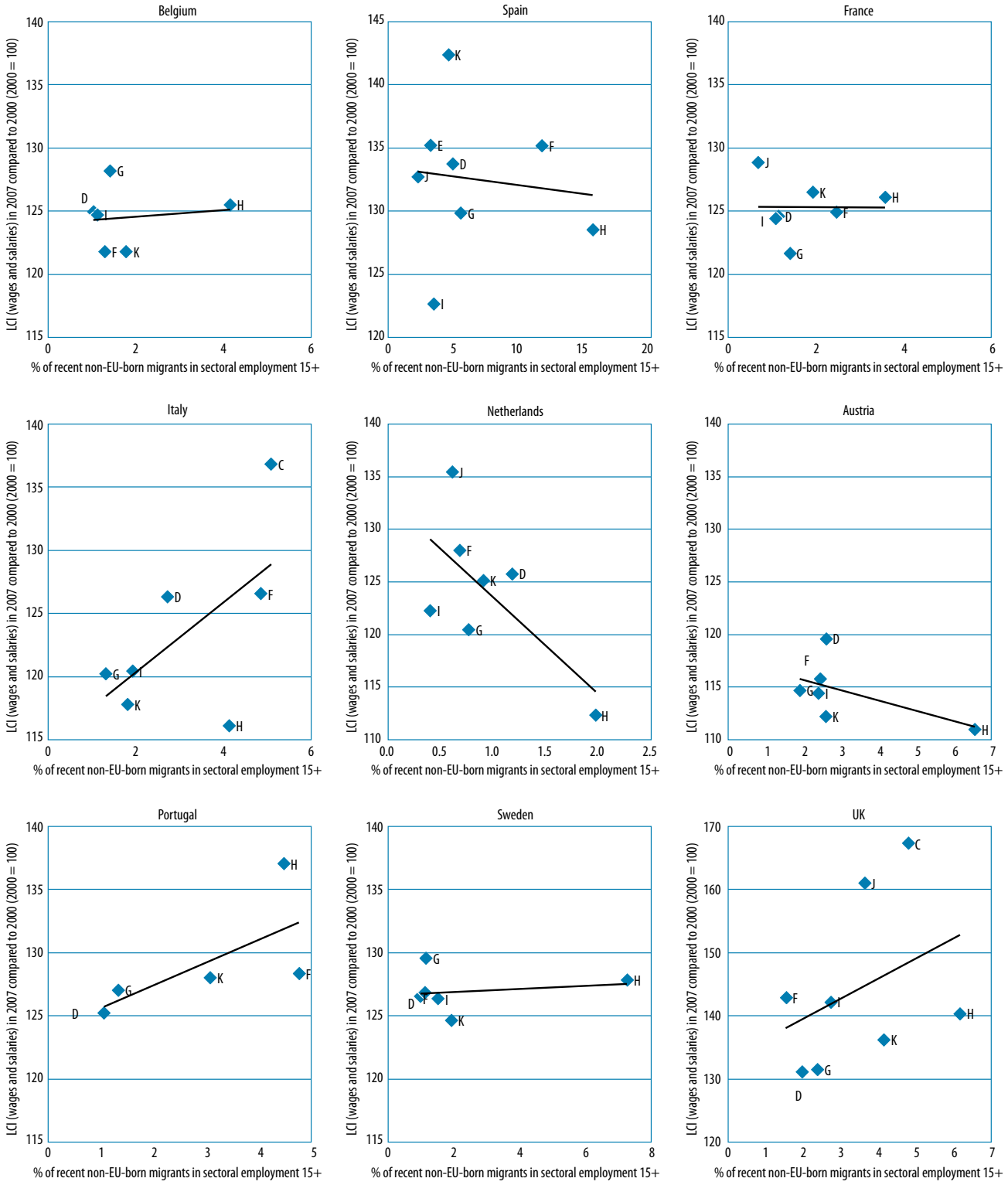
Comparing the gender and age characteristics of recently arrived third country migrants in employment in 2007 with those of the overall net change in employment between 2000 and 2007 reveals substantial differences. The population of recently arrived migrants in employment consists of a higher share of men (57%) – the opposite of the situation for the overall employment expansion in the EU – while the age composition is also generally reversed, with a much higher share of younger workers among recent migrant workers as opposed to a greater share of older workers in the overall net employment change (Chart 41). In this sense the influx of recent third country migrants has provided an element of counterbalance, or complementarity, to the overall employment trends in the EU since 2000, especially in terms of age-related developments and injecting a supply of relatively younger workers.

Focusing on the type of employment recent third country migrants are engaged in (Chart 42), it is clear that the vast majority of recent migrants are working as employees (93%) rather than as self-employed (7%), and in full time (81%) rather than part-time (19%) employment. Consequently, self- and part-time employment are not strong features of recent

57 Statistical classification of economic activities. C to K covers essentially industry and market services.

58 Immigration has a tendency to reduce inflationary pressure and consumers may therefore benefit from immigration due to lower prices.

Chart 40: Developments in labour cost index (wages and salaries), 2000–07 versus share of recent migrants by sectors in selected Member States, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data and labour cost index.
Note: NACE sectors: Mining and quarrying (C), Manufacturing (D), Electricity, gas, steam and hot water supply (E), Construction (F), Wholesale and retail trade, repair of motor vehicles, motorcycles and personal and household goods (G), Hotels and restaurants (H), Transport, storage and communication (I), Financial intermediation (J), Real estate, renting and business activities (K).

migrants' employment. However, a significant share is found to be engaged in relatively precarious employment, with 34% of recent migrant employees working under fixed-term arrangements.

7.3.2. Sectoral and occupational features of recent migrant employment and its contribution to addressing labour shortages

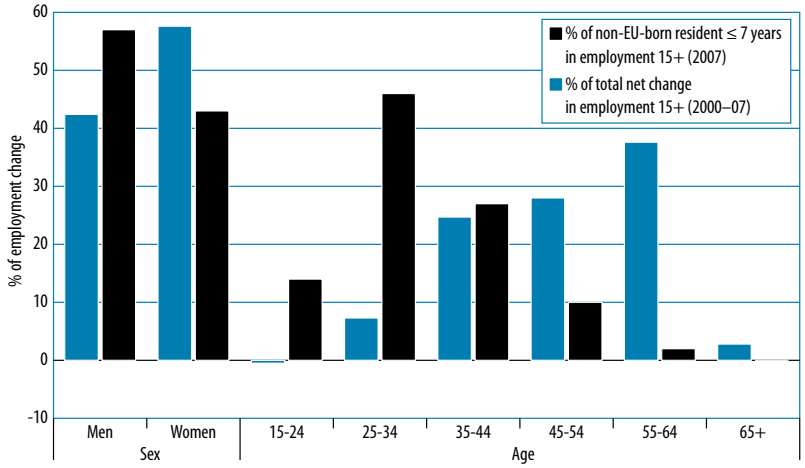
Recent third country migrants have played an important role in alleviating labour market and skill shortages. This is exemplified by their tendency to be employed in sectors where labour demand has been greatest over the period 2000–07. For example, across the EU Member States, a high share of recent migrants is employed in hotels and restaurants, and in construction in France and Portugal. These sectors have been among those with the highest demand for new workers in these countries, as indicated by average job vacancy rates[59] over 2000–07 (Chart 43). Overall, therefore, recent immigrants' employment tends to have concentrated in sectors suffering from labour shortages in many Member States.

Comparing the sectoral employment distribution of recently arrived third country migrants in employment in 2007 with that for the overall change in employment in the EU* between 2000 and 2007 indicates that recent migrants have mainly been employed in expanding sectors (Chart 44). However, it is apparent that migrants have also found employment in the contracting agricultural and manufacturing sectors, where overall employment has fallen substantially since 2000. Within industry, they have also made a strong contribution to the expansion in employment in the construction sector (accounting for almost a quarter of the rise in employment in this sector).

Within services, the impact of recent migrants relative to the total increase in sectoral employment has been greatest in the private households sector, where migrants account for around two thirds of sectoral employment expansion. Other sectors where recent migrants have contributed relatively strongly to sectoral employment rises were the wholesale and retail trade, hotels and restaurants, transport, storage and communication and financial intermediation sectors, where they accounted for between around a quarter and a third of employment expansion. Although the absolute number of recent migrants employed in the real estate, renting and business activities, and health and social work sectors is sizeable (0.3–0.4 million), the relative contribution to expansion in these sectors was much more limited (around 9% and 11% respectively), as was that in the education and public administration sectors (7% and 5%).

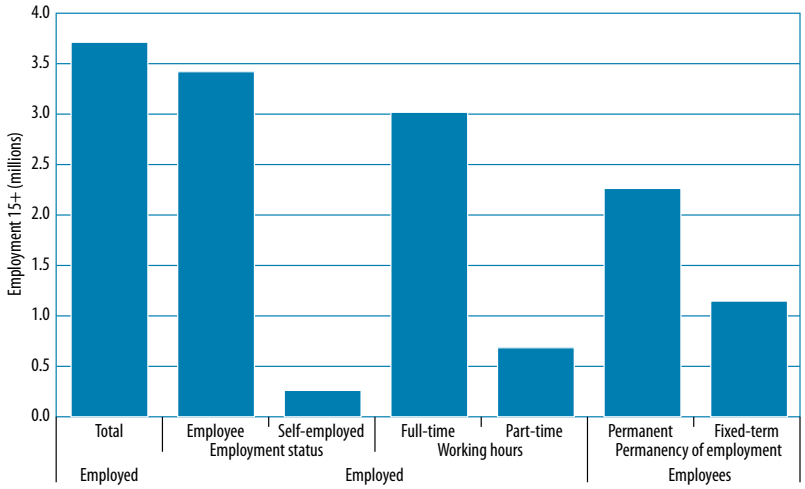
As to the occupational features of employment, in terms of overall employment expansion in occupational groupings (Chart 45), the contribution of recent third country migrants has been most significant in elementary, the plant and machine operators and assemblers (almost 40% of employment expansion in these groups), and service workers and shop and market sales workers (34%) occupations. Furthermore, a significant share of recent migrants have been employed

Chart 41: Characteristics of non-EU-born workers resident for seven years or less and of total employment expansion 2000–07 in the EU*



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: BG, DE, IE and RO excluded.

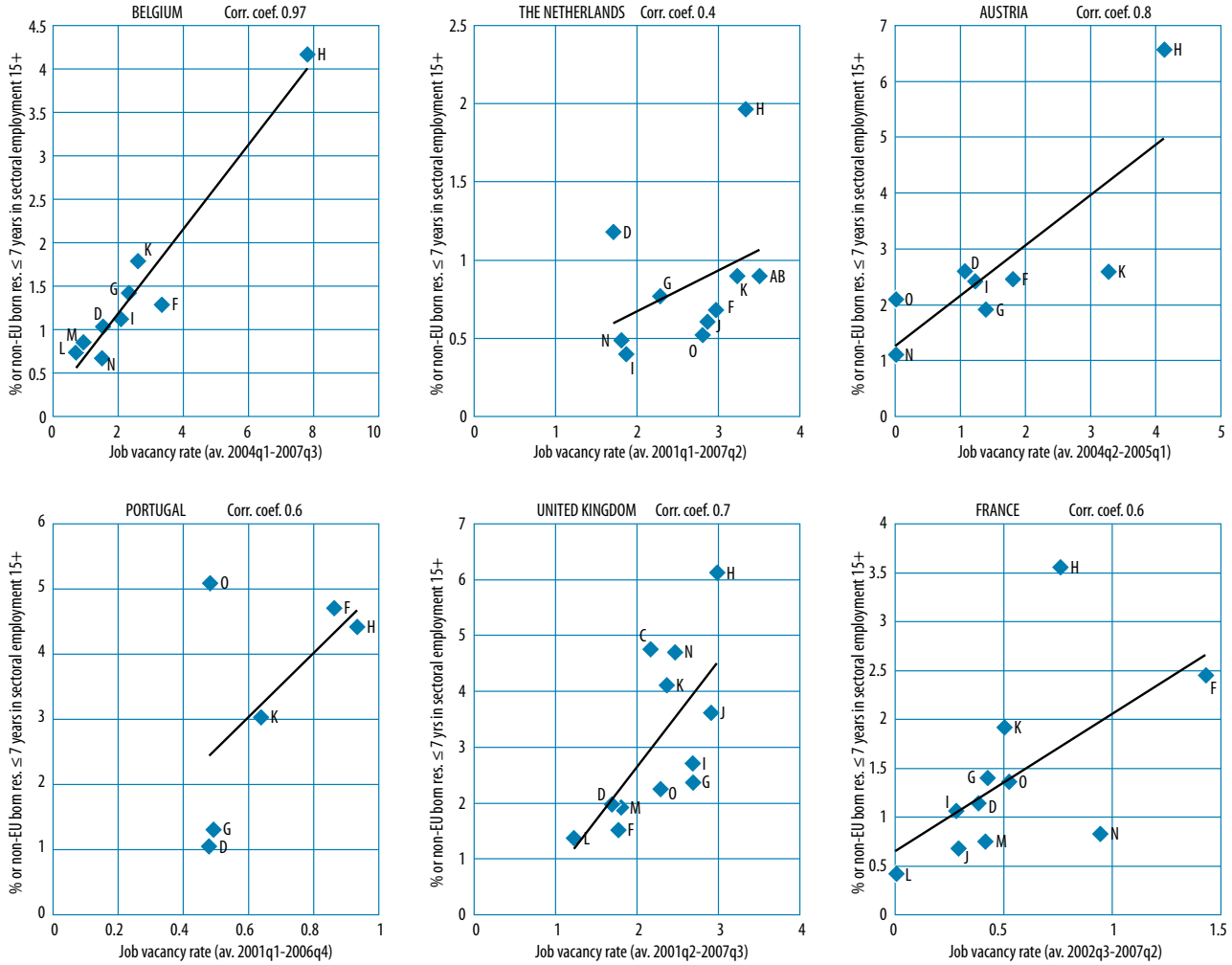
Chart 42: Characteristics of employment in the EU* of non-EU-born workers resident for seven years or less, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: BG, DE and IE excluded.

59 The job vacancy rate is the ratio of job vacancies relative to the sum of vacancies and occupied posts.

Chart 43: Sectoral employment distribution of recent migrants (2007) versus sectoral job vacancy rates (2000–07) in selected Member States



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data and job vacancy statistics.
Note: NACE sectors: Mining and quarrying (C), Manufacturing (D), Electricity, gas, steam and hot water supply(E), Construction (F), Wholesale and retail trade, repair of motor vehicles, motorcycles and personal and household goods (G), Hotels and restaurant (H), Transport, storage and communication (I), Financial intermediation (J), Real estate, renting and business activities (K), Public administration and defence, compulsory social security (L), Education (M), Health and social work (N), Other community, social and personal service activities (O).
For FR, the job vacancy rate corresponds to enterprises with more than 10 employees while for the other countries the job vacancy rate is for all enterprises (1+).

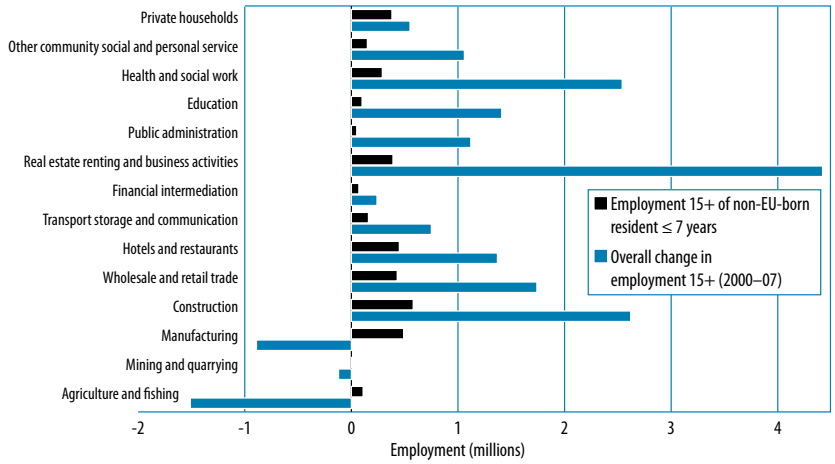
as craft and related trades workers and clerks – occupations which have seen either no overall employment growth or an employment decline between 2000 and 2007. However, recent non-EU migrants' contribution to the employment expansion in the more skilled occupations (legislators, senior officials and managers, professionals, and technicians and associate professionals) has been much less substantial, with migrants' share at below 8% in all three occupational groupings. This emphasises once again that recent migrants have mainly helped to address labour market requirements at the low end of the jobs spectrum.

As highlighted previously, a key issue with regard to migrants is whether they are substitutes for, or complementary to, native-born workers. If they have the same types of skills as native-born workers, they may compete for the same types of job, putting downward pressure on wages and/or leading to reduced employment for native-born workers. However, if migrants have different skills or work in jobs that native-born workers no longer wish to do, they will be more complementary. Another aspect to consider is that migrants entering low-skilled jobs may actually help free the more skilled native-born workers to carry out work that makes better use of their higher skills. For example, the ongoing trend within EU Member States towards improved education and training should lead to the indigenous workforce 'upskilling' to carry out higher-skilled jobs, and being less willing to accept lower-skilled work.[60] In this case migrants would help fill the resulting vacuum for remaining employer demand for low-skilled workers.

60 Boswell et al. (2004) highlights that the upward professional mobility of workers in Western European states has been to a large extent facilitated through the import of low-skilled immigrant labour since the 1950s. Post-World War II immigration supplied workers for low-skilled manufacturing, construction, transport, and agriculture; and more recently for catering, domestic services or janitorial work.

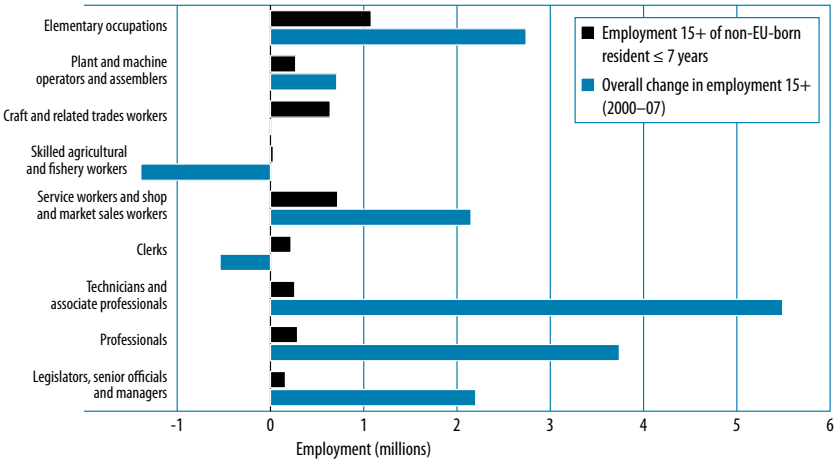
The occupation distribution of absolute changes in overall employment since 2000 and of recent migrants' employment tends to suggest that recent migrants have been more complementary rather than substitutes (Chart 46). Of the total employment of recent third country immigrants, only around one fifth worked in the skilled occupations (ISCO 1–3)[61], while these account for approximately 60% of the overall absolute change across occupation groupings (or around 75% of the net increase in employment). Furthermore, recent migrants are much more concentrated in the elementary, craft and related trades workers, and service workers and shop and market sales workers occupational groups, which, combined, account for two thirds of recent migrants' employment, but only around a third of the overall employment expansion between 2000 and 2007.

Chart 44: Sectoral distribution of employment expansion (2000–07) in the EU* and employment of non-EU-born workers resident for seven years or less (2007)



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: BG, DE, IE and RO excluded.

Chart 45: Occupational distribution of employment expansion (2000–07) in the EU* and employment of non-EU-born resident for seven years or less (2007)



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: BG, DE, IE and RO excluded.

8. Skills of migrants

8.1. Skills distribution

Migration is often put forward as a means of addressing labour and skill shortages. In general, there appears to be a need in Europe not only for high skills but also for a wide range of skills from across the spectrum. In this respect, migration may help, for example, to address the rising demand for care provision as women increasingly participate in the labour market and are no longer available as carers, while new needs arise from population ageing, such as health and long-term care.

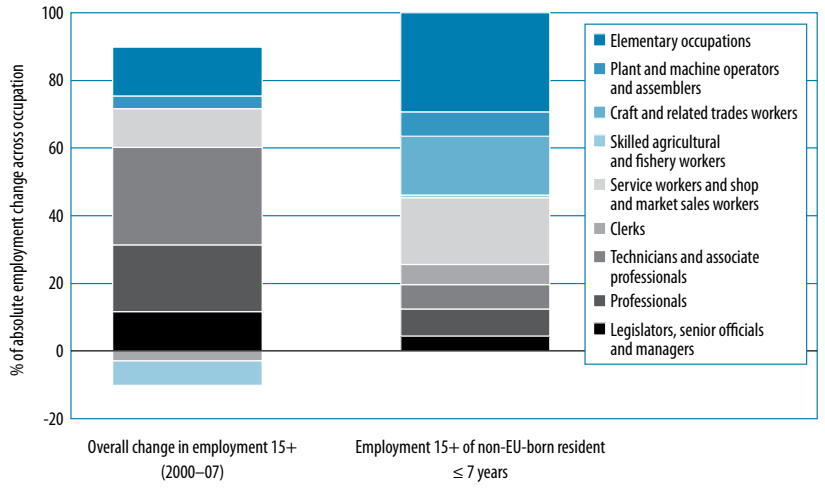
At EU**[62] level (excluding Bulgaria, Germany, Ireland and the UK) there is some polarisation of skill levels of third-country migrants compared with the native-born. Third country migrants tend to be marginally over-represented at the highest skill levels and much more significantly over-represented at the lowest skill levels, suggesting that they potentially make a more significant contribution to the low-skill end of the labour market (Chart 47). The bias towards low skills in part reflects the composition according to region of origin: immigrants from East Asia, the Balkans, North and Sub-Saharan Africa and Turkey, which account for half of migrants in the EU**, have relatively high proportions of people with low skills (Chart 49). It is interesting to note that recent working-age migrants from other EU Member States have relatively higher human capital endowments than both third-country migrants and the native-born, with a significantly lower share of less-skilled and greater shares of high-skilled. They therefore appear as potentially the primary source to fill demand in higher-skilled occupations.

There is evidence for differences in recent skill level demands across Member States (Chart 49). Some countries appear to have developed policies moving towards favouring increased entry of highly skilled migrants – the proportion of recent third country migrants with tertiary education reaches almost 40% in Luxembourg and Sweden

61 International standard classification of occupations

62 EU** also excludes the UK (in addition to Bulgaria, Germany and Ireland) due to incomplete coding of foreign qualifications with consequent problems in the classification of migrants' skill levels and because the skill level composition of migrant populations shows a clear break in series in 2004.

Chart 46: Occupational composition of employment expansion, 2000–07 in the EU* and employment of non-EU-born resident for seven years or less (2007)



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: BG, DE, IE and RO excluded.

(which exceeds the share of high-skilled EU-born by more than 10 percentage points). However, most countries continue to accept rather large numbers of low-skilled migrants from outside of the EU. The situation varies across Europe, but in general recent immigration to southern Member States has been mainly low-skill-focused (more than half of recent migrants to Greece, Italy and Portugal are low-skilled), and to a lesser extent (around 45–50%) in Austria, Belgium, France and Spain. However, in the more northern countries it has generally been less so – in Denmark, Finland, Luxembourg, the Netherlands and Sweden, around 40% or less are low-skilled.

Concerning high-skilled migrants, except for the southern new migration countries of Cyprus, Italy, Portugal and Spain, together with Denmark and Finland, in most Member States, there tends to be a higher share of tertiary-educated people among recent non-EU migrants than among the more established migrant population, although at the aggregate EU** level there is no significant difference (Chart 50). Overall, the EU does not seem to be particularly successful in attracting high-skilled migrants. Dayton-Johnson et al. (2007) reports that the EU-15 have attracted only one quarter of the total number of highly skilled migrants while, in contrast, two thirds of all such migrants are found in North America. Similarly, according to OECD data, among 28 countries[63] almost two thirds of the foreign-born aged 15 or over with tertiary education live in the US and Canada, 32% in the EU (excluding Bulgaria, Cyprus, Estonia, Lithuania, Latvia, Malta, Romania and Slovenia) and 5% in Australia.

On average in the EU**, there have been substantial improvements in the human capital endowment of the indigenous population over recent decades (in terms of comparing the composition of age cohorts by educational attainment). This has improved the overall skill level of the working-age population and enabled a shift towards more skilled work. However, this trend in skills improvement is not so strongly evident in the population of third country migrants. There are no marked improvements in the skill structure for younger cohorts as there has been in the case of the EU-born, neither for longer-established migrants nor recent ones (Chart 51).

Indeed, with regard to the EU-born, there has been a significant shift in educational attainment between age cohorts, with marked improvements in the shares of high-skilled within younger age groups (Chart 52). However, the situation is more mixed for migrants. Furthermore, while recent arrivals aged under 35 have lower shares of tertiary–educated people than the EU-born, among those aged 35 and over the shares are higher. This suggests that high-skilled immigrants help in particular to address skill deficiencies among the older EU-born population by bringing more professional experience and expertise to the EU. A similar pattern also exists with regard to more established migrants.

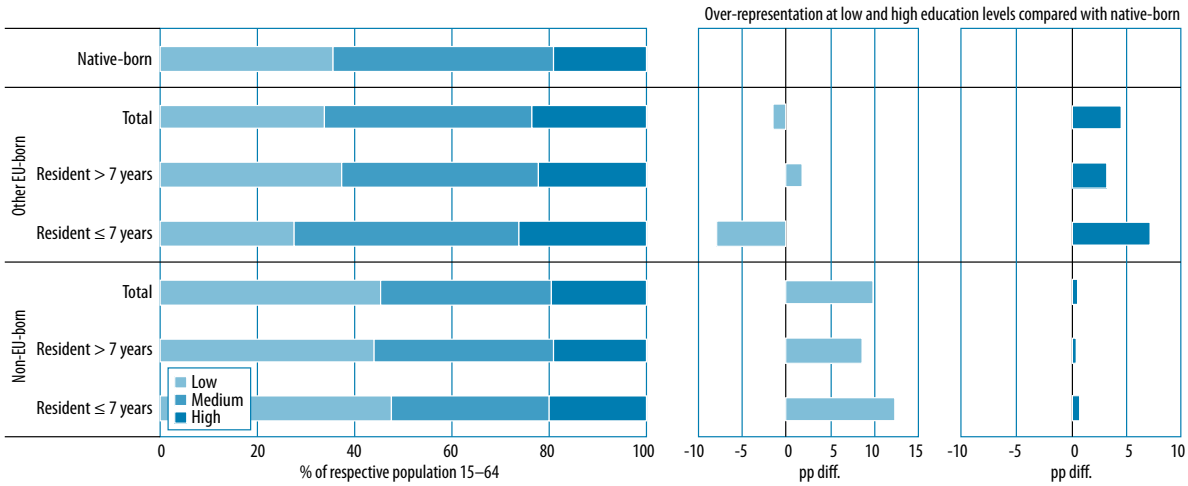
While younger cohorts of recent migrants aged 30–44 comprise greater shares of high-skilled people than more established migrants, there are some 'worrying' signs in the group of very young migrants (both long-term residents and recent arrivals) aged 25–29, where the share of those with tertiary education is lower than in other age groups under 60 and substantially below the equivalent share for the EU-born. This highlights that children of immigrants often face educational difficulties but also might indicate that the increasing abundance of high-skilled indigenous young people in the EU is reducing the need for high-skilled young migrants, and instead increasing the need for those with low skills.

8.2. Skills distribution and employment rates

The skill levels of recent non-EU migrants tend to be marginally worse than their predecessors, in that the shares of the low-skilled are slightly higher while the shares of the high-skilled have not changed substantially. This seems to be reflected in employment rates for recent migrants which are substantially below those of more established migrants in most Member States, and for the EU* as a whole. However, the research literature on migrants indicates that this gap also reflects a general improvement in the labour market performance of immigrants the longer they stay in the host

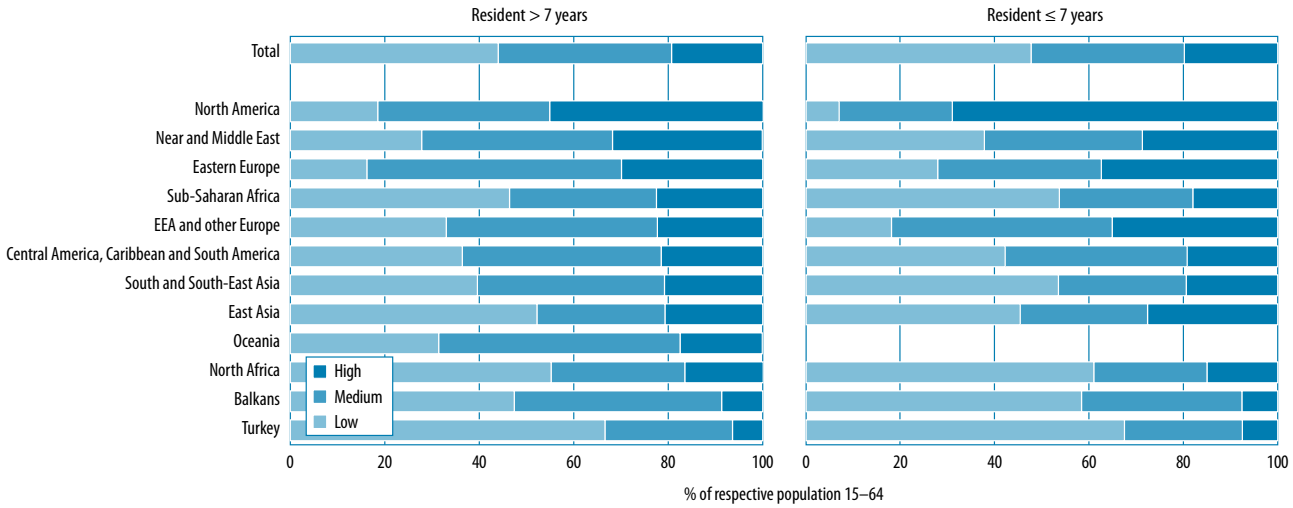
63 Source: OECD database on immigrants in OECD Countries (DIOC).

Chart 47: Skill level in the EU** of EU-born and non-EU-born, 2007



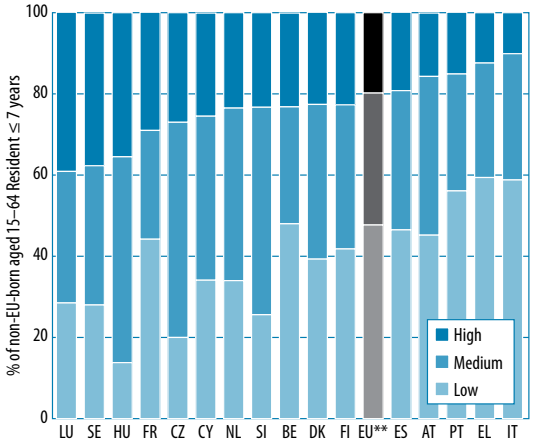
Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: BG, DE, IE and UK excluded.

Chart 48: Skill level of non-EU-born by region of origin in the EU**, 2007



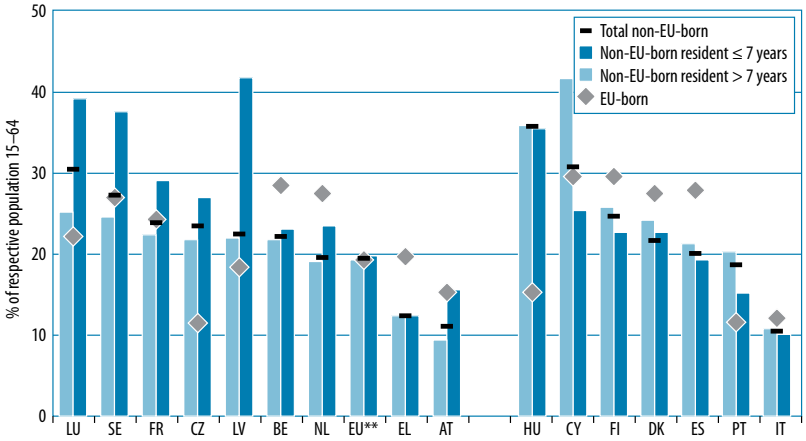
Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: BG, DE, IE and UK excluded. Data for non-EU-born resident ≤ 7 years from Oceania not reliable and from North America uncertain due to small sample size.

Chart 49: Skill level of non-EU-born resident for seven years or less across EU Member States, 2007



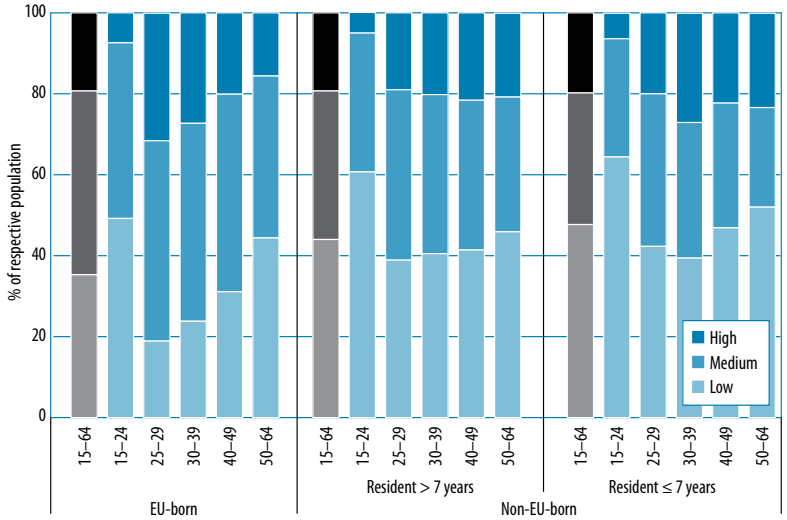
Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
*Note: EU** excludes BG, DE, IE and UK. Data for SI uncertain due to small sample size. Data not available or reliable for countries which are not shown.*

Chart 50: High skill levels among EU-born and non-EU-born across EU Member States – share of population with tertiary education, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
*Note: EU** excludes BG, DE, IE and UK. Data for HU and FI (non-EU-born res. ≤ 7 years) uncertain due to small sample size. Data not available or reliable for countries which are not shown.*

Chart 51: Skill level of EU-born and non-EU-born by age groups in the EU, 2007**



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: BG, DE, IE and UK excluded.

country, reflecting the fact that immigrants that have lived in a country longer have had more time to adapt, speak the host language and acquire valuable work experience.

Although high-skilled migrants generally have the highest employment rates, in several countries, and for the EU** overall, the employment rate gap between high-skilled recent migrants and the high-skilled EU-born significantly exceeds the employment rate gap between their low-skilled counterparts (Chart 53). Indeed, in several Member States, and for the EU** as a whole, recent low-skilled non-EU migrants have employment rates which are similar to or even better (in the Czech Republic, Cyprus, Greece, Italy, Portugal and Spain) than those of the low-skilled EU-born. Furthermore, the better employment rates of recent non-EU migrants compared with the EU-born in those countries reflect relatively higher employment among the low- and/or medium-skilled.

Unfavourable gaps in employment rates between the EU-born and immigrants therefore tend to increase with the level of education. Hence, while a higher level of education facilitates access to the labour market, problems of labour market integration appear relatively more acute, reflecting the fact that migrants face more difficulties in making effective use of their human capital, or at least in having their qualifications recognised by potential employers. OECD (2007b) similarly finds that as one moves up the skill ladder with respect to jobs, human capital issues appear to become much more important, with language proficiency and skill transferability being the key challenges for the integration process. High-skilled migration in itself, except when in direct response to labour market shortages, does not seem to be an automatic guarantee of labour market integration without due attention to these issues.

Differences in skill structure generally explain only a limited portion of the differences in employment rates of the EU-born and non-EU-born (Chart 54). In the more traditional immigration countries (except for Austria) the skill structure of the migrant population does not explain a substantial part of the difference in employment rates. In these countries, labour market outcomes are decidedly below what would be expected based on the skills structure of the migrant population alone.

Similarly, OECD (2007b) finds that differences in the age and educational distribution of immigrants do not explain cross-country differences in outcomes, with immigrant employment outcomes generally worsening if one takes into account their age distribution and educational attainment – that is, the employment rates of immigrants tend to be lower than would be expected on the basis of their age and reported educational attainment alone. The cross-country variation in outcomes therefore cannot be explained purely by differences in the age and educational distributions of immigrants compared with non-immigrants.

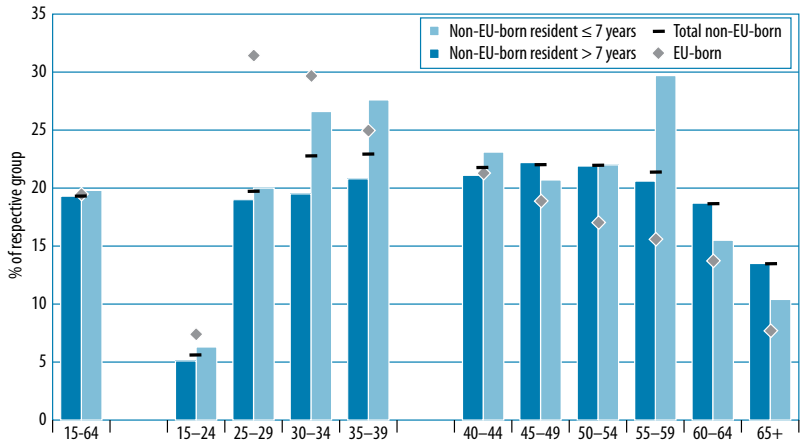
8.3. Matching qualifications and occupation levels

Evidence suggests that the skills of immigrants are underutilised and that they suffer from large mismatches between the level of jobs they hold and their qualifications. For example, OECD (2007a) highlights that immigrants are more likely than the native-born to hold jobs for which they appear to be over-qualified, this being especially the case in Italy, Greece, Portugal, Spain, Austria, the Czech Republic and Sweden.

Dustmann (2008) offers some explanation for this, reporting that it is frequently observed that, on entry to the receiving country, immigrants do worse than native-born workers with the same level of observable skills, this being for two main reasons. First, immigrants may have skills that are not immediately applicable to the host country labour market. For instance, immigrants may have worked in a different industrial environment, and skills have to be transferred to the specifics of the receiving country's labour market. Secondly, immigrants often lack complementary skills necessary to perform according to their full potential. For example a skilled immigrant may be less productive as long as they are not fluent in the host country's spoken language, which is particularly important for highly skilled jobs. Thus, on entry, immigrants are likely to 'downgrade' relative to their observable skills.

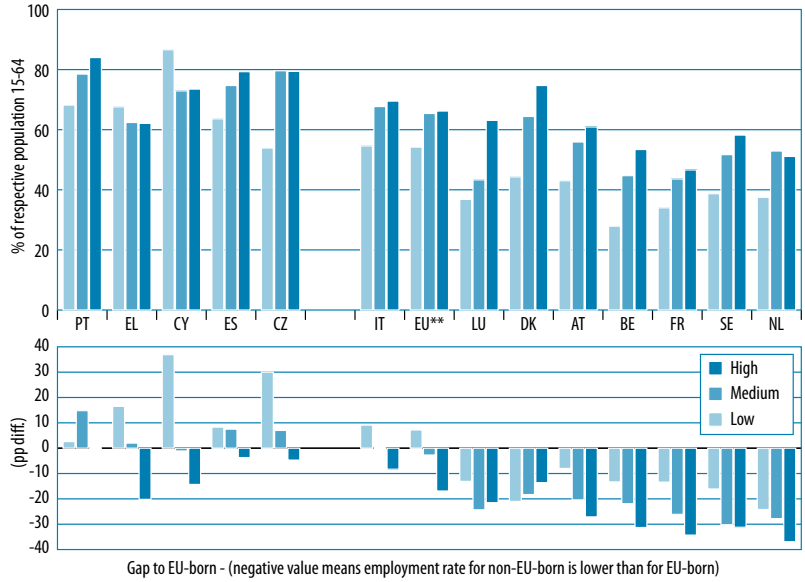
However, large mismatches for migrants may also be due to the problems they experience in getting their qualifications appropriately recognised. Potential employers often have little appreciation of formal qualifications obtained in another country and are thus unable to properly assess their value. Furthermore, in some professions, foreign qualifications and experience are often not fully recognised or accepted. In this regard it may be hard to reconcile EU Member States' expressed desire for high-skilled workers and the lack of systems to allow for the proper and rapid recognition of migrants' qualifications obtained abroad.

Chart 52: High skill levels among EU-born and non-EU-born by detailed age groups in the EU** – share of population with tertiary education, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: BG, DE, IE and UK excluded.

Chart 53: Employment rates of non-EU-born resident for seven years or less by skill level across Member States, 2007



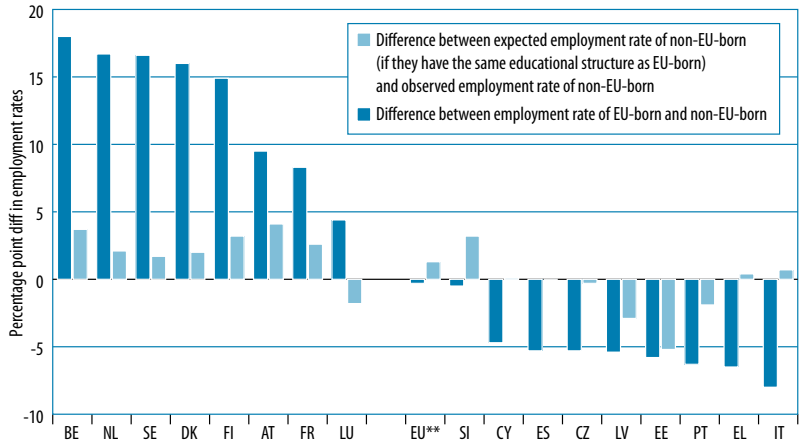
Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
*Note: EU** excludes BG, DE, IE and UK. Data for LU uncertain due to small sample size. Data not available or reliable for countries which are not shown.*

8.3.1. The extent of migrants' over-qualification in the EU

In the EU**, 19% of employed native-born people with a tertiary-level education are over-qualified for their job.[64] The mismatch between qualifications and occupations is even more pronounced for migrant workers: two thirds of employed high-skilled recent migrants are in

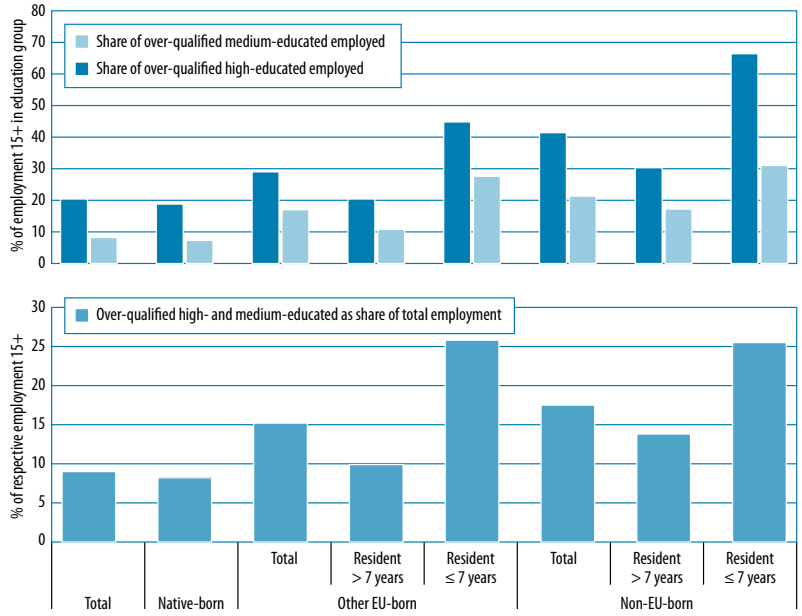
64 The ISCO occupational classification system devised by the ILO can be used to establish linkages between levels of qualification and educational levels as designated by the International Standard Classification of Education (ISCED). Education and job qualification levels are grouped into three broad categories: low, medium and high. An over-qualified individual is one who holds a job that requires lesser qualifications than would theoretically be available to him at his education level. Over-qualification rates are calculated for individuals with an intermediate or higher education. See Table 8 in Annex for the correspondence table.

Chart 54: Difference in employment rates of EU-born and non-EU-born, and between expected (given the skill structure of EU-born in that Member State) and observed employment rates of non-EU-born across Member States, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
*Note: EU** excludes BG, DE, IE and UK. Data not available or reliable for countries which are not shown.*

Chart 55: Over-qualified high- and medium-skilled and over-qualification rates in the EU** for EU-born and non-EU-born, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: BG, DE, IE and UK excluded. Occupations: high-skilled (ISCO 1–3), medium-skilled (ISC0 4–8), low-skilled (ISCO 9).

jobs for which they are over-qualified (although given the differences in education systems and formal qualifications between EU and third countries, this estimate must be taken with caution). This means that, compared to the native-born, there are around three times as many high-skilled recent migrants who occupy jobs that require skills of a lower level than their qualifications would suggest (Chart 55). The differential decreases with the length of residence in the country, but nevertheless remains significant.

Alongside the 66% of high-skilled recent migrants, 31% of medium-skilled recent migrants also occupy posts for which they are over-qualified (compared to 7% of medium-skilled among the native-born). This translates into overall rates of over-qualification (high- and medium-skilled combined) of around 25% for recent migrants, compared with 8% for the native-born.

Considerable differences exist across Member States in this regard. Rates of over-qualification among migrants are among the highest in the southern Member States of Cyprus, Spain and Greece, being markedly higher in the former two. Furthermore, in the new immigration countries of Cyprus, Portugal and Spain, together with Finland, Luxembourg, the Netherlands and Sweden, differences between over-qualification for recent migrants and the EU-born are 15 percentage points or more (Chart 56).

In southern Member States, high over-qualification may reflect that workers may be ready to accept unskilled jobs on arrival, with the hope of subsequent upward professional mobility, as evidenced by the substantial decline in over-qualification for more established migrants in Cyprus and Spain. However, in the latter countries these expectations may not be fully met in practice, as even for more established migrants the rates of over-qualification remain much higher than in most other Member States. In countries such as the Netherlands and Sweden, the situation differs in that the proportion of migrants entering as workers is relatively low and the proportion of refugees is substantial. These refugees are relatively highly skilled but face special problems arising from their status.

Overall, therefore, while some countries (mainly southern Member States) seem to be better at getting migrants into work, the employment those migrants obtain is more likely to involve work for which they are over-qualified. This raises the question of whether in such countries the relatively good position with regard to employment of recent immigrants is created at the expense of 'bad matches' and precarious employment: at the time of arrival, immigrants have higher participation and employment rates than the native-born, but higher rates of over-qualification

and temporary contracts than in other Member States. OECD (2007) similarly reports that some countries are more successful at getting immigrants into employment but leave them at greater risk of being over-qualified, while others reveal a lower rate of immigrant over-qualification but have a high rate of immigrant unemployment.

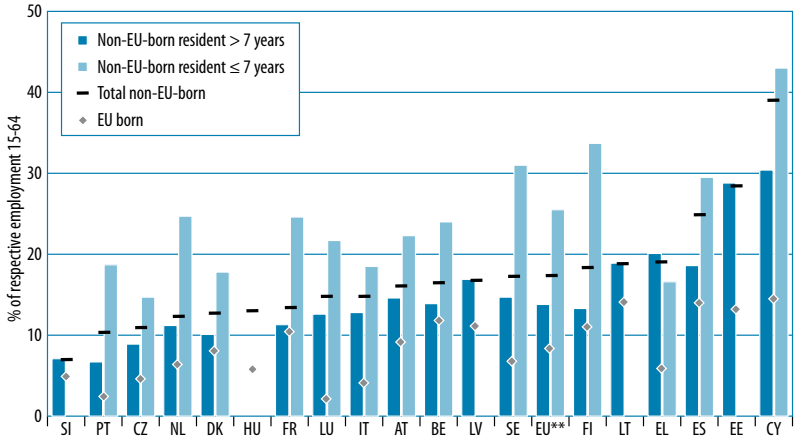
9. Inactivity among migrants and labour market transitions

9.1. Extent and gender-related aspects of inactivity among migrants

In total, economically inactive people born outside of the EU account for 6% of all inactive people of working age in the EU*. Migrant women represent a larger share of the gender-specific inactive population than migrant men: 7% of all inactive women originate from third countries, but only 5% of inactive men. On average, inactivity rates of non-EU-born (39%) and EU-born (38%) women are similar, but non-EU-born men have much lower rates of inactivity (18%) than their EU-born counterparts (24%). Consequently, gender differences between inactivity levels of men and women are more marked for the non-EU-born – 15 percentage points among the EU-born and 21 percentage points among the non-EU-born (Chart 57).

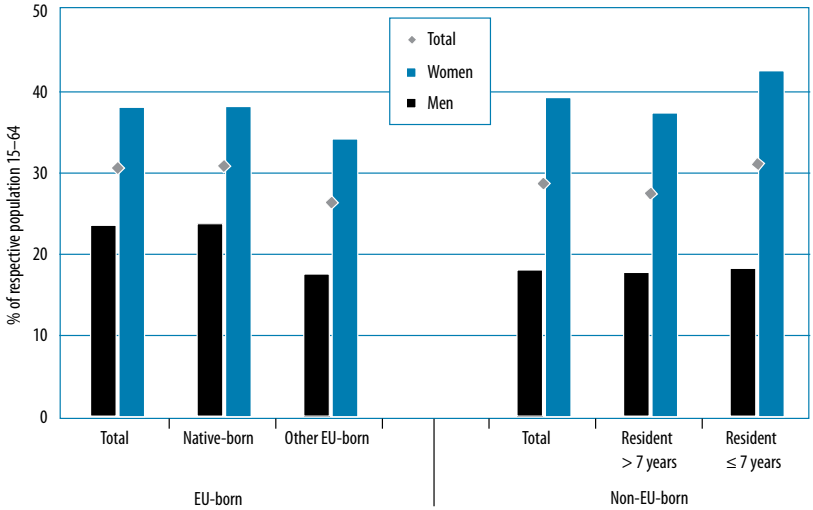
Within the EU, the degree of inactivity of third country migrants varies considerably across Member States, ranging from as high as 56% in Poland to 18% in Portugal. In most southern and new Member States, inactivity is relatively low among non-EU migrants, with inactivity rates lower than for the EU-born population. In the traditional migration countries of Northern Europe and Austria, inactivity rates for migrants are generally higher and often well above those for the EU-born.

Chart 56: Over-qualification rates for EU-born and non-EU-born across Member States, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
*Note: EU** excludes BG, DE, IE and UK. Data for LU and FI (non-EU-born) uncertain due to small sample size. Data not available or reliable for countries or groups which are not shown.*

Chart 57: Inactivity rates in the EU* for EU-born and non-EU-born, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: BG, DE and IE excluded.

At EU* level, migrant women are around twice as likely to be inactive as migrant men. Much higher inactivity among women than men is generally observed in Member States where participation of non-EU-born in the labour market is relatively low (Belgium, France, Luxembourg and the UK), but also in countries where there is traditionally a large gender gap even among the EU-born population, such as Greece, Italy and Spain (Chart 58).

9.2. Reasons for inactivity among migrants

The reasons for inactivity among people aged 15–64 clearly differs for non-EU migrants and EU-born (Chart 59). Among third country migrants, personal and family responsibilities is a more important reason for being out of the labour market than among the EU-born (29% of inactive migrants are out of the labour market for this reason), and retirement much less important. Additionally, given the relatively large share of young persons among non-EU

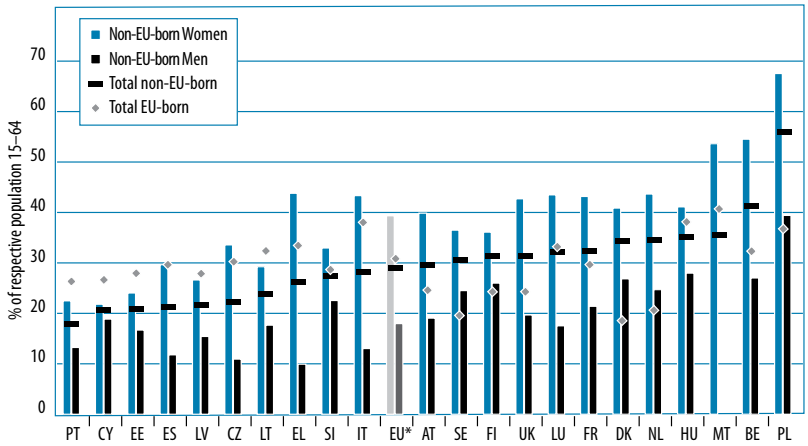
migrants, education or training is also an important reason for inactivity in this group (29% of inactive migrants), especially so for recent migrants (among whom 38% of inactive people are in education or training).

Migrants' reasons for inactivity vary for men and women (Chart 60). Longer-established migrant men are inactive because of three main reasons – education or training, illness and disability and retirement – which altogether account for more than 75% of inactivity in this group. Among male recent migrants, inactivity is mainly due to their participation in education and training (66%). Personal and family responsibilities do not feature strongly as reasons for inactivity either for more established or recent male migrants. In contrast, it is the dominant reason for non-EU-born women to be inactive, accounting for 46% of recent inactive female migrants and 38% of longer-established migrant women. Education or training is the second most common reason (accounting for more than a quarter of recent and almost one fifth of longer-established inactive females), although much less so than for their male counterparts.

At the level of individual Member States, the reasons for inactivity reflect the age structure of the inactive migrant population. In most countries inactive young men and prime working-age (25-54) women account for a large share of this population.

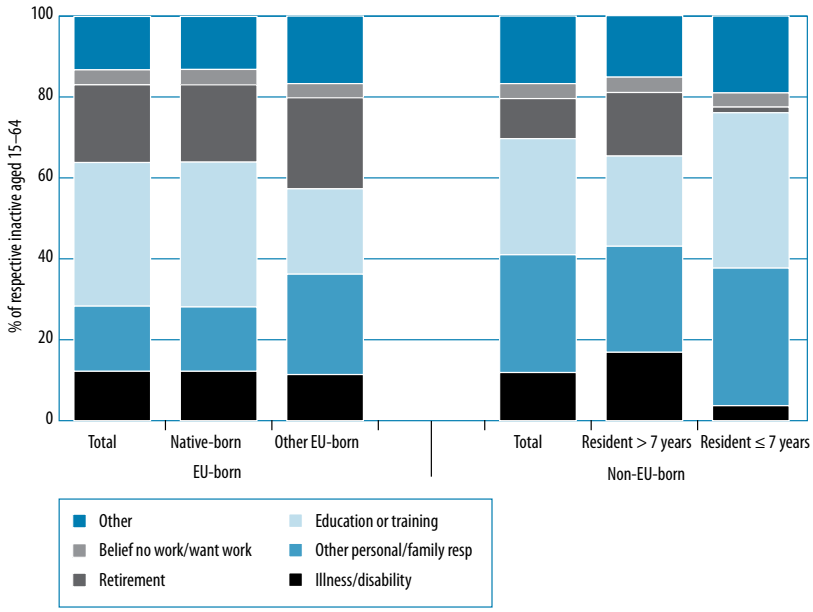
Consequently, among men, education or training accounts for a significant share of inactivity in most countries (in line with the higher share of inactive young people). In countries where inactivity of prime working-age people dominates, illness or disability are also relatively important (Denmark, the Netherlands and Sweden) as are unspecified other reasons (Belgium and the UK) (Chart 61). In other Member States, where the inactive migrant population consists predominantly of older people, retirement (Estonia, France, Latvia and Slovenia) or illness or disability (Estonia) are important reasons for inactivity among male migrants.

Chart 58: Inactivity rates for non-EU-born by gender across Member States, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: EU excludes BG, DE and IE. Data for LT, LU and PL (Men) and MT (Women) uncertain due to small sample size. Data not available or reliable for countries or groups which are not shown.*

Chart 59: Reasons for inactivity in the EU* for EU-born and non-EU-born, 2007



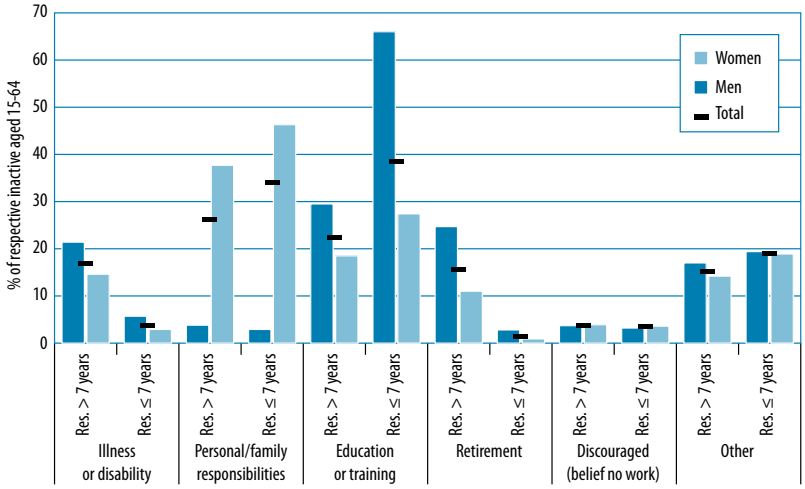
Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: BG, DE and IE excluded.

In contrast with inactive migrant men, apart from education or training in Denmark, Sweden and Portugal, retirement in the Baltic States and Slovenia, illness or disability in Denmark, Estonia and Sweden, and unspecified other reasons in France and the UK, personal or family responsibilities is the dominant reason for inactivity among migrant women (Chart 63). This may reflect cultural attitudes to the role of women in society, but also raises the question of the accessibility to flexible working arrangements and care facilities for migrant women.

These reasons for inactivity also help explain the different labour market performances for migrants between northern and southern countries. For

example, compared with the southern Member States of Greece, Italy, Portugal and Spain, much higher inactivity among migrants in northern countries (such as Belgium, Denmark, the Netherlands and Sweden) is largely due to a much higher incidence of inactivity related to illness or disability together with generally higher participation in education or training, especially among male migrants. This may reflect at least in part differences in the types of welfare system and the social protection benefits available to migrants, and the importance placed on the training of migrants, between these two groups of countries as well as differences in levels of immigration for study and education-related purposes.

Chart 60: Reasons for inactivity for non-EU-born by gender in the EU*, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: BG, DE and IE excluded.

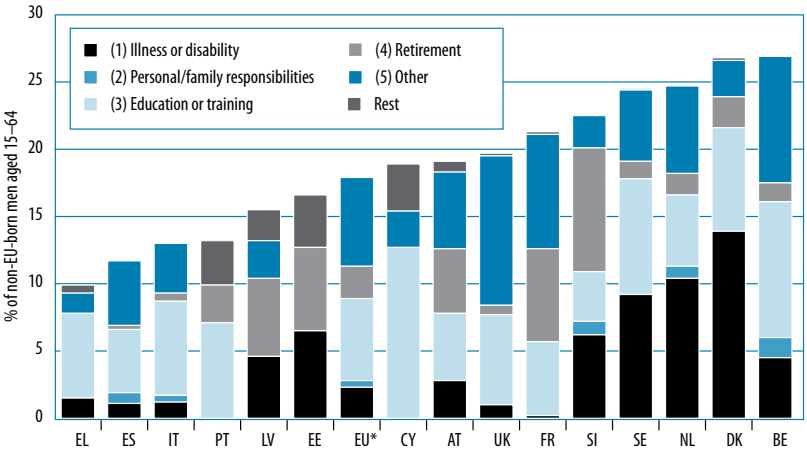
9.3. Labour market transitions of migrants

Looking at transitions between labour statuses (employment, unemployment, inactivity) between 2006 and 2007[65], in the EU* as whole (excluding Bulgaria, Germany, Ireland, the Netherlands and Sweden) non-EU migrants appear to have a slightly lower chance to remain in employment than the EU-born. Transition rates from employment to unemployment and from employment to inactivity are both lower for the EU-born (2% and 3.1% respectively) than for the non-EU-born (4.3% and 3.6%).

In particular, recent non-EU migrants face the highest risks of dropping out of employment: 5.5% of the previously employed (5.5% for men and 5.6% for women) become unemployed and another 4.2% (2.5% for men and 6.5% for women) become inactive within a year (Chart 63). The principal reasons for recent migrants leaving employment and transiting into inactivity are personal or family responsibilities (30%) together with other unspecified reasons (35%), which probably include issues such as expiration of work permits or completion of temporary work contracts (Table 5).

65 Based on 2007 LFS results for the year 2007 and the variable referring to the situation with regard to activity one year before the survey

Chart 61: Reasons for inactivity for non-EU-born men across Member States, 2007

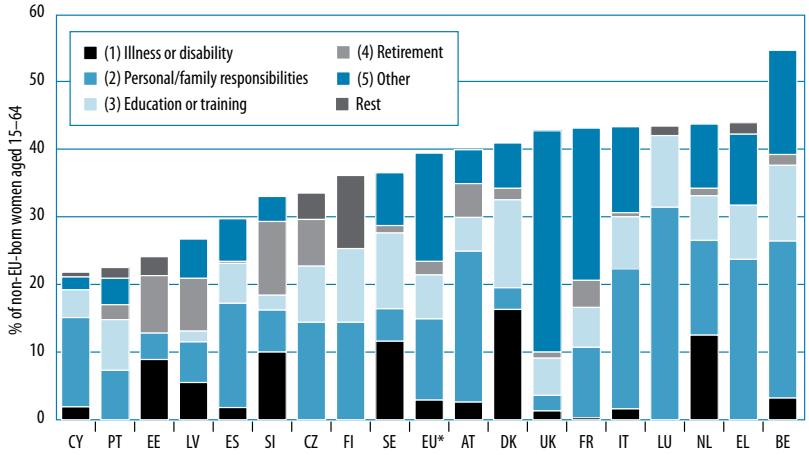


Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: EU excludes BG, DE and IE. Data for reasons for BE (2, 4), DK (4–5), EL (1, 5), FR (1), CY (5) and SI (1–3, 5) uncertain due to small sample size. Data not available or reliable for countries/ reasons which are not shown. The 'Rest' category includes reasons among categories 1–5 which were not publishable separately.*

However, recent migrants' reduced employment stability is partially offset by higher rates of movement from unemployment and inactivity into employment. These higher dynamics of transitions into and out of employment for recent migrants highlights their role in increasing the flexibility of EU labour markets. 15% of inactive recent non-EU-born migrants enter employment within a year compared with just 10% of inactive EU-born and 8% of more established non-EU-born migrants. Furthermore, more impressively half of unemployed recent non-EU-born migrants find employment within a year, compared with a third of unemployed EU-born and more established non-EU-born migrants. Unemployed recent migrants are also less likely to become inactive: only 22% of them (16% for men and 29% for women) exit the labour market within a year, compared with 29% of the EU-born and 25% of the more established non-EU migrants.

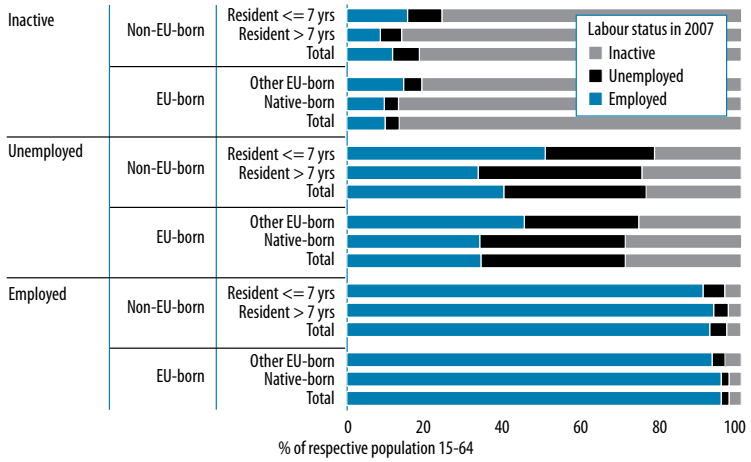
However, despite higher flows from unemployment and inactivity into employment, recent non-EU migrants are more likely to drop out of the labour force altogether. Driven by relatively higher transitions from employment into inactivity, 7% of the labour force of recent migrants becomes inactive within a year, compared with less than

Chart 62: Reasons for inactivity for non-EU-born women across Member States, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: EU excludes BG, DE and IE. Data for reasons for BE and DK (4), FR (1), CY (1, 3, 5), LV (3, 5), LU and FI (3), SI (2–3, 5) uncertain due to small sample size. Data not available or reliable for countries which are not shown. The 'Rest' category includes reasons among categories 1–5 which were not publishable separately.*

Chart 63: Transitions between labour statuses in the EU* for EU-born and non-EU-born aged 15–64, between 2006 and 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: BG, DE, IE, NL and SE excluded.

6% of the EU-born or more established migrants. Nevertheless, the closer similarity of transitions of longer-established migrants to those of the EU-born confirm that the longer third country migrants reside in the EU, the more their labour market behaviour converges to that of the EU-born.

Migrants' transition rates between economic statuses show considerable variation across Member States (Table 6). For longer-established migrants, rates of moving out of employment range from 8–10% in Austria, Belgium, France and Spain to around 5% in Italy, Portugal and the UK, and below 4% in Greece. For recent migrants, this rate goes from over 20% in France to 2.5% in Greece. Rates of moving from unemployment and inactivity to employment vary even more. Among longer-established migrants, just 18% of the unemployed move into employment within a year in Belgium – a much lower rate than in other Member States – while the rate is also relatively low in France (27%). In contrast, almost half of the unemployed longer-established migrants in Spain find a job within a year. Similarly, only 7% of inactive longer-established migrants in Belgium and 5% in France enter employment within a year, compared with around 15% or more of inactive migrants in Austria, Denmark and Spain. Transition rates among recent migrants indicate much higher dynamics. Rates of leaving unemployment to enter employment range from 30% in Belgium to around 60% or more in Portugal and Spain, and for transiting from inactivity to employment from below 13% in Belgium, France and Italy to over 20% in Denmark, Portugal and the UK.

These comparisons of transition rates between statuses tend to suggest that in certain countries, in particular Belgium and France, the labour market is not very accommodating or dynamic for migrants, in that they are retained less in employment and find it harder to get into employment when out of work. The risk of moving out of employment is higher than in most other Member States, and the chances of entering work are much lower. In contrast, the labour market for migrants in countries such as Portugal and the UK appears more dynamic and accommodating, with migrants more likely to remain in employment, and with the probability of unemployed or inactive migrants entering work being much higher than average.

10. Factors affecting migrant labour market performance

The preceding results and various studies have shown that in most Member States non-EU-born immigrants have difficulties integrating into the labour market, despite the fact that employment is the most important enabler of integration into host country societies. In many EU countries, immigrants face impediments with respect to access to the labour market. Dayton-Johnson et al. (2007) report that in many, the main impediments immigrants face are labour market rigidities, incomplete recognition of qualifications and/or skills acquired outside of the EU, and discrimination.

Nevertheless, results indicate that immigrant outcomes can be more favourable than those of the EU-born for migrants from certain regions of origin and in certain host countries, although this could also be interpreted as partly being the consequence of a relatively poor labour market performance of nationals in certain countries. Based on a review of the existing research in this area, in particular recent OECD studies (see for example OECD, 2007b), the following sections provide an overview of some of the key factors which affect the labour market integration of third-country migrants, including issues such as the channels for entry in national immigration systems, restrictions on labour market access, support schemes at entry and discrimination.

Table 5: Reasons for inactivity in the EU* in 2007 by working status in 2006

	Reasons for inactivity in 2007					
Labour status in 2006	Illness/ disability	Other personal/ family responsi-bilities	Education or training	Retire-ment	Belief there is no work	Other
Total population 15–64						
Employed	11.3	19.6	7.6	30.9	5.9	24.8
Unemployed	10.3	20.4	5.2	3.4	27.8	32.9
Inactive	11.5	16.9	39.6	19.7	2.1	10.2
EU-born						
Employed	11.4	18.9	7.5	32.2	6.0	24.1
Unemployed	10.2	20.4	5.1	3.4	28.8	32.1
Inactive	11.7	16.2	39.9	20.0	2.1	10.0
Native-born						
Employed	11.3	18.8	7.6	32.5	6.1	23.8
Unemployed	10.2	20.4	5.1	3.4	28.9	31.9
Inactive	11.8	16.0	40.3	19.9	2.1	10.0
Other EU-born						
Employed	15.1	20.9	(5.7)	22.8	:	33.1
Unemployed	(9.7)	20.1	:	:	24.6	37.1
Inactive	7.7	27.3	23.9	25.5	2.1	13.5
Non-EU-born						
Employed	10.3	30.4	9.1	11.1	(4.3)	34.8
Unemployed	12.1	19.9	(5.7)	(3.1)	13.5	45.8
Inactive	7.4	32.6	32.9	11.9	2.2	13.0
Non-EU-born resident > 7 years						
Employed	11.5	25.8	(7.1)	16.5	:	36.1
Unemployed	15.2	14.5	(5.4)	:	13.9	47.2
Inactive	10.5	30.2	26.3	20.0	2.4	10.5
Non-EU-born resident ≤ 7 years						
Employed	(7.7)	37.7	(11.9)	:	:	33.1
Unemployed	:	28.9	:	:	(13.1)	44.0
Inactive	2.7	36.3	41.6	(1.3)	1.9	16.2

Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: BG, DE, IE, NL and SE excluded. ':' data not reliable. Data in brackets uncertain due to small sample size.

10.1. National immigration, integration and labour market access systems

Member States differ widely according to the importance given to the various entry channels for immigration and this can play a key role in explaining the variation in migrants' labour market outcomes across Member States, especially for recently arrived migrants. Indeed, the category of migration (e.g. labour, family, humanitarian) and related administrative status (e.g. the duration and conditionality of the residence permit) is a key predictor of labour market outcomes.

In this context, legal status at entry and access rights to the labour market (and other areas)[66] are crucial factors in understanding the variation in migrants' labour market integration across Member States. Depending on their status, migrants can face specific obstacles in accessing or remaining on the labour market, or accessing social protection (especially in countries where they more often work in the informal sector) or services that are key for integrating into society (e.g. social services, housing and financial services).

For example, if under existing policies and integration systems there are important delays or restrictions on access to the labour market for asylum seekers and family members of migrants with residence rights, it is only to be expected that countries with greater emphasis on labour immigration display better labour market indicators for their migrant populations. Indeed, as expected, there is a strong correlation across Member States between the share of the foreign-born popula-

66 Access to employment, health, housing and welfare services is often determined by immigration status.

Table 6: Transitions of non-EU-born between labour market statuses between 2006 and 2007 in selected Member States

	Employed			Unemployed			Inactive		
	Employed	Unem-ployed	Inactive	Employed	Unem-ployed	Inactive	Employed	Unem-ployed	Inactive
Non-EU born resident > 7 years									
BE	91.2	5.2	3.6	18.4	46.4	35.2	7.2	7.7	85.0
DK	92.1	(3.8)	(4.1)	(34)	(25.3)	40.7	16.7	(5.2)	78.1
EL	96.4	2.5	:	(21.5)	62.8	(15.7)	(3.8)	(3.7)	92.5
ES	90.3	5.9	3.7	45.4	30.4	24.3	14.8	10.2	75.0
FR	91.8	4.1	4.0	27.0	49.9	23.0	4.8	4.4	90.7
IT	95.1	2.5	2.4	40.0	24.9	35.1	8.0	4.9	87.1
AT	90.3	4.7	5.0	37.6	30.9	31.5	15.8	(4.4)	79.8
PT	94.9	3.8	:	42.7	51.1	:	9.5	:	86.4
UK	94.7	2.2	3.1	40.4	44.2	15.4	9.0	5.3	85.7
EU*	93.0	3.7	3.3	33.3	41.5	25.2	8.5	5.4	86.2
Non-EU born resident ≤ 7 years									
BE	82.6	12.4	:	(30.2)	44.3	(25.5)	12.8	13.6	73.5
DK	89.4	:	:	(35.9)	:	(46.9)	25.4	(6.9)	67.7
EL	97.5	:	:	:	55.8	:	:	:	91.0
ES	90.9	5.5	3.5	67.3	20.0	12.8	17.1	11.2	71.7
FR	76.7	14.5	8.9	37.1	36.0	26.9	12.8	8.7	78.5
IT	93.9	3.1	3.1	44.7	26.0	29.3	7.2	6.6	86.2
AT	85.3	(6.7)	7.9	36.5	(25.3)	38.2	16.3	(6.7)	77.1
PT	92.9	5.2	:	59.1	:	:	21.7	:	69.1
UK	92.1	3.2	4.7	51.7	31.4	16.9	20.7	7.2	72.1
EU*	90.3	5.5	4.2	50.3	27.7	22.0	15.4	8.7	76.0

Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: EU excludes BG, DE, IE, NL and SE. ':' data not reliable. Data in brackets uncertain due to small sample size.*

tion[67] resident for three years or less and in employment and the share of permanent-type migrants who arrived in 2005 for employment-related reasons (Chart 65). This highlights that particular efforts are necessary to ease integration of newly arriving family members in society and the labour market.

At the same time, differences in migrants' labour market outcomes across countries also appear to reflect variation in migrant populations who are inactive due to participation in education and training, perhaps in turn reflecting differences in immigration for study-related reasons. Countries with large gaps in employment rates between the EU-born and recent third country migrants tend to be those with relatively high shares of (economically inactive) students among recent working-age migrants compared with the EU-born, such as the northern Member States (Chart 65).

Even those migrants who enter for purposes of work face variation across Member States in the strictness of the work-permit restrictions placed on them. For example, work permits are frequently related to a specific work position and employer. Furthermore, despite evidence that immigrants are more mobile and reactive to employment opportunities, and thus have a higher potential to ease inefficiencies due to the regional disparities within the EU, they are not allowed to move freely between national labour markets in the EU. Reflection on how to facilitate the mobility of third-country workers would appear to be warranted.

Münz et al. (2007b) similarly argue that due to the fact that immigrants are more mobile and efficient in taking advantage of employment opportunities, they have greater potential to meet shortages due to the regional mismatch within and between EU Member States. Enhanced intra-EU mobility of third-country workers would allow them to truly act as substitutes for non-mobile EU workers. The authors, thus, consider that granting free mobility (i.e. labour market access in all EU Member States to third country nationals who are long-term residents) could help establish a better integrated EU labour market that enhances its flexibility and thus the competitiveness of the EU economy.

10.2. National welfare and labour market institutions

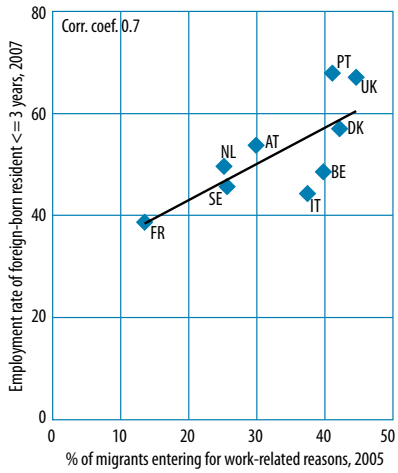
Results shown previously indicate that high levels of inactivity among migrants in certain northern Member States is specifically related to illness or disability, implying a link to the relative generosity of welfare systems and the types of benefit available. Research also suggests that the combination of different immigration and welfare regimes accounts to a large extent for the varying employment opportunities for migrant women across Member States (Baldwin-Edwards, 2002; Adsera and Chiswick, 2004). Biffl (2008) also highlights that welfare models and social systems are important factors in explaining labour market integration, especially for migrant women.

As pointed out in Commission Communication COM(2007) 780 (European Commission, 2007e), restricting access to social rights and training can be an obstacle to labour market integration: full access to social protection and lifelong learning offer the best results. For example, newcomers are often not entitled to unemployment benefits, which may limit their access to some labour market programmes designed to help people into work. The recently adopted proposal for a framework directive laying down a common set of rights for third country workers legally residing in Member States could be important in this respect.

67 Covering both third country and other EU migrants.

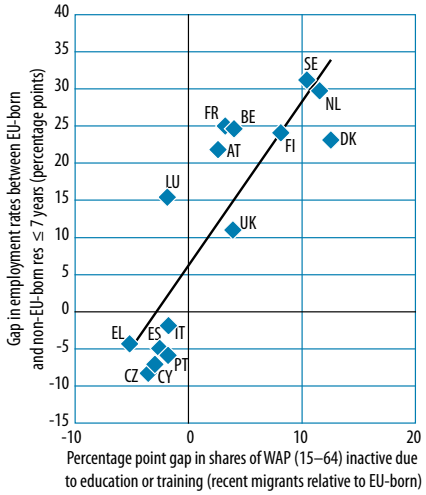
Coppel (2001) considers that special care is required to avoid undesirable impacts as a result of interactions with other labour and product market policies. For example, minimum wages set too high, or excessively restrictive employment protection legislation, could increase the level of structural unemployment and make it especially difficult for new entrants in the labour market to find work. Münz (2007b) similarly suggests that instruments aiming to protect workers, such as dismissal protection and rigid wages, may only reduce the effect of immigration on native workers in the short run. In the long run, they are likely to aggravate the negative impact of immigration on equilibrium native employment, in so far as these instruments tend to reduce overall employment.

Chart 64 : Employment rates for non-EU-born migrants resident for three years or less versus share of migrants who arrived for employment-related reasons in 2005



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data and and OECD SOPEMI (2007a).

Chart 65: Employment rate gaps between the EU-born and non-EU-born migrants resident for seven years or less versus differences in respective shares of working-age population inactive due to education or training, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: Data not available or reliable for countries which are not shown.

10.3. Immigrant naturalisation

There are indications that naturalisation can have a positive effect on migrants' labour market outcomes especially in certain Member States such as Belgium, Denmark, France, the Netherlands and Sweden (Chart 66). Employment rates for non-EU-born populations are generally higher than the rates for non-EU nationals of the same origin, the latter excluding the naturalised migrants. The differences are particularly marked for migrants from certain regions of origin. Indeed, for Turkish migrants this is true throughout the EU*, most significantly in Austria, Belgium, Denmark, Sweden and the UK. For North Africans the differences are most visible in Belgium, France, the Netherlands and the UK. Especially large positive effects are also observed in most main immigration countries for migrants from Sub-Saharan Africa, the Near and Middle East, and South and South East Asia. These migrant groups from low- and medium-income countries are generally also those that have the greatest difficulties in achieving labour market integration.

Münz (2007a) reports that the analysis of LFS data makes clear that immigrants who do not naturalise within the first 10–15 years are especially likely to remain in low-skill and low-paid employment. The analysis for Europe shows the importance of citizenship for the process of integration. He finds that in the EU-15 countries which in the past received immigrants from the Southern and/or Eastern Mediterranean, the immigrants born in Turkey and the Maghreb[68] have higher employment rates than Algerian, Moroccan, Tunisian and Turkish nationals living in those EU-15 countries. He states this can be interpreted as a result of particularly exclusionary mechanisms in these countries' labour markets affecting foreign nationals more adversely than naturalised citizens. But such discrepancies are almost non-existent when comparing immigrants from other EU Member States as well as North America and Australia with nationals of the same regions living in the EU-15.

68 Algeria, Morocco and Tunisia.

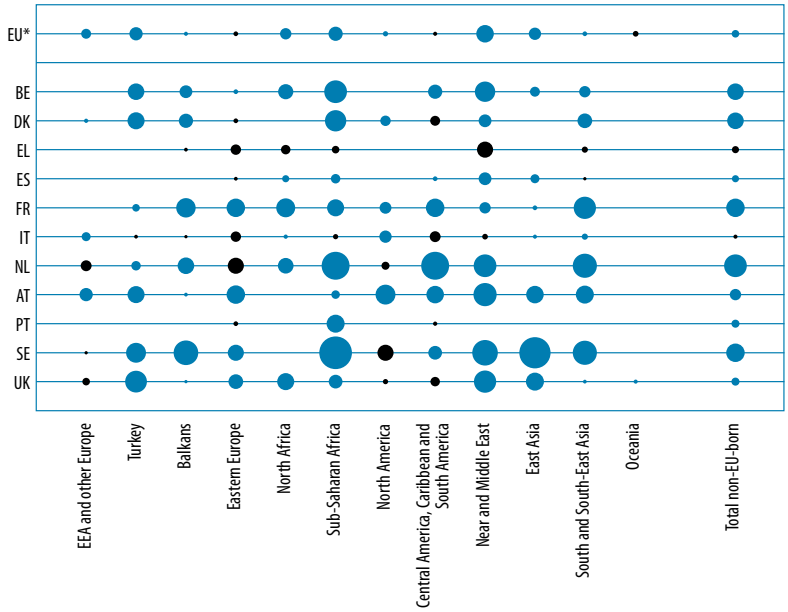
He concludes that citizenship is important for immigrants from middle- and low-income countries, with those who naturalise better integrated into the workforce. There is, however, no simple causality. On the one hand, naturalisation may help in gaining access to certain segments of the labour market and reducing discrimination. On the other hand, successful economic integration of immigrants makes it more likely that they become citizens of the receiving country.

OECD (2008) similarly reports that naturalised immigrants generally have better labour market outcomes than foreign nationals, even after controlling for other factors such as education, country of origin and length of stay. For example, naturalisation opens access to public sector jobs. But its impact is also seen in other sectors, since doubts by employers or immigrants themselves about the duration of permits, and more generally about the eventual length of stay, may hamper labour market integration. Employers may also take naturalisation as sign of a positive commitment to integration and/or motivation.

10.4. Country or region of origin (cultural distance)

At EU* level, migrants from East Asia, North Africa, the Near and Middle East, and Turkey have worse labour market outcomes than migrants from other regions. In line with the results reported earlier (see section 6.2.4), the OECD (2007b) finds that part of the cross-country differences in employment and unemployment rates among immigrants reflects variations in the composition of immigrant populations, in particular by country of origin. They also suggest that significant country-of-origin effects for women are not very surprising given that many immigrant women come from countries where their participation in the labour market is more limited, and adaptation to the participation behaviour of women in host countries may not be immediate, if it occurs at all.

Chart 66: Differences between employment rates of non-EU-born compared with non-EU nationals in selected Member States, 2007



Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: Data not reliable for groups which are not shown. The size of the bubble reflects the difference between employment rate of non-EU-born compared with non-EU nationals. Light bubbles correspond to positive differences, dark bubbles to negative ones.

10.5. Proficiency in host country language

Proficiency in the host country language is arguably the most important element with respect to integration. Most Member States consider basic knowledge of the host society language as an essential element of integration, with many focusing their integration strategies on introduction programmes including (sometimes compulsory) language courses for new arrivals. Several studies find that migrants' outcomes are best when language acquisition is linked with work experience.

However, immigrants do not all have the same needs for language training, nor are those needs the same in all countries. For example, some nationals of new EU Member States who have settled in the UK or Ireland have relatively high skill levels and a good knowledge of English. Likewise, in France many newcomers are French speakers. Furthermore, proficiency in the host country language may be less of an issue for lower-skilled employment. Some jobs in the labour market do not require significant language proficiency and can be held by immigrants with modest proficiency levels. The high employment rates in Southern Europe for recent immigrants would seem to bear this out.

10.6. Skill levels and problems with recognition of migrants' qualifications obtained abroad

On average most third country migrants to the EU (around 80%) tend to be low- or medium-skilled, while only one in five is high-skilled. In general labour market outcomes are better, the higher the skill level. However, evidence suggests that differences in skill structure only partly explain the differences in employment rates of the EU-born and the non-EU-born. As shown earlier (section 8), a central issue for integration is that of the transferability of skills and qualifications acquired in the country of origin to the host country and the matching of migrants' skill levels to the jobs they hold. Qualifications and work experience earned in origin countries are not easily recognised by many employers, highlighting a need to establish common standards for the recognition of qualifications held by immigrants.

10.7. Importance of early labour market entry for longer-term outcomes

Results reported above tend to suggest that the relative performance across Member States in terms of the ease and rapidity of integrating recent migrants into employment has effects which persist into their longer-term outcomes. OECD (2007b) reports that when immigrants arrive during adverse economic conditions, they take longer to find work and this weakens their longer-term integration prospects. Furthermore, they indicate that in contrast to work experience gained in the country of origin, which tends to be almost entirely discounted, experience gained in the host country seems to be highly regarded by employers. In this context, early labour market access appears to be a key determinant of long-term labour market success.

This finding would argue in favour of ensuring immediate access to labour markets for categories of migrants other than labour migrants, which would also reduce immigrants' needs to draw on social assistance. Indeed, Dayton-Johnson et al. (2007) and Munch (2008) argue that European countries must provide fair and equal access to the labour market at the earliest point in the immigration experience for all migrants and their family members (including asylum seekers who do not enter irregularly, after a reasonable waiting period), and similarly early access to the educational system and to specialised language and other classes.

10.8. Information asymmetries and migrants' knowledge of labour market functioning

Many immigrants may arrive with little or no knowledge of the host country society and in particular of how the local labour market functions. In this regard, introductory programmes which cover these aspects may prove particularly useful. Furthermore, immigrants often have few contacts with potential employers, which complicates the task of finding work, and may require assistance in building relevant networks. Finally, programmes that enable employers to see what immigrant workers can do 'on the job' tend to be effective in ensuring continued employment. Hence providing support for enterprise-based training and temporary employment as initial paths for migrants to enter the labour market appears to be important.

10.9. Discrimination

One key issue affecting migrants is discrimination. Discriminatory hiring practices undoubtedly exist. An ILO-sponsored and innovative large-scale experimental test of hiring procedures carried out in a number of OECD countries in recent years suggests the existence of significant discriminatory behaviour by employers.[69] This would seem to highlight a need to further strengthen anti-discrimination and anti-racism laws and/or the enforcement of existing ones. Diversity management – making staff at work and management level appreciate the benefits of working with migrants and getting them used to doing so – is also receiving increasing attention.

However, discrimination in the labour market is probably simply a particular manifestation of general attitudes within Member States with regard to immigrants (Box 2), which will clearly impact on migrants' labour market outcomes. In a recent study, Rudiger (2008) highlights that the ability of European companies to attract highly skilled people from overseas might be reduced by negative public perceptions if governments fail to make a convincing case for immigration of skilled migrants. It warns that Europe could lose out in the global competition for talent if it does not persuade migrants they will be welcomed and will fail to attract sufficient numbers of highly skilled workers in sectors such as finance, engineering, scientific research, IT, education and health care. Consequently, public debate on migration should be balanced, to avoid encouraging discriminatory attitudes in society in general and undesirable effects on the labour market.

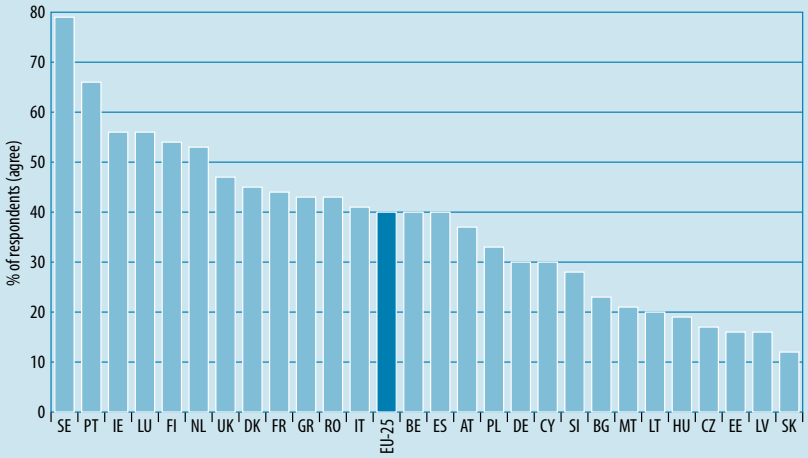
69 Results from the testing programmes are highlighted on the following website:

http://www.ilo.org/public/english/protection/migrant/equality/discrimination/evidence.htm

Box 2: Public attitudes to migrants

Unsuccessful integration may be the result of 'unwelcoming' attitudes to immigrants, which may in turn be reinforced by the social problems linked to their poor integration. This situation may make it politically unacceptable to receive more immigrants. Eurobarometer survey results indicate that, on average, only 40% of EU citizens feel that immigrants contribute a lot to their country, while a majority of citizens (52%) do not agree with this statement. However, there are significant differences across countries (Chart 67). While 79% of Swedes and two thirds of Portuguese have a positive opinion of immigrants' contribution to society, only 12% of Slovaks hold this view. In general, citizens in the old Member States are more positive about migrants' contribution than those in the new Member States.

Chart 67: Shares of population who consider that immigrants contribute a lot to the host country, 2007



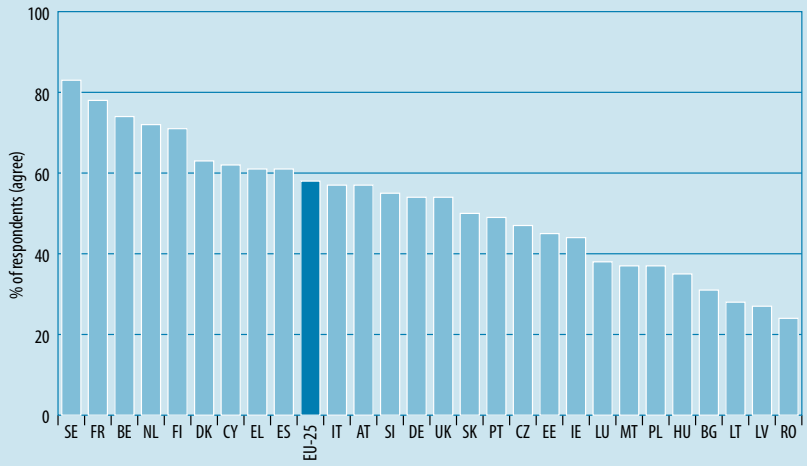
Source: Eurobarometer (2007a).

Dustmann and Glitz (2005) provide an analysis of public perceptions on the way immigration affects wages and employment. The results suggest large differences in responses according to educational background, with the lower-educated consistently overestimating the negative effects of immigration, including its impact on wages and employment as well as on the size of stocks of immigrants. There is also a wide diversity in responses across European countries, some of which are associated with differences in the unemployment rates, GDP per capita and the number of past asylum applications. The report concludes that factual knowledge about immigration is very low, which may give rise to exaggerated arguments against immigration. Furthermore, policy is likely to react to voters' subjective perceptions which are based on these low levels of factual knowledge. It is therefore essential to highlight more strongly the results of quantitative research on immigration-related issues and to bring more factual information on immigration to the attention of the public.

Immigrants with jobs are more closely bonded to their host society. Equally, employed migrants contribute to a positive public image of immigrants (i.e. as hard-working, rather than as a drain on public resources). However, in a recent Eurobarometer survey on discrimination in the EU, most EU citizens acknowledged that foreigners would stand less chance of getting a job or traineeship, even with the same level of qualifications as other candidates[70] (Chart 68). On average in the EU, 58% of people thought that foreigners would be less likely to be successful compared with native-born workers of the country. Countries with the highest shares of respondents expecting foreigners would be less likely were Belgium, Finland, France, the Netherlands and Sweden, all with rates over 70%. As shown earlier, these are among the Member States with the largest gaps in employment rates between migrants and the EU-born. Discrimination not only hinders labour market performance of immigrants, but by decreasing returns to human capital lowers their incentive to invest in host-country-specific human capital, which in turn results in lower labour market performance.

70 The question posed was 'Would you say that, with equivalent qualifications or diplomas, a foreigner would be less likely, as likely or more likely than a national to get a job, be accepted for training or be promoted?'

Chart 68: Shares of respondents saying that, with equivalent qualifications or diplomas, a foreigner would be less likely than a national to get a job, be accepted for training or be promoted (2006)



Source: Eurobarometer (2007c).

11. Recent developments in Member States' migration and integration policies

11.1. Migration policies

Member States have varying immigration needs, due to their different economic situations, demographic prospects, social standards and historical ties. As a result, their policies on managing immigration also vary greatly, leading to inconsistencies and a lack of coordination at EU level. Moreover, national immigration policies clearly have an impact beyond national borders and actions taken in one Member State can rapidly have an impact on others.

The very diverse experiences of immigration across Member States offers opportunities for mutual learning about migration-related policies. To an extent, such mutual learning is already taking place. As for the wider context in which the integration process should take place, some Member States have opted for 'multi-culturalism' – the acceptance of diversity - while others prefer a 'melting-pot' approach which aims to forge a common national identity. Both models have come into question recently, with ongoing experimentation combining aspects of one model with those of the other.

Existing migration policies have been shaped by domestic considerations and consequently no two systems are alike. Nonetheless, it is possible to distinguish five common features shared across EU countries. These are:

- acceptance of foreigners to visit for a short period of time for business or tourism purposes
- rules which allow spouses and close relatives of citizens to enter the country on a permanent basis (family reunion)
- the possibility for individuals who claim social and political persecution in their country to apply for asylum (asylum seekers)
- mechanisms for individuals to enter largely for the purpose of employment (labour migration)
- naturalisation rules which enable foreign citizens to acquire national citizenship.

There are several discernible trends among EU Member States towards, on the one hand, increasingly selective immigration policies and, on the other hand, tightening of criteria for granting refugee status and allowing family reunification, in an attempt to shift the balance towards immigrants with skills and education and away from asylum seekers and family members.

In this context, there is growing emphasis on labour migration and the selection of migrants for employment. Given the high levels of employment already reached by skilled EU nationals, the recruitment of third country migrants increasingly seems to be the main way of responding to the growing demand for medium- and high-skilled labour. At the same time, Europe has a continuing demand for low-skilled labour.

The selection of immigrants for employment is mainly geared towards two main areas:

- the recruitment of highly skilled migrants to attract or retain these workers, mostly for permanent migration
- the recourse to temporary, often seasonal, low-skilled immigrants in order to alleviate labour shortages – an issue of concern in a number of Member States, in particular in Southern European countries.

Member States tend to favour temporary immigration for the low-skilled and reserve permanent residence for the highly skilled foreign workers.

11.2. Integration policies

Integration measures emphasise all the stages in the process from the reception of first-generation immigrants to access to citizenship. Member States are already converging towards providing some specific measures, although with varying degrees of sophistication, resources and success, such as basic language training, vocationally oriented, practical information on employment and immigration rights, guidance on government and community institutions, and advice on how to gain access to essential services.

Several Member States are in the process of establishing comprehensive approaches to immigration. These address the integration of migrants, together with actions to combat illegal immigration, in conjunction with developing a legal immigration framework which is responsive to labour market shortages.[71] Regarding policies for integration specifically in the labour market, measures to strengthen this aspect – including education and training, more effective systems to recognise qualifications, fighting against discrimination in the workplace and promoting employment for immigrant women – are increasingly implemented.

As an example of recent actions taken, several Member States now offer specific training measures and language courses to migrants, with activation measures coupled with support from employment services specifically aimed at this group. Wage subsidy schemes for employment of migrants and their descendants have been introduced in Sweden and Denmark. Some Member States with large shares of immigrants (for example France and the UK) are launching specific programmes in geographical areas with high concentrations of migrants. In a number of countries, immigration is seen as an important element in answering labour market needs (for example especially in Ireland and Spain), while some Member States are planning to develop measures to attract highly skilled migrants and to simplify the procedures for work and residence permits in sectors with labour shortages.

Regarding opportunities for mutual learning from recent experiences, OECD (2007b) reports that although in recent years the southern Member States appear to have better labour market outcomes for immigrants, the specificities of the situation in these countries prevent any general policy conclusions. Outcomes were favourable from the beginning of large-scale immigration, and it is difficult to argue that successful integration policies have made a difference in these countries, both because migration is a recent phenomenon and largely irregular in nature and because little existed in the way of formal integration or introduction programmes. Furthermore, recent initiatives in this regard in Southern Europe have not yet had to deal with difficult labour market conditions.

12. Future analysis and research

Apart from the need for more research on best practices in better steering migration flows towards specific skill structures and better integration of migrants in society and labour markets while minimising the related costs and social burden, the following sections highlight other specific issues and opportunities for further research in the area of migration.

12.1. 2008 LFS ad hoc module on the labour market situation of migrants and their immediate descendants

In the context of the political debate on managing immigration to increase EU labour supply, it is crucial to have access to accurate data on the labour market participation and situation of migrants and their immediate descendants, and on the factors affecting their integration. For the time being, there is insufficient accurate and comparable data at EU level on these aspects. The results from the 2008 LFS module[72] will constitute an important source of information, being extremely relevant and useful for policy fields central to the issue of labour migration. When available, the module results should allow for a more thorough examination of the labour market situation of migrants and also of their immediate descendants.

In particular, the 2008 LFS module contains specific variables that will enable potential groups of interest to be examined, including the children of migrants and groups of migrants according to reason for migration. Furthermore, the data to be provided on migration experiences should allow for better analysis on the integration in and adaptation to the host country labour market and factors affecting integration/adaptation. It will cover specific labour-market-related issues of particular relevance for migrants, such as access to the labour market and participation in labour market integration and training programmes. In addition, it should enable more detailed analysis of such issues as the extent and effect of labour market access restrictions and the possibility to be mobile in the labour market; access to and use of employment services; recognition of skills and qualifications; and participation in professional labour market training or measures to assist in labour market integration.

Information from the module should provide the basis for a better understanding of the variation in migrants' labour market outcomes across Member States, in particular the true impediment to integration of some of the main factors commonly cited as barriers for migrants (e.g. lack of recognition of skills/qualifications, lack of support measures at entry, etc.).

71 The 'Strategic plan for Citizenship and Integration 2007–2010'.

72 European Commission (2007i).

12.2. Situation of descendants of migrants

In a longer-term perspective, and given the increasing evidence that migrants' children also face difficulties in integrating into the labour market, further analysis should be carried out not only on migrants but also on their immediate descendants. Children of immigrants are in a different situation from their parents in that they have grown up in the host country and have most likely been through the host country education system. Yet, they are potentially faced with the same problems linked to discrimination, socio-economic characteristics, and to a lesser extent cultural background. In this context, evidence shows that children of immigrants often face educational difficulties and this could be a main reason for the difficulties they encounter in accessing the labour market, as highlighted in the recently adopted Green Paper on Migration and mobility: challenges and opportunities for EU education systems (European Commission, 2008c).

Collecting information on migrants' descendants is important in the context of the ageing of society. As attracting new migrants to the labour market is considered as one way of helping to alleviate the long-term effects of demographic ageing, it is also important to have data about the labour market participation of their descendants to guide assumptions on to what extent attracting new migrants will have an effect in the long run. Such data is also important from a social inclusion perspective, where some data suggests that children of migrants also have more difficulties in accessing the labour market and face discriminatory barriers. Data from the 2008 LFS module will provide an opportunity to examine these issues in detail.

12.3. Return and onward migration

Return and onward migration can be substantial in certain Member States and will affect the results obtained from examining stocks of migrants who remain in the host country. This will confound overall measures of the economic situation and impact of third country migrants, and is an area which needs further research and improved availability of data. For example, if many high-skilled immigrants leave the host country after a period of time, the overall composition of migrant cohorts who entered at the same time will be affected, most likely through worse aggregate labour market outcomes for the remaining stock of migrants.

13. Summary and conclusions

Immigration from third countries is an important political issue at both EU and Member State level. Against a background of ageing European societies and growing labour market needs, demand for immigration is set to increase over coming decades. Increased immigration provides several opportunities – in particular:

- to alleviate the effects of population ageing (although providing no long-term solution, as it is not realistic to expect it to fully compensate for the impact of demographic trends);
- to help deal with labour and skill shortages, especially for highly skilled workers and in specific areas such as the construction, health, hotels and restaurants, and domestic services and care sectors, which are already heavily dependent on labour supply of immigrants;
- and more generally to fuel economic growth.

Nonetheless, it also brings challenges, especially regarding development of appropriate integration policies.

Given that access to employment is one of the main conditions for successful integration of third country nationals into society, this chapter has focused on the relative labour market performance of migrants, in particular those who have arrived in the EU since 2000. The analysis is based on a country of birth approach to classify migrants rather than nationality, which currently excludes results for Germany, together with Bulgaria and Ireland. This initial exploration, which aims to present what we currently know from existing data sources and analysis, has identified areas where more data and research is needed. The 2008 LFS ad hoc module on migrants and their immediate descendants should provide some very useful results in this context within a year or two.

Across the EU there is a wide variety of migration experiences. Indeed, Member States are characterised by a diversity of past and recent migration histories and migrant population compositions. At the same time migrants display a wide heterogeneity as regards region of origin, cultural background, skill level and socio-economic characteristics, and have varying reasons for migrating to the EU. All this, together with the existing heterogeneity in the Member States in terms of institutional framework and attitudes of society towards migrants, has an impact on the variation in outcomes across Member States regarding the labour market integration of migrants.

Net migration into the EU has seen a substantial increase in recent years, rising threefold between the mid-1990s and early 2000s. Indeed, migrants who arrived in the EU within the last seven years account for almost one third of all resident working-age migrants. Furthermore, in most Member States, immigration from third countries appears to be much more significant than the influx from intra-EU mobility. The pattern of recent immigration to the EU* (excluding Bulgaria, Germany and Ireland) is also somewhat different to that prior to 2000, with indications that flows have become more diversified. For example, recent immigration has seen a large influx from Central and South America, while in term of destination countries within the EU, the general increase in net migration to countries in Southern Europe has accelerated in recent years, becoming

as important as that to the more traditional immigration countries in Northern Europe.

In terms of economic benefits, most studies find a small overall net gain from immigration for the host country, while negative effects on the labour market situation of native workers are negligible. Evidence suggests that the skills of non-EU immigrants are usually complementary to the skills of native-born workers, with only a limited impact of immigration on domestic wages and employment, although the risk of some negative effects appears to be greater for low-skilled native workers. At the same time immigration can improve the efficiency of labour markets by compensating, at least partially, for the low mobility of native-born workers and increasing labour-force flexibility. EU consumers also benefit from immigration, through wider choice, reduced inflationary pressure and lower prices, particularly for those services corresponding to jobs native-born workers are increasingly unwilling to fill.

Empirical evidence suggests that overall, third country migrants have made a substantial contribution to the EU labour market and economy in recent years, in particular through alleviating specific labour and skill shortages and increasing flexibility in the labour market. Recently arrived immigrants in particular have made a significant contribution to overall economic growth and employment expansion (around a quarter) in the EU* since 2000. In summary:

- Third country migrants make an important contribution to overall labour input, accounting for 6.7% of the EU* labour force, compared with their share of 6% in the adult population.

- Recent migrants tend to be employed in those sectors where demand for labour has been greatest over 2000–07. In particular, they have helped to ease shortages at the low-skill end of the jobs spectrum, as non-migrants continue to improve their skill base and non-migrant women increasingly participate in the labour market. Of particular note is the high importance of recent migrants to the private household sector – a feature which is likely to continue in the future.

- The occupational distribution of recent migrants' employment tends to suggest they have been complementary to EU-born workers rather than substitutes.

- Immigrants have helped increase labour market flexibility, as indicated by their higher dynamics in labour market transitions and greater involvement in more precarious and atypical forms of employment.

- A more pronounced polarisation of skill levels for migrants suggests that currently they potentially play an enhanced role in meeting demands for labour at the low-skill end of the labour market. The overall share of high-skilled migrants in total employment in the EU remains low, comparing unfavourably with the shares in other similarly developed economies. Rather, the EU still tends to attract mainly less-skilled immigrants: almost half (48%) of recent working-age migrants are low-skilled and only one in five is high-skilled.

Concerning migrants' labour market integration, although at EU* level employment rates for the non-EU-born population are comparable with those for the EU-born, the analysis reveals a mixed picture across Member States. In particular, the present labour market situation of immigrants suggests that their potential contribution is currently not fully realised and that there remain considerable challenges regarding the integration of migrants into the labour market:-

- *Firstly*, current figures show that in many Member States the overall labour market situation for third country migrants is substantially worse than that of the EU-born:

  - Migrants tend to have lower employment rates and a greater risk of being unemployed. Differences in skill structure explain only a limited portion of the differences in employment rates of non-EU-born migrants and the EU-born across Member States.

  - Considering standard labour market indicators, two main groups of Member States can be identified with regard to the labour market situation of migrants relative to the EU-born. In the new migration countries of southern Europe that have received high flows of labour migration over recent years, and in most of the new Member States, migrants perform better than non-migrants on the labour markets. In the remaining old Member States with long traditions of family-related or humanitarian immigration, migrants tend to have poorer overall labour market outcomes relative to the EU-born.

- *Secondly*, focusing on recent non-EU migrants who have arrived since 2000, in most Member States their employment rates are considerably below those for both the EU-born and longer-established migrants, suggesting that there are important delays for migrants to establish a sufficient foothold in the labour market. In this context:

  - Although there is a general improvement in migrants' labour market performance with time spent in the host country, indications are that relative performance in terms of ease and rapidity of migrants' integration into employment has effects which persist into relative longer-term labour market outcomes across Member States.

  - The integration of women and migrants from certain regions of origin remains a significant challenge in most Member States.

Underperformance in the labour market is concentrated among recent female migrants, for whom the acute gap compared with their EU-born counterparts reflects particular difficulties in integrating into the labour market and relatively high inactivity levels. At the same time, migrants from East Asia, North Africa, the Near and Middle East, and Turkey have worse labour market outcomes than migrants from other regions and face particular difficulties in integrating quickly into European labour markets. This would tend to support the need for specific integration programmes for newly arrived immigrants within these groups, together with the need to help those granted asylum or entering as dependants or through family reunification to better use their abilities in the labour market.

- *Thirdly*, migrants tend to be more exposed to jobs of lower quality, precarious employment and greater frequency of transitions in labour status. In addition, they encounter greater difficulties in achieving an effective use of their human capital, often holding jobs for which they are over-qualified. For example:

  - Compared with the EU-born, migrants are more likely to be in fixed-term employment, work more frequently at night or in the evening, are under-represented in positions with supervisory responsibilities, work more often in low-skilled sectors and occupations, and are frequently involved in undeclared work.

  - Migrants face more difficulties in making effective use of their human capital. The employment rate gap between high-skilled migrants and non-migrants exceeds significantly that between their low-skilled counterparts, indicating that while a higher level of education facilitates access to the labour market, problems of appropriate labour market integration appear relatively more acute. In particular, evidence suggests that immigrants' skills are underutilised and they suffer from large mismatches between the level of jobs they hold and their qualifications. Around 60% of recent high-skilled non-EU-born migrants in employment are in jobs for which they are over-qualified – about three times the rate for the native-born. This calls into question the aim to attract high-skilled migrants if their potential is not used, and highlights that more efforts are needed to properly take into account their previously acquired experience and qualifications obtained outside the EU, which requires recognition and proper assessment of formal and informal qualifications.

Overall, most countries of southern Europe seem to be more successful at getting migrants into employment, but with greater risk of their being over-qualified and exposed to lower quality and precarious employment. In contrast, northern Member States show a lower rate of migrant over-qualification but have greater gaps in participation and employment rates, and higher unemployment rates, for migrants compared with the EU-born.

The main factors affecting immigrants' labour market integration, and helping to explain differences across Member States, include issues such as the immigration channel for entry, country of origin, host country language proficiency, availability of support schemes at entry, level of acceptance of irregular work, labour market rigidities and access restrictions in the host country, type of welfare system, incomplete recognition of qualifications acquired outside of the EU, lack of information on labour market functioning, and discrimination. These suggest where policy measures to raise migrants' labour market integration should focus and highlight the scope for better coordination between migration and other policy areas. In particular, anti-discrimination and equal rights policies and information campaigns are important for addressing many of the obstacles faced by immigrants in employment.

The immigration experience over 2000–07 took place during a period of continued expansion in the economy and the working-age population. It is too early to assess what potential effects the emerging economic downturn will have on short-term labour market prospects in the EU and what the impact will be on recent migrants across Member States. While in the short term, the economic downturn may have some negative implications for existing migrants and the demand for further immigration, in the coming decades, the strong decline in the working-age population should create an even stronger pull factor for immigration from third countries. The need for highly qualified workers is projected to increase, and this together with wider labour shortages and geographical mismatches across EU labour markets, will call for higher flows of immigrants and more effective integration policies.

In terms of Member State practices, there are discernible trends towards, on the one hand, increasingly selective immigration policies favouring high-skilled migrants and, on the other hand, tightening of criteria for granting refugee status and allowing family reunification. However, most countries continue to accept rather large numbers of low-skilled migrants. This highlights that while international competition is especially focusing on the high-skilled, a comprehensive migration policy needs to address how to meet future labour market needs across the whole skill spectrum.

Several Member States are developing more comprehensive approaches to immigration, which address the integration of migrants while developing a legal framework with respect to immigration which is responsive to their labour market needs. Measures to strengthen integration in the labour market, including education and training, more effective systems to recognise qualifications, actions to fight discrimination in the workplace, and promoting employment of immigrant women are increasingly being implemented.

Realising the potential gains from immigration depends crucially on successful integration into the labour market (and into the host societies) of the immigrant population, as well as of their children. Although integration into the labour market constitutes a key element of the process of integration, it is unlikely to succeed in the longer run if it is not backed up by a more comprehensive approach leading to the effective integration of immigrants in the social, cultural and political life of the host society. The EU must therefore prepare for current and future immigration in a responsible, comprehensive and effective way. As well as the economic aspects, the social and social cohesion implications of large-scale immigration are important issues which must also enter into any overall assessment of the impact of migration on host countries, which requires further research. A successful policy approach will have to strike the balance between the interests of third country nationals and the host societies while anticipating future impacts. Employment and social policies have a critical role to play in this context.

Annex

(a) Nationality or country of birth as a basis for defining migrants

It is possible to use two different approaches for examining migration – one based on nationality (i.e. non-nationals) or one based on country of birth (i.e. foreign-born). Non-nationals (or foreigners) do not hold citizenship of the destination country. The foreign-born are those who were born outside the host country and who may or may not have citizenship of the destination country. Both concepts have advantages and disadvantages when analysing migration, as follows:

- **Country of birth** – the foreign-born category covers all those born in another country, and therefore also includes citizens at birth who were born abroad (although this is likely to account for relatively limited numbers). It has the key advantage that it includes migrants who have acquired citizenship, and thus does not lose track of migrants once they acquire the nationality of the host country.[73] This is particularly important, as naturalisation policies vary considerably across Member States, and indications are that the labour market outcomes for naturalised migrants may differ considerably from those for non-naturalised migrants. This definition will automatically exclude descendants (children) of immigrants who were born in the host country.

- **Nationality** – in this case, migrants are defined as non-nationals (foreigners), and hence will not include migrants who have acquired citizenship of the destination country. It will, however, include the children of migrants who were born in the host country but never acquired nationality of that country and who have, in fact, never migrated.[74] The experiences and labour market outcomes of the latter group are distinctly different from those who have actually changed residence from one country to another.

If shares of foreigners are computed on the basis of nationality rather than actual migration experience, country differences will reflect differences in naturalisation practice and the ease with which migrants can become citizens, and in the population shares of non-national descendants of immigrants. For example, in countries with a high incidence of naturalisation the official number of legal foreign residents largely underestimates the immigrant population.

(b) Limitations of the EU LFS for examining migrant populations

Results concerning migrant populations derived from the LFS should be treated with caution, taking into account several limitations of the survey, as follows:

- In many Member States there is a delay in entering the reference sample frame and very recent migrants may not be well covered. Furthermore, the LFS only covers migrants who have stayed or intend to stay for one year or more and hence those migrants who do not remain very long in the country are not covered, for instance seasonal workers or posted workers on short-term assignments..

- Collective households (e.g. hostels or communal dwellings including those provided by employers) are generally not covered. However, the percentage of migrants living in collective households is small and usually not significantly different from the population at large, although newly arrived migrants have a somewhat higher propensity to live in collective households than migrants who have settled in the country.

- Non-response for migrants is considerably higher than for nationals, mainly due to their higher mobility, problems of language and possibly their illegal status. Furthermore, it seems to be higher for recent migrants than for more established migrants, and also higher for non-EU migrants than for EU migrants.

- Data on migrants may lack statistical reliability due to small sample sizes, in particular in countries where migrants represent a very small part of the population, and more generally when too many variables are crossed to analyse this population.

- The LFS does not cover migrants who subsequently left the host country, either to return home or to some other destination, and whose labour market integration experiences might be especially problematic (or successful).

73 When a foreigner acquires the nationality of the host country they are no longer included in the statistics on foreigners (i.e. non-national residents). Therefore, once foreigners acquire the nationality of the country, it is usually no longer possible to monitor their labour market performance. The problem is magnified by the fact that naturalisation policies vary substantially across EU Member States, hence making sensible cross-country comparisons of migrants' situations problematic.

74 This is not the entire population of first generation descendants of migrants. By looking at foreigners only that part of the second generation that has not acquired citizenship of the host country is covered. However, in many countries a significant part of the second generation born in the host country holds its citizenship.

(c) Composition of groupings of countries of origin

Table 7: List of groupings of countries of origin

Native-born	Same country
Other EU-born	Belgium, Bulgaria, the Czech Republic, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Italy, Cyprus , Latvia, Lithuania, Luxembourg, Hungary, Malta, the Netherlands, Austria, Poland; Portugal, Romania, Slovenia, Slovakia, Finland, Sweden, the UK
EEA and other Europe	Norway, Iceland, Lichtenstein, Switzerland, Andorra, Monaco, San Marino, Vatican
Turkey	Turkey
Balkans	Croatia, FYROM Macedonia, Albania, Bosnia Herzegovina, Kosovo, Montenegro, Serbia
Eastern Europe	Russian Federation, Belarus, Moldova, Ukraine
North Africa	Algeria, Morocco, Tunisia, Libya, Egypt, Other undetermined
Sub-Saharan Africa	Angola, Burkina Faso, Burundi, Benin, Botswana, the Democratic Republic of the Congo, Central African Republic, Congo, Côte d'Ivoire, Cameroon, Cape Verde, Djibouti, Eritrea, Ethiopia, Gabon, Ghana, Gambia, Guinea, Equatorial Guinea, Guinea-Bissau, Kenya, Liberia, Lesotho, Madagascar, Mali, Mauritania, Mauritius, Malawi, Mozambique, Namibia, Niger, Nigeria, Rwanda, Seychelles, Sudan, Sierra Leone, Senegal, Somalia, Sao Tome and Principe, Swaziland, Chad, Togo, United Republic of Tanzania, Uganda, South Africa, Zambia, Zimbabwe, Other undetermined
North America	Bermuda, Canada, Greenland, Saint Pierre and Miquelon, United States, Other undetermined
Central America, Caribbean and South America	Antigua and Barbuda, Belize, Netherlands Antilles, Barbados, Bahamas, Cuba, Costa Rica, Dominican Republic, Dominica, Grenada, Guatemala, Honduras, Haiti, Jamaica, Mexico, Nicaragua, Panama, Puerto Rico, El Salvador, Other undetermined Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Peru, Paraguay, Suriname, Uruguay, Venezuela, Other undetermined
Near and Middle East	United Arab Emirates, Armenia, Azerbaijan, Bahrain, Georgia, Israel, Iraq, Iran , Jordan, Kyrgyzstan, Kuwait, Kazakhstan, Lebanon, Oman, Palestinian Territory, Qatar, Saudi Arabia, Syria, Tajikistan, Turkmenistan, Uzbekistan, Yemen, Other undetermined
East Asia	China, Japan, Taiwan, Other undetermined
South and South East Asia	Afghanistan, Bangladesh, Brunei Darussalam, Bhutan, Indonesia, India, Cambodia, North Korea, South Korea ,Lao People's Democratic Republic, Sri Lanka, Myanmar, Mongolia, Maldives, Malaysia, Nepal, Philippines, Pakistan, Singapore, Thailand, Timor-Leste, Vietnam, Other undetermined
Oceania	Australia, Fiji, Federated States of Micronesia, New Caledonia, New Zealand, French Polynesia, Papua New Guinea, Solomon Islands, Vanuatu, Other undetermined
Other	Other and stateless

(d) ISCED and ISCO correspondence

Table 8: Correspondence between ISCED education level and ISCO occupation level

		ISCO occupation level		
		Low-skilled (ISCO 9)	Medium-skilled (ISCO 4-8)	High-skilled (ISCO 1-3)
ISCED education level	Low (ISCED 0-2)		Under-qualified	Under-qualified
	Medium (ISCED 3-4)	Over-qualified		Under-qualified
	High (ISCED 5-6)	Over-qualified	Over-qualified	

(e) Miscellaneous tables

Table 9: Third country migrants' population, labour force and employment shares and activity, employment and unemployment rates, 2007

	Share of population 15+			Share of labour force 15+			Share of employment 15+				Activity rates				Employment rates				Unemployment rates		
	Non-EU-born			Non-EU-born			Non-EU-born				Non-EU-born				Non-EU-born				Non-EU-born		
	Total	Resident > 7 years	Resident ≤7 years	Total	Resident > 7 years	Resident ≤ 7 years	Total	Resident > 7 years	Resident ≤ 7 years	EU born	Total	Resident > 7 years	Resident ≤ 7 years	EU born	Total	Resident > 7 years	Resident ≤ 7 years	EU born	Total	Resident > 7 years	Resident ≤ 7 years
BE	5.7	4.0	1.7	5.7	4.1	1.6	4.7	3.5	1.2	67.7	58.7	60.5	54.5	63.2	45.2	48.1	38.7	6.5	22.8	20.4	28.9
CZ	0.6	0.4	0.2	0.7	0.4	0.2	0.7	0.4	0.2	69.8	77.7	76.7	79.0	66.1	71.4	69.4	74.4	5.3	8.2	9.5	5.8
DK	6.5	3.1	1.8	6.1	2.9	1.7	5.7	2.7	1.5	81.5	65.7	68.1	62.3	78.7	59.6	(62.1)	(55.6)	3.4	9.2	(8.6)	(10.6)
EE	17.6	17.3	(0.2)	14.8	14.6	:	14.6	14.4	:	:	79.2	79.5	:	:	74.4	74.8	:	:	5.7	5.6	:
EL	5.3	3.8	1.5	7.0	5.0	2.0	7.0	5.0	2.0	66.5	73.9	74.9	71.3	61.0	67.5	68.4	65.4	8.2	8.6	8.7	8.2
ES	9.4	3.9	5.5	12.3	5.1	7.2	12.0	5.0	7.0	70.3	78.8	80.0	78.0	64.7	70.4	71.3	69.8	7.9	10.7	10.9	10.6
FR	8.6	7.0	1.7	8.7	7.1	1.6	8.0	6.7	1.3	70.4	67.6	71.3	54.9	65.2	56.9	61.8	40.2	7.3	15.7	13.2	26.8
IT	4.8	2.9	1.8	6.7	4.2	2.5	6.6	4.2	2.4	61.9	71.9	75.1	66.9	58.2	66.2	70.2	60.2	6.0	7.9	6.6	10.1
CY	9.8	3.4	6.4	11.6	3.6	8.0	11.5	3.5	8.0	73.3	79.3	74.6	81.7	70.4	75.2	69.9	77.7	3.7	5.2	(6.2)	4.8
LV	14.4	14.1	0.3	12.3	11.9	0.4	12.2	11.8	0.4	72.1	78.4	78.2	84.2	67.7	73.1	72.8	80.2	5.9	6.6	6.7	:
LT	4.5	4.4	(0.2)	4.3	4.1	:	4.2	4.0	:	67.6	76.2	77.0	:	64.7	70.9	71.8	:	4.2	(6.7)	(6.5)	:
LU	5.2	3.5	1.7	6.1	4.2	1.8	5.6	4.0	1.5	66.8	67.8	72.3	59.7	64.4	60.0	65.8	49.2	3.6	(11.5)	(9.0)	(17.6)
HU	0.4	0.3	0.1	0.5	0.3	0.1	0.5	0.4	0.1	61.9	64.9	65.3	63.8	57.3	62.6	63.0	61.2	7.4	:	:	:
MT	2.8	2.4	:	3.4	3.0	:	3.4	3.0	:	59.4	64.5	65.6	:	55.5	60.2	62.2	:	6.5	:	:	:
NL	9.2	8.2	1.0	8.5	7.6	0.8	8.0	7.3	0.7	79.3	65.5	66.9	55.1	76.9	59.8	61.5	47.3	3.1	8.7	8.1	14.1
AT	10.0	7.5	2.5	10.9	8.5	2.4	10.2	8.1	2.1	75.3	70.4	74.1	60.0	72.5	63.0	67.4	50.8	3.7	10.5	9.1	15.3
PL	0.7	0.7	(0.0)	0.2	0.1	(0.1)	0.2	0.1	(0.0)	63.2	44.0	38.5	(62.6)	57.1	38.7	34.1	(54.0)	9.6	:	:	:
PT	5.2	3.7	1.5	6.4	4.4	2.0	6.3	4.3	1.9	73.5	82.0	82.0	82.1	67.4	73.7	73.7	73.6	7.8	10.1	10.0	10.4
RO	(0.1)	(0.1)	:	(0.1)	:	:	(0.1)	:	:	63.0	(63.6)	:	:	58.8	(62.4)	:	:	6.4	:	:	:
SI	7.5	7.2	0.3	7.6	7.3	(0.3)	7.6	7.3	(0.3)	71.2	72.6	73.0	(63.2)	67.7	68.2	68.8	(56.8)	4.7	5.9	5.7	:
SK	0.1	0.1	:	0.1	(0.1)	:	(0.1)	(0.1)	:	68.3	73.2	(73.3)	:	60.7	(60.9)	(59.6)	:	11.1	:	:	:
FI	1.5	1.0	0.4	1.6	1.1	0.4	1.4	1.0	0.3	75.6	68.7	71.4	61.8	70.5	55.6	59.6	46.6	6.7	18.9	16.4	(24.6)
SE	9.9	7.6	2.3	9.1	7.3	1.8	8.3	6.8	1.5	80.3	69.4	72.7	58.5	76.0	58.9	63.2	44.9	5.3	15.1	13.1	23.1
UK	8.1	5.2	2.8	8.1	4.9	3.0	7.8	4.8	2.9	75.6	68.5	69.3	67.7	71.9	62.6	63.9	60.8	4.9	8.7	7.8	10.2
EU*	6.0	4.0	1.9	6.7	4.4	2.3	6.4	4.3	2.1	69.2	71.1	72.4	68.7	64.6	63.3	65.1	59.9	6.6	10.9	10.0	12.8
Men	6.0	4.1	1.8	6.9	4.6	2.3	6.6	4.4	2.2	76.5	82.0	82.3	81.8	71.8	74.3	75.0	73.0	5.9	9.4	8.7	10.7
Wom-en	6.0	4.0	2.0	6.6	4.3	2.3	6.2	4.1	2.1	61.9	60.7	62.6	57.4	57.4	52.8	55.3	48.6	7.3	12.9	11.7	15.4

Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: Data for BG, DE and IE not available. EU excludes BG, DE and IE. ':' Data not reliable. Data in brackets uncertain due to small sample size. The total shares may differ from the sum of shares by groups due to 'No answers' regarding the length of stay in the country.*

Table 10: Foreign-born as a share of working-age population, 2007

	Other EU-born			Non-EU-born			Total foreign-born			Share of resident ≤ 7 years		
	Total	Resident > 7 years	Resident ≤ 7 years	Total	Resident > 7 years	Resident ≤ 7 years	Total	Resident > 7 years	Resident ≤ 7 years	Total	Other EU-born	Non-EU-born
BE	5.2	3.9	1.3	6.5	4.5	2.0	11.7	8.5	3.2	27.6	24.3	30.2
CZ	1.3	0.9	0.4	0.6	0.4	0.2	1.9	1.3	0.6	30.9	28.4	36.2
DK	2.0	1.1	0.5	5.4	3.4	2.2	9.5	4.5	2.7	37.2	31.4	38.9
EE	0.6	0.6	:	13.1	12.9	(0.2)	13.8	13.4	(0.3)	2.0	13.2	:
EL	1.6	1.0	0.7	6.4	4.5	1.9	8.1	5.5	2.5	31.6	40.3	29.3
ES	4.2	1.9	2.3	11.1	4.5	6.6	15.3	6.4	8.9	58.3	55.7	59.3
FR	3.3	2.7	0.6	9.0	7.0	2.1	12.3	9.7	2.7	21.8	19.3	22.8
IT	2.1	1.3	0.9	5.9	3.6	2.3	8.1	4.8	3.2	40.0	40.9	39.6
CY	7.5	4.0	3.4	11.1	3.6	7.5	18.5	7.6	10.9	58.8	46.1	67.3
LV	1.3	1.1	(0.1)	10.9	10.6	0.3	12.2	11.7	0.5	3.8	9.9	(3.1)
LT	0.4	(0.3)	:	3.8	3.6	:	4.1	3.9	(0.2)	5.6	(16.3)	:
LU	35.7	26.0	9.6	5.9	3.9	2.0	41.8	29.9	11.6	27.9	26.9	33.9
HU	1.2	0.9	0.2	0.4	0.3	0.1	1.6	1.3	0.4	21.8	20.5	25.3
MT	1.4	1.3	:	3.1	2.7	:	4.5	4.0	(0.6)	12.2	11.6	:
NL	2.7	2.2	0.5	10.1	8.9	1.2	12.8	11.1	1.7	13.3	19.1	11.7
AT	5.8	3.7	2.1	11.7	8.6	3.1	17.5	12.3	5.2	29.5	36.2	26.2
PL	0.2	0.1	(0)	0.2	0.2	(0.1)	0.4	0.3	0.1	18.8	13.2	(22.9)
PT	1.6	1.2	0.4	6.1	4.2	1.9	7.7	5.4	2.3	30.2	26.5	31.1
RO	:	:	:	(0.1)	(0.1)	:	0.1	(0.1)	:	(12.9)	:	:
SI	0.5	0.5	:	7.6	7.3	0.3	8.1	7.8	0.4	4.5	4.3	:
SK	0.4	0.4	:	0.1	0.1	:	0.5	0.5	(0.1)	10.6	10.5	:
FI	1.4	1.2	0.2	1.7	1.2	0.5	3.2	2.4	0.8	24.3	17.1	30.1
SE	4.7	4.0	0.8	10.6	8.1	2.5	15.3	12.1	3.3	21.3	15.9	23.7
UK	3.9	1.9	1.9	8.8	5.3	3.4	12.8	7.3	5.4	42.5	50.0	39.1
EU*	2.6	1.7	1.0	6.6	4.3	2.3	9.2	5.9	3.3	35.8	37.0	35.3
Shares												
Men	46.1	45.6	46.9	48.7	50.0	46.4	48.0	48.8	46.5	:	:	:
Women	53.9	54.4	53.1	51.3	50.0	53.6	52.0	51.2	53.5	:	:	:

Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
Note: Data for BG, DE and IE not available. EU excludes BG, DE and IE. ':' Data not reliable. Data in brackets uncertain due to small sample size.*

Table 11: Education attainment level of migrants, 2007

	Total non-EU-born			Resident > 7 years			Resident ≤ 7 years		
	Low	Medium	High	Low	Medium	High	Low	Medium	High
BE	49.5	28.3	22.2	50.1	28.1	21.8	48.0	28.8	23.1
CZ	15.9	60.6	23.5	13.8	64.4	21.8	20.0	53.0	27.0
DK	40.6	37.7	21.7	40.5	35.3	24.2	39.3	38.1	22.7
EE	7.4	58.7	33.9	7.4	58.4	34.2	:	:	:
EL	51.1	36.5	12.4	47.7	39.9	12.4	59.4	28.2	12.4
ES	46.4	33.5	20.1	46.3	32.4	21.3	46.5	34.3	19.3
FR	46.0	30.1	23.9	46.5	31.1	22.4	44.2	26.8	29.1
IT	53.9	35.6	10.5	50.7	38.5	10.8	58.8	31.1	10.1
CY	29.8	39.5	30.8	20.8	37.5	41.7	34.1	40.4	25.4
LV	11.8	65.6	22.5	12.2	65.8	22.0	:	:	:
LT	(7.9)	67.3	24.8	(8.1)	67.4	24.5	:	:	:
LU	31.5	38.0	30.5	34.2	40.6	25.2	28.5	32.4	39.2
HU	18.4	45.7	35.8	20.0	44.1	35.9	:	50.7	(35.5)
MT	51.3	(27.0)	(21.7)	55.3	(25.7)	:	:	:	:
NL	39.3	41.1	19.6	40.0	40.9	19.1	34.0	42.5	23.5
AT	48.3	40.6	11.1	49.4	41.2	9.4	45.2	39.1	15.6
PL	(17.7)	45.5	36.9	(21.4)	50.1	(28.5)	:	:	(65.2)
PT	56.1	25.2	18.7	56.1	23.5	20.3	56.1	28.8	15.2
RO	:	:	:	:	:	:	:	:	:
SI	33.6	56.0	10.4	33.9	56.3	9.8	(25.6)	(51.1)	(23.3)
SK	:	(59.6)	:	:	(59.8)	:	:	:	:
FI	37.2	38.1	24.7	35.0	39.2	25.8	41.8	35.5	(22.7)
SE	27.8	44.9	27.3	27.7	47.7	24.6	28.0	34.3	37.6
UK	:	:	:	:	:	:	:	:	:
EU**	45.2	35.3	19.5	44.0	36.7	19.3	47.7	32.5	19.8

Source: DG EMPL calculations based on Eurostat, EU Labour Force Survey annual data.
*Note: Data for BG, DE and IE not available. EU** excludes BG, DE, IE and UK. ':' Data not reliable. Data in brackets uncertain due to small sample size.*

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Geographical labour mobility in the context of EU enlargement

Chapter 3

1. Introduction

Geographical labour mobility between EU Member States is an important element of the European Employment Strategy and at the centre of the Commission's recent Job *mobility action plan 2007-2010*[1]. Moreover, in many Member States the 2004 and 2007 enlargements of the EU sparked concerns that there could be a massive surge of workers from poorer Central and Eastern European countries flooding the labour markets of the 'old' EU-15 Member States and negatively affecting wages and local workers' employment.

In order to address these concerns, transitional arrangements were introduced, allowing Member States to restrict the free movement of workers from most of the new Member States for a maximum of seven years after accession to the EU. Under these arrangements, Member States applying restrictions must review their decision after two years.

With respect to Bulgaria and Romania, which joined the EU in January 2007 (EU-2), the existing Member States restricting the access of Bulgarian and Romanian workers to their labour markets will have to declare by the end of 2008 if they intend to maintain restrictions further. Concerning the eight Central and Eastern European countries which joined the EU in May

Table 1: Member States' policies towards workers from the new Member States

Member State		Workers from the EU-8/EU-15	Workers from BG and RO/EU-25
EU-15	BE	Restrictions with some simplifications	Restrictions with some simplifications
	DK	Restrictions with some simplifications	Restrictions with some simplifications
	DE	Restrictions with some simplifications *	Restrictions with some simplifications *
	IE	Free access (1 May 2004)	Restrictions
	EL	Free access (1 May 2006)	Restrictions
	ES	Free access (1 May 2006)	Restrictions
	FR	Free access (1 July 2008)	Restrictions with some simplifications
	IT	Free access (27 July 2006)	Restrictions with some simplifications
	LU	Free access (1 November 2007)	Restrictions with some simplifications
	NL	Free access (1 May 2007)	Restrictions with some simplifications
	AT	Restrictions *	Restrictions *
	PT	Free access (1 May 2006)	Restrictions
	FI	Free access (1 May 2006)	Free access, subsequent registration for monitoring purposes
	SE	Free access (1 May 2004)	Free access
	UK	Free access (1 May 2004), mandatory workers registration scheme for monitoring purposes	Restrictions
EU-10	CZ	No reciprocal measures	Free access
	CY	-	Free access, subsequent registration for monitoring purposes
	EE	No reciprocal measures	Free access
	LV	No reciprocal measures	Free access
	LT	No reciprocal measures	Free access
	HU	Reciprocal measures (simplifications as of 1 January 2008)	Restrictions with simplifications
	MT	-	Restrictions
	PL	No reciprocal measures (17 January 2007)	Free access
	SI	No reciprocal measures (25 May 2006)	Free access, subsequent registration for monitoring purposes
	SK	No reciprocal measures	Free access
EU-2	BG	-	No reciprocal measures
	RO	-	No reciprocal measures

Source: DG EMPL.
*Note: * Restrictions also on the posting of workers in certain sectors.*

1 See COM (2007) 773 final.

Transitional arrangements on the free movement of workers

Free movement of persons is one of the four fundamental freedoms guaranteed by EU law, along with the free movement of goods, services and capital. It includes the right of EU nationals to freely move to another Member State, to take up employment and reside there with their family members. Free movement of workers precludes Member States from directly or indirectly discriminating against EU workers and their families on the basis of nationality in employment-related matters. It also ensures equal treatment as regards public housing, tax advantages and social advantages.

The Accession Treaties of 2003 and 2005 allow Member States to temporarily restrict the free movement of workers from countries that joined in 2004 (with the exception of Malta and Cyprus) and 2007 to their labour markets.[1] These 'transitional arrangements' for the free movement of workers are divided into three distinct phases according to a 2+3+2 formula, with different conditions applying during each phase:

- For an initial two-year period, the national law of the other Member States regulates the access of workers from the EU-8 and EU-2 to their labour markets. At the end of this first phase, the Commission has to provide a report as a basis for the Council to examine the functioning of this first phase of the transitional arrangements.
- Member States can extend their national measures for a second of phase of another three years upon notification to the Commission before the end of the first phase; otherwise EU law granting free movement of workers applies.
- A Member State can maintain restrictions for a final third phase of two additional years only after notifying the Commission of a serious disturbance of its labour market or threat thereof.

The transitional arrangements end irrevocably seven years after accession – i.e. on 30 April 2011 for the EU-8 and 31 December 2013 for Bulgaria and Romania.

These restrictions can only be applied to workers but not to the self-employed any other category of citizens. They only apply to obtaining access to the labour market in a particular Member State. Once a worker has been admitted to the labour market of a particular Member State, Community law on equal treatment as regards remuneration, other employment-related matters and access to social and tax advantages is valid. This means that no discrimination on the grounds of nationality in these matters is allowed between legally employed workers, regardless of the EU Member State from which they come. As no transitional arrangements are in place for the application of Community law on coordination of social security schemes, they also benefit from equal treatment in this regard.

15 Member States have restrictions for workers from Romania and Bulgaria while 10 Member States have opened their labour markets (see Table 1).

From 1 January 2009, the second phase of the transitional period will start. The EU-25 Member States that decide to lift restrictions will, throughout the remainder of the transitional period, be able to reintroduce restrictions, using the safeguard procedure set out in the Accession Treaty, should they undergo or foresee disturbances on their labour markets. Notwithstanding the restrictions, a Member State must always give preference to EU-2 and EU-8 workers over those who are nationals of a non-EU country with regard to access to the labour market.

For EU-8 workers, three Member States opened their labour markets from the date of accession (Ireland, Sweden and the United Kingdom (UK)). After the end of the first two-year period and the Commission's 2006 report on the functioning of the first phase of the transitional arrangements[2], four more Member States (Spain, Finland, Greece and Portugal) opened their labour markets as of 1 May 2006, followed by Italy (27 July 2006), the Netherlands (1 May 2007), Luxembourg (1 November 2007) and most recently France (1 July 2008). The UK has opened its labour market but still requires mandatory registration for monitoring purposes. Presently, only Belgium, Denmark, Germany and Austria restrict access to their labour markets under national law. Hungary applies (simplified) reciprocal measures, limiting access to its labour market for workers from EU-15 Member States that restrict access of Hungarian workers.

1 'EU-15' refers to all Member States forming part of the EU before 1 May 2004;
'EU-10' refers to all countries that joined the EU on 1 May 2004,
'EU-8' refers to all EU-10 Member States except for Malta and Cyprus,
'EU-25' refers to all Member States forming part of the EU before 1 January 2007,
'EU-2' refers to Bulgaria and Romania.

2 See European Commission (2006).

2004 (EU-8), four of the EU-15 currently maintain restrictions. A further extension of these restrictions after April 2009 and until April 2011 at the latest is only possible if there is a serious disturbance of the labour market or threat thereof (see Box 1).

Against this background, this chapter presents an analysis of the extent and impact of geographical labour mobility within the EU.[2] Section 2 provides an updated picture of the level of intra-EU labour mobility since the last two EU enlargements and the driving forces behind it. Section 3 looks at the main socio-economic characteristics of recent intra-EU movers, while section 4 examines the main impacts of intra-EU labour mobility on the overall economy and labour markets of the receiving and sending countries. Section 5 looks at a number of other effects, such as those related to brain drain from the sending countries, remittances and impacts on public services. Section 6 summarises and draws policy conclusions.

2. Intra-EU mobility: extent and drivers

2.1. How many have come? The receiving countries' perspective

The accession of 10 new Member States in 2004 increased the EU's overall population by over 19%, with the accession of Bulgaria and Romania increasing it by another 6% (Table 2). Although smaller in relative terms than the 1973 enlargement for Denmark, Ireland and the UK, both of the recent enlargement rounds came with concerns in the existing Member States that the large differences in income and labour market conditions and geographical proximity between some of the old and new Member States could lead to a massive surge in east-west labour flows.

Table 2: Increase in EU population during past EU enlargements

Year of accession	Acceding countries	Number of EU Member States after accession	Increase in EU population (at time of accession)	
			Absolute (in 1 000)	Relative (% of EU)
1973	DK, IE and UK	9	64 228	30.8
1981	EL	10	9 701	3.5
1986	ES and PT	12	48 515	16.7
1995	AT, FI and SE	15	21 859	6.2
2004	CY, CZ, EE, HU, LV, LT, MT, PL, SK and SI	25	74 142	19.3
2007	BG and RO	27	29 244	6.3

Source: Eurostat, Demographic statistics.

In many ways, this echoed similar concerns raised during the 1980s Southern enlargements when Greece, Portugal and Spain joined the EU. Indeed, the accession of Greece in 1981 was the first case where transitional measures regarding free movement of workers were applied, providing for a seven-year transitional period. The accession arrangements for Portugal and Spain from 1986 also provided for a transitional period of seven years.[3] However, the transitional periods for Portugal and Spain were subsequently shortened from seven to six years[4] following a Council review five years after accession. The review found that allowing for free movement of workers was not likely to cause imbalances in the various national labour markets.

Emigration from the three Southern accession countries turned out to be negligible in any case, both during and after the end of their transition periods. While population stocks of Greek and Portuguese citizens living in other Member States only slightly increased over time, they even declined in the case of Spanish citizens. According to Dustmann et al. (2003)[5], the stock of Greek citizens living in other Member States rose by an average of 10 000 per year in the 10 years after the end of the transitional period. In the case of the Portuguese, population stocks in the other Member States increased by an average of 7 700 per year during the six-year transition period and the following six years. In contrast, population stocks of Spanish citizens resident in the other Member States decreased from 495 000 at the time of accession to 474 000 during the last year of the transition period, declining to 470 000 by 1997.

Concerning the new Central and Eastern European Member States, income gaps with the old Member States were on average much greater at the time of accession than was the case for the Southern enlargement. While Greece, Portugal and Spain had already reached almost two thirds of the average EU per capita income at the point of accession[6], per capita income was below one half in many of the EU-10 and below one third in Bulgaria and Romania (adjusted for purchasing powers).[7] Moreover, geographical proximity may, in principle, also be more of a driving force behind mobility in the 2004 and 2007 enlargements. While Greece and Por-

2 Parts of this chapter draw on research presented in Brücker et al. (2008) and IZA et al. (2008).

3 10 years for the free access of workers to Luxembourg. This special arrangement was justified by the fact that some 40% of workers in the Grand Duchy at the time were foreigners, and it was feared that Portuguese and Spanish workers would move from their traditional sectors of construction and hotel/restaurants into other sectors of the labour market. A general safeguard clause allowed the other Member States to apply to the Commission to suspend free movement in the case of serious and persistent problems on the labour market. The other Member States were not allowed to introduce any new restrictions on the employment of Spanish or Portuguese nationals ('standstill clause'). Furthermore, if the provisions of bilateral agreements with the other Member States in question were more favourable to the worker, these took precedence over the Community provisions.

4 Seven years for movement to Luxembourg.

5 See Dustmann et al. (2003), p.44.

6 See Dustmann et al. (2003), p.41.

7 See Table 8 and Chart 9.

A note on the definition of mobility in this chapter

Differing from the previous chapter on third country immigration, Chapter 3 describes geographical mobility in terms of nationality instead of country of birth. Although there are solid reasons to define migrants as foreign-born persons (see Chapter 2), the main justification for using the nationality concept in the context of post-enlargement intra-EU mobility flows is that the restrictions on free movement under the transitional arrangements are linked to citizenship – and not to country of birth. Another reason is to ensure conceptual consistency between migration data derived from the LFS and other data sources used for this chapter, in particular the Eurobarometer survey on geographical mobility in the EU and administrative data on worker registrations or residence/work permits which are based on citizenship.

The choice of defining geographical mobility in terms of citizenship is unlikely to have any significant impact on the main findings in this chapter. Much of the analysis focuses on recent intra-EU mobility. As the percentage of EU citizens who recently moved to live in another Member State and who have since acquired citizenship of their receiving country is very small, any differences in analysis between foreign and foreign-born persons are likely to be minimal.

Throughout the chapter, recent movers or recent mobile persons are defined as persons who have been resident for four years and less in an EU Member State and who are not citizens of that Member State. The period of four years or less is used as it covers, by and large, the time since the 2004 enlargement.

tugal had no common border with the EU when they joined and France shared borders with the more prosperous regions of Spain, many more new Member States share a border with old Member States, some with large income differentials.

It therefore comes as no surprise that mobility flows have been substantially higher in the context of the two recent EU enlargements compared with the Southern enlargement. However, the accession of the Central and Eastern European Member States has not led to a massive increase of labour flows into the EU-15. As shown below, there has been a substantial rise in labour mobility from several of the Central and Eastern European Member States to some of the EU-15, but numbers have been generally limited when compared with the population sizes of both receiving and sending countries. Moreover, the observed labour flows after enlargement have not had any serious negative labour market impacts in the receiving countries.

2.1.1. Overall stocks of EU-foreigners resident in the EU Member States

The exact size of intra-EU labour mobility is difficult to determine, due to largely open borders within the EU. In addition, capturing recently arrived foreigners statistically is problematic, especially if they come for only a short time, such as seasonal workers, or perform undeclared or illegal work. (See Chapter 2 for a more detailed description of data limitations, namely concerning the EU Labour Force Survey, LFS.)

With these limitations in mind, an approximation using population statistics and data from the LFS suggests that the total number of EU-10 citizens[8] living in an EU-15 Member State may have increased by approximately 1.1 million since the 2004 enlargement. While the number of EU-10 citizens resident in the EU-15 stood at over 900 000 at the end of 2003, it now stands at about 2 million (Table 3). Concerning Romanians and Bulgarians resident in the EU-15, their numbers increased from around 690 000 in 2003 to about 1.6 million in 2007 according to the available data – a process which had started well before the accession of both countries to the EU in January 2007.

While these are substantial population increases in a short period of time, they also should be put into perspective compared with other migration flows and overall population numbers. For example, during the same 2003–07 period, the number of third country nationals living in the EU-15 appears to have increased by around 3.4 million. Moreover, the number of EU-15 citizens living in another EU-15 country has also risen by over 700 000 .[9]

In relative terms, the average population shares of third country nationals and other EU-15 citizens in the old Member States remain well above the share of foreigners from the newer Member States, even four years after the 2004 enlargement. According to the data presented in Table 4, in 2007, people from an EU-15 Member State living in another EU-15 Member State accounted for about 1.7% of the total population in the EU-15, while third country nationals accounted for around 4.4%. In comparison, the share of EU-10 citizens among the EU-15 population was 0.5% (up from 0.2% in 2003) and the share of Bulgarian and Romanian citizens resident in the EU-15 stood at 0.4% (0.2% in 2003).

8 In most of the data presented in this report, Cyprus and Malta are grouped together with the EU-8 in order to ensure a comprehensive coverage of post-enlargement developments. Nevertheless, mobility flows from Malta to other EU Member States have been marginal and recent outflows from Cyprus have also been rather small (only 2% of recent overall flows from the EU-10 to the EU-15 and with Greece and the UK essentially as the two noteworthy EU destination countries for Cypriots).

9 Note that most of the increase in the number of EU-15 citizens resident in another EU-15 Member State has been recorded in Spain, with retirees accounting for a substantial share.

Table 3: Number of foreign nationals resident in the EU-27 by broad group of citizenship, 2003–07 (000)

Host country	Resident foreign nationals from …																			
	EU-15 Member States					EU-10 Member States					EU-2 Member States (BG/RO)					Non-EU-27 countries				
	2003	2004	2005	2006	2007	2003	2004	2005	2006	2007	2003	2004	2005	2006	2007	2003	2004	2005	2006	2007
1,000 persons																				
BE 1)	494	539	545	523	533	13	15	17	19	23	4	6	10	16	19	220	260	250	254	303
DK 2)	56	57	59	63	68	10	11	13	16	22	2	2	2	2	3	199	194	192	193	202
DE 3)	1 850	1 660	1 654	1 783	1 773	482	440	483	564	600	133	113	112	120	119	4 802	5 017	4 448	4 725	4 741
IE 4)	111	112	127	132	136	31	44	94	148	203	:	:	:	:	:	98	105	105	121	129
EL 1)	19	24	27	28	26	25	32	29	29	34	32	41	47	48	56	396	436	450	461	522
ES 3)	536	644	765	982	1 068	42	56	71	103	150	252	371	490	664	843	1 925	2 300	2 676	2 856	3 240
FR 1)	1 035	1 074	954	1 050	1 116	40	45	38	39	39	20	14	14	29	36	1 675	1 696	1 729	1 691	1 889
IT 2)	134	138	143	149	134	56	69	81	95	83	189	264	315	362	431	1 611	1 931	2 131	2 332	2 606
LU 1)	154	155	163	163	173	:	:	:	3	4	:	:	:	:	:	15	17	14	15	16
NL 3)	211	210	210	211	229	13	18	23	29	36	4	5	5	5	4	363	363	356	348	365
AT 2)	127	138	150	162	175	60	69	77	84	90	27	28	30	30	37	531	537	542	536	539
PT 1)	38	45	37	40	41	:	:	:	:	:	10	8	13	14	27	185	213	241	236	283
FI 2)	19	19	20	21	22	16	17	18	21	24	1	1	1	1	1	70	71	74	78	84
SE 3)	186	186	186	188	196	21	23	27	34	44	3	3	3	3	2	259	261	256	241	241
UK 1)	935	913	978	940	934	112	168	281	479	662	13	21	28	35	37	1 707	1 857	1 947	2 123	2 271
EU-15 6)	5 906	5 913	6 018	6 435	6 624	924	1 007	1 255	1 665	2 016	691	878	1 071	1 331	1 617	14 055	15 257	15 410	16 209	17 429
CZ 3)	13	15	19	24	17	50	51	68	78	85	6	6	7	7	7	126	182	164	186	208
EE 1)	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	246	244	217	209	216
CY 1)	:	42	41	44	41	:	1	2	3	2	:	4	5	5	13	:	35	35	35	43
LV 3)	1	2	2	2	2	3	3	4	4	9	0	0	0	0	:	510	487	451	426	372
LT 3)	:	1	1	1	2	:	1	1	1	1	:	0	0	0	0	:	22	22	21	24
HU 3)	12	10	18	25	20	5	4	7	8	5	57	69	67	68	69	56	61	63	66	57
MT 5)	6	5	4	3	4	:	:	:	:	:	:	:	:	:	:	3	5	6	5	4
PL 1)	:	10	17	12	10	:	1	2	3	2	:	:	:	:	:	:	16	20	49	37
SI 3)	1	1	2	2	9	0	0	1	1	:	0	0	0	0	:	43	43	46	51	127
SK 3)	3	3	5	7	18	9	8	9	11	12	3	1	1	1	1	15	10	10	13	5
EU-10 6)	37	90	110	122	123	70	70	95	111	118	66	81	81	82	90	999	1 106	1 036	1 062	1 093
BG 1)	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	10	9	10	8	9
RO 3)	5	5	5	5	5	0	0	0	0	:	0	0	0	0	:	19	19	20	20	20
EU-2 6)	6	6	6	5	6	0	0	1	1	:	0	0	0	0	:	30	28	30	28	29
EU-27 6)	5 949	6 009	6 135	6 563	6 753	995	1 077	1 351	1 777	2 135	757	959	1 152	1 413	1 707	15 083	16 392	16 475	17 299	18 552

Sources: Eurostat EU LFS, Eurostat population statistics, national data sources, DG Employment estimates. ":" figures too small to be reliable or not available.
Note: Choice of data sources according to data availability for individual countries. - Figures not fully comparable between Member States due to the use of different sources. - Data from the LFS should be treated with some caution due to limitations of the survey with regard to foreign populations, in particular concerning coverage of very recent migrants and collective households, relative levels of non-response and small sample sizes. - 1) EU LFS quarterly data, 4th quarter. - 2) National and Eurostat population statistics. - 3) Eurostat population statistics, 2007 DG Employment estimate. - 4) CSO Ireland, Quarterly national household survey, 4th quarter; for 2003 3rd quarter 2004; Nationals from BG and RO included under non-EU-27 nationals until 2006 and under EU-10 nationals in 2007. - 5) EU LFS quarterly data, 4th quarter. EU-10 and EU-2 nationals included under non-EU-27. - 6) EU totals and sub-totals are only of an indicative nature as they are the sum of country values that stem from different sources; EU totals and sub-totals include country data which are not shown individually due to small sample size.

Table 4: Share of foreign nationals resident in the EU-27 by broad group of citizenship, 2003–07 (% of total population)

Host country	Resident foreign nationals from …																			
	EU-15 Member States					EU-10 Member States					EU-2 Member States (BG/RO)					Non-EU-27 countries				
	2003	2004	2005	2006	2007	2003	2004	2005	2006	2007	2003	2004	2005	2006	2007	2003	2004	2005	2006	2007
% of total resident population																				
BE 1)	4.8	5.2	5.2	4.9	5.0	0.1	0.1	0.2	0.2	0.2	0.0	0.1	0.1	0.2	0.2	2.1	2.5	2.4	2.4	2.8
DK 2)	1.0	1.1	1.1	1.1	1.2	0.2	0.2	0.2	0.3	0.4	0.0	0.0	0.0	0.0	0.1	3.7	3.6	3.5	3.6	3.7
DE 3)	2.2	2.0	2.0	2.2	2.2	0.6	0.5	0.6	0.7	0.7	0.2	0.1	0.1	0.1	0.1	5.8	6.1	5.4	5.7	5.8
IE 4)	3.5	3.5	3.8	3.9	3.9	1.0	1.3	2.8	4.3	5.8	:	:	:	:	:	3.0	3.2	3.1	3.5	3.7
EL 1)	0.2	0.2	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.5	3.7	4.1	4.2	4.3	4.9
ES 3)	1.3	1.5	1.7	2.2	2.4	0.1	0.1	0.2	0.2	0.3	0.6	0.9	1.1	1.5	1.9	4.6	5.3	6.1	6.4	7.2
FR 1)	1.8	1.8	1.6	1.7	1.8	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	2.8	2.9	2.9	2.8	3.1
IT 2)	0.2	0.2	0.2	0.3	0.2	0.1	0.1	0.1	0.2	0.1	0.3	0.5	0.5	0.6	0.7	2.8	3.3	3.6	3.9	4.4
LU 1)	34.0	34.0	36.2	35.6	37.3	:	:	:	0.6	0.8	:	:	:	:	:	3.4	3.8	3.0	3.3	3.4
NL 3)	1.3	1.3	1.3	1.3	1.4	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	2.2	2.2	2.2	2.1	2.2
AT 2)	1.6	1.7	1.8	1.9	2.1	0.7	0.8	0.9	1.0	1.1	0.3	0.3	0.4	0.4	0.4	6.5	6.5	6.6	6.5	6.5
PT 1)	0.4	0.4	0.4	0.4	0.4	:	:	:	:	:	0.1	0.1	0.1	0.1	0.3	1.8	2.0	2.3	2.2	2.7
FI 2)	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.5	0.0	0.0	0.0	0.0	0.0	1.3	1.4	1.4	1.5	1.6
SE 3)	2.1	2.1	2.1	2.1	2.1	0.2	0.3	0.3	0.4	0.5	0.0	0.0	0.0	0.0	0.0	2.9	2.9	2.8	2.6	2.6
UK 1)	1.6	1.6	1.7	1.6	1.6	0.2	0.3	0.5	0.8	1.1	0.0	0.0	0.0	0.1	0.1	2.9	3.2	3.3	3.6	3.9
EU-15 6)	1.6	1.6	1.6	1.7	1.7	0.2	0.3	0.3	0.4	0.5	0.2	0.2	0.3	0.3	0.4	3.7	4.0	4.0	4.2	4.5
CZ 3)	0.1	0.1	0.2	0.2	0.2	0.5	0.5	0.7	0.8	0.8	0.1	0.1	0.1	0.1	0.1	1.2	1.8	1.6	1.8	2.0
EE 1)	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	18.3	18.1	16.2	15.6	16.2
CY 1)	:	5.8	5.6	5.9	5.4	:	0.1	0.2	0.4	0.3	:	0.5	0.7	0.7	1.7	:	4.8	4.7	4.8	5.7
LV 3)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.4	0.0	0.0	0.0	0.0	:	22.0	21.1	19.7	18.7	16.4
LT 3)	:	0.0	0.0	0.0	0.1	:	0.0	0.0	0.0	0.0	:	0.0	0.0	0.0	0.0	:	0.6	0.7	0.6	0.7
HU 3)	0.1	0.1	0.2	0.3	0.2	0.1	0.0	0.1	0.1	0.1	0.6	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.7	0.6
MT 5)	1.4	1.3	0.9	0.8	1.0	:	:	:	:	:	:	:	:	:	:	0.8	1.4	1.5	1.3	0.9
PL 1)	:	0.0	0.1	0.0	0.0	:	0.0	0.0	0.0	0.0	:	:	:	:	:	:	0.1	0.1	0.1	0.1
SI 3)	0.1	0.1	0.1	0.1	0.5	0.0	0.0	0.0	0.0	:	0.0	0.0	0.0	0.0	:	2.2	2.1	2.3	2.5	6.3
SK 3)	0.1	0.1	0.1	0.1	0.3	0.2	0.1	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.3	0.2	0.2	0.2	0.1
EU-10 6)	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	1.5	1.6	1.5	1.4	1.5
BG 1)	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	0.1	0.1	0.1	0.1	0.1
RO 3)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	:	0.0	0.0	0.0	0.0	:	0.1	0.1	0.1	0.1	0.1
EU-2 6)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	:	0.0	0.0	0.0	0.0	:	0.1	0.1	0.1	0.1	0.1
EU-27 6)	1.3	1.3	1.3	1.3	1.4	0.2	0.2	0.3	0.4	0.4	0.2	0.2	0.2	0.3	0.3	3.2	3.4	3.4	3.5	3.8

Sources: Eurostat EU LFS, Eurostat population statistics, national data sources, DG Employment estimates. ":" figures too small to be reliable or not available.
Note: Choice of data sources according to data availability for individual countries. - Figures not fully comparable between Member States due to the use of different sources. - Data from the LFS should be treated with some caution due to limitations of the survey with regard to foreign populations, in particular concerning coverage of very recent migrants and collective households, relative levels of non-response and small sample sizes. - 1) EU LFS quarterly data, 4th quarter. - 2) National and Eurostat population statistics. - 3) Eurostat population statistics, 2007 DG Employment estimate. - 4) CSO Ireland, Quarterly national household survey, 4th quarter; for 2003 3rd quarter 2004; Nationals from BG and RO included under non-EU-27 nationals until 2006 and under EU-10 nationals in 2007. - 5) EU LFS quarterly data, 4th quarter. EU-10 and EU-2 nationals included under non-EU-27. - 6) EU totals and sub-totals are only of an indicative nature as they are the sum of country values that stem from different sources; EU totals and sub-totals include country data which are not shown individually due to small sample size.

Concerning individual Member States, Belgium, Cyprus, Luxembourg, Ireland and Spain host the highest share of nationals from other EU-15 Member States in proportion to their overall populations. As for EU-10 citizens, Ireland has by far the highest share (5.4% of the Irish population) followed by the UK (1.1%). In both countries, this has principally been the consequence of post-enlargement mobility flows. In Austria, the population share of EU-10 citizens amounts to some 1.1% – a similar level to that in the UK – but most of these people were already resident in Austria before the EU accession of their home countries (Table 4).

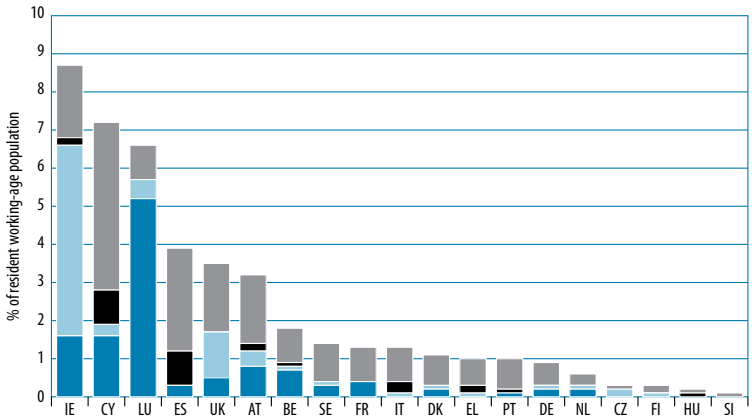
Due to the substantial recent inflow of Romanians, in the most part (and to a lesser extent, Bulgarians), Spain and Italy have seen a substantial increase in the population share of resident EU-2 nationals, which now stands at 1.6% and 0.7% respectively. Cyprus (1.1%), Hungary (0.7%) and Greece (0.5%) also host significant shares of EU-2 citizens, although the majority are not new arrivals. Corresponding shares in other Member States are substantially smaller.

It is also worth noting that the stock of EU-15 nationals resident in the newer Member States remains very low. With the exception of Cyprus and possibly Hungary, the number of EU-15 citizens resident in the EU-10 or EU-2 is marginal, having not increased significantly over time. The same applies to the number of EU-10 citizens resident in another EU-10 Member State, with Slovak nationals living in the Czech Republic being the only significant exception. Concerning Bulgarians and Romanians, Hungary is the only EU-10 Member State which hosts a noteworthy number of EU-2 – practically all Romanian – citizens. (Cyprus also has a significant population share of EU-2 – in this case, mostly Bulgarian – nationals although absolute numbers are low.)

2.1.2. Recently arrived working-age movers

An alternative way of analysing recent intra-EU mobility and migration to the EU is to look at more recent arrivals – rather than the overall stock of foreign nationals present in a country. Chart 1 shows the number of working-age foreign nationals (i.e. aged 15–64) resident in a country for four years and less relative to the total resident working-age population in the Member States, thus covering the period since the 2004 enlargement. The charts illustrate several ideas, confirming many of the observations made above:

Chart 1: Working-age foreign nationals resident for four years or less in Member States, 2007 (in % of total resident working-age population)



	IE	CY	LU	ES	UK	AT	BE	SE	FR	IT	DK	EL	PT	DE	NL	CZ	FI	HU	SI
Non-EU-27 citizens	1.9	4.4	0.9	2.7	1.8	1.8	0.9	1.0	0.9	0.9	0.8	0.7	0.8	0.6	0.3	0.1	0.2	0.1	0.1
EU-2	0.2	0.9		0.9	0.0	0.2	0.1		0.0	0.3		0.2	0.1	0.0	0.0		0.0	0.1	
EU-10	5.0	0.3	0.5	0.0	1.2	0.4	0.1	0.1	0.0	0.1	0.1	0.1		0.1	0.1	0.2	0.1		
EU-15	1.6	1.6	5.2	0.3	0.5	0.8	0.7	0.3	0.4	0.0	0.2	0.0	0.1	0.2	0.2	0.0			

Source: Eurostat, EU LFS, annual data.
Note: Data for IE provisional. Numbers for missing data and countries too small to be reliable. Limited reliability for EU-15 results for EL; EU-10 results for LU, DK and FI; EU-2 results for BE and NL; and non-EU-27 results for SI.

- There has been great variation in recent flows of foreign nationals to EU Member States, both in size and composition. Over the four years since the 2004 enlargement, Ireland, Cyprus and Luxembourg have received by far the largest number of foreign citizens relative to their overall working-age population, followed – at lower levels – by Spain, the UK and Austria.

- In almost all Member States, the number of recent arrivals from non-EU countries exceeds the number of newcomers from other Member States. The only exceptions are Ireland and Luxembourg. Moreover, in most Member States, the number of recently arrived working-age EU-15 citizens has exceeded the number of recent arrivals from the 12 new Member States.

- Concerning recently arrived working-age citizens from the EU-10, Ireland has been by far the largest receiving country in relative terms, with around 5% of its current working-age population from an EU-10 country. Although it is the biggest EU-10 receiving country in absolute numbers, the second-highest share is found in the UK with 1.2% of its working-age population consisting of recent arrivals from the EU-10. Austria and Luxembourg also have a significant share of recent EU-10 arrivals, albeit to a substantially lesser extent than that found in the UK and Ireland. In all remaining Member States, the population share of recent EU-10 arrivals is very small, even in Sweden which never applied restrictions to the free movement of citizens from the new Member States, and those Member States which opened their labour markets since 2006.

- As for recent arrivals from the EU-2, Spain, Italy and Cyprus have been the largest recipients in relative terms. Yet, despite the substantial absolute numbers involved, the population share of recent arrivals of EU-2 – mostly Romanian – citizens to Spain and Italy is around

Table 5: Nationality breakdown of recent intra-EU movers in the EU receiving countries with the highest inflows, 2007 (%)

Receiving country	Frequency of EU working-age citizens resident four years and less in receiving country by citizenship (in % of all EU citizens resident four years and less in receiving country)																				
	1		2		3		4		5		6		7		8		9		10		Other EU
UK	49	PL	6	SK	6	LT	5	FR	4	DE	4	PT	3	IE	3	CZ	3	IT	3	NL	15
ES	59	RO	13	BG	7	PT	6	UK	5	IT	4	FR	2	DE	1	PL	1	AT	1	BE	2
IE	46	PL	12	LT	10	UK	5	LV	4	SK	3	FR	3	CZ	3	DE	2	IT	2	RO	9
FR	25	DE	24	UK	13	PT	8	BE	8	IT	7	PL	4	RO	3	ES	3	SE	2	BG	3
DE	32	PL	11	NL	9	FR	7	BG	6	AT	5	IT	4	RO	4	LT	4	CZ	4	ES	15
IT	72	RO	13	PL	3	BG	3	DE	2	FR	2	UK	1	ES	1	CZ	1	LT	1	AT	2
AT	42	DE	15	PL	11	RO	8	SK	6	HU	3	IT	2	FR	2	NL	2	EL	2	UK	8
EU-27	26	PL	19	RO	7	DE	6	UK	5	FR	4	PT	4	BG	4	SK	4	IT	4	LT	18

Source: Eurostat, EU LFS, annual data.
Note: Data for IE provisional.

0.9% and 0.3% respectively – far below the number of recent arrivals from non-EU countries.

In terms of nationalities, around 26% of all recent intra-EU working-age movers were Polish citizens, while around 19% were Romanians (Table 5). The third-largest group were Germans (7%), followed by UK (6%) and French (5%) citizens. Portuguese, Bulgarian, Slovak, Italian and Lithuanian nationals each comprised around 4% of all recent intra EU movers.

Distribution varies considerably between Member States. Of the seven Member States with the highest absolute recent inflows of working-age EU citizens, the UK, Germany and Ireland recorded Polish citizens as the largest group of EU newcomers, while the largest number in France and Austria came from Germany. In Spain almost 60% of recent working-age arrivals from within the EU came from Romania, with the share in Italy amounting to over 70%.

Table 6: Main receiving countries of largest groups of recent intra-EU movers, 2007 (%)

Citizenship of EU nationals resident four years or less in another EU Member State ...	... by main EU destination country (percentage of overall number of working age nationals resident four years and less in another Member State)					
PL	59	UK	17	IE	11	DE
RO	57	ES	26	IT	2	UK
DE	33	FR	22	AT	18	UK
UK	39	FR	20	ES	18	IE
FR	35	UK	16	DE	16	BE
PT	31	ES	28	FR	28	UK
BG	56	ES	15	DE	7	EL
SK	55	UK	21	CZ	11	IE
IT	26	ES	23	UK	21	FR
LT	52	UK	33	IE	10	DE
Other EU citizens	38	UK	17	DE	9	FR
All recent intra-EU movers	32	UK	18	ES	10	IE

Source: Eurostat, EU LFS, annual data.
Note: Data for IE provisional.

Almost one third of all recent intra-EU movers went to the UK (32%), followed by Spain (18%) and Ireland (10%). (See Table 6). The UK has been also the main destination country for Polish citizens, receiving almost 60% of the recent working-age movers from Poland. Ireland has been the second most popular destination for Polish citizens (17%), with Germany as the third most popular (11%).

Concerning Romania, the vast majority of recent movers have gone to two countries – namely Spain (57%) and Italy (26%). By comparison, the third most popular destination country for Romanians was the UK which received only 2% of all Romanians movers (with similar low percentages for Austria, Germany, Portugal and Greece).

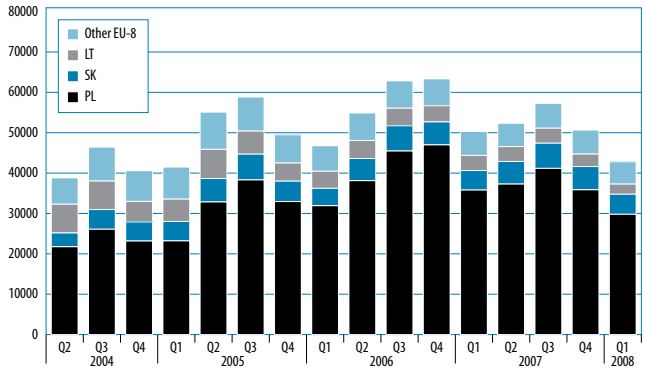
2.1.3. Gross mobility flows since enlargement

Data on the annual gross inflow of citizens from the new Member States (instead of their accumulated total or more recent stocks) suggests that EU-8 mobility to those countries which opened their labour markets right after EU-8 accession peaked in 2006, declining since then.

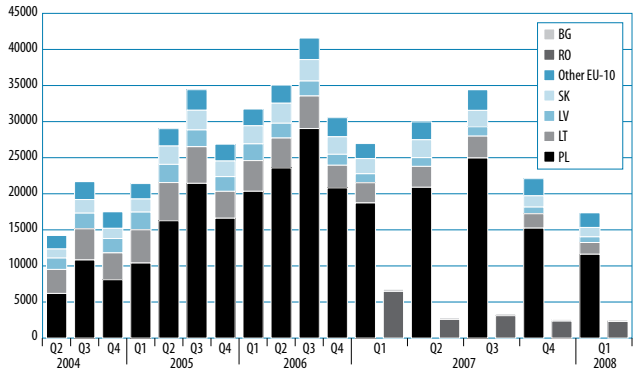
In the UK, a total of 210 575 applications from EU-8 citizens to work in the UK were recorded in 2007 under the UK's workers' registration scheme (WRS), down from 227 875 in 2006. In

Chart 2: Inflow of EU-10 and EU-2 citizens to selected Member States since 2004

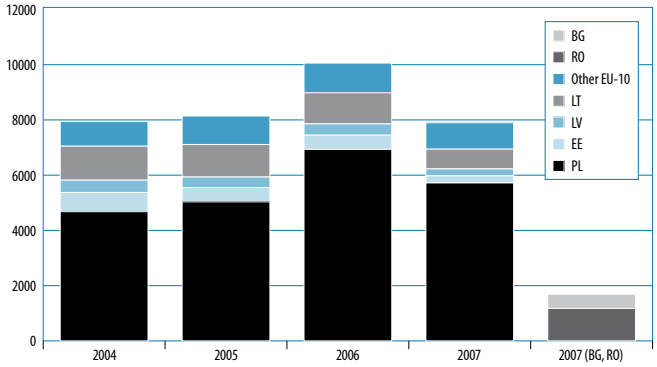
Inflow of EU-8 labour migrants to the UK (000)



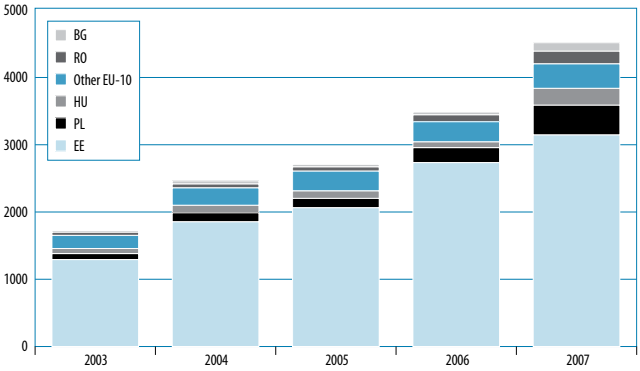
Inflows from EU-10 and BG/RO to Ireland (000)



Inflows from EU-10 and BG/RO to Sweden (000)



Inflows from EU-10 and BG/RO to Finland (000)



Source: UK: UK Home Office, Accession Monitoring Reports.
IE: Irish Department of Social and Family Affairs, Personal Public Service Numbers.
SE: Migrationsverket (Swedish Migration Board), residence permits registrations.
FI: Statistics Finland, population and migration statistics.

Ireland, the number of Personal Public Service Numbers (PPSN)[10] issued to EU-10 citizens declined from 138 939 in 2006 to 113 431 in 2007. WRS and PPSN data for the first quarter 2008 point towards a further significant decrease in new labour migration from the EU-10 to both the UK and Ireland (Chart 2). Although much lower in absolute and relative terms than in these countries, flows into Sweden from the Eastern and Central European Member States increased until 2006, noticeably slowing down in 2007.

Part of this recent decrease of EU-8 labour mobility to the UK and Ireland may be linked to the slowdown in the economy and a consequent decline in labour demand in both countries. However, it has also been suggested that EU-8 mobility flows have been diverted to alternative destinations within Europe, as many other Member States have loosened their restrictions on workers' labour market access from the EU-8 since 2006.[11]

A look at the development of foreign population stocks in Tables 3 and 4 seems to confirm that some Member States have seen some increase in their foreign population from the EU-10 after opening up their labour markets. This seems to be the case mainly in Spain where population statistics suggest that the number of resident EU-10 nationals doubled from about 40 000 in 2003 to 80 000 in 2007. Some increase also seems to have occurred in Italy, Finland and the Netherlands.[12]

However, despite some rises, the free access to other Member States' labour markets does not seem to have unleashed additional migration potential from the Central and Eastern

10 PPSN is a unique customer reference number for transactions between individuals and government departments and other public service agencies in Ireland.

11 See e.g. Pollard et al. (2008), who also suggest three additional factors which are likely to decrease the future labour supply from the new Member States to the UK and lead to an increase in return migration of those who are already there. These include a shrinking earnings gap between the UK and Poland due to the devaluation of the pound sterling, improving economic conditions and employment prospects in the sending countries and a declining pool of potential migrants due to demographic trends in sending countries. The later two points are also examined in section 2.3 of this document.

12 For the Netherlands, population statistics presented in Table 3 record an increase of EU-10 residents from 23 000 to 39 000 between 2005 and 2007. However, based on administrative statistics and a special enterprise survey, van den Berg et al. (2008) estimate that 100 000 workers from the Central and Eastern European Member States may be currently working in the Netherlands.

European Member States. It seems more likely that some redistribution between Member States is taking place, but that overall flows into the EU-15 are not substantially affected. This assessment may also be supported by the observation that a number of Member States have seen a very low inflow of nationals from the new Member States, even though they do not apply restrictions.

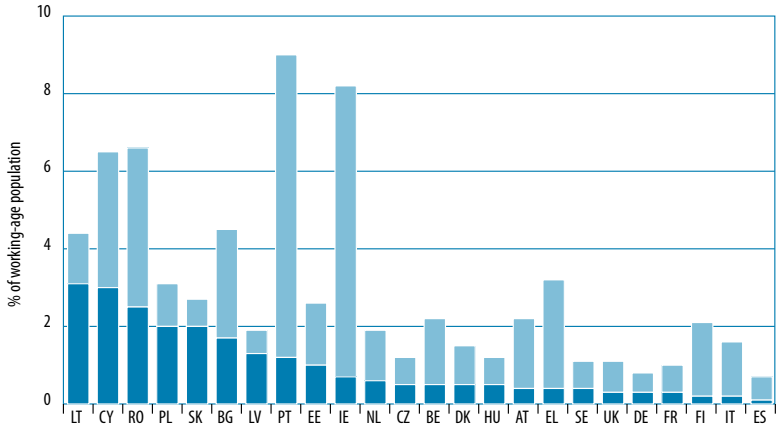
Flows from EU-10 Member States to Sweden and Finland, for example, have continued to be very low in absolute and relative terms, although the former never applied restrictions and the latter opened its labour markets at the beginning of 2006. In Greece and Portugal, the experience seems to have been similar.

Sweden and Finland are also the only two EU-15 Member States which do not apply restrictions to the access of Romanian and Bulgarian workers. So far, the available data does not indicate that this has led to a significant increase in the inflow of workers from these two countries (Chart 2). In addition, to date, there seems to be no indication of a substantial increase in flows from the EU-2 to the Member States that joined the EU in 2004, which, with the exception of Hungary and Malta, do not apply restrictions, despite a significant income gap between the EU-2 and EU-10.

In Austria, however, the number and population share of EU-10 citizens has increased in recent years, despite limited access to its labour market. Concerning the EU-2, a similar pattern seems to apply to Spain and Italy which have been, under their national work permit schemes, the main receiving countries for Romanian and Bulgarian movers.

All this suggests that restrictions on the labour market access do have some influence on the distribution of intra-EU mobility flows, but that labour mobility is ultimately driven by other factors such as general labour demand and supply, network effects through already existing foreign populations or language.

Chart 3: Intra-EU movers by sending country and years of residence in the host country (% of working-age citizens resident in another Member State relative to the working-age population of the sending country, 2007)



	LT	CY	RO	PL	SK	BG	LV	PT	EE	IE	NL	CZ	BE	DK	HU	AT	EL	SE	UK	DE	FR	FI	IT	ES
More than 4 years	1.3	3.5	4.1	1.1	0.7	2.8	0.6	7.8	1.6	7.5	1.3	0.7	1.7	1.0	0.7	1.8	2.8	0.7	0.8	0.5	0.7	1.9	1.4	0.6
4 years and less	3.1	3.0	2.5	2.0	2.0	1.7	1.3	1.2	1.0	0.7	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.1

Source: Eurostat, EU LFS, annual data.
Note: Figures do not include foreign citizens who were born in another Member State and continue living there. Data on foreign nationals resident in IE provisional. Numbers for LU, MT and SI were too small to be reliable.

It also implies that restrictions on labour market access will only delay labour market adjustments. They may even exacerbate resort to undeclared work, leading to undesired social consequences both for undeclared workers and the regular labour force, if not accompanied by appropriate enforcement of legislation.[13]

The experience since 2004 suggests that the lifting of restrictions on labour market access reduces the likelihood of undeclared work by citizens from the new Member States. For example, it has been suggested that up to 40% of EU-8 workers registering for the worker registration scheme in 2004 may have already been in the country when the UK opened its labour markets.[14] Reports from the Netherlands indicate that the incidence of illegal employment of EU-8 citizens working without permit has decreased after the Netherlands decided to open its labour market in 2007.[15]

2.2. How many have left? The sending countries' perspective

A look at recent mobility flows relative to the population of the sending countries reveals a very heterogeneous picture, with 'high-mobility' and 'low-mobility' countries among both the EU-15 and the new Member States. Chart 3 illustrates this observation by showing the number of working-age citizens by sending country who have moved to another Member State since about 2004 in proportion to the sending country's overall working-age population.

According to this evidence, 3.1% of working-age Lithuanians have moved to other EU Member States over the past four years, followed by Cyprus (3.0%), Romania (2.5%), Poland (2%) and Slovakia (2%) and Bulgaria (1.7%).[16] Although still substantial, intra-EU mobility rates for Latvia and Estonia are significantly lower. Interestingly, Portugal also has a high recent intra-EU mobility rate of 1.2%, together with Ireland and the Netherlands to a lesser extent.

13 See "Stepping up the fight against undeclared work", COM(2007) 628 of 24.10.2007.
14 UK Home Office (2004).
15 Ministry of Social Affairs and Employment of the Netherlands (2007).

16 Note that these data cover only recent flows to other EU Member States, but not to non-EU countries. Total emigration from any of the countries shown here is therefore likely to be higher than the intra-EU emigration rates.

In contrast, the Czech Republic and Hungary have rather low intra-EU mobility rates (both around 0.5%) which are below or equal to that of several EU-15 Member States. For Slovenia, Malta and Luxembourg, the numbers picked up by the LFS are too small to be reliable.

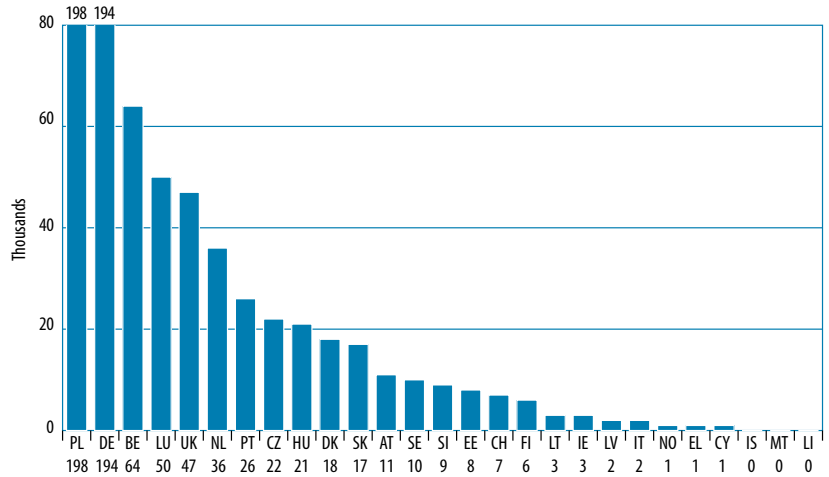
2.3. Temporary mobility flows

A characteristic feature of post-enlargement mobility is that a large part appears to be temporary. Evidence from a number of Member States indicates that many intra-EU labour migrants go to another Member States for a few months or years, but do not intend to stay forever.

In the UK, 60% of EU-8 workers registering under the UK's WRS in April 2007–March 2008 indicated on their application form that they intended to stay for less than three months.[17] Although workers may change their minds and stay longer than originally indicated, this result is roughly confirmed when comparing the number of EU-8 workers registered under the WRS since 2004 with the increase in the stock of EU-8 citizens resident in the UK since 2004. While the WRS recorded a total of 769 300 (approved) workers from the EU-8 between May 2004 and December 2007, the stock of employed EU-8 residents in the UK increased by around 390 000 between 2003 and 2007, according to LFS data. In other words, around half of the EU-8 citizens who came to work in the UK since enlargement may have already left the country again.[18]

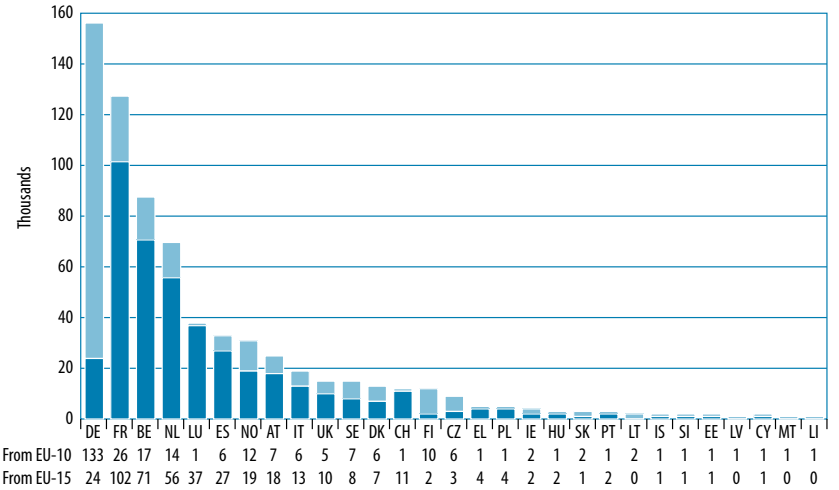
A similar picture emerges for Ireland when comparing PPSNs issued to citizens from the new Member States with the increase in their resident stock according to the Irish quarterly household survey. Between May 2004 and December 2007, almost 418 000 PPSNs were issued to EU-10 citizens, while their stock in the resident population increased by about 160 000 – i.e. less than half.

Chart 4: Posted workers by sending country, 2006 (000)



Source: Administrative data from EU Member States, EEA (IS, LI, NO) and CH on E101 social security forms issued to workers for postings to the EU-25, EEA and CH. 2006 data not received from BG, ES FR and RO.
Note: Data includes E101 forms issued for multiple destinations and international transport. Figures from the UK relate to April 2006–March 2007. Figures from CZ estimated.

Chart 5: Posted workers from the EU-15 and EU-10 by receiving country, 2006 (000)



Source: Administrative data from Member States, EEA (IS, LI, NO) and CH on E101 social security forms issued to workers for postings to EU-25, the EEA and CH. 2006 data not received from BG, ES, FR and RO.
Note: Figures from CH not included, because not disaggregated by destination country. BG and RO excluded as receiving countries, because most countries did not supply figures. Figures from the UK relate to April 2006–March 2007. Not all figures from EL included (some data not disaggregated by destination country). Figures from CY relate to January–October 2006. Figures from CZ estimated.

Producing a complete picture of short-term mobility flows between EU Member States is difficult due to gaps in the data and the fact that both population statistics and household surveys such as the LFS do not normally cover stays lasting less than a year. However, in addition to the examples given for the UK and Ireland, there is some further evidence that short-term mobility is a sizable phenomenon, not only concerning the east-west dimension, but for the EU as a whole.

For example, administrative data[19] indicates that in 2006, over 750 000 workers were posted by their employers to work in another Member State (including European Economic Area (EEA) countries and Switzerland) for

17 UK Home Office (2008), p. 16.

18 See also Pollard et al. (2008) who estimate that a total of around 1 million EU-8 migrant workers have arrived in the UK since 2004, but that around half of this group have already left the UK. Note that they arrive at a higher number of EU-8 workers by including self-employed migrants which are not included in the WRS figures.

19 Administrative data collected by the Commission (DG Employment). The data refer to E101 social security forms issued to workers for postings under 12 months to EU Member States, EEA countries and Switzerland.

Table 7: Foreign seasonal workers to Germany by nationality, 1997–2007

Year	Total		PL		SK		CZ		HU		SI		RO		BG		HR	
	persons	%	persons	%	persons	%	persons	%	persons	%	persons	%	persons	%	persons	%	persons	%
1997	225 951	100	202 198	89.5	6 365	2.8	2 347	1.0	3 572	1.6	466	0.2	4 961	2.2	203	0.1	5 839	2.6
1998	231 810	100	209 398	90.3	5 534	2.4	2 182	0.9	3 200	1.4	359	0.2	6 236	2.7	236	0.1	4 665	2.0
1999	230 345	100	205 439	89.2	6 158	2.7	2 031	0.9	3 485	1.5	302	0.1	7 499	3.3	332	0.1	5 101	2.2
2000	263 805	100	229 135	86.9	8 375	3.2	3 235	1.2	4 139	1.6	311	0.1	11 842	4.5	825	0.3	5 943	2.3
2001	286 940	100	243 405	84.8	10 054	3.5	2 913	1.0	4 783	1.7	264	0.1	18 015	6.3	1 349	0.5	6 157	2.1
2002	307 182	100	259 615	84.5	10 654	3.5	2 791	0.9	4 227	1.4	257	0.1	22 233	7.2	1 492	0.5	5 913	1.9
2003	318 549	100	271 907	85.4	9 578	3.0	2 235	0.7	3 504	1.1	223	0.1	24 599	7.7	1 434	0.5	5 069	1.6
2004	333 690	100	286 623	85.9	8 995	2.7	1 974	0.6	2 784	0.8	195	0.1	27 190	8.1	1 249	0.4	4 680	1.4
2005	329 795	100	279 197	84.7	7 502	2.3	1 625	0.5	2 305	0.7	159	0.0	33 083	10.0	1 320	0.4	4 598	1.4
2006	303 492	100	236 267	77.8	6 778	2.2	1 232	0.4	1 806	0.6	141	0.0	51 190	16.9	1 293	0.4	4 785	1.6
2007	299 657	100	228 807	76.4	5 122	1.7	1 087	0.4	1 800	0.6	119	0.0	56 893	19.0	1 182	0.4	4 647	1.6

Source: Bundesamt für Migration und Flüchtlinge (2006), 2007 data from Bundesagentur für Arbeit, and DG EMPL calculations.

a period of less than 12 months. The true number is likely to be higher as no information was available for workers posted from France, Spain, Bulgaria and Romania.

Almost two thirds of recorded postings originated in the EU-15 and a little over one third from the EU-10. However, in relative terms, posted workers accounted for an average of 0.3% of the working-age population in the EU-15 sending countries and 0.5% in the EU-10 sending countries. Almost 200 000 posted workers were Polish, with postings from the other EU-8 much smaller in size (Chart 4). Among the EU-15, Germany sent almost as many posted workers (194 000) as Poland. Postings from Belgium, Luxembourg, the UK and the Netherlands were also relatively significant in size.

Around 80% of postings were towards the EU-15 and only about 4% to the EU-10, with the rest going to EEA countries and Switzerland (6%) or distributed among multiple destinations or transport-related workers active across the EU. The biggest receiving country in absolute terms was Germany, which received over 150 000 posted workers, with France, Belgium and the Netherlands being other major recipients (Chart 5). While the vast majority of workers posted to Germany came from an EU-10 country (mostly Poland), the large majority of postings to the other Member States originated from an EU-15 Member State.

Overall, these figures suggest that postings form an important element of the European mobility equation, with a significant number of posted workers coming from not only the new but also the old Member States.

Another important form of short-term mobility, at least in some Member States, concerns seasonal work. For example, around 300 000 seasonal workers from several new Member States (and Croatia) were employed in Germany in 2007 under bilateral agreements, mainly in agriculture and the hotel and restaurant industry (Table 7). Seasonal workers from Poland account for the largest share by far, but their numbers have fallen noticeably since 2004, as has the overall number of seasonal workers from the new Member States. The only significant rise has been among seasonal workers from Romania who now represent almost 20% of the total.

2.4. What influences mobility flows within the EU?

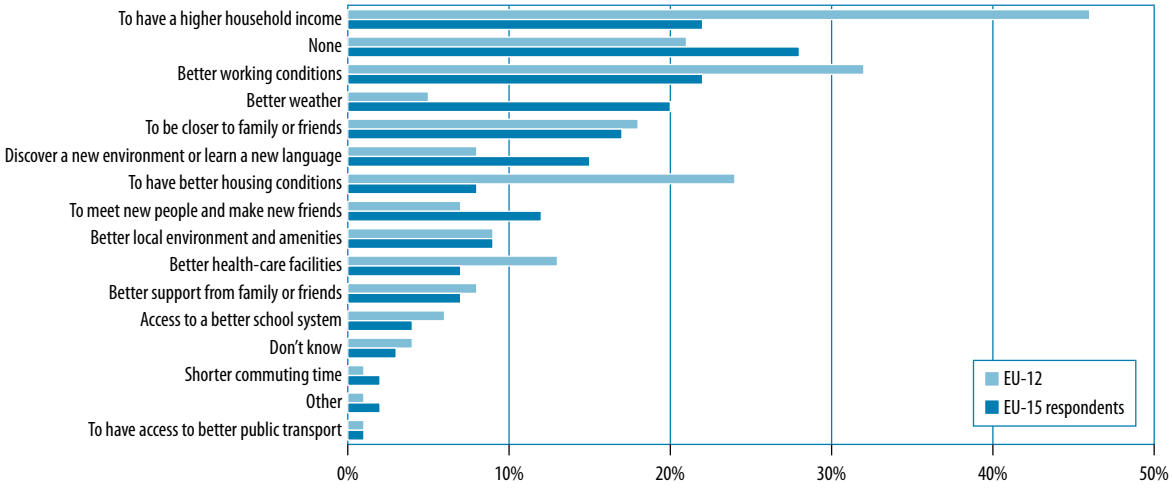
2.4.1. Reasons to stay and move

According to a recent Eurobarometer survey on geographical mobility within the EU, a higher household income and better working conditions are the most important factors that tend to encourage Europeans to move to another country. Factors such as better weather and being closer to family and friends also seem to play a role in stimulating cross-border mobility. Other issues such as public transport, commuting time and school systems are only of minor importance in this respect (Chart 6).

The importance that citizens attach to these various factors appears to be strongly linked to their country of origin. Overall, potential mobility motivations in the new Member States are more related to socio-economic concerns, whereas citizens from the EU-15 also focus on other considerations related to quality of life.

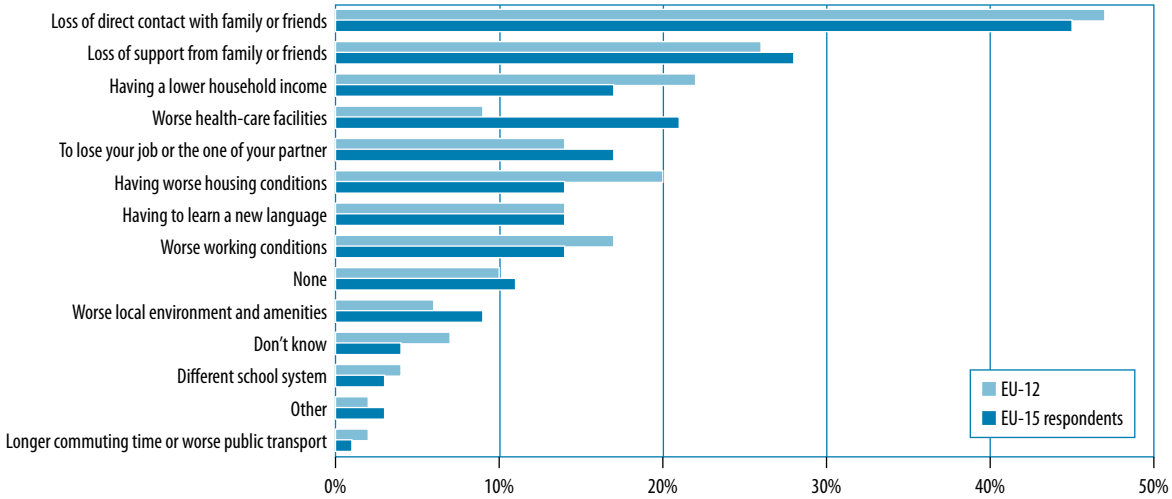
First and foremost, a higher household income is a considerably stronger motivation for moving abroad in the new Member States (46%) compared with the old ones (22%). In addition, housing conditions play a much more important role in the EU-12 than in the EU-15. Expectations for better working conditions and health-care facilities are also stronger motivations in the new Member States. In the old Member States, better weather, discovering new environments, learning new languages and meeting new people are significantly more important than in the new Member States and almost as important as a potentially higher income or better working conditions.

Chart 6: Factors which might encourage someone to move to another country



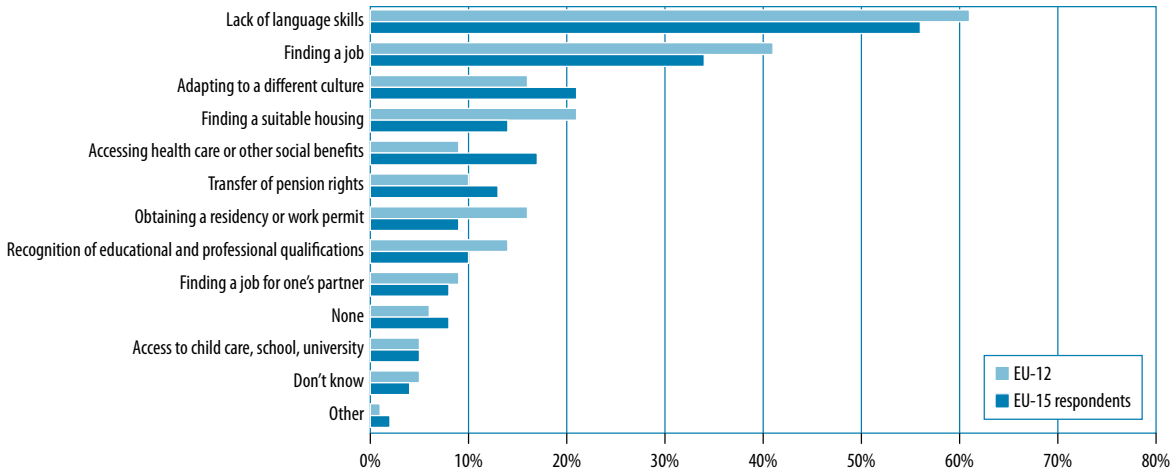
Source: Special Eurobarometer 67.1, 2007, QD10.
Note: A maximum of three answers were possible. Question posed to persons with and without moving intentions.

Chart 7: Factors which might discourage someone from moving to another country



Source: Special Eurobarometer 67.1, 2007, QD11.
Note: A maximum of three answers were possible. Question posed to persons with and without moving intentions.

Chart 8: Most important difficulties people expect to face if they wanted to move to another country



Source: Special Eurobarometer 67.1, 2007, QD12.
Note: A maximum of three answers were possible.

Table 8: GNI and hourly wages in the EU

Member State	2007		2007		2006*	
	GNI per capita in PPS		GNI per capita in euro		Hourly gross wages and salaries	
	PPS	EU-15 = 100	Euro	EU-15 = 100	Euro	EU-15 = 100
BE	29 900	108	31 500	109	17.4	120
DK	31 400	114	42 500	147	24.3	167
DE	28 600	104	29 700	102	16.5	114
IE	31 000	112	36 500	126	17.7	121
EL	23 800	86	20 000	69	6.0	41
ES	25 200	91	22 800	79	10.8	74
FR	27 700	100	29 900	103	17.6	121
IT	25 100	91	25 700	89	9.9	68
LU	56 300	204	60 400	208	26.0	178
NL	33 300	121	34 800	120	17.6	121
AT	31 400	114	32 400	112	14.4	99
PT	17 600	64	14 700	51	:	:
FI	29 600	107	34 000	117	15.5	106
SE	31 300	113	37 100	128	17.7	121
UK	29 400	107	33 400	115	17.0	117
EU-15	**27 600**	**100**	**29 000**	**100**	**14.6**	**100**
CZ	18 700	68	11 500	40	3.7	25
EE	16 700	61	10 900	38	3.5	24
CY	22 100	80	19 200	66	8.3	57
LV	13 900	50	8 400	29	2.9	20
LT	14 300	52	8 000	28	2.9	20
HU	14 800	54	9 300	32	4.2	29
MT	18 700	68	12 800	44	7.2	50
PL	12 900	47	7 700	27	3.3	23
SI	22 000	80	16 300	56	8.3	57
SK	16 400	59	9 800	34	3.4	23
EU-10	**15 200**	**55**	**9 100**	**31**	**3.5**	**24**
BG	9 300	34	3 700	13	1.0	7
RO	9 600	35	5 400	19	1.5	10
EU-2	**9 400**	**34**	**4 900**	**17**	**1.4**	**9**
EU-25	**25 600**	**93**	**25 900**	**89**	**12.7**	**87**
EU-27	**24 600**	**89**	**24 600**	**85**	**12.0**	**82**

Source: Eurostat, annual national accounts and DG EMPL calculations.
*Note: * BG and RO data for 2005.*

However, in both the old and new Member States, a high percentage of respondents said that nothing would encourage them to move abroad (28% in the EU-15 and 21% in the EU-12).

By far the most common factor preventing EU citizens from moving abroad appears to be the fear of losing one's social ties and networks – a concern which seems to be equally strongly pronounced among citizens from both the old and new Member States. Around 45% of EU-15 and 47% of EU-12 respondents said that they would be discouraged to move because of a resulting loss of direct contact with family or friends (Chart 7). 28% and 26%, respectively, said that they would be reluctant to move because this would imply losing support from family and friends – e.g. for helping with taking care of children or the elderly.

Concerning other obstacles, some interesting differences are observed. While worse health-care facilities would discourage around one in five EU-15 citizens from moving abroad, only 9% of EU-12 citizens said that they would be discouraged by it. Conversely, housing conditions and household income seem to be more important for the new Member States.

The main obstacle to moving to another European country – in terms of the difficulties potential movers expect to face – is the concern about adequate language skills. Over 61% of EU-12 respondents and 57% of EU-15 respondents said that the lack of language skills would be a difficulty (Chart 8). Other major concerns link to finding a job in another Member State, adapting to a different culture in the destination country and finding adequate housing.

While still significant, administrative barriers such as access to health care and social security, transfer of pension rights, obtaining residency or work permits and recognition of professional qualifications seem to be of lesser concern.

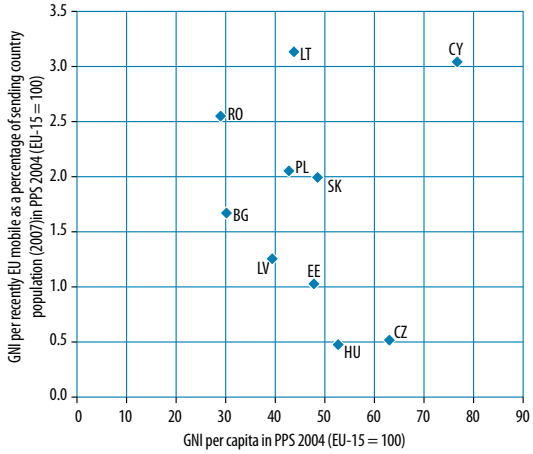
2.4.2. Income gaps between Member States

The Eurobarometer survey results on the drivers of and barriers to mobility appear to be, by and large, a good reflection of migration incentives found in the literature and of existing income and employment gaps between Member States.

Migration theory suggests that monetary and non-monetary arguments affect migration decisions.[20] Individuals form expectations on income levels at different destinations, which are determined by the respective wage levels and employment opportunities.[21] Moreover, since migration involves sunk costs, expectations on the future development of wages and employment opportunities are relevant.[22]

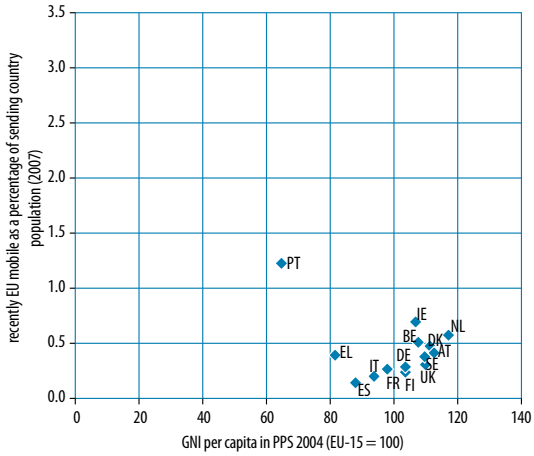
20 See Sjaastadt (1962) and Stark (1991).
21 Harris and Todaro (1970).
22 Burda (1995).

Chart 9: GNI per capita versus recent mobility from the new Member States to the EU-15



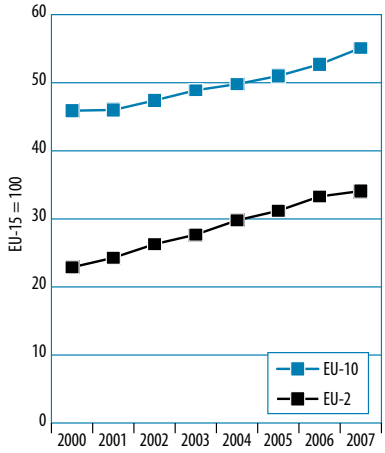
Source: Eurostat, EU LFS, annual data, annual national accounts.
Note: Recently EU mobile defined as working-age persons who have been resident four years and less in another Member State (see also Chart 3).

Chart 10: GNI per capita versus recent mobility among the EU-15



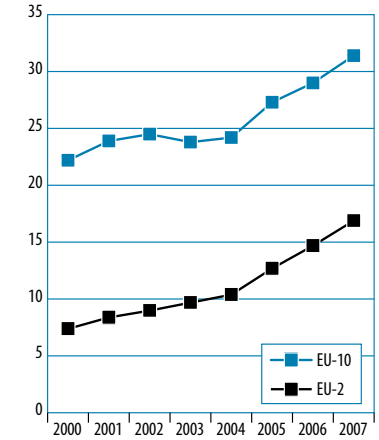
Source: Eurostat, EU LFS, annual data, annual national accounts.
Note: Recently EU mobile defined as working-age persons who have been resident four years and less in another Member State (see also Chart 3).

Chart 11: Convergence of GNI per capita in PPS, 2000–07



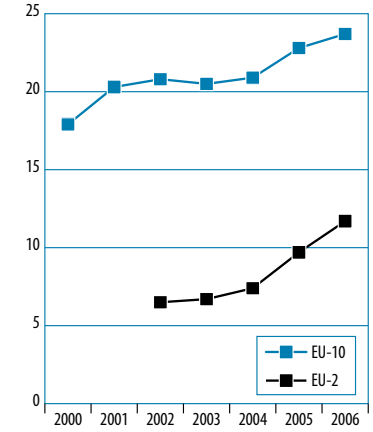
Source: Eurostat, annual national accounts.

Chart 12: Convergence of GNI per capita in euro, 2000–07



Source: Eurostat, annual national accounts.

Chart 13: Convergence of hourly gross wages and salaries, 2000–06



Source: Eurostat,annual national accounts.

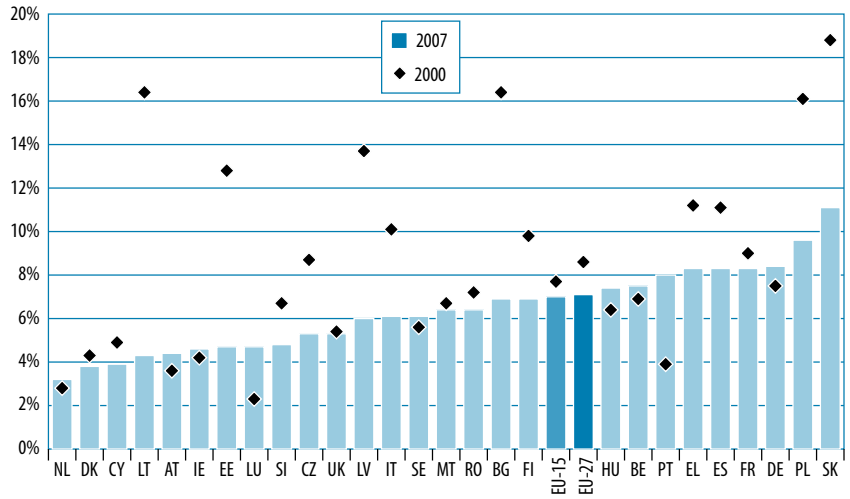
A look at income gaps between Member States indicates that there are indeed monetary incentives for labour mobility, in particular from the newer Member States to the EU-15. Measured in purchasing power standards (PPS), gross national income (GNI) per capita in the EU-10 ranges from 47% in Poland to 80% in Slovenia and Cyprus relative to the EU-15 average range in 2007. Gross national income (GNI) per capita in PPS of Bulgaria and Romania are at 34% and 35%, respectively, of the EU-15 average (Table 8).

Purchasing power parity estimates tend to understate monetary incentives for labour mobility, since migrants can consume a part of their earnings in their home countries or remit a part of their income to their families. Consequently, differences in earnings at current exchange rates may also affect migration decisions. At current exchange rates, the GNI per capita of the EU-10 amounted to about 31% of that in the EU-15 in 2007 and 17% for Bulgaria and Romania.

The wage gap is even larger. Average hourly gross wages and salaries in the EU-10 are only around a quarter of those earned in the EU-15. In Bulgaria and Romania they are on average at around 7% and 10% of EU-15 wages respectively.

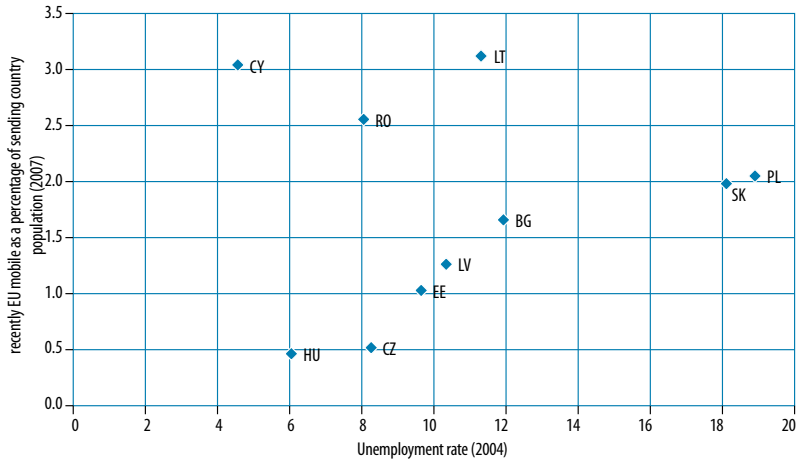
A simple comparison between income levels and intra-EU mobility rates indi-

Chart 14: Unemployment rates in the EU, 2000 and 2007



Source: Eurostat, EU LFS, harmonised unemployment rates, annual averages.

Chart 15: Unemployment rates versus recent mobility from the new Member States to the EU-15



Source: Unemployment rate: Eurostat, EU LFS, harmonised unemployment rates, annual averages; mobility rates: EU LFS, annual data.

cates that there indeed seems to be a relationship between the propensity to move to another Member State and the income gap between sending and receiving countries. Chart 9 shows the correlation between GNI per capita (in PPS) in the EU-12 as a percentage of the EU-15 average and the share of a Member State's population that moved to another Member State during the last four years. In order to account for some lag between the perception of an income gap and the actual mobility taking place, the GNI data relates to 2004, while the mobility rates refer to those who in 2007 had been resident for four years or less in another Member State (as presented in Chart 3). The chart shows that recent mobility was lowest in the Central and Eastern European Member States with the smallest income gap to the EU-15 (the Czech Republic and Hungary), while it was higher for Member States with a relatively large income gap. Cyprus is an exception, with a small income gap but a relatively high emigration rate.[23]

Comparing the same two variables for the EU-15 produces a different picture. Interestingly, the correlation seems to go the other way for most of the EU-15. As shown in Chart 10, EU-15 Member States with a relatively high national income also tend to exhibit higher intra-EU mobility rates, with the exception of Portugal and Greece.

This seems to confirm findings from the Eurobarometer survey on mobility presented above, suggesting that income- and employment-related mobility incentives are relatively less important than other factors compared with the new Member States. It also implies that, together with a significantly lower average mobility rate in the EU-15, the average propensity to migrate is likely to decrease for the new Member States as their incomes further converge towards the EU-15 average. Moreover, incomes do not need to converge fully on the EU-15 average for migration rates to decline as the examples of Hungary or the Czech Republic show.

2.4.3. Convergence of incomes

There is strong evidence that national income and wage levels between the old and new Member States are converging. In 2000, the purchasing-power-adjusted GNI per capita for the EU-10 amounted to 46% of that for the EU-15, but reached 55% in 2007. A similar convergence trend can be observed for Bulgaria and Romania.

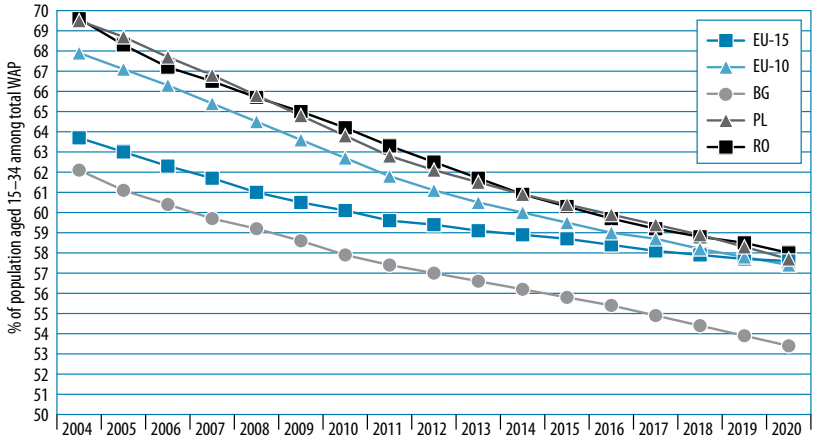
A similar pattern also emerges for the convergence of the gross domestic product (GDP) per capita at current exchange rates: the initial gap in 2000 declined both in case of the EU-10 and EU-2 by almost 10 percentage points by 2007 (Chart 12).

2.4.4. Employment opportunities

Labour market conditions between the EU-15 and the new Member States have also converged since the beginning of the decade. In fact, unemployment rates both in the EU-10 and EU-2 are now below the EU-15 average, with the exception of Poland, Slovakia and Hungary (Chart 14). Moreover, lower unemployment rates tend to correlate with lower emigration rates as suggested by the data presented in Chart 15.

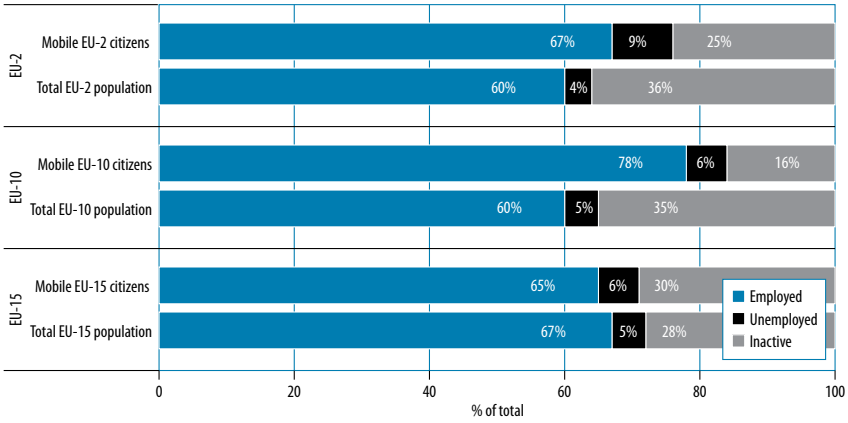
23 Malta and Slovenia are not included in the graph due to the fact that recent mobility figures from both countries as recorded by the EU LFS are too small to be reliable.

Chart 16: Percentage of population aged 15–34 out of working-age population, 2004–20



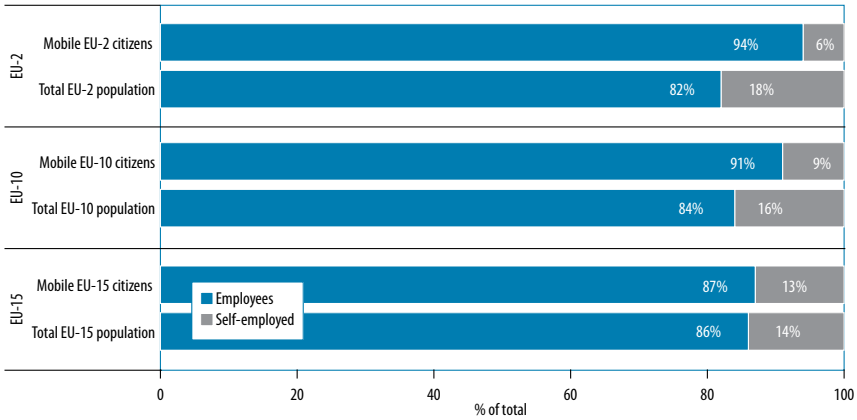
Source: Eurostat, population projections 2004, no migration variant.

Chart 17: Labour market status of recent intra-EU movers and total population (aged 15–64), 2007



Source: Eurostat, EU LFS, annual data.
Note: Mobile EU citizens are defined here as working-age foreign-nationals resident for four years or less in another Member State.

Chart 18: Share of self-employed citizens and employees among overall employment and recent EU mobile workers in the EU, 2006



Source: Eurostat, EU LFS, annual data.
Note: Mobile EU citizens are defined here as working-age foreign-nationals resident for four years or less in another Member State.

Altogether, unemployment risks therefore do not seem to create specific migration incentives in the new Member States.[24]

2.4.5. Demographic developments in the sending countries

As explored in this section, the vast majority of recent mobile workers from the new Member States are young. Almost 80% of recent EU-10 and close to 70% of recent EU-2 mobile workers have been under the age of 35.

At the same time, however, the proportion of the population aged 15–34 in the new Member States, overall, and the working-age population will shrink substantially in the near future. As shown in Chart 16, the working-age population share of persons aged 15–34 in the EU-10 average has already been falling in recent years and will converge to the EU-15 share by around 2020 under population projections which do not take into account net migration changes.

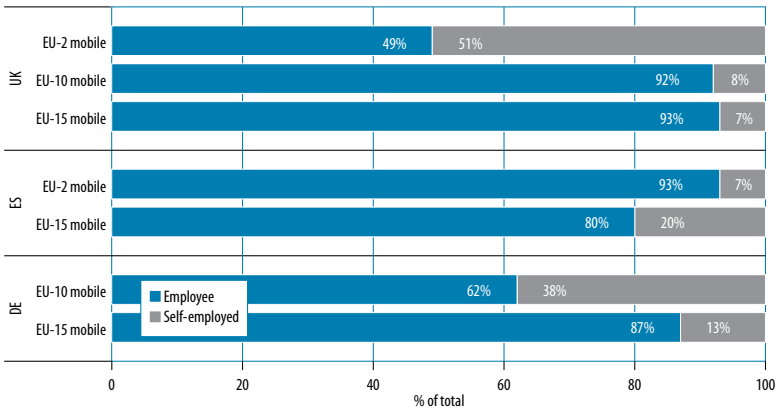
As a result, the pool of potential movers from the Central and Eastern European Member States (but also the EU-15) is getting smaller and this decrease is likely to act soon – if not already the case – as a brake on geographical labour mobility within the EU.

2.4.6. The eroding role of distance

Theories of migration decisions traditionally highlight the role of migration costs, particularly the costs of distance (e.g. Sjaastadt, 1962; Stark, 1991). The social and psychological costs of moving to an unfamiliar environment indeed play an important role, affecting the structure of migration (see e.g. Brücker and Schröder, 2006).

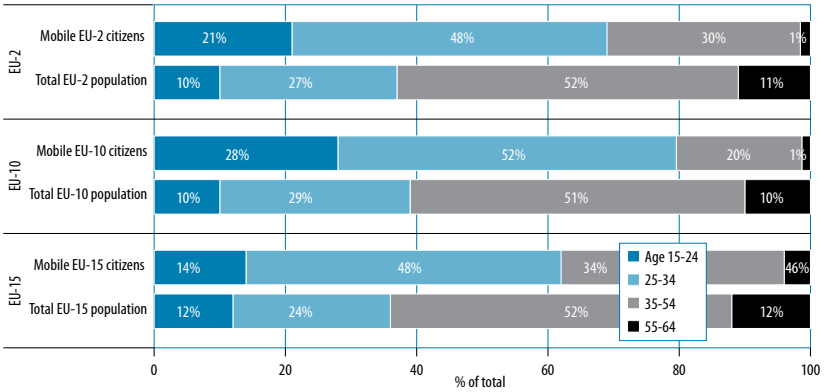
24 Note, however, that migrants can optimize with regard to wage levels and unemployment risks across locations. In particular, migrants from the EU-8 cluster in countries and regions with high wage levels and low unemployment rates in the EU-15, such that a comparison of average unemployment and wage rates between the EU-15 and the new Member States need to be taken with some caution.

Chart 19: Share of self-employed citizens and employees among recent EU mobile workers in selected EU-15 Member States, 2007



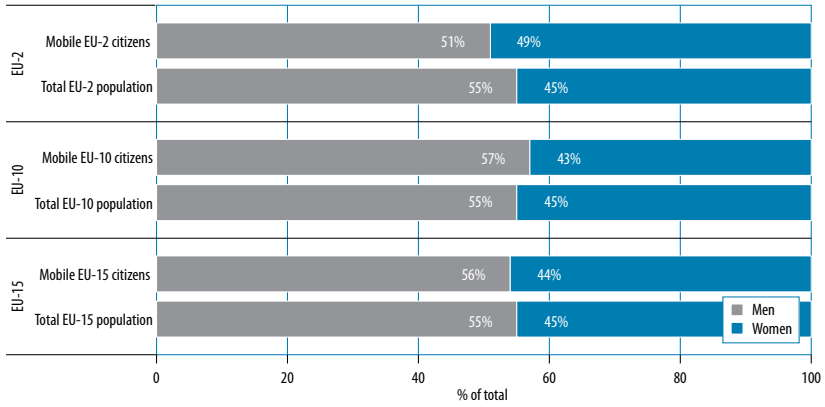
Source: Eurostat, EU LFS, annual data.
Note: Mobile EU citizens are defined here as working-age foreign-nationals resident for four years or less in another Member State.

Chart 20: Age distribution of recent mobile and total active working-age population, 2007



Source: Eurostat, EU LFS, annual data.
Note: Mobile EU citizens are defined here as working-age foreign-nationals resident for four years or less in another Member State.

Chart 21: Gender distribution of mobile and total active population, 2007



Source: Eurostat, EU LFS, annual data.
Note: Mobile EU citizens are defined here as working-age foreign-nationals resident for four years or less in another Member State.

However, as argued by Brücker et al. (2008), the role of geographical distance in migration costs tends to decline with the emergence of low-cost air carriers. Low-budget air transport has two important effects on migration particularly in the European context: first, the role of fixed costs in transport increases, while the role of variable costs diminishes. As a consequence, the impact of geographical distance decreases. Second, due to the high share of fixed costs, transport costs tend to decline with an increasing migrant community. As a consequence, transport costs become endogenous: the more migrants settle in a certain location, the lower the migration costs. Thus, within the European context, it becomes increasingly uncertain where movers settle.

This may have important implications for the geographical structure of labour mobility in the context of EU enlargement: while past migration patterns in the EU have been largely determined by geographical proximity, the emergence of low-cost carriers makes it more and more likely that migrants will choose destinations on the basis of other criteria such as language, climate or labour market conditions. Moreover, network effects may become more significant, since transport costs depend on the size of the migrant community.

Table 9: Employment of total resident populations and recently mobile citizens by economic activity, 2007 (% of total employment by group)

Economic activity (Nace Rev.1)	EU-15		EU-10		EU-2	
	Total resident population	Mobile EU-15 citizens	Total resident population	Mobile EU-10 citizens	Total resident population	Mobile EU-2 citizens
A Agriculture	3.1	:	9.4	2.3	20.8	7.1
B Fishing	0.1	:	0.1	:	(0.1)	0.0
C Mining and quarrying	0.2	:	1.2	:	1.2	:
D Manufacturing	17.5	15.9	22.5	25.3	22.7	10.0
E Electricity gas and water supply	0.7	:	1.5	:	2.0	:
F Construction	8.3	8.4	8.3	13.2	8.0	28.4
G Wholesale and retail trade	14.3	10.8	14.6	12.1	13.8	6.3
H Hotels and restaurants	4.6	9.1	2.9	13.3	2.5	13.2
I Transport storage and communication	6.1	6.2	7.0	7.7	5.9	(2.0)
J Financial intermediation	3.3	4.8	2.3	:	1.2	:
K Real estate renting and business activities	10.6	17.4	6.5	9.4	3.6	6.4
L Public administration	7.4	2.7	6.5	:	5.8	:
M Education	7.1	7.4	7.3	2.0	5.1	:
N Health and social work	10.7	8.9	6.1	6.3	4.4	3.1
O Other community social and personal service	4.9	4.9	3.8	4.0	2.7	(2.1)
P Private households	1.3	:	0.2	2.1	0.4	19.4
Q Extra-territorial organisations	0.1	(1.4)	(0.0)	:	:	:

Source: Eurostat, EU LFS, annual data.
Note: Recent movers defined as EU-10/2 citizens resident four years and fewer in an EU-15 Member State - ":" - Figures too small to be reliable. Figures in brackets of limited reliability. For some activities (e.g. agriculture, construction, hotels and restaurants) the LFS may understate the number of employed due to underestimation of seasonal workers.

3. What are the main characteristics of mobile workers in the EU?

This section gives an overview of the socio-economic profile of intra-EU movers. To analyse the characteristics of recent movers – instead of the overall stock of foreigners by nationality – this analysis looks at EU-15, EU-10 and EU-2 citizens who have been resident in another EU Member State for four years or less and compares them with the characteristics of the overall resident population of the EU-15, EU-10 and EU-2.

Table 10: Share of recent EU mobile among EU-15 employment by economic activity, 2007 (per 1 000 employed in activity)

Economic activity (Nace Rev.1)	EU-15 mobile	EU-10 mobile	EU-2 mobile
A Agriculture	:	2.6	4.1
B Fishing	:	:	0.0
C Mining and quarrying	:	:	:
D Manufacturing	2.7	5.0	1.0
E Electricity gas and water supply	:	:	:
F Construction	2.9	5.7	6.1
G Wholesale and retail trade	2.2	3.0	0.7
H Hotels and restaurants	5.8	10.6	5.2
I Transport storage and communication	3.0	4.5	(0.6)
J Financial intermediation	4.4	:	:
K Real estate renting and business activities	4.8	3.2	1.1
L Public administration	1.1	:	:
M Education	3.0	1.0	:
N Health and social work	2.5	2.1	0.5
O Other community social and personal service	2.9	2.9	(0.8)
P Private households	:	5.9	26.7
Q Extra-territorial organisations	(52.9)	:	:

Source: EU LFS, annual data.
Note: Recent movers defined as EU-10/2 citizens resident four years and fewer in an EU-15 Member State - ":" - Figures too small to be reliable. Figures in brackets of limited reliability. For some occupations (e.g. in agriculture, construction, hotels and restaurants) the LFS may understate the number of employed due to underestimation of seasonal workers.

3.1. Labour market status

People moving from the EU-12 to the EU-15 show higher labour market participation and employment rates than the overall populations both in the sending and receiving countries. The average employment rate of the recent intra-EU movers from the EU-10 amounts to 78% – around 18 percentage points higher than the average employment rate in the EU-10 sending countries and over 10 percentage points higher than in the EU-15 receiving countries (Chart 17). Recent intra-EU movers from Bulgaria and Romania have an average employment rate of 67% – equal to the average employment rate in the EU-15 and 7 percentage points higher than the overall employment rate in the EU-2. By comparison, the employment rate of recent movers from the EU-15 totals 65% – slightly below that of the overall EU-15 population.

Table 11: Occupation of total resident employment and of employed mobile citizens, 2007 (% of total employment by group)

Occupation (ISCO-88)	EU-15		EU-10		EU-2	
	Total resident population	Mobile EU-15 citizens	Total resident population	Mobile EU-10 citizens	Total resident population	Mobile EU-2 citizens
1 Legislators, senior officials and managers	8.8	11.7	6.8	2.6	3.9	:
2 Professionals	13.9	26.6	14.0	4.3	10.6	3.1
3 Technicians and associate professionals	17.4	16.8	14.1	5.2	9.8	(2.4)
4 Clerks	11.9	9.0	7.5	4.4	5.3	(2.0)
5 Service workers and shop and market sales workers	13.9	11.9	12.6	17.6	12.3	16.0
6 Skilled agricultural and fishery workers	2.5	:	7.6	:	17.2	2.9
7 Craft and related trades workers	13.6	8.3	17.3	16.0	17.0	28.3
8 Plant and machine operators and assemblers	8.1	5.5	12.2	18.0	12.3	4.4
9 Elementary occupations	9.9	9.9	7.9	31.0	11.8	39.1

Source: Eurostat, EU LFS, annual data.
Note: ":" - figures too small to be reliable. Figures in brackets of limited reliability.

Table 12: Share of recent mobile among total EU-15 employment by occupation, 2007 (per 1 000 employed in occupation)

Occupation (ISCO-88)	EU-15 mobile	EU-10 mobile	EU-2 mobile
1 Legislators, senior officials and managers	3.8	1.1	:
2 Professionals	5.5	1.1	0.4
3 Technicians and associate professionals	2.8	1.0	(0.2)
4 Clerks	2.2	1.3	:
5 Service workers and shop and market sales workers	2.4	4.6	2.0
6 Skilled agricultural and fishery workers	:	:	2.1
7 Craft and related trades workers	1.8	4.2	3.7
8 Plant and machine operators and assemblers	2.0	7.7	1.0
9 Elementary occupations	2.9	11.4	7.1

Source: Eurostat, EU LFS, annual data.
Note: ":" - figures too small to be reliable. Figures in brackets of limited reliability.

With respect to unemployment, the share of unemployed comes to around 6% for recent EU-10 movers, 9% for EU-2 movers and around 6% for EU-15 movers.[25] Unemployment among recent EU movers is therefore slightly higher than average unemployment in the sending and receiving countries.

3.2. Self-employed and employees

Given that restrictions on the free movement of workers under transitional arrangements only apply to people who want to take a job as a dependent employee, there have been concerns that this may lead to an increased inflow of (real and 'false') self-employed people who are not to subject to such restrictions on free movement.

Overall averages indicate, however, that the share of self-employed recent movers in the EU-15 is in fact lower than the share of self-employed in the respective sending countries (Chart 18). Moreover, the share of self-employed recent EU-10 and EU-2 movers to the EU-15 is below the overall self-employment rate in the EU-15.

However, there are substantial differences between Member States, as shown in Chart 19 which presents the proportion of self-employed recent movers for the main receiving countries for which data are sufficiently available. According to this data, in the UK the share of self-employed is small, being almost identical for both recent immigrants from the EU-15 and the EU-10 (7% and 8% respectively). In contrast, around half of employed recent arrivals from the EU-2 to the UK and almost 40% of recent arrivals from the EU-10 to Germany are self-employed.

The main reason for this may be due to the fact that Germany still restricts the free movement of workers from the new Member States while the UK opened its borders to EU-8 labour migrants from the day of accession, but has implemented restrictions with respect to Bulgarians and Romanians. This has reduced the number of employees relative to self-employed coming to Germany and the UK from those Member States for which restrictions are applied. The question of how much is the share of self-employed movers from the new Member States observed in a destination country due to false or 'bogus' self-employment cannot be answered on the basis of the available data.

3.3. Age and gender

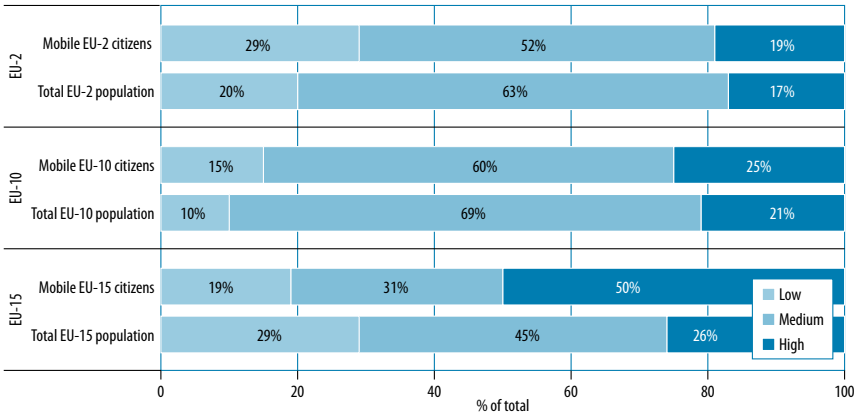
A look at age distributions shows that EU mobile workers are substantially younger than the overall labour forces in the sending and receiving countries.

25 Note that these are unemployment to population ratios which are different from the unemployment rates which measures unemployment relative to the active population.

This is especially true for mobile workers from the EU-10 of which close to 80% are under the age of 35. As for EU-2 mobile workers, close to 70% are under 35. Recent EU-15 mobile workers, however, tend to be older on average than their counterparts from the EU-10 and EU-2, with only 62% under 35 and the share of the very young – aged 15–24 – being significantly smaller.

As to the gender breakdown, the average percentage of females among recent mobile workers from the EU-10 and EU-15 seem to be a reflection of the gender distribution in the overall labour forces of the EU-10 and EU-15, with around 55% of the active populations being male and the other 45% being female. In the case of recent mobile EU-2 workers, the share of women is almost equal to that of men and therefore somewhat higher than the overall average in the EU-2 sending countries.

Chart 22: Educational attainment of mobile and total active population, 2007



Source: Eurostat, EU LFS, annual data.
Note: Mobile EU citizens here defined as working-age foreign-nationals resident for four years or less in another Member State. Recent mobile resident in the UK excluded due to data problems.

3.4. Employment structure by economic activity

With respect to employment structure by sector, there are significant differences between mobile workers and the overall resident population of sending and receiving countries and differences according to nationality.

Compared with overall EU-15 employment by sector, more recent EU-15 mobile workers tend to work in hotel and restaurant activities and real estate, renting and business activities. In contrast, they are significantly less likely to work in agriculture, wholesale and retail trade, public administration and health and social work.

Workers from the EU-10 resident in the EU-15 tend to be significantly 'over-represented' in manufacturing, construction, hotels and restaurants, real estate, renting and business activities, and as employees of private households. They are under-represented mainly in wholesale and retail trade, public administration and education.

As for mobile workers from Bulgaria and Romania and compared to the sector breakdown of EU-15 employment, they tend to be significantly more likely to work in agriculture, construction, hotels and restaurants and private households, while their share in manufacturing, wholesale and retail trade, public administration, education and health and social work is well below average.

These findings are also largely reflected in the employment share of recent intra-EU movers to the EU-15 by individual economic sector.

3.5. Employment structure by occupation

Well over half of the recent mobile workers from the EU-15 are employed in professions that can be broadly described as high-skilled (International Standard Classification of Occupations, ISCO, categories 1, 2 and 3) (Table 11). Only around 10% work in low-skilled elementary occupations while about a third hold jobs which tend to require intermediate-level qualifications.[26]

The occupational distribution of recent arrivals from the new Member States is on average quite different from that of EU-15 movers, the overall EU-15 workforce and the sending countries' workforce. Almost a third of all recent EU-10 and almost 40% of EU-2 movers work in low-skill elementary jobs and are strongly under-represented in high-skilled jobs. Both are also relatively more concentrated in intermediate-level occupations.

These differences in the occupational distribution of the different groups of intra-EU movers are also reflected in their employment share by individual occupation. The highest numbers of recently arrived EU-10 workers are found in service and retail, crafts and manufacturing and, above all, elementary jobs, while their employment share in professional jobs and other higher-skill occupations is quite small (Table 12). The employment share of recent mobile EU-2 workers among the higher-skill occupations is even lower, with a relatively high number employed in crafts and elementary occupations. Recent mobile EU-15 nationals, however, have a relatively high employment share in professional occupations and among technical professions and senior functions.

3.6. Educational attainment

In the context of the general migration and mobility debate, the issue of migrants' skill levels plays an important role. In the sending countries, one particular concern is that too much emigration, especially of high-skilled persons with tertiary education, could lead to 'brain drain' and labour shortages. In the receiving countries, in

26 This grouping of ISCO categories into 'high-skilled', 'intermediate' and 'low-skilled' follows an OECD methodology presented in OECD (2007a), pp. 155–156.

contrast, there are fears that labour from abroad could substitute local workers and take away their jobs.

Unfortunately, any analysis of the qualifications of foreign nationals is made difficult by the fact that the LFS as the main available data source has problems in correctly capturing the educational attainment of foreigners, in particular if qualifications were obtained outside the host country and cannot be correctly classified in the survey. For this reason, this analysis excludes data on foreigners in the UK where the data is known to be particularly problematic. Moreover, data for Ireland and some other Member States may be less reliable through a high non-response rate concerning foreigners' educational attainment.

With this caveat in mind, Chart 22 suggests that around a quarter of recent mobile workers from the EU-10 may be highly skilled, while around 60% are medium-skilled and only 15% fall into the low-skill category. Among recent mobile workers from the EU-2, the highly skilled share is somewhat smaller than for the EU-10 mobile while the share of the low-skilled is substantially higher.

Compared with the skill distribution in the sending countries, the share of the highly skilled among those who have recently left the country is on average somewhat higher than among the total labour force of the sending countries. However, the percentage of medium-skilled recent emigrants tends to be significantly lower than in the overall labour force, while the share of the low-skilled emigrants is relatively higher. Overall, these figures do not suggest a massive loss of highly skilled workers for the sending EU-10 and EU-2 countries, at least at this aggregated level. However, a more detailed discussion of the issue of brain drain for the sending countries will be provided in section 5 of this chapter.

Differing from the skill profile of the EU-10/2 mobile, the share of high-skilled workers is much higher among recent EU-15 mobile workers. One likely reason for this is that EU-15 movers tend to be on average significantly older than their counterparts from the EU-10/2 and are therefore more likely to have attained tertiary education. Moreover, other factors such as differences in the occupational and sectoral employment profile are also likely explanations.

In addition, the data shows that the share of low-skilled EU-15 movers is relatively small (19%), being substantially below the percentage of low-skilled workers in the overall EU-15 labour force. And while the proportion of the highly skilled among EU-10 movers is almost the same as that in the EU-15 labour force, the share of medium-skilled EU-10 movers appears to be substantially higher. In the case of EU-2 movers, the share of the low-skilled seems to be about equal to that of the overall EU-15 labour force; the percentage of high-skilled workers is substantially lower, but the share of medium-skilled workers is also significantly higher.

Comparing skill distributions with occupational distributions presented in the previous subsection suggests that many recent arrivals from the EU-2 and EU-10 are not employed according to their skill level. The percentage of recent EU-10/2 movers with tertiary education is substantially higher than those who currently work in high-skilled jobs, while the share of the poorly qualified is significantly below the percentage of those who perform low-skilled jobs.

This seems to be confirmed by Drinkwater et al. (2006) and Brücker et al. (2008) who present evidence that the skills of recent arrivals from the EU-8, in particular Poland, have not been put to the best use. This 'brain waste' phenomenon is found to have potentially two main consequences. On the one side, it may have a negative impact on human capital formation in the sending countries as it may reduce incentives to acquire higher skills among those who are planning to go abroad. On the other, it may encourage return mobility as those whose skills are not used efficiently may be more likely to go back to the sending country, in particular if their potential return to education increases on the labour market of their home country.

4. Economic impacts of intra-EU mobility

4.1. Impact on wages and employment

4.1.1. Empirical findings

A frequently heard public concern regarding labour immigration in general and labour mobility in the context of EU enlargement is that workers from abroad take away jobs from the native population, drive down local wages and burden the welfare systems of the host countries. Whether or not these concerns hold true is the topic of a wide body of economic literature which is summarised in Chapter 2 herein. This section will therefore focus mostly on the available empirical evidence concerning the impact of labour mobility between EU Member States.

The actual extent to which local workers' wages and employment opportunities are affected by immigration has been widely examined through economic research, the main conclusion being that:

> The empirical literature from around the world suggests little or no evidence that immigrants have had a major impact on native labour market outcomes such as wages and unemployment.[27]

The largest adverse effect is found in a study by Borjas (2003) for the US. His results suggest that an increase in the immigrant share in a labour market, defined by education and labour market experience, by 1 percentage point could reduce native wages by 0.4%. However, recent metastudies of this literature by Longhi et al. (2004 and 2006) find that a 1% increase in the number of immigrants involves on average a 0.1% wage decline, while the increase in natives' unemployment is a mere 0.024%.

Concerning Europe, a range of studies covering time periods before or after enlargement consistently find little or no negative impact from immigration on local workers. For example,

27 See Blanchflower et al. (2007).

assessments of EU-8 migration to the UK by Portes and French (2005), Gilpin et al. (2006) and most recently Lemos and Portes (2008) find no significant adverse effects of EU-8 migration on claimant unemployment, either overall or for any identifiable subgroup, including the young or low-skilled. They also find no statistically significant impact on wages. Blanchflower et al. (2007) report that recent immigration to the UK has probably not led to an increase in the natural rate of unemployment in the very recent past and that recent immigration continues to suppress inflationary pressures. For Ireland and Sweden, Doyle et al. (2006) identify no evidence of displacement of native workers by labour immigrants from the new Member States.

For Spain, Carrasco et al. (2008) estimate the labour market impact of migration to Spain during the 1990s. Despite a rapid acceleration of immigration to the country during the second half of the 1990s, they find no significant negative effects of this immigration on either the employment or wages of native workers. This is essentially confirmed by Pajares (2007) who also looks at the impact of more recent immigration to Spain since the beginning of the decade. Concerning natives' employment opportunities, he determines no evidence that they are negatively affected by immigration, but rather that they seem to be improved by the inflow of immigrants who play a complementary role on the labour market. Moreover, he locates no evidence that immigration has put a downward pressure on average wages for native workers, with the possible exception of those at the very low wage end of the labour market. Looking at immigration along different skill groups for the period 1975–97 for Germany, Bonin (2005) find no significant negative impact on natives' wages and employment opportunities, suggesting that immigrants are complements – rather than substitutes – for native workers.

One of the difficulties in assessing the impact of labour migration from the Eastern and Central European Member States after enlargement is the fact that not all Member States have opened their labour markets to workers from the EU-8 or Bulgaria and Romania. While estimates for previous periods and countries which have already opened their labour markets take into account observable migration flows and labour market developments, predictions on the potential impact of future migration need to either draw inferences from previous examples or be based on simulation models. In the EU enlargement context, several studies have simulated the labour market effect of east-west migration on individual economies or the EU as a whole.

For Germany, Baas et al. (2006) and BMWI (2007) look at the labour market effects of migration from the EU-8 and Romania and Bulgaria in the context of overall economic impact of EU enlargement. They find that the EU's eastern enlargement has brought substantial welfare gains for the German economy, mainly through a closer integration of goods and capital markets leading to higher productivity and total output. Increases in total output also has positive labour market effects as it increases wages and reduces unemployment. The exact size of the labour market impact depends on the degree of free movement granted to potential labour immigrants and the assumed size of ensuing migration flows. Both studies find that wage growth and the decline in unemployment rates would be slightly slower under a free movement scenario compared with keeping current restrictions on labour market access. However, even taking these effects into account, free movement would not decrease wages and employment and EU enlargement would still have a positive overall effect on the labour market. Baas et al. (2007) therefore concludes that:

> Given the general increase in employment through EU enlargement, maintaining restrictions against the new Member States is difficult to justify. The Common Market can not function in the long-term if individual Member States intend to avoid the alleged problems of integration.[28]

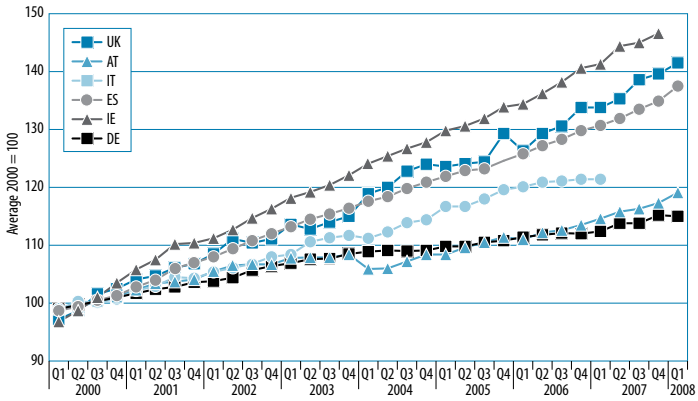
28 Baas et al. (2007), p. 6, own translation into English.

For Austria, Prettner and Stiglbauer (2007) conclude that a complete opening of the Austrian labour market to workers from the EU-8 would have a neutral or slightly negative impact on aggregate unemployment in the long run, and a modest short-run increase in unemployment in particular among the low-qualified. They also find that immigration would ease inflationary pressures in the country.

For Europe as a whole, Brücker (2007) analyses labour market effects on the basis of two migration scenarios: in an eastern enlargement scenario, the stock of migrants from the NMS-10 will increase by some 3 million persons between 2003 and 2014, while under the conditions of a pre-enlargement status quo it will increase by about 1.1 million persons. The estimated wage effects of the eastern enlargement compared with the pre-enlargement status quo are neutral in both the sending and the receiving countries in the long run, and the long-term effects on the unemployment rate are negligible. In the short run, wages may decline in the EU-15 by up to 0.2%, while the unemployment rate may increase by up to 0.1 percentage points, all things being equal. In the new Member States, wages may increase by up to 1%, while the unemployment rate may decline by up to 1.2 percentage points in the short term. In addition to adjustments in capital stocks, links between migration and international trade and capital mobility together with the sectoral adjustment of economies also tend to mitigate the labour market effects of migration.

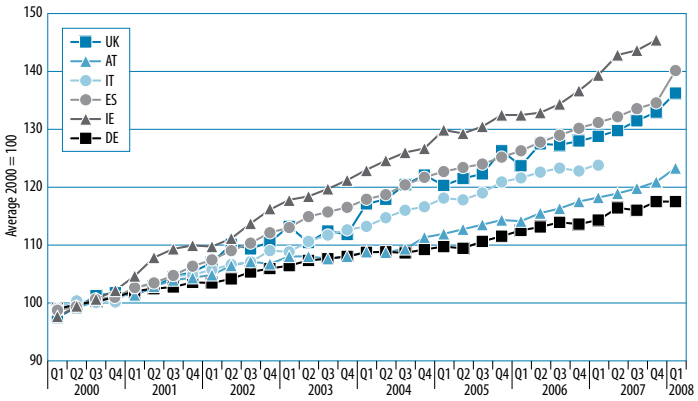
More recently, Brücker et al. (2008) find that the actually observed east-west mobility flows during the 2003–07 period have dampened EU-15 average wages by only 0.08% in the short run, with no impact at all the long run. The short-run impact on unemployment is also found to be marginal, with an estimated increase of the average EU-15 unemployment rate of only 0.04 percentage points in the short run and a neutral effect in the longer run due to the inflow of EU-8 workers and a similar moderate effect concerning

Chart 23: Development of hourly gross wages and salaries in industry and services (excluding public administration) in major receiving countries, 2000–08



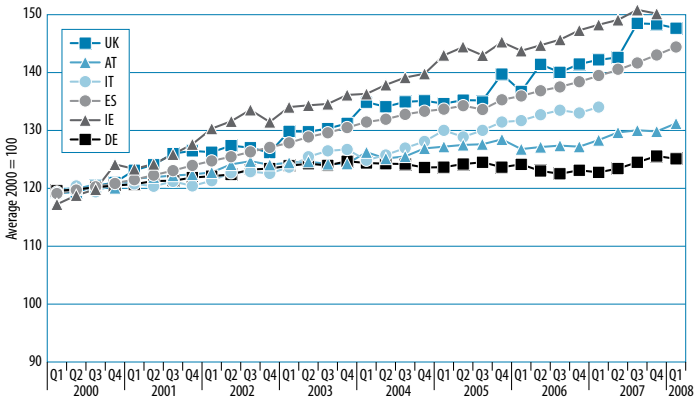
Source: Eurostat, quarterly labour cost index – wages and statistics, working day and seasonally adjusted.

Chart 24: Development of hourly gross wages and salaries in the manufacturing sector in major receiving countries, 2000–08



Source: Eurostat, quarterly labour cost index – wages and statistics, working day and seasonally adjusted.

Chart 25: Development of hourly gross wages and salaries in the construction sector in major receiving countries, 2000–08



Source: Eurostat, quarterly labour cost index – wages and statistics, working day and seasonally adjusted.

EU-2 mobility. Moreover, taking into account differences in qualifications, no serious impacts are found for low-skilled and medium-skilled workers (let alone the highly skilled).

4.1.2. Descriptive evidence on wages and employment

A look at descriptive wage and employment data in the main EU destination countries also does not appear to support concerns that the inflow of workers from the new Member States may have caused serious labour market disturbances.

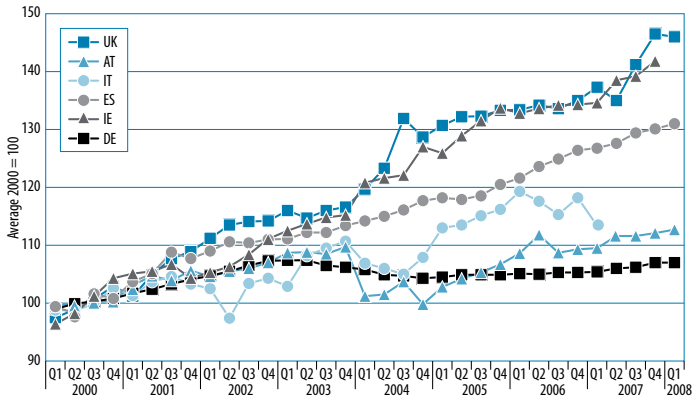
Chart 23 shows that overall nominal hourly earnings in industry and services (excluding agriculture and public administration) have continued increasing in all Member States shown in the chart. This applies not only to the overall average, but also to individual economic sectors which tend to employ a relatively high share of foreign workers – namely manufacturing, construction, hotels and restaurants and agriculture (see Chart 24–27).

A look at the development of unemployment rates in the main EU-15 receiving countries since the beginning of the decade also shows that the overall unemployment situation is not worse in the UK, Ireland and Austria, broadly remaining at the low levels of the pre-enlargement period. In Italy, Spain and Germany, overall unemployment rates have decreased substantially and are significantly below pre-enlargement unemployment rates, so far even when taking into account recent changes in in trend since the end of 2007 (Chart 28).

In Austria, the unemployment rate of non-foreigners has dropped to less than 4% in 2006 and 2007, despite an inflow of foreigners from the new Member States which has been similar to that in the UK relative to population size. In Ireland, unemployment rates of native citizens were already low before the opening of labour markets to EU-8 workers in 2004 and have further declined since then until very recently, with the slower economic growth affecting labour markets. In the UK, unemployment rates of UK nationals were only slightly higher in 2006 and 2007 compared with 2004 and 2005. Empirical evidence suggests, however, that there is no significant relationship between the new immigration from the EU-8 and the recent increase in the actual unemployment rate in the UK – rather it is a reflection of a general slack in the labour market.[29]

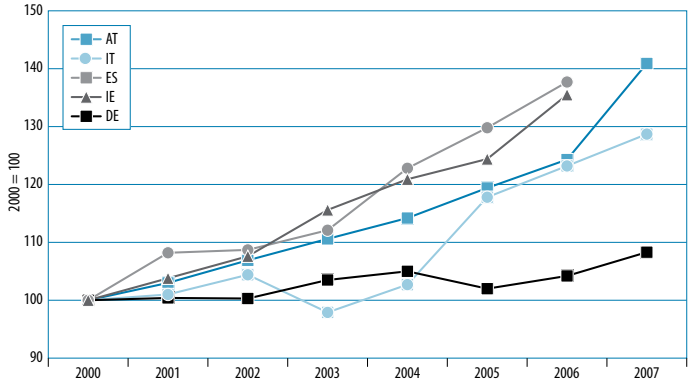
29 See Blanchflower et al. (2007), pp. 25–32.

Chart 26: Development of gross wages and salaries in the hotel and restaurant sector in major receiving countries, 2000–08



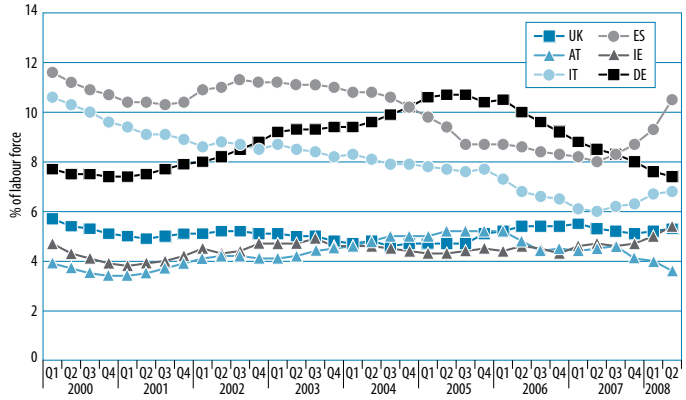
Source: Eurostat, quarterly labour cost index – wages and statistics, working day and seasonally adjusted.

Chart 27: Development of hourly gross wages and salaries in agriculture and fishing in major receiving countries, 2000–07



Source: DG EMPL calculations based on Eurostat annual national accounts.

Chart 28: Overall unemployment rates in the main EU-15 receiving countries, 2000–08



Source: Eurostat, EU LFS, quarterly adjusted series, seasonally adjusted.

In Italy, Spain and Germany, overall unemployment rates have decreased substantially and are now significantly below pre-enlargement unemployment rates, even when taking into account very recent increases in employment due to economic slowdown.

This general picture largely also holds true for the low-skilled part of the labour force (Chart 29).

A similar picture is found when looking at employment rates in the main EU receiving countries. In Germany, Ireland, Spain and Austria, employment rates have increased significantly since the beginning of 2003 while they have remained broadly the same in Italy and the UK (Chart 30).

Employment rates of low-skilled workers are also higher in Spain and Austria, remaining largely stable in the other Member States shown in the figure (Chart 31).

4.2. Impact on economic growth, GDP per capita and inflation

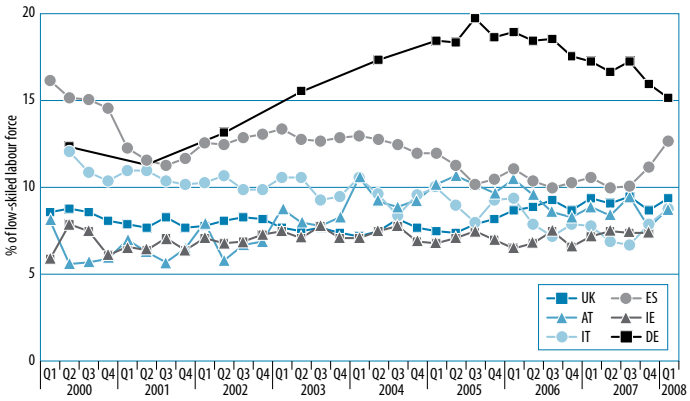
4.2.1. Overall GDP

Concerning the impact on economic growth, labour migration can be expected to increase overall GDP in the receiving countries and decrease it in the sending countries, due to the increase or decrease, respectively, of labour as a production factor.

Several recent studies have tried to estimate the impact of intra-EU migration on GDP and other macroeconomic variables after EU enlargement. Most of these studies find relatively modest GDP effects in the short run and more substantial effects in the long run, although the exact results vary significantly with the estimates' underlying assumptions concerning expected future migration flows, the skill mix of native versus migrant workers, speed of adjustment of capital stocks and other factors.

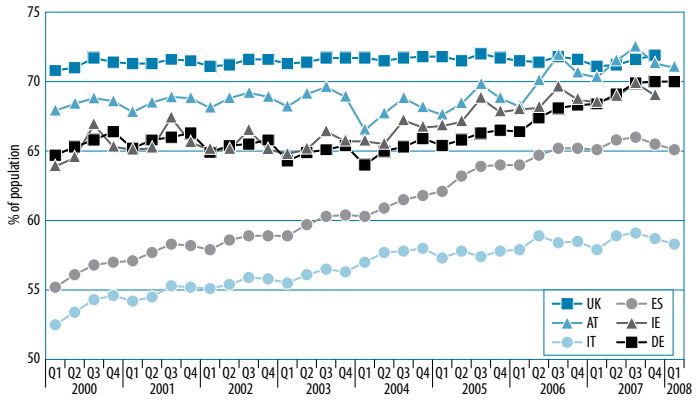
Based on migration flows observed after the 2004 enlargement and using a general equilibrium model, Barrel et al. (2007), for example, estimate that mobility flows from the EU-8 have added an extra 0.4% to the Irish GDP and 0.3% to the UK's GDP by 2007, while it decreased the Polish and Lithuanian GDP by 0.2% and 0.4% respectively. Their long-run estimate forecasts an extra 1.7% to GDP in Ireland and 0.6% in the UK by 2015 compared with the

Chart 29: Unemployment rates of low-skilled persons in the main EU-15 receiving countries, 2000–08



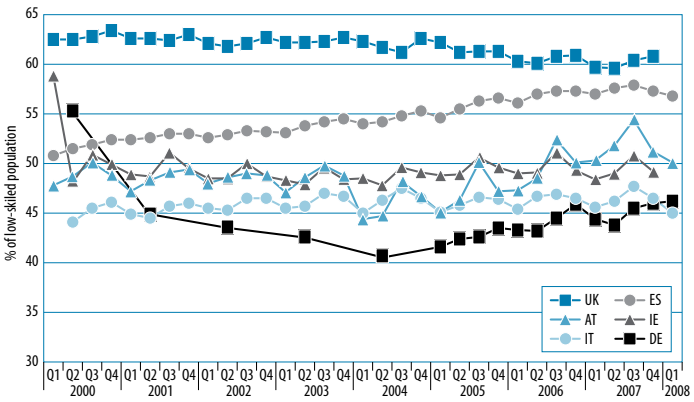
Source: Eurostat, EU LFS, quarterly series.

Chart 30: Overall employment rates in the main EU-15 receiving countries, 2000–08



Source: Eurostat, EU LFS, quarterly adjusted series.

Chart 31: Employment rates of low-skilled persons in the main EU-15 receiving countries, 2000–08



Source: Eurostat, EU LFS, quarterly series.

pre-enlargement situation. In contrast, total GDP in Poland and Lithuania, two of the main sending countries, is estimated to fall by around 1% and 0.8%, respectively, during the same period.

Simulations by Brücker (2007) for all of the EU-15 and EU-8 also find negligible short-run effects and substantial long-run effects on GDP. According to his estimates, migration from the EU-8 to the EU-15 between 2000 and 2006 increased overall GDP in the EU-15 by 0.08% and decreased EU-8 GDP by 0.38%, with a net increase for the enlarged EU of 0.03%. In the long run, and assuming higher intra-EU migration than Barrel et al. (2007), GDP is estimated to increase by 1.1% in the EU-15 and 0.6% in the enlarged EU and to decline by 3.9% in the EU-8.

More recently, Brücker et al. (2008) find that 2003–07 labour mobility flows from the EU-8 may have increased the aggregate GDP of the enlarged EU by about 0.14% in the short run and 0.23% in the long run, while mobility from the EU-2 has increased the GDP of the enlarged EU by 0.14% in the short run and by 0.25% in the long run during the same period of time.

4.2.2. GDP per capita

In the debate of the costs and benefits of immigration, overall GDP has been criticised as an irrelevant and misleading indicator for assessing the economic impact of immigration on individual countries. It has been suggested that GDP per capita of the resident population is a better measure of the standard of living than GDP as it takes account of the fact that immigration increases not only GDP but also population in the receiving countries.[30]

Available literature suggests that migration has only a small impact on GDP per capita. One recent study covering the UK finds that the rise in GDP per capita associated with recent immigration from the EU-8 may be small or even negative.[31]

Barrell et al. (2007), in contrast, identify a small reduction in GDP per capita in the short term in the EU-15 receiving countries, but increases in the longer term, due to EU-8 immigration. For example, the UK GDP per capita is estimated to decrease by around 0.1% during the first four years after 2004 enlargement, but was found to be about 0.2% higher in 2015 compared with the pre-enlargement situation. The short-

30 House of Lords (2008).
31 Ernst & Young (2007).

term reduction in GDP per capita is explained by the fact that capital stocks take some time to adjust to the inflow of labour and for the additional labour to be absorbed into employment. In the longer term, GDP per capita rises as the immigration of mostly young workers increases the receiving countries' working-age populations relative to their overall populations.[32]

Concerning the sending countries, Barrell et al. (2007) conclude that GDP per capita in the EU-8 generally rises relative to the pre-enlargement situation. Although the reduction of the sending countries' working-age populations relative to their overall populations tends to depress GDP per capita, increases in labour productivity and declining unemployment are considered to more than offset this change.[33]

Brücker et al. (2008) also observe a positive impact of EU-8 mobility on GDP per capita in the enlarged EU. Although it falls slightly by 0.14% in the short run, it rises in the long run by 0.23% due to the adjustment of capital stocks. More importantly, the total factor income per native person tends to increase in the long run by 0.12% in the receiving countries, without declining in the short run.

4.2.3. Inflation

In simplified terms, immigration can affect inflation in the receiving countries through two main channels.

- Firstly, as seen above immigration may temporarily lower wages and tends to increase output, both of which increase aggregate supply in the economy and ease inflationary pressures.

- Secondly, immigrants may act as additional consumers and higher profitability of capital due to the availability of migrant labour may eventually lead to higher investments in machinery and equipment, both of which boosts aggregate demand and exerts an upward pressure on inflation.

As for the sending countries, in principle these effects work the other way around. The sign and size of the net impact of these opposing effects on inflation depend on a range of factors such as the size of the impact of immigration wages, aggregate employment, migrants' remittances to their home countries, speed of adjustment of capital stocks, or substitution effects between capital and labour.

Assessing these various factors against each other, Blanchflower et al. (2008) suggest that in the case of the UK, recent EU-8 immigration has raised potential supply more than demand, thereby acting to reduce inflationary pressures.[34]

Empirical findings by Barrel et al. (2007) also indicate that labour mobility from the new Member States has reduced inflationary pressures in the UK and other receiving countries among the EU-15, while it is contributing to an increase in inflation in the main EU-8 sending countries.

4.3. Impact on labour market efficiency and innovation

Another and overall positive effect of geographical mobility concerns the possibility of better skill matches through an expanded labour market.[35] In general, imperfections in the information available in the labour market entail the simultaneous presence of unemployed persons and vacant jobs. This is the origin of frictional unemployment. These imperfections are even more important when vacant jobs are located in different regions or countries. To the extent that the skills required by the vacant jobs differ from the skills available in the local labour market, skill mismatch might arise. This skill mismatch will persist if neither workers nor jobs are fully mobile.

Therefore, enhancing geographical mobility would lead to regional labour market adjustment and to a better match between the demand and supply of skills. If geographical mobility enhances the quality of job matches, individuals could receive a higher return on their human capital. This increases incentives to invest in education.

However, for a worker, the search for a job that fits their requirements and skills is a time-consuming process. Likewise, when a firm wants to recruit new workers, it often chooses to devote substantial resources to the selection of suitable individuals. Therefore, mobility entails costs which in most cases are irreversible. This implies that excessive mobility could increase the cost of vacancy posting on the side of the firms, or search costs on the side of the workers. However, most of these additional costs are borne voluntarily by individual workers and firms. There have, however, been no empirical studies which have been able to document external aspects of these costs.

Free geographical mobility furthermore helps in allocating the innovation and entrepreneurial potential incorporated in individuals to the environment where they can achieve the highest return. The impact of educated immigrants on technological and scientific progress is likely to affect future growth rates of income per capita, as innovation increases total factor productivity. This dynamic effect of a 'brain gain' on the rate of scientific and technological innovation of a country has indeed been captured by several empirical studies.[36]

4.4. Impact on public finances and welfare systems

EU enlargement has also raised concerns about an increase in 'welfare tourism' of people who are more attracted by favourable social services and benefits in the receiving countries than by working there.

However, while the European experience is mixed with respect to the impact of overall immigration on public finances and welfare systems,[37] migration from the new EU Member States seems to have had little or no negative impact.

32 Barrel et al. (2007), p. 16.
33 Ibid.

34 Blanchflower et al. (2008)
35 See e.g. World Bank (2006).

36 See Peri (2005) for examples.
37 See Münz et al. (2006), pp. 38–42, for an overview.

For example, the UK government's quarterly *Accession Monitoring Report* suggests that the number of EU-8 nationals applying for tax-funded income-related benefits and housing support remains low in the UK (UK Home Office 2008).

Brücker et al. (2008) identify evidence that intra-EU migrants from the new Member States are not disproportionately reliant on the welfare system in the receiving countries. According to descriptive statistics from the *EU Survey of Living and Income Conditions* (SILC), they find that migrants appear to be under-represented among the recipients of contributory benefits, but over-represented for non-contributory allowances. However, once controlling for relevant confounding individual- and household-level factors that are likely to correlate with migrant status and to influence the likelihood of receiving the two kinds of social benefits, migrant status appears to have little – if any – impact on the likelihood of being a recipient of social welfare benefits.

5. Other impacts

5.1. Brain drain and labour shortages in the sending countries

In a number of the new Member States, the emigration of mostly younger workers has sparked serious concerns over brain drain and labour shortages. Several reports indeed indicate that emigration has led to labour shortages in some countries – e.g. the Baltic States and Poland.[38] These tend to affect mostly specific sectors of the economy (e.g. construction, hotels and restaurants) and professions (in particular, health care).

A closer look at the skill composition of movers from the EU-8 and EU-2 reveals that they are slightly better skilled than native people in the sending countries. Nevertheless, the overwhelming share of migrants from the new Member States is concentrated at the medium-skill level, such that increased labour mobility in the context of EU enlargement does not significantly change human capital endowments in both the sending and the receiving countries.

Moreover, there is evidence that enrolment rates for tertiary education in the new Member States have substantially accelerated in recent years, which may compensate for the outflow of skilled labour.

Table 13 shows the share of students enrolled in tertiary and post-tertiary education among the population aged 15–24 by Member State. In the EU-10, average tertiary enrolment rates have been rapidly increasing from 22.3% in 2000 to 29.8% in 2005 – the most recent year available. In addition, while EU-10 tertiary enrolment rates for 18–24 year olds were below the EU-15 average at the beginning of the decade, they are now significantly above it. Concerning Romania, there has also been a rapid increase, while tertiary enrolment rates in Bulgaria have risen only slightly.

Furthermore, there are indirect effects that may help to reduce or even offset the negative effects of brain drain. For example, many younger migrants do

Table 13: Students enrolled in tertiary and post-tertiary education among population aged 18–24

Member State	2000	2001	2002	2003	2004	2005
CZ	17.1	17.4	19.0	19.6	21.9	23.2
EE	28.7	28.9	28.5	28.4	28.5	28.7
CY	12.3	13.8	15.8	19.5	20.9	18.0
LV	24.1	26.1	27.9	29.0	29.9	29.5
LT	28.2	30.1	31.1	33.0	34.1	35.2
HU	19.2	20.0	22.0	24.3	26.3	27.5
MT	11.8	13.1	13.3	15.0	13.9	16.4
PL	24.5	27.2	28.9	30.0	30.9	32.5
SI	29.2	31.2	33.8	34.9	35.7	38.1
SK	17.0	17.8	18.6	18.9	18.8	20.3
EU-10	**22.3**	**24.2**	**25.9**	**27.2**	**28.3**	**29.8**
BG	23.1	21.6	21.2	21.9	21.9	23.3
RO	13.9	16.6	19.5	20.5	21.5	22.6
EU-2	**16.1**	**17.8**	**19.9**	**20.8**	**21.6**	**22.8**
BE	32.8	32.6	32.9	33.1	33.5	33.7
DK	17.8	18.4	19.1	19.7	20.2	20.7
DE	14.8	15.2	15.9	16.6	17.5	17.7
IE	25.7	26.2	27.0	27.1	27.9	27.2
EL	:	:	:	:	:	:
ES	30.4	30.4	30.3	30.3	30.3	29.7
FR	29.7	29.7	29.3	29.5	29.7	29.9
IT	22.1	22.8	23.9	25.9	27.1	27.5
LU	:	:	:	:	:	:
NL	25.8	26.2	26.5	26.7	27.4	28.3
AT	17.0	17.5	16.7	17.3	18.0	18.4
PT	23.2	24.9	24.6	25.1	25.3	25.0
FI	29.6	29.9	29.8	31.2	31.5	31.8
SE	21.1	21.5	22.6	23.6	24.2	24.0
UK	22.3	22.7	23.4	22.9	22.3	22.3
EU-15	**23.6**	**23.9**	**24.2**	**24.7**	**25.0**	**25.1**
EU-27	**22.7**	**23.5**	**24.2**	**24.9**	**25.4**	**25.8**

Source: DG EMPL calculations based on Eurostat education and demographic statistics.
Note: ":" – Data not available.

38 See e.g. World Bank (2006a).

not move permanently but rather for a temporary period (e.g. to study and/or for short work experience abroad). After returning home, they bring extra skills including language and cultural capabilities, enabling them to undertake more internationally oriented jobs. Secondly, they may bring home a migrant partner, who is also well–educated. Thus brain and youth circulation may result in a brain gain in the long run.[39]

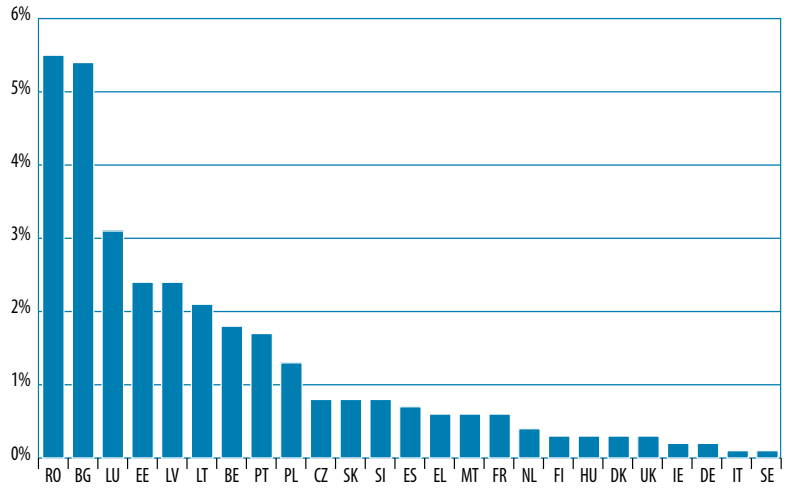
Moreover, even if migrants choose not to return home, they may serve as 'middlemen' linking businesses in the destination and origin countries.[40] Navigating between both regions, they often function as major catalysts for expanding knowledge, businesses and venture initiatives, and as a consequence enhance the cross-border knowledge transaction and trade in general and possibly increasing foreign direct investment in the origin country.[41]

5.2. Remittances

Migrants often remit part of their income to their families in the origin country. Research by the World Bank (2006 and 2007) shows that remittances can be a substantial source of income in the sending country and there is a direct link between remittances and factors driving economic growth, such as investment in education and start-up of capital-intensive businesses. It seems plausible to assume that the positive impact of remittances increases with the income differential between destination and origin areas. Thus, while probably less significant in the context of intra-EU-15 mobility, remittances may play a positive role in the economic development of the new Member States.

A look at remittances data published by the World Bank (2008) suggests that they are of importance in several EU-8 countries. Including transfer payments of employees' compensation to workers residing in their home country, remittances accounted for about 1.3% of GDP in Poland and over 2% of GDP in the three Baltic States in 2006. The figures are substantially higher in Romania and Bulgaria where remittances contribute to over 5% of GDP.

Chart 32: Worker remittances (incl. employees' compensation) as a share of GDP, 2006



Source: World Bank, Migration and remittances factbook 2008
Note: MT data for 2005.

5.3. Impact on public services and infrastructure

In some of the receiving countries, inflows of workers and their families from the new Member States has sparked a debate over its impact on public services and infrastructure.

As highlighted in various national reports[42], the impact of new migration flows on the welfare state (including its financing) seems to be limited or positive at the national level. However, there are variations across functions of the welfare state and levels of government. Migration flows can in particular create pressure on the provision of education, housing and health-care services at local level.

For instance, there have been cases in the UK where the arrival of migrants' children has strained the capacities of local schools (although these seem to be examples in which the enrolment of migrant children has contributed to the maintenance of village schools). Anecdotal evidence suggests that there may also be some extra costs on the UK's health-care system which are associated with immigration. However, the evidence currently available on the impact on the educational and health systems in the UK appears to be too limited to draw firm conclusions over the size and direction of the effects.[43]

Another example is the Netherlands where there have been reports of a lack of adequate housing in major destination communities for some workers from the new Member States.[44]

5.4. Social impact

Concerning the social impact of intra-EU mobility on recent movers, a comprehensive assessment of the income and living conditions of workers from Bulgaria, Romania and other Member States is not yet available. However, as reported in the *National action plans for social inclusion* and through EU studies[45], there is considerable evidence of the differences that persist between the living conditions faced by newly arrived migrants and

39 See e.g. Mayr and Peri (2008) and World Bank (2006b).
40 See Saxenian (2002).
41 See Teferra (2004); Kaba (2004); and Sekretariatet for ministerudvalget for Danmark i den globale økonomi (2005).

42 See e.g. Gott and Johnston (2002).

43 House of Lords (2008), pp. 42–44.
44 Van den Berg et al. (2008).
45 See European Commission (2005), (2007a) and (2008).

host-country nationals. These include higher risks of poverty, poorer educational outcomes for movers' children, and difficulties in accessing housing, health care and other social services.

Furthermore, there have been reports from some sending countries of negative impacts on family cohesion and children as a consequence of one or both parents working abroad.[46]

In addition, the failure to create the conditions for mobile workers to integrate in the society can result in serious social problems and a waste of the economic benefits of mobility. This failure could be at the root of negative attitudes towards intra-EU mobility.

6. Summary and conclusions

The last two rounds of EU enlargement came with concerns that large differences in income and unemployment could lead to a massive flow of workers from the 'poor' newcomers to the 'rich' older members of the EU. There were significant concerns in a number of Member States that a looming migration shock may lead to serious labour market imbalances by pushing native workers out of their jobs, driving down local wages and burdening the welfare systems of the host countries.

Four years after the EU's 2004 enlargement and over a year after the accession of Bulgaria and Romania, it seems fair to conclude that fears of a massive surge of workers from the EU's new Eastern and Central European Member States to the 'old' EU-15 Member States and most of the associated concerns have not materialised.

Between 2003 and 2007, the average population share of EU-10 foreigners resident in the EU-15 has increased from around 0.2% to 0.5%. During the same time the population share of Romanians and Bulgarians resident in the EU-15 rose from 0.2% to 0.4%, a process that already started well before 2007. By comparison the population share of EU-15 nationals resident in another EU-15 country grew from 1.6% to about 1.7% and that of non-EU-27 nationals from 3.7% to 4.5%.

This is not to suggest that east-west mobility in the course of EU enlargement has been moderate. In absolute terms, available statistics suggest that the number of EU-10 residents in the EU-15 has increased by over a million and that of Romanians and Bulgarians by over 900 000 since 2003, all within a relatively short period of time. The real numbers are likely to be higher because of problems to account statistically for very recent arrivals, those who stay illegally and those who come for only a few months and then leave.

Moreover, intra-EU mobility flows have not spread equally across Europe, being largely limited to a few major receiving and sending countries, who have consequently felt more of an impact than the rest. In terms of recent EU-10 mobility, Ireland and the UK have been the main receiving countries, to some extent also Austria and Germany, despite restrictions on labour market access in the latter two countries. Concerning Bulgaria and Romania, flows have been directed towards mainly Spain and Italy – a process which started well before the EU-2 accession in 2007. Relative to their population size, Romania and Bulgaria have also been the main sending countries, together with Lithuania, Cyprus, Poland, Latvia, Slovakia, and Estonia, while the outflow from the other new Member States has been much less significant.

Nevertheless, and despite the costs involved, practically all of the available evidence suggests that the overall economic impact of recent intra-EU mobility has on balance been positive and that it has not led to serious disturbances on the labour market, even in Member States which have seen a relatively large inflow of workers from the new Member States.

In both the main receiving and sending countries, local workers' wages have continued to rise. In addition, unemployment has not significantly increased, but rather in many countries it has declined since enlargement. Even when analysing the isolated effects of migration on wages and unemployment, empirical studies have consistently found little or no negative impact of east-west intra-EU labour mobility on local workers' wages and employment.

The great majority of people from the new Member States have come to work in the destination countries. They have played an important role in improving labour market efficiency by alleviating labour shortages in sectors and occupations with high labour demand which could not be meet by national workers alone.

As a consequence, intra-EU labour mobility has also contributed to a substantial increase in the economic growth of the receiving countries and the EU-27 in total, while it has led to some reduction in overall output in the main sending countries. However, mobility has helped to increase GDP per capita in the main sending countries, being likely to increase it as well in the receiving countries in the long run. Added labour supply through intra-EU mobility has also helped to ease inflationary pressures in the main receiving countries, although it has contributed to rising inflation in several sending countries. Concerning intra-EU mobile workers' impact on public finances, there is no evidence that EU enlargement has led to a rise in 'welfare tourism'.

Looking into the future, there seems no reason to expect that there will be a further surge of labour mobility from the new Member States. Migration flows to the UK and Ireland appear to have peaked in 2006, significantly declining in 2007 and first quarter 2008. There are in fact indications of an increased return migration of those migrants who are already living in the UK. Furthermore, the opening of labour markets for EU-8 workers in most of the other EU-15 countries since 2006 may have lead to a limited diversion of migration flows to some other Mem-

46 See e.g. Soros Foundation (2007) and SOS Kinderdorf (2008).

ber States, but has not resulted in a substantial additional inflow of labour from the new Member States.

Even in the case of Bulgaria and Romania, large numbers of people have already moved and been working abroad within the EU in recent years, suggesting that many of those who wanted to move have already done so and that the potential of additional migration from the EU-2 may be limited.

Examples such as Sweden, Finland, Greece, Portugal (free early labour market access, but low labour inflows) and Germany and Austria (restricted access, but relatively high inflows) suggest that transitional arrangements on labour market access only have a limited influence on the distribution of intra-EU mobility. Ultimately, mobility flows are driven by other factors such as general labour demand, network effects through already existing foreign populations or language. On the contrary, as experience has shown, access restrictions are likely to exacerbate problems, such as the incidence of undeclared work, false self-employment or the violation of labour standards.

Furthermore, all of the main EU sending countries have seen a rapid rise in national income per capita, earnings and employment over recent years. There is some evidence that this is already dampening the incentive to migrate and is likely to contribute to a further decline in labour supply from the new Member States. In addition, due to a substantially shrinking young generation, the pool of potential mobile workers from the Central and Eastern European Member States is shrinking and this decrease is likely to act as a brake on geographical labour mobility within the EU.

In policy terms and from the perspective of Member States still applying restrictions on the free movement of workers, it is worth bearing the following points in mind:

- Concerning transitional arrangements for the EU-8, restrictions should in principle end on 30 April 2009. The very few Member States still applying restrictions on the free movement of workers can only maintain them beyond April 2009 if they notify the Commission of a serious disturbance of the labour market or the threat thereof. Yet, current available evidence does not point towards serious mobility-induced labour market disturbances. This is not to say that there are no costs involved with opening labour markets to workers from outside. However, practically all the evidence at hand suggests that the benefits outweigh the costs and that any negative labour market and economic impacts have not led or are unlikely to lead to serious labour market disturbances, not only at an aggregate level but also at the level of regions, sectors or occupations.

- Regarding Bulgaria and Romania for which the second three-year transitional phase starts in January 2009, Member States maintaining restrictions should carefully consider whether the continuation of these restrictions are needed in light of the experiences and evidence presented in this report, and notwithstanding their rights set forth in the Treaties of Accession concerning transitional arrangements.

- Even in the unexpected case of a serious labour market disturbance after opening labour markets, an affected Member State can still apply for invoking a safeguard clause foreseen in the Accession Treaties under which free movement of workers may be partially or wholly suspended within the seven-year transitional period in order to restore a normal situation.

- If it is indeed feared that the opening of labour markets would create 'losers' among the resident population, alternative solutions such as adequate labour market policies to bring (low-skilled) unemployed people back into work may be a more efficient way of dealing with this issue, at the same time allowing the benefits of intra-EU mobility to be reaped.

- Likewise any negative impacts concerning public services, housing, social cohesion, exploitation of migrant workers or undeclared work need to be addressed. However, such impacts are not good reasons to maintain restrictions on labour market access under transitional arrangements. On the contrary, as experience has shown, some of these problems are likely to be exacerbated by access restrictions, such as the incidence of undeclared work, false self-employment or the violation of labour standards.

From the perspective of new Member States, in particular the 'high-mobility' countries, substantial outflows of workers are sometimes perceived as a mixed blessing. On the one hand, emigration has helped to reduce unemployment in some Member States by allowing unemployed persons to look for jobs in other Member States. On the other hand, the outflow of, in particular, younger and relatively high-skilled people has led to concerns about brain drain and labour shortages. There are several points and implications to these findings:

- While some Member States, in particular the high-mobility countries (e.g. Poland and Lithuania), do indeed suffer from skill shortages, there are a number of factors helping to alleviate or offset these problems. First, a significant recent rise in tertiary-education enrolment indicates that the number of highly educated people available to the labour market has been increasing in most of the new Member States. Secondly, much of the recent east-west mobility appears to be temporary, as argued before. Moreover, improving income and working conditions in most of the new Member States already seem to be starting to reduce the incentive to emigrate and to attract back home many of those who are still abroad. And those who do come back often do so with improved working skills and international contacts which can be of benefit to the home country.

- Brain drain, in any case, cannot be effectively curbed by legal restrictions of the free movement of workers, even if well meant. Many destinations, both inside and outside Europe, would still remain in particular for the well-educated.

- Addressing brain drain and skill shortages will require policy-makers of mainly the sending countries to devise an appropriate policy mix consisting of elements such as measures to increase general labour market participation, further improvements to education and vocational training, adequate pay and working conditions for public sector workers, incentives for return migration, facilitating both internal labour mobility and immigration from outside the EU.

Finally, it is worth remembering that freedom of movement of workers is one of the basic freedoms under the EC Treaty. This freedom is based on the rationale that international labour mobility contributes positively to a better functioning of labour markets throughout Europe. It is indeed a key element of the EES to which all Member States have subscribed. However, for many citizens throughout Europe, in particular in the new Member States, the freedom to move and work in another European country has also become a powerful and positive symbol of what Europe means for the individual. It is this aspect, too, which should not be forgotten when taking the decision by when to allow all EU citizens to enjoy this freedom.

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Measuring the quality of employment in the EU*

Chapter 4

1. Introduction

In 1997, the European Employment Strategy (EES) was launched as a coordinated effort to implement policies and actions aimed at boosting labour market outcomes in the EU. Since 2000 and in the framework of the Lisbon *Growth and jobs* strategy launched in 2000, the EES overarching objectives have been further enriched by encompassing not only *full employment*, but also *promoting quality and productivity at work*. Hence, quantitative and qualitative aspects (or *more and better jobs*) are both highly important elements within the EU employment policy agenda.

10 years after the launch of the EES, European Union (EU) labour market performance has significantly improved in quantitative terms (i.e. higher employment rates and lower structural unemployment), while no clear-cut conclusions can be drawn with regard to job quality developments.

In recent years, some developments have caused general concern in the public opinion about the perceived 'erosion' in the quality of jobs in the EU. These include:

- Increased market integration at international level (i.e. globalisation) may lead to more frequent episodes of downsizing and outsourcing, particularly in sectors more affected by competitive pressures.
- Increased use of temporary work, which is often linked to precarious employment.
- Skill-biased technological progress, putting low-skilled workers especially at risk.
- Socio-demographic factors, such as population ageing and the progressive replacement of the 'male breadwinner' by the dual wage earner model which, while having led to positive developments such as the increased participation of women in the labour market, has also implied growing difficulties to combine work and private life.

Overall, these factors are often perceived to go hand in hand with increased job insecurity; a deterioration of working conditions (e.g. increased stress and work-related health problems); reduced possibilities to combine work with other private and social responsibilities; and increasing inadequacy of existing social security schemes to cope with more heterogeneous and uncertain individual employment histories. All these concerns call for taking a closer look at job quality levels and trends in the EU.

Moreover, a number of dimensions of job quality are likely to affect – directly or indirectly – labour productivity. These include the provision of training at the workplace, which plays a key role in improving workers' skills, as well as work organisation practices and work-related health outcomes, which may have significant motivational effects via their impact on job satisfaction. In the context of the poor productivity performance of the EU during the current decade, these considerations further support an attempt to re-assess job quality outcomes in Europe.

In addition to being one of the overarching objectives of the EES, job quality has been the focus of both conceptual and policy concerns since the end of the 1990s and beginning of the current decade. In particular, following a 2001 Commission communication[1], a comprehensive framework for monitoring and analysing job quality was endorsed by the European Council of December 2001 in Laeken (sections 2.2 and 2.4). This framework recognises the complexity and multi-dimensionality of the concept, following which appropriate quality indicators were included in the 2002 *Employment Guidelines*.[2]

Since 2003, the emphasis on job quality issues has somewhat waned following, among other things, the macroeconomic downturn in 2002–04. In 2006–07, the employment policy debate began focusing on the flexicurity approach, aimed at guiding labour market reform strategies in a way that reconciles increased adaptability of workers and enterprises with 'new'

* This chapter is largely based on Davoine et al. (2008).

1 See European Commission (2001a).
2 European Commission (2002).

forms of employment security that promote labour market transitions. However, the role of quality in work in flexicurity policies remains to be clarified in the EU policy debate (see Box 1).

In the first half of 2007, under the impulse of the German EU Presidency, job quality returned to the EU policy agenda, as the Council[3] identified 'good jobs' as a key element of a renewed European social model capable of withstanding the challenges of globalisation. Following Council conclusions, the Commission adopted[4] the 'Renewed Social Agenda' for Europe in the 21st century, highlighting the promotion of more and better jobs as one of its key elements.

Quality in work is a multi-dimensional phenomenon, which in principle may touch a broad set of individual job's and workers' characteristics, ranging from wages, training, health and safety at work, work organisation, reconciliation between work and family life, etc. As socio-economic literature does not appear to have reached a clear consensus on a definition of variables to include – let alone on a weighing scheme – any attempt to analyse and monitor job quality needs to be considered with great care. Additionally, some of the relevant aspects are more of a qualitative and subjective nature, thus raising obvious measurement problems.

This chapter reassesses the EU concept of job quality in the context of recent developments in the socio-economic literature and proposes an enriched framework for its analysis. Based on this framework, job quality models or regimes across the EU are characterised.

The chapter is structured as follows. Section 2 first presents the theoretical background and policy context, and then critically reviews the EU job quality concept. The analytical core of the chapter, section 3 identifies a taxonomy of job quality models in the EU and compares results with those derived using the EU job quality concept. It also presents a dynamic analysis of job quality in the EU in recent years. Part 4 concludes.

2. Job quality: economic concept and policy goal

2.1. Importance of job quality

The EES includes among its overarching objectives not only the pursuit of full employment, but also raising productivity and the promotion of quality in work. In a nutshell, this implies simultaneously aiming at more and better jobs. However, it is thus necessary to clarify the meaning of 'better jobs' and present the policy rationale.

In a neo-classical model of a perfectly competitive labour market, wages fully capture job quality aspects. Wage differentials fully compensate for the disutility of work and any downsides associated with a particular job.[5] However, the economic literature suggests that, in practice, wage differentials do not fully compensate for all job differences, mainly due to a number of market failures, such as incomplete information, matching costs, monopsony power, human capital, etc. Hence, wages alone do not capture all aspects of the quality of work. In addition, other characteristics of the job including human capital, working conditions, health risks, and job satisfaction, need also to be considered to form an overall picture.

The level of human capital associated with a particular job or occupation is an important dimension of job quality. The theory of human capital (Becker, 1964) introduces a crucial distinction between generic and specific skills. Firms have no incentive to finance generic skills, because such an investment would be entirely reaped by workers, while workers may not afford to invest in education themselves due to credit market imperfections. It has been found that, in practice, most training schemes combine elements of general and specific skills – hence there is an inherent tendency to under-provide training if left to the market (Booth and Snower, 1996). Moreover, in order for firms to invest in firm-specific skills for their workers, productivity has to exceed wages and both parties should be involved in stable relationships.[6]

Given that wages do not take into consideration all aspects related to the quality of work, employees' answers to survey questions on job satisfaction and well-being have been increasingly used to assess job quality. They tend to confirm the insufficiency of wages as an overall measure of job quality: significant rises in gross domestic product (GDP) per capita and wages in developed countries over recent decades have not been reflected in an equivalent improvement in reported levels of job satisfaction. Various explanations have been advanced for this apparent 'paradox'.[7] According to the 'economics of happiness' literature (Layard, 2005), above a certain income threshold, workers seem to care more (or as much) about relative incomes than about its absolute value. In addition, Green (2006) suggests that a number of work organisation practices, leading to work intensification and lower worker autonomy for carrying out tasks, may have largely offset the positive impact of higher real wages on overall job satisfaction, particularly in Anglo-Saxon countries.

3 The informal Employment, Social Policy, Health and Consumer Affairs (EPSCO) Council held in Berlin (18–20 January 2007).
4 European Commission (2008).

5 In a nutshell, the theory of compensating wage differentials is based on three main assumptions: i) workers maximise utility; ii) perfect information about the job, including occupation risks and all non-pecuniary characteristics associated with it; and iii) perfect mobility. See Bonhomme and Jolivet (2005).

6 For specific training, a necessary condition for the efficiency of investment decisions is that it must be possible to sign long-term, non-renegotiable contracts to avoid the hold-up problem (see Cahuc and Zylberberg, 2004, p. 658). The hold-up problem describes the following: the employer finances firm-specific investments, leaving them exposed to turnover/replacement costs that may oblige the firm to compensate the worker, who has benefited from this investment, allowing them to keep part of the surplus.
7 Actually, this is a paradox only if one assumes that wages capture all relevant jobs' features.

Increased attention has also been paid recently to a number of policy concerns, such as workers' career prospects, labour market transitions and employment security. Broad definitions of job quality, formulated both in academic circles (e.g. Green 2006) and by international organisations (EU, International Labour Organization, ILO) tend to include these and other aspects, such as industrial relations, labour market institutions and policies (e.g. flexicurity), and background information on the socio-economic context.

The transitional labour markets (TLMs) school (Schmid and Gazier, 2002) highlights the alleged 'erosion of standard employment'[8], stressing the importance of studying labour market transitions[9], and the distinction between good and bad ones (see section 2.2 below). In the context of fostering good transitions, reforms of employment protection legislation that have loosened regulations on fixed-term and other non-standard contracts – while maintaining existing legislation on permanent contracts – may be counterproductive. In particular, they may help create segmented labour markets, where workers under non-standard contracts face poorer working conditions and less favourable career prospects.

All these new theoretical and policy considerations provide an opportunity for revisiting the EU concept of job quality and discussing the main empirical determinants of job quality indicators.

2.2. Job quality in economic theory

Concern for work quality is relatively recent as a subject of interest for social scientists. This in part reflects the predominant role played by the neoclassical economic theory, and the resulting corollary that wage differentials essentially compensate for all the non-pecuniary downsides of work. Section 2.1, however, mentioned that a number of market failures strongly suggest that wages do not provide an accurate (social) valuation for many jobs and occupations.

According to the economics of happiness literature, although being closely related, the concept of subjective happiness covers many more aspects of human well-being than the standard concept of utility (Frey and Stutzer, 2002). One finding of this literature is the consistently large influence of non-financial variables on self-reported satisfaction. In particular, the absolute level of wages is weakly correlated with subjective levels of job satisfaction.[10] As regards the determinants of job satisfaction, ranking and habit formation effects seem to dominate when compared with wage-level effects. The ranking effects refer to the finding that, all the rest being equal, workers are 'unhappy' if they are paid less than their colleagues, while wage rises tend to have only transitory effects (Clark, 1999). The economics of happiness literature therefore emphasises the relevance of the relative position in the income distribution rather than the absolute level of income. This recalls the relative income theory of consumption (Duesenberry, 1948) which assumes that individuals are not so much concerned about their absolute consumption level as they are with their consumption relative to other people ('Keeping up with the Joneses'), thus implying that the share of income consumed depends on an individual's position in the income distribution of the population.

Related to the economics of happiness literature is the notion of 'procedural utility', meaning that individuals care not only about the outcomes usually considered in economic theory (e.g. pay and hours of work), but also about the conditions and processes leading to such outcomes. According to this idea, all the rest being equal, workers prefer autonomy and networking at work to working in a Taylorist[11] organisation.

However, habit formation effects point to some weaknesses of job satisfaction surveys. The main advantage of approaches based on workers' preferences is to avoid an ethnocentric or paternalistic view of job quality conditioned by the researcher's culture or point of view. In addition, job satisfaction has been shown to be negatively correlated with turnover and absenteeism rates (Hackman and Oldham, 1980; and Appelbaum and Berg, 1997). Nevertheless, other authors have warned against the use of job satisfaction indicators as a measure of job quality. Using the 1997 *International Social Survey Programme* questionnaire on work orientations which covers 23 countries and the 2000 Spanish survey on quality of life at work, Llorente and Macías (2005) do not find a link between objective job quality indicators (e.g. wages, type of contract, work organisation practices, etc.) and levels of job satisfaction. The authors explain this result by arguing that workers' expectations and the objective characteristics of their jobs tend to conform over time. According to some psychologists (e.g. Festinger, 1957), individuals tend both to adapt their expectations to actual conditions and to look for jobs with objective characteristics that better match their expectations.

This discussion illustrates that a 'good' job quality concept has to be multidimensional, including both objective and subjective indicators. Green (2006) adopts a broad definition of job quality, focusing exclusively on job characteristics (i.e. disregarding contextual socio-economic variables). In his framework, job quality is evaluated looking at the range of capabilities and rewards granted to workers to achieve their own well-being and fulfil the firm's goals, including wages, skills used in the job, the intensity of work,

8 Defined by the change in paradigm from full-time permanent contracts to a diversity of working-time arrangements, employment contracts, and intermediate statuses between work, unemployment and inactivity.

9 Not only within work, but also between work, education, unemployment, inactivity, and non-paid family care activities.

10 *…the evidence says that on average people are not happier today than people were fifty years ago. Yet at the same time average incomes have more than doubled. This paradox is equally true for the United States and Britain and Japan* (Layard, 2005).

11 'Taylorism' refers to a management approach that calls for specifying job tasks, routines, and tools in detail.

autonomy and discretion in the tasks performed, and social networking at work. Green (2006) highlights the potential negative contribution of work intensification to overall job satisfaction over recent decades, particularly in the UK, due to 'effort-biased' technological and organisational changes.

Compared with more 'academic' definitions of job quality (e.g. Green, 2006), the EU's definition differs mainly on two respects:

i) it does not include an explicit reference to either wages or the intensity of work; but

ii) it includes aggregate labour market (or context) variables in the set of indicators used to monitor job quality.

In order to better serve the EES, which also monitors variables related to labour market dynamics and career advancement, Green's (2006) framework should be complemented. The TLM theory (Schmid and Gazier, 2002) is highly relevant in this context, giving a dynamic or lifecycle perspective to employment quality issues, highlighting the interactions between employment and other life spheres. This school stresses the change in paradigm from 'standard employment' to differentiated employment careers, with a variety of working-time and contractual arrangements, and more frequent changes of statuses between employment, unemployment, inactivity, education, family care and non-paid activities.

The transition matrix is an important descriptive tool for the TLM theory. One key issue is to distinguish between good and bad transitions in a lifecycle perspective. In some of its earlier editions (see, e.g., European Commission, 2004b) the *Employment in Europe* report has analysed transition dynamics by activity status, contractual arrangement and pay level to provide evidence on workers' upward mobility in the EU. According to the TLM School, employment quality should provide flexible arrangements, particularly as regards working time, while also enhancing security. The TLM fully recognises the importance of other quality dimensions, such as the right to (re-)training, occupational (re-)deployment, family life, suitable working time arrangements, etc. (Schmid, 2006). Gender issues are implicitly addressed by the focus on the rights of workers to choose the working-time arrangements that better suit their needs throughout the lifecycle.

2.3. Job quality as a policy goal

The EES was launched in November 1997 in the Luxembourg Jobs Summit anticipating the entry into force of the Amsterdam Treaty. The EES introduced a new working method: the open method of coordination (OMC). While safeguarding the powers of Member States in the field of employment policy, the OMC establishes quantified common targets to be achieved at Community level, putting into place surveillance mechanisms encouraged by pooling experience. At the launch of the EES, job quality was not specifically addressed.[12] The job quality issue was first introduced at the Lisbon Council in March 2000, which puts forward the objective of more and better jobs for all. At the December 2000 Nice Council, employment quality is included in the European Social Agenda. In 2003, improving quality and productivity at work became one of the three overarching objectives of the *Employment Guidelines* for 2003–05, together with full employment and strengthening social cohesion and inclusion.

In 2001, the Commission adopted a communication that provides a broad framework for promoting quality in work.[13] The chosen concept of job quality includes 10 dimensions[14], each of them quantified by specific indicators encompassing both characteristics of the job and of the worker, such as those related to skills, working conditions, reconciliation between non-working and working life, health and safety at work and job satisfaction, as well as aspects covering the wider socio-economic context (e.g. employment rates, growth in aggregate labour productivity). In 2003, the Commission adopted another communication[15] that reviewed progress in improving quality in work in the EU. In an annex, it includes the list of indicators approved by the Council to be used for monitoring quality in work (see section 2.4).[16]

The communications on job quality stress the importance of synergies between job quality and the other main objectives of the EES – namely full employment, labour productivity, and social cohesion and inclusion. In fact, progress in some dimensions of job quality, such as more and better investment in human capital and vocational training or the adoption of innovative forms of work organisation can foster innovation activities, and thereby productivity growth (Lorenz and Valeyre, 2006). However, reforms of employment protection legislation, focusing exclusively on easing the rules on fixed-term contracts, may not only aggravate labour market segmentation, but also have negative effects on productivity, as high labour turnover rates, associated with large shares of temporary work, reduce firms' incentives to invest in their workers' training (Dolado et al., 2001).

Job quality issues regained visibility within the EU employment policy debate in the first half of 2007. In fact, the informal Employment, Social Policy, Health and Consumer Affairs Council (EPSCO) held in January 2007 during the German Presidency put forward a number of 'principles' for 'good work' – specifically

i) fair wages;

12 The four main policy pillars, or objectives, were employability, entrepreneurship, adaptability and equal opportunities.
13 European Commission (2001a).
14 i) Intrinsic job quality; ii) skills, life long learning and career development; iii) gender equality; iv) health and safety at work; v) flexibility and security; vi) inclusion and access to the labour market; vii) work organization and the work–life balance; viii) social dialogue and worker involvement; ix) diversity and non-discrimination; and x) overall work performance.

15 European Commission (2003).
16 It should be remembered that such a list was the outcome of a political negotiation between Member States, leading to partial divergence with respect to initial Commission Services' proposal.

ii) protection against health risks at work;

iii) workers' rights to assert their interests and to participate;

iv) family-friendly working arrangements;

v) enough jobs.

Job quality is increasingly seen as one of the key elements of a renewed European Social Model which can reconcile economic efficiency and social cohesion in an environment characterised by more intense global competition.

The European Foundation for the Improvement of Living and Working Conditions (European Foundation) devised a framework for addressing work and employment quality concerns (European Foundation, 2002) built around four main dimensions:

i) career and employment security

ii) health and well-being of workers

iii) reconciliation of working and non-working life

iv) skill development.

This framework bears a strong resemblance to that of the EU, except for excluding some aspects which relate more to overall labour market outcomes than to the job itself (e.g. employment rates).

International organisations like the ILO and the Organisation for Economic Cooperation and Development (OECD) have also included job quality issues in their agendas. In 1999, the ILO developed the concept of 'decent work', which includes four strategic objectives, namely:

i) the promotion of labour rights

ii) employment

iii) social protection

iv) social dialogue.

Due to the presence of developing as well as developed countries in the ILO, its concept includes labour rights and social protection aspects in its definition. Given that the external dimension is one of the five key areas[17] for the future of the EES (EPSCO Council, December 2007), this has allowed the emergence of synergies between the EU and the ILO's job quality strategies. In this line, the EU has shown support for promoting the decent work agenda in the world in a series of policy documents.[18]

The OECD has not included job quality within the main goals of its original jobs strategy, which was more focused on labour market de-regulation. More recently, however, it has developed such an agenda, having significant points in common with the EES, such as the emphasis on the role of human capital and work–life balance.

In 2007, the fourth international seminar on the measurement of the quality of work took place in Geneva. Experts from interested countries and international organisations were present, namely the ILO, the European Foundation, Eurostat and the Directorate-General for Employment, Social Affairs and Equal Opportunities (DG EMPL).[19] This seminar was an opportunity to compare the existing frameworks for measuring quality of work established by the ILO (decent work), the EU (quality of work), and the European Foundation (job and employment quality), bringing them together into a proposed framework for international use, described by the heading 'quality of employment'. At the seminar, there was general agreement to organise the proposed international framework for quality of employment around 11 dimensions and a list of about 50 indicators.[20]

Concerns about the 'decline of good jobs' have also been raised within the United States' (US) academic and political debate. The focus in the US is firmly on wages as a central measure of job quality; hence Schmitt (2008) defines a good job as one paying above the median male hourly wage and providing health insurance and a pension plan. According to this definition, the share of good jobs in the US labour market declined somewhat between 1979 and 2005, from 23.1% to 22.1%. However, controlling for compositional effects of the US labour force – namely age and education levels – the decline is estimated to be much larger, reaching 15.8% in 2005[21] and signalling substantial erosion in job quality in the US.

Using longitudinal data, Hacker (2006) argues that work has become riskier and more unstable in the US over past decades. He points to an overall 'risk shift' taking place in the US economy, whereby the burden of risk-sharing has been gradually passed from government's welfare policies and employers' funded health and pension plans onto workers. In this context, the old 'American work contract', characterised by some degree of risk-sharing between workers and employers, has been replaced by a different one characterised by more frequent use of restructuring and downsizing, together with a more limited offer of health and pension plans as part of the overall workers' compensation package. As a result, employees face higher risks, and in case of dismissal may be forced to accept substantial wage cuts and/or deteriorating working conditions. High educational attainment no longer constitutes a guarantee of income security and career progress, as wage inequality has significantly increased also among highly educated and older workers, together with the incidence of long-term unemployment.

17 The other four priority areas are: flexicurity, active inclusion, the *New skills for new jobs* initiative and active ageing.

18 European Commission (2001b, 2004a and 2006a), see also the site on the EU and Global Trade: http://ec.europa.eu/trade/issues/global/index_en.htm.

19 The United Nations Economic and Social Council (UNECE) acted as the secretariat. All papers and presentations from the seminar are available on the UNECE site: http://www.unece.org/stats/documents/2007.04.labour.htm.

20 The proposed 11 dimensions are: i) access to employment; ii) child labour and forced labour; iii) income from employment; iv) skill development and lifelong learning; v) hours of work and working-time arrangements; vi) flexicurity; vii) balancing work and non-working life; viii) fair treatment in employment; ix) safe work; x) social protection in employment; and xi) social dialogue. A taskforce is currently in charge of developing the achievements of the April 2007 seminar. A new seminar is planned for mid-2009 to discuss a list of indicators.

21 The workforce is divided in 12 groups, according to age and education attainment levels.

Box 1: Job quality and flexicurity

Consideration of job quality issues at EU level predates the more recent debate on flexicurity policies, while the articulation of the two concepts is not always clear. In many ways, both concepts are embedded in the specific economic and political context of the period when they entered the debate. Hence, concerns about job quality originated in the prevailing political climate at the end of 1990s reflecting the relatively favourable macroeconomic conditions at the time as well as the specific concerns of some Member States.

The subsequent deterioration of the economic situation during the early part of this decade triggered a shift of focus in the EU from job quality to job creation, with the emphasis on labour market reforms to make them more efficient and adaptable to change. Concerns about excessive labour market rigidity, which is detrimental to employment creation, has led a number of Member States to undertake, since the late 1990s, reforms aimed at tackling their strict employment protection rules. In most cases, though, these have substantially lessened regulations on the use of temporary and other non-standard jobs, while maintaining existing provisions on permanent employment contracts. Such reforms have contributed to significant reductions in unemployment but at the same time led to segmented labour markets, with increasing numbers of workers 'trapped' in temporary contracts with little chance of moving to more secure jobs. This has resulted in a widespread perception of higher job insecurity and precariousness (Boeri, 2008), thus conveying the idea that having more jobs necessarily implies that many of them are of 'bad' quality.

The EU policy debate on flexicurity has been a response to the concerns about segmentation of labour markets. Flexicurity is defined as 'an integrated strategy to enhance, at the same time, flexibility and security in the labour market' (European Commission, 2007b). It can therefore be argued that the main difference between the flexicurity approach and job quality lies on the increased emphasis of the former on the *overall labour market performance* rather than on individual jobs' characteristics and working conditions.

At the same time, however, while calling for 'sufficiently flexible contractual arrangements' (EPSCO Council conclusions December 2007) the flexicurity strategy recognises the potential negative effects of reforms 'at the margin' and underlines that flexibility should be associated with successful transitions over time (e.g. from job to job and from unemployment/inactivity to work) as well as upward mobility to better jobs – i.e. offering higher pay and better working conditions (European Commission, 2007b). Hence, there is no contradiction in principle between reforms aiming at enhancing the flexibility and dynamism of labour markets, and those aimed at improving job quality.

Furthermore, the flexicurity approach encompasses a number of policy tools aimed at supporting successful moves within the labour market, including the provision of training/lifelong learning programmes, enabling workers to continually upgrade their skills and thus, enhance their adaptability to change. This constitutes another area of synergy with job quality as training is a key component of the latter, both in the Laeken definition and in the extended framework proposed in this chapter. In this context, the growth in the number of fixed-term contract jobs may have discouraged both employers and employees from investing in human capital and contributed to depressing the rate of labour productivity growth in the EU over the last decade.

Moreover, the common principles of flexicurity (EPSCO Council conclusions December 2007) give an equal emphasis to external and internal (i.e. within the enterprise) aspects of flexibility. In relation to the latter, they call for promoting high-quality and productive workplaces and good organisation of work. In fact, firms in industrialised economies have increasingly adopted innovative or 'high performance' work organisation practices (OECD, 1999), including teamwork, task rotation, worker autonomy and enhanced participation in decision-making, total quality management, etc.

One branch of the economic literature (Ichniovski et al., 1997; Caroli and van Reenen, 2001) has highlighted the positive impact of new work practices on productivity, especially in connection with IT and the availability of a skilled workforce. As regards the impact of new work practices on working conditions, however, the indications in the literature are ambiguous. Although there is evidence (Askenazi et al., 2001) that some of those practices, such as task rotation and quality norms, can lead to increased frequency of work injuries and greater mental strain, other contributions underline that appropriate combinations of them (e.g. increased task complexity accompanied by greater autonomy and discretion at work; see Karasek, 1998 and European Commission, 2007a) may reduce stress and increase job satisfaction. This implies that specific 'clusters' of innovative work practices can improve firms' profitability, job quality in general, and working conditions in particular.

In conclusion, flexicurity has to some extent implied a shift of focus from individual jobs' characteristics to the overall labour market performance and reform strategies. However, this does not mean that there is a trade-off with job quality issues, but rather that these approaches should be seen as complementary. Flexicurity does not call for the systematic dismantling of employment protection rules but rather for their redesign in order to maximise workers' transitions to 'better' jobs. Skills, training and human capital formation, together with efficient work organisation in the firm, are key ingredients for improving both workers' adaptability and labour productivity, implying strong synergies between flexicurity policies and job quality improvements.

2.4. Monitoring job quality: the Laeken indicators

This section reviews the list of job quality indicators endorsed at the Laeken European Council in December 2001 and discusses their adequacy to capture and monitor the multidimensionality of the concept. The EU definition comprises 10 dimensions of job quality, proposing for each area key and context indicators. However, for some dimensions, not all indicators have yet been agreed or developed for lack of political consensus. Table 1 provides the list of Laeken indicators, classified by job quality dimension. Each job quality indicator is briefly discussed and, in some cases, complementary indicators are proposed.

- **Intrinsic job quality** – the importance of addressing the issue of the transition between labour market statuses, pay levels and contract types is consistent with a dynamic perspective of job quality as stressed by the TLM framework. Moreover, the inclusion of job satisfaction complies with the recommendation to use both objective and subjective indicators of job quality, as previously discussed (see section 2.2 above). However, the absence of data on the level and distribution of pay is a major omission.

- **Skills, lifelong learning and career development** – on this dimension, the Laeken indicators are in line with other theoretical approaches, such as the human capital literature and the TLM school. However, the specific in-

Table 1: The Laeken indicators of job quality

Dimension	Indicator
1) Intrinsic job quality	Transitions between non-employment and employment and, within employment, by pay level
	Transitions between non-employment and employment and, within employment, by type of contract
	Satisfaction with type of work in present job
2) Lifelong learning and career development	Percentage of the working age population participating in education and training by gender, age group, employment status and education level
	Percentage of the labour force using computers in work, with or without specific training
3) Gender equality	Ratio of women's gross hourly earnings to men's for paid employees at work
	Employment rate gap between men and women
	Unemployment rate gap between men and women
	Gender segregation in occupations[1]
	Gender segregation in sectors[2]
4) Health and safety at work	The evolution of the incidence rate[3]
5) Flexibility and security	Number of employees working part-time and with fixed-term contracts as a percentage of the total number of employees
6) Inclusion and access to the labour market	Transitions between employment, unemployment and inactivity
	Transitions between non-employment and employment or training
	Total employment rate, and by age group and education level
	Total long-term unemployment rate, and by gender
	Percentage of early-school-leavers[4]
	Youth unemployment ratio[5]
7) Work organisation and the work–life balance	Difference in employment rates for individuals aged 20 to 50 in households having or not a child aged between 0 and 6 years
	Children cared for (other than by the family) as a proportion of all children in the same age group
	Employees who left over the last year their job for family duties and intend to go back to work but are currently unavailable for work
8) Social dialogue and workers' involvement	No agreement
9) Diversity and non-discrimination	Employment rate gap for workers aged between 55 to 64 years old
	Employment and unemployment rate gaps for ethnic minorities and immigrants
10) Overall economic performance and productivity	Growth in labour productivity (both per hour worked and per person employed)
	Total output (both per hour worked and per person employed)
	Percentage of the population having achieved at least upper secondary education by gender, age group and employment status

Source: Adapted from European Commission (2003).
Notes: (1) The occupational segregation index is calculated as: $i = \frac{1}{2}\sum\left|\frac{M_i}{M} - \frac{F_i}{F}\right|$ *where M, total male employment; Mi, the number of males in occupation i; F, the total female employment; and Fi, the number of females in occupation i. The index varies between 0 and 1. A higher index means more segregation in the distribution of occupations by gender (Emerek et al., 2003). (2) The segregation-by-sector index is calculated as in the previous footnote but using economic sector instead of occupation. (3) Defined as the number of accidents at work per 100 000 persons in employment. (4) Percentage of 18–24 year-olds having achieved lower secondary education or less and not attending further education or training. (5) Unemployed aged 15–24 as a percentage of total population in the same age bracket.*

dicators chosen present two main weaknesses:

i) they focus exclusively on participation in vocational training, disregarding its intensity both in terms of volume (i.e. number of hours) and cost per participant;

ii) they concentrate on the supply side of skills (except for the indicator concerning the use of computers).[22]

- **Gender equality** – this dimension reflects the importance of gender issues in the EU. One methodological caveat concerns gender segregation indicators (both by economic sector and occupation). Evidence shows that their relative stability over time results basically from two offsetting trends:

  i) an increase in female employment in jobs implying hierarchical responsibilities;

  ii) an increase in female-dominated low-qualified jobs[23] (Emerek et al., 2003).

- **Health and safety at work** – this dimension considers only one indicator – the rate of serious accidents at work. Therefore, a number of important variables are not captured, including occupational diseases, stress at work and work intensity.

- **Flexibility and security** – this dimension has recently been renamed 'Flexicurity', which adopts a holistic perspective of labour market policies and institutions, compared with the concept of job quality (see Box 1 above). The Laeken indicators on this dimension are rather limited in their scope, basically concerning part-time and fixed-term employment. It is difficult to draw clear cut conclusions on the desirability of these contractual arrangements, though fixed-term contracts are more likely to be associated with undesirable outcomes than part-time jobs as evidenced by lower voluntary take-up rates for the former. Nevertheless, although voluntary part-time work may facilitate the reconciliation between work and family life, it can also harm career prospects.

- **Inclusion and access to the labour market** – this dimension includes several indicators on the overall socio-economic and labour market context, such as employment rates, and long-term and youth unemployment rates. This is partly at odds with the theoretical debate, as summarised in section 2.3, which emphasises the role of individual's job characteristics as key determinants of job quality.

- **Work organisation and the work -life balance** – this dimension has a strong gender orientation, taking into account the policies favouring the reconciliation between work and family life, such as the availability of childcare and care systems for older people. However, this dimension does not include indicators on working practices, such as the extent of autonomy granted to workers, job rotation, teamwork or networking practices. This contrasts with the attention paid in the literature to the impact of new work organisation practices on job quality and worker satisfaction (section 2.2).

- **Social dialogue and worker involvement** – at present this job quality dimension is not covered by any indicator, although the theoretical debate (section 2.2) identifies worker consultation, participation in decision-making and good social relationships at work as important elements of job quality. This should be seen, therefore, as a major weakness in practice.

- **Diversity and non-discrimination** – this component is complementary to the gender dimension, introducing age, the national origin of workers and minority issues in the analysis of job quality.

- **Overall economic performance and productivity** – this dimension largely refers to contextual macroeconomic indicators, such as the growth rate and level of labour productivity in the whole economy. The choice of indicators for this component makes it difficult to evaluate outcomes in terms of job quality, because while on the one hand, job quality is positively correlated with productivity levels, largely reflecting higher levels of human capital; on the other, it tends also to be negatively correlated with productivity growth rates, reflecting the catch-up of poorer countries.

2.5. Conclusions

The theoretical overview provided in section 2.2, section 2.3's comparison with frameworks elaborated by other international institutions and the synthetic review of the Laeken indicators in section 2.4 enable the main strengths and weaknesses of the EU's current categorisation of job quality to be identified.

The main strong points can be cited as follows:

- The EU's job quality framework is broad in its scope, thereby acknowledging the multi-dimensionality of the concept.

- Both subjective and objective measures are considered.

- It provides a dynamic perspective, taking into account both labour market and pay transitions, together with a well-developed gender and work–life balance perspective.

22 E.g. highly educated young adults may easily become dissatisfied if qualification requirements in their first job are lower than their initial level of education (Belfield and Harris, 2002).

23 Since 1992, especially in southern EU Member States, the share of women has increased both among managers and professionals and among some categories where women were already over-represented, such as service workers and clerks. This occupational polarisation of female employment would not be captured using an indicator of gender segregation.

However, the following weak points can be listed:

- The EU's job quality framework includes economy-wide indicators that are not directly related to the characteristics of a particular job and only provide information on the socio-economic context.

- The EU's framework excludes some indicators, which have been identified as relevant and important, such as wages, work intensity and some more qualitative aspects of human capital formation.

Based on this summary, and following the findings of the economic literature, section 3 contains some suggestions for improving the EU's job quality framework by considering a number of complementary aspects. The resulting enlarged framework is then used to provide a typology of job quality 'models' in the EU, along the following four dimensions:[24]

- **Socio-economic security** – this approximately covers dimensions 1, 5, 6 and 9 in the EU's definition, but includes variables on wages.

- **Training** – this roughly corresponds to dimensions 2 and 10, but incorporates variables on qualitative aspects.

- **Working conditions** – this roughly encompasses dimensions 4 and 8, but also covers variables on work intensity.

- **Reconciliation of working and non-working life and gender balance** – this roughly corresponds to dimensions 3 and 7.

24 This typology is relatively similar to the one proposed earlier by the European Foundation and discussed in section 2.3 above.

3. Job quality regimes in the EU

3.1. Comparative capitalism and job quality

This section presents the results of a detailed empirical analysis of the main dimensions of job quality intended to classify EU Member States using a reduced number of job quality 'regimes'. The analytical framework is derived from the theory of institutions and comparative capitalism[25], which highlights the existence of different country-specific institutional arrangements which result, in turn, in different socio-economic outcomes and distinct capitalism models.

The 'comparative capitalism' approach makes two main assumptions:

1. Economic actions represent a particular form of social actions that need to be coordinated and managed by institutional arrangements (Jackson and Deeg, 2006).

2. Institutions are interdependent or complementary, implying that institutions in a given domain affect outcomes in other areas (e.g. welfare/employment protection policies affect the working of product markets and firms' adaptability) and that overall macroeconomic performance depends on policy interactions rather than on individual policies.

The major results of this literature can be summarised as follows: institutional interdependence does not guarantee economic efficiency in itself and can be associated with sub-optimal outcomes. Different institutional arrangements may be equally effective in terms of obtaining good socio-economic outcomes – i.e. they may be 'functional equivalents', implying that the comparative analysis of capitalism models does not provide a unique normative recommendation on the 'best' institutional arrangements. It is possible to relate various typologies of capitalism, such as those developed by Hall and Soskice (2001) and Amable (2003), to different job quality outcomes, even though this literature does not explicitly address the issue of job quality. In this context, a careful reading suggests that job quality is likely to be influenced by the following institutions:

- **Industrial relations and the wage bargaining system** – for example, the degree of centralisation and coordination of wage bargaining can have a huge impact on how economic shocks affect wage determination (Calmfors and Driffil, 1988).

- **Education and training system** – the availability and intensity of education and training affects job quality, but the relationship between how national education and training systems are organised and the accumulation of skills is unclear (Crouch et al., 1999).

- **Welfare systems, labour market policies and institutions** – Esping-Andersen's (1990) welfare model is especially relevant for considering gender issues and the reconciliation of working and non-working life.

- **Work organisation practices** – more advanced forms of work organisation[26] are often associated with complementary human resource management policies, yielding higher compensation packages. However, they may in some cases imply work intensification and more stress at work (Askenazi and Caroli, 2002).

The empirical analysis carried out in section 3.2 identifies different models of employment quality in Europe and proposes a typology. The job quality typology should, however, not be

25 See the literature on 'varieties of capitalism' (Hall and Soskice, 2001) and the work of the French Regulation School (Boyer, 2006 and Amable, 2003).

26 New forms of work organisation are characterised by high levels of autonomy at work, task rotation and teamwork, task complexity, problem solving and communication structures at work.

considered 'normative' – i.e. ranking models or (implicitly) recommending any given model over any other.

3.2. Job quality regimes

This section presents a taxonomy of European job quality models based on an enlarged dataset that includes the Laeken indicators, together with a number of complementary variables discussed above (see section 2). The aim is to better identify the main dimensions of job quality, better characterise national job quality regimes, and use the results to compare the Laeken indicators with the enlarged dataset.

The methodology used corresponds to the 'tandem analysis' (Nardo et al., 2005). First, a principal component analysis (PCA) is carried out, followed by a cluster analysis (CA). PCA is a multivariate technique that aims to reduce a large number of variables to a limited number of factors that account for most of the variability in the original data.[27] CA is then applied to the countries' scores along the factors previously identified in order to group Member States into a few distinctive clusters, based on some measure of 'distance'.[28]

The following three criteria are used to define the set of variables/indicators to be considered in the analysis.

- First, additional indicators on important aspects not covered by the Laeken indicators are considered, such as wages, work intensity and some qualitative aspects of training.
- Second, for simplification purposes some detailed breakdowns of the Laeken indicators are not included.
- Third, equal importance is given to the four dimensions of job quality identified in section 2.4 in order to correct any imbalance in the Laeken list of indicators:

  i) socio-economic security

  ii) education and training

  iii) working conditions

  iv) reconciliation of working and non-working life/gender balance.

Although discussion in section 2 above would call for the exclusion of socio-economic contextual variables, a few are retained in the analysis (see the last section of Table 2), such as employment rate, productivity etc., in order to characterise the different job quality models in terms of aggregate socio-economic performance.[29]

Table 2 lists the set of variables/indicators included in the analysis (classified using four dimensions) and their correlation coefficients for the three main principal components identified in the PCA. The analysis is carried out for the EU and based on the most recent data available, mainly covering the period 2005–06. Figures are mainly derived from the Labour Force Survey (LFS), the compendium of indicators for monitoring the *Employment Guidelines*, approved by the Employment Committee (EMCO), and the fourth wave of the European Working Conditions Survey (EWCS) carried out by the European Foundation. The detailed list of data with respective sources can be found in the annex to this chapter.

While at odds with discussion in section 2, the list excludes indicators of labour market transitions solely due to unavailability of suitable data sources, as calculation of transition probabilities requires longitudinal datasets following individual employment histories over several years, such as the European Union Statistics on Income and Living Conditions (EU-SILC), which is not yet available for a sufficient number of EU Member States.

The three principal components account for more than half (52.3%) of the overall variability in the data. Using the correlation coefficients between the variables and the principal components (see also Chart 1), it is possible to interpret the first three principal components as follows: the first one, which accounts for 26.4% of the total variance in the data, is *positively* correlated with average wages, job satisfaction, good prospects for career advancement, participation in training and use of computers. In contrast, it is *negatively* correlated with the in-work risk of poverty, the long-term unemployment rate and a number of indicators associated with unfavourable working conditions, such as long working days, health at risk because of work[30], and jobs involving painful or tiring positions.

The first factor can be interpreted as capturing *socio-economic security* and *(good) working conditions*. Correlations with a few socio-economic contextual variables (at the bottom of Table 2) suggest that a higher score tends to be associated with better labour market outcomes (e.g. higher employment rates and lower youth unemployment ratios) as well as favourable outcomes in terms of productivity levels. These results imply the existence of synergies – instead of a trade-off – between qualitative and quantitative outcomes in the labour market. However, the first factor also displays a positive

27 This is achieved by transforming correlated variables into a new set of uncorrelated factors: the principal components. The latter can then be interpreted as capturing one or more dimension(s) of the concept under analysis (e.g. job quality). However, application of this multivariate technique warrants a few words of caution about its robustness and the policy conclusions that can be derived from it. First, PCA is based on correlations and, hence, does not necessarily provide any indication of causal relationships. Second, results of clustering are often sensitive to the particular methodology and parameters chosen for the procedure. Third, the success of PCA largely depends on its ability to reduce the initial set of variables to a limited number of principal components; hence variables weakly correlated may be wrongly discarded.

28 See Box 1 in *Employment in Europe 2006*, p. 109 (European Commission, 2006b) for more details on the methodology of PCA and CA.

29 Moreover, the long-term unemployment rate is also included to capture the ability of a certain 'regime' to ensure sustainable labour market attachment, contributing to workers' socio-economic security.

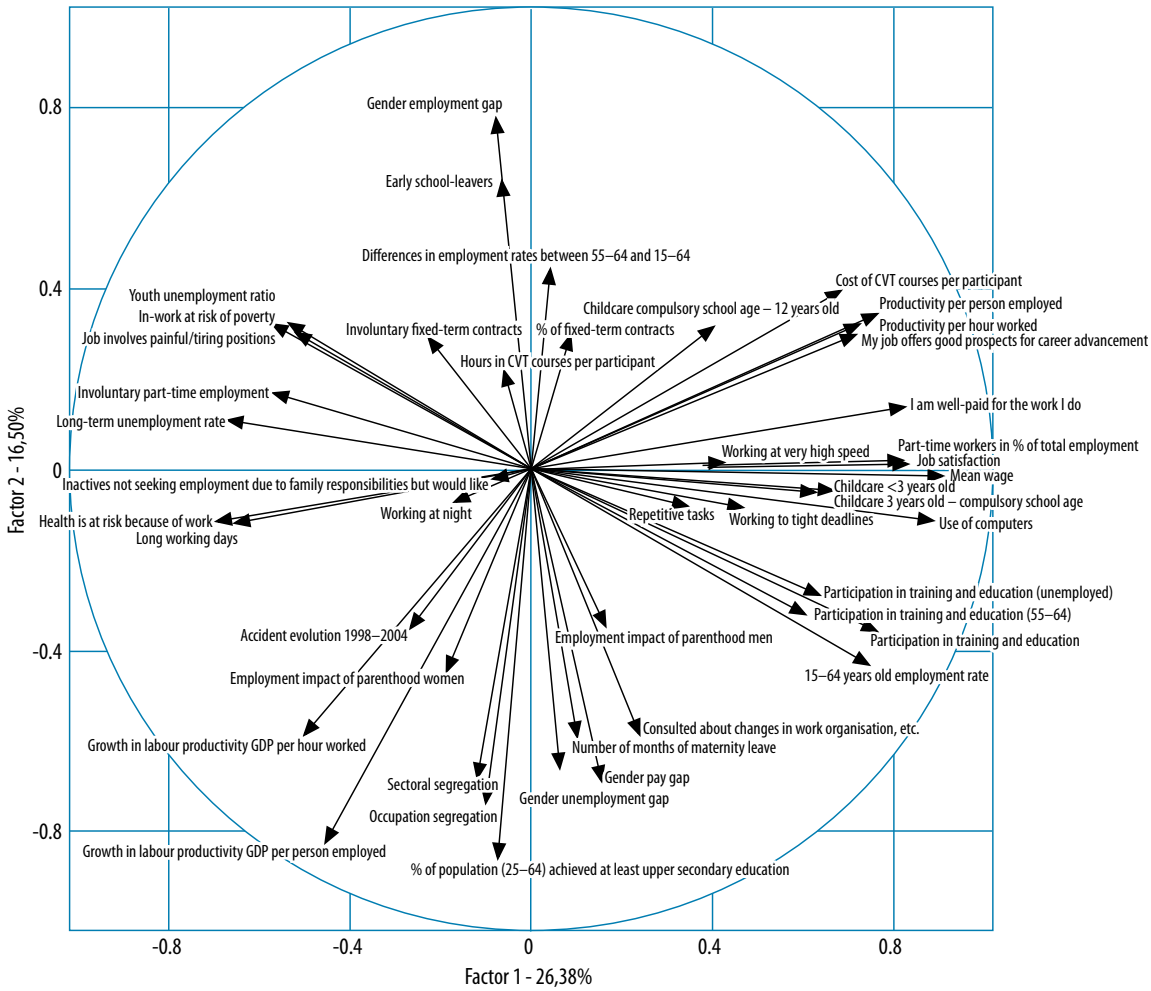
30 Moreover, background analysis carried out in Davoine et al. (2008) highlights that the variable 'health at risk because of work' can summarise a broad range of physical risks associated with work, such as 'breathing in smokes, fumes, dust etc…' or 'job involves moving heavy loads'.

Table 2: PCA analysis on an extended set of job quality indicators

Principal components	D1	D2	D3
Variability (%)	26.4%	16.5%	9.4%
Cumulative (%)	26.4%	42.9%	52.3%
Correlations with principal components			
Socio-economic security			
Job satisfaction	**0.81**	0.02	-0.29
Perception of being well paid for the work done	**0.82**	0.14	-0.14
Wages	**0.90**	-0.01	0.02
Prospects for career advancement in the job	**0.71**	0.29	-0.08
Share of fixed-term contracts	0.09	0.30	0.32
Share of involuntary fixed-term contracts	-0.22	0.29	**0.40**
In-work at risk of poverty	**-0.56**	0.32	0.23
Long-term unemployment rate	**-0.66**	0.11	**-0.45**
Education and training			
Participation in training and education	**0.76**	-0.35	0.19
Participation in training and education for workers aged 55–64	**0.60**	-0.32	0.29
Participation in training and education (unemployed)	**0.63**	-0.27	0.24
Cost of training per participant	**0.67**	0.39	0.02
Hours in training per participant	-0.06	0.21	**0.50**
Early school-leavers	-0.07	**0.62**	0.28
Use of computers	**0.88**	-0.11	-0.13
Population's educational attainment	-0.07	**-0.84**	-0.19
Reconciliation-gender balance			
Gender pay gap	0.15	**-0.67**	-0.11
Gender employment gap	-0.08	**0.77**	-0.20
Gender unemployment gap	0.06	**-0.65**	0.01
Gender sectoral segregation	-0.12	**-0.67**	0.09
Gender occupational segregation	-0.10	**-0.73**	-0.03
Part-time employment rate	**0.82**	0.01	-0.08
Involuntary part-time employment	**-0.56**	0.17	**0.43**
Employment impact of parenthood on women	-0.18	**-0.43**	**-0.59**
Employment impact of parenthood on men	0.16	-0.33	-0.34
Availability of childcare (less than 3 years old)	**0.66**	-0.05	**0.46**
Availability of childcare (3 years old-compulsory school age)	**0.63**	-0.05	0.10
Availability of childcare (compulsory school age-12 years old)	0.39	0.31	**0.40**
Inactives not seeking employment due to family responsibilities	-0.07	-0.01	0.03
Length of maternity leave	0.10	**-0.58**	0.39
Working conditions			
Work accident rate	-0.26	-0.35	**0.43**
Painful/tiring positions at work	**-0.51**	0.30	**0.52**
Tasks' repetitiveness	0.33	-0.08	**0.51**
Health at risk because of work	**-0.69**	-0.11	**0.46**
Working to tight deadlines	**0.46**	-0.08	0.00
Working at very high speed	**0.41**	0.02	0.23
Consulted about changes in work organisation	0.24	**-0.57**	0.07
Long working days	**-0.64**	-0.12	-0.01
Working at night	-0.16	-0.07	**-0.65**
Socio-economic context			
Employment rate for people aged 15–64	**0.74**	**-0.43**	0.23
Older workers' employment rate gap	0.04	**0.44**	**-0.54**
Youth unemployment ratio	**-0.53**	0.31	-0.10
Growth in labour productivity, per person employed	**-0.45**	**-0.81**	-0.01
Growth in labour productivity, per hour worked	-0.34	**-0.68**	0.12
Productivity per employee	**0.75**	0.34	-0.16
Productivity per hour worked	**0.72**	0.32	-0.11

Source: Adapted from Davoine et al. (2008).
Note: All listed variables are 'active' – i.e. they all contribute to the definition of the principal components. Correlations larger than 0.4 in absolute value are in bold.

Chart 1: Correlation coefficients between variables and the two principal components, representing 42.9% of overall variability in the data



Source: Davoine et al. (2008).

correlation with work intensity indicators (i.e. working at high speed and under tight deadlines), which suggests that problems of work intensification may be more acute in countries with high wage/productivity and good socio-economic security outcomes.

The second principal component, which accounts for 16.5% of the overall variability in the data, is *positively* correlated with the gender employment gap and the share of early school-leavers, but *negatively* correlated with educational attainment, gender occupational/sectoral segregation and the pay gap as well as the number of months of maternity leave. Hence, this factor can be interpreted as representing gender balance and initial education. As regards gender balance, the second axis suggests the existence of a trade-off between female employment, on the one hand, and gender occupational/sectoral segregation and the pay gap[31], on the other hand. Concerning contextual variables, the second axis is negatively correlated with growth in labour productivity, possibly implying the negative impact of low levels of educational attainment. Finally, this axis is also negatively correlated with an indicator on social dialogue at the workplace (i.e. share of workers being consulted on changes in work organisation).

The third principal component, which accounts for 9.4% of overall variability in the data, can be interpreted as capturing some aspects related to working conditions and gender balance not captured in the first two axes. The third axis is *positively* correlated with the repetitiveness of tasks and the change in the number of accidents in the 1998–2004 period, but *negatively* correlated with working at night. Furthermore, it is positively associated with the share of involuntary fixed-term employment. As regards gender issues, it is positively correlated with the availability of childcare. Finally, the third axis appears to be positively correlated with hours spent in training[32], which can be interpreted as a proxy of its intensity.

Chart 1 plots the correlation coefficients between the variables and the first two principal components using the 'unitary circles'.[33]

31 When women's labour market participation is low, occupational/sectoral segregation and pay gap tend also to be low.

32 The first axis captures participation in training.

33 A variable close to the unitary circle has a high correlation with a linear combination of the two principal components being considered, hence it is well represented by one (or both) of them.

In the second step of the analysis, country scores on the principal components are used to classify Member States across a reduced number of clusters based on their similarity/dissimilarity in terms of the main dimensions of job quality. In other words, each cluster groups those countries sharing a relatively similar model of job quality.[34]

The resulting taxonomy appears to identify four job quality systems in the EU (see Table 3), which can be characterised as follows:

Table 3: Results of the CA, using an ascending hierarchical method on the list of job quality indicators of Table 2

Nordic	Continental	Southern	Eastern
DK	BE	ES	CZ
NL	LU	MT	EE
UK	DE	IT	LT
SE	AT	PT	HU
FI	IE	EL	BG
	FR		LV
	CY		SK
	SI		RO
			PL

Source: Adapted from Davoine et al. (2008).

- A **Nordic cluster**, including Denmark, Finland, Sweden, the UK and the Netherlands – this system is characterised by high wages[35] and overall good socio-economic security, together with good working conditions. It also displays high participation in training and large availability of childcare facilities. Job satisfaction, employment rates and productivity levels are also relatively high. However, average work intensity is higher than in other clusters. Hence, this cluster ranks relatively high on the first axis. It is, nonetheless, in a low-to intermediate position on the second axis, which reflects a relatively low gender employment gap and a relatively high average educational attainment.

- A **Continental cluster**, including Belgium, Germany, Austria, Luxembourg, France, Ireland, Cyprus and Slovenia – this system is close to the average EU situation in most indicators. It ranks in an intermediate-to-high position both on the first axis, which signals a relatively favourable situation in terms of socio-economic security and working conditions, and on the second axis, which suggests the prevalence of intermediate-to-high gender employment gaps and intermediate-to-low levels of educational attainment. The low ranking along the third axis is associated with a relatively high employment gap for older workers.

- A **Southern cluster**, including Greece, Portugal, Italy, Malta and Spain – this system is characterised by an overall unfavourable performance in terms of job quality. Countries in this cluster display intermediate-to-low scores on the first axis, which are associated with low levels of socio-economic security, training and working conditions. Furthermore, they tend to be located on the upper end of the second axis, signalling relatively low levels of educational attainment, large gender employment gaps and a lack of social dialogue. A higher-than-average score on the third axis in this cluster – namely in Spain, Portugal and Greece – reflects the importance of labour market segmentation in these countries.

- A **New Member States' cluster**, including Poland, Romania, Hungary, Bulgaria, Slovakia, the Czech Republic, Latvia, Lithuania and Estonia – this system has relatively low scores on the first axis, particularly in Poland, Slovakia and Romania, which imply low socio-economic security and rather unfavourable working conditions (e.g. high health risks), which are partly offset by the relatively low work intensity. However, these countries display an intermediate-to-low score on the second axis, due to the relatively high level of initial education achieved. Finally, they are characterised by low productivity levels and high productivity growth rates, as expected in 'catching-up' countries.

Chart 2 plots countries' scores along the first two axes (socio-economic security/working conditions and gender balance/initial education).

All considered, this analysis points to significant differences across EU Member States as regards job quality, with Scandinavian countries, together with the Netherlands and the UK, showing better outcomes. Furthermore, these results do not seem to support the hypothesis of a trade-off between job quantity and quality, as for instance, countries belonging to the Nordic cluster exhibit both good outcomes in terms of employment rates, productivity levels and other indicators related to job quality.

The results of this clustering exercise, using the list of indicators of Table 2, are quite similar to those obtained in the literature, such as Esping-Andersen's and Amable's typologies (see section 3.1). In addition, they are roughly in line with the taxonomy of flexicurity regimes identified in the 2006 and 2007 editions of *Employment in Europe*. However, an

34 The technique used is the hierarchical ascending clustering method which consists in grouping similar cases (countries in our analysis), by maximising inter-classes 'distance' and minimising intra-classes 'distance'. A classification tree is obtained that is partitioned at a certain 'cut-off point' chosen by the researcher in order to get an 'optimal' number of clusters. See Nardo et al. (2005) for details.

35 i.e. high wages compared with the EU average. The reader should keep in mind that this does not say anything about wage distribution. This information is partially captured via the share of working poor. As the latter is negatively correlated with the first axis, the Nordic cluster is also characterised by relatively more equal wage distribution at the lower end of the earnings scale.

important difference can be found in the absence of an Anglo-Saxon specific model of job quality, as the UK is included in the Nordic model, while Ireland joins the Continental one. This reflects both the set of variables chosen for the analysis[36] and the functional equivalence across different models.

3.2.1. A comparison with the Laeken indicators

A similar multivariate analysis was carried out using the Laeken set of indicators of job quality, in order to evaluate the value added of considering a broader set of indicators. Table 4 displays the correlation coefficients between the Laeken indicators and the first three principal components.

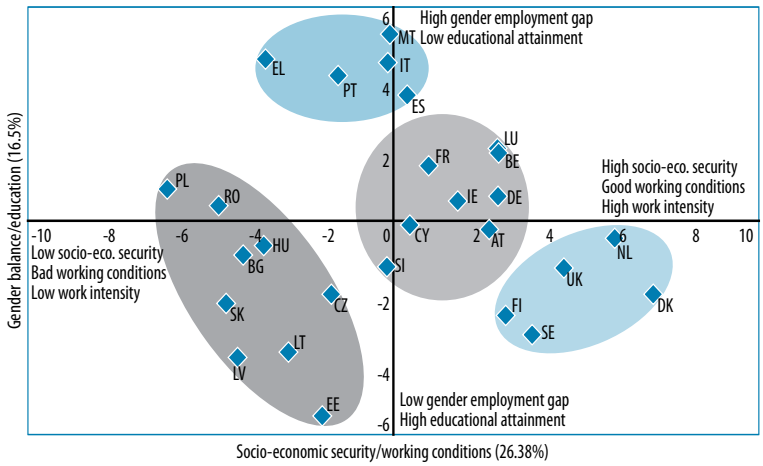
The three principal components account for almost two thirds (63.9%) of the overall variability in the data. The first factor is positively correlated with participation in education and training, employment rates and the availability of childcare facilities. However, it is negatively correlated with unemployment rate indicators. The second factor is positively correlated with the gender pay gap and indicators on occupational/sectoral segregation, and negatively correlated with the gender employment gap and early school-leavers. The third principal component is negatively correlated with early school-leavers (although more weakly than the second axis) and the change in the number of accidents, and positively correlated with the employment gap of older workers.

Comparing the results obtained using the Laeken indicators (section 3.2.1) with those using the enlarged set (section 3.2) suggests that the latter provides a better interpretation of the various dimensions of the job quality concept for two main reasons:

- First, the broad set of indicators enables the various dimensions of job quality to be better characterised using a PCA. In particular, including wage-related variables is vital for interpreting the first axis as representing socio-economic security aspects of job quality. The inclusion of health at work risks and work-intensity indicators in the broad set is also crucial to associate the first axis with working conditions.

- Second, some variables included in the Laeken indicators are statistically redundant – i.e. they are highly correlated. In particular, this concerns gender and age breakdowns of participation in training and education, and employment and unemployment variables. This suggests that there is room for streamlining in the Laeken set of indicators.

Chart 2: PCA – country scores on an enlarged job quality framework: socio-economic security/working conditions and gender balance/education



Source: Adapted from Davoine et al. (2008).

Table 5: Results of the CA based on the Laeken indicators, using an ascending hierarchical method

Nordic	Continental	Southern	Eastern I	Eastern II
DK	BE	ES	CZ	PL
UK	LU	MT	EE	SK
SE	DE	IT	LT	
FI	AT	PT	HU	
	IE	EL	BG	
	FR		LV	
	NL		RO	
	SI		CY	

Source: Adapted from Davoine et al. (2008).

The results of the CA corresponding to the Laeken indicators are presented in Table 5.

The clusters identified in Table 5 are similar to those derived in section 3.1 (Table 3). All countries belong to the same group as before, with the exceptions of Cyprus, which is included in the Eastern I cluster, and the Netherlands, which is included in the Continental cluster. The Eastern cluster is split now in two groups – one including Poland and Slovakia, reflecting their high unemployment and low employment rates. Chart 3 plots Member States' scores along the first two principal components.

36 The existing typologies in the literature are essentially based on institutional variables, such as the strictness of employment protection legislation or spending on labour market policies, which are absent from the present exercise. Secondly, the absence of transition rates by activity status, type of job contract and pay level prevents the current analysis from capturing possible differences in terms of dynamic job quality outcomes between UK and Nordic countries. However, UK and Ireland differ significantly in terms of education and training performance – i.e. UK is characterised by a much larger share of people participating in training programmes – putting into question the homogeneity of an 'Anglo-Saxon' cluster.

Table 4: PCA analysis using the Laeken job quality indicators

	D1	D2	D3
Variability (%)	36.4%	18.9%	8.6%
Cumulative (%)	36.4%	55.3%	63.9%
Correlations with principal components			
Job satisfaction	**0.67**	-0.25	0.23
Participation in training and education (PTE)	**0.94**	0.02	0.11
PTE – women	**0.93**	0.06	0.07
PTE – men	**0.93**	-0.03	0.18
PTE – age group 25–34	**0.94**	0.03	0.16
PTE – age group 35–44	**0.94**	0.03	0.10
PTE – age group 45–54	**0.92**	0.02	0.11
PTE – age group 55–64	**0.79**	0.00	0.00
PTE – low educational attainment	**0.81**	0.09	-0.01
PTE – medium educational attainment	**0.87**	-0.22	0.10
PTE – high educational attainment	**0.84**	-0.09	0.16
PTE – employed	**0.89**	0.00	0.15
PTE – unemployed	**0.81**	-0.06	-0.07
PTE – inactive	**0.88**	-0.08	0.08
Use of computers	**0.77**	-0.15	0.37
Gender pay gap	0.34	**0.60**	-0.15
Gender employment gap	-0.38	**-0.69**	0.04
Gender unemployment gap	0.30	**0.48**	-0.39
Sectoral segregation	0.14	**0.58**	-0.37
Occupational segregation	0.12	**0.65**	-0.33
Change in the number of accidents in the 1998–2004 period	-0.01	0.34	**-0.43**
Involuntary part–time employment	**-0.52**	-0.03	-0.35
Involuntary fixed–term contracts	-0.20	-0.20	-0.01
Employment rate for people aged 15–64	**0.87**	0.10	-0.17
Employment rate for people aged 15–24	**0.80**	-0.23	-0.09
Employment rate for people aged 25–54	**0.67**	0.42	-0.06
Employment rate for people aged 55–64	**0.64**	0.23	**-0.50**
Employment rate for people with low levels of education (ISCED 0–2)	**0.59**	**-0.69**	-0.15
Employment rate for people with medium levels of education (ISCED 3–4)	**0.83**	0.06	-0.24
Employment rate for people with high levels of education (ISCED 5–6)	**0.51**	0.40	-0.38
Long-term unemployment rate	**-0.69**	0.27	0.44
Long-term unemployment rate for women	**-0.69**	0.16	**0.51**
Long-term unemployment rate for men	**-0.64**	0.36	0.34
Early school-leavers	-0.23	**-0.75**	**-0.51**
Early school-leavers (women)	-0.23	**-0.70**	**-0.49**
Early school-leavers (men)	-0.22	**-0.73**	**-0.55**
Youth unemployment ratio	**-0.57**	-0.01	**0.48**
Employment impact of parenthood (women)	-0.09	**0.51**	0.02
Employment impact of parenthood (men)	0.22	0.15	-0.28
Availability of childcare for 3 years old	**0.69**	-0.25	0.02
Availability of childcare between 3 years of age and compulsory schooling age	**0.55**	-0.18	0.03
Availability of childcare between compulsory schooling age and 12 years of age	0.27	-0.48	-0.23
Inactives not seeking employment due to family responsibilities	0.03	-0.06	-0.43
Difference in employment rates between people aged 55–64 and 15–64	-0.24	-0.25	**0.63**
Growth in labour productivity (GDP per person employed)	-0.11	**0.91**	-0.13
Growth in labour productivity (GDP per hour)	-0.02	**0.76**	-0.11
Productivity per employee	**0.46**	-0.45	0.46
Productivity per hour	**0.41**	-0.44	0.42
Fraction of the population aged 25–64 with secondary education or more	0.20	**0.93**	0.20
Fraction of women with upper secondary education or more	0.20	**0.94**	0.14
Fraction of men with upper secondary education or more	0.20	**0.89**	0.26
Fraction of workers with fixed–term contracts	0.07	-0.28	0.21
Fraction of part–time workers in total employment	**0.69**	-0.25	0.27

Source: Davoine et al. (2008).
Note: All listed variables are 'active' (see Table 2). Correlations larger than 0.4 in absolute value are in bold.

3.3. Assessing job quality trends

Time series are used to characterise the dynamics of job quality in the EU mainly since the mid-1990s. Two multivariate techniques are used:

- Kohonen (or self-organising) maps
- Synthetic indices.

Similar to PCA, Kohonen maps reduce a large dataset to a limited number of dimensions (Kohonen, 1995). This chapter uses a particular form of Kohonen maps – constrained Kohonen maps[37] to group countries in terms of job quality and map the evolution in their relative rankings over time.

Synthetic indicators are normally used to provide a summary measure of multidimensional concepts, such as job quality, by aggregating various dimensions (Nardo et al., 2006). Hence, they are a useful tool for assessing diffenences in job quality across EU Member States and evaluating the magnitude and direction of change over time.[38]

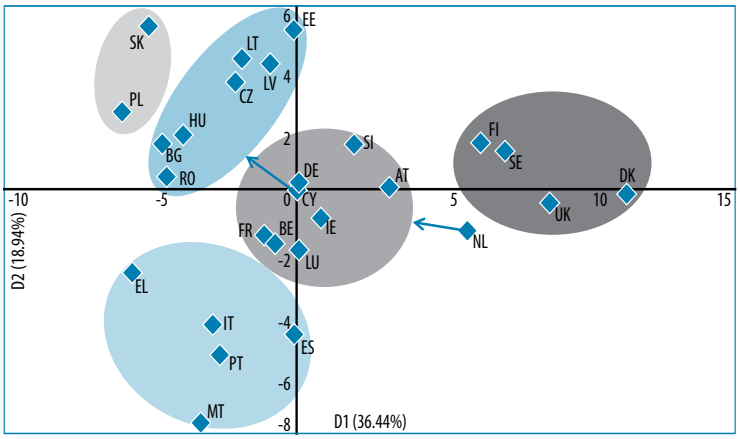
The analysis of job quality trends is based on a narrower set of variables than the cross-section one (section 3.2), namely because of both geographical and time coverage problems with a number of potentially relevant variables. As a result, various Member States are excluded from the analysis – namely Germany, the UK, Bulgaria, Lithuania, Slovenia, Malta and Romania – whereas others are only partially covered over the period considered.[39]

Table 6: List of variables included in the time-series analysis of job quality*

Variable	Direction of the impact on job quality	Available for 1983–2004	Available for 1995–2004
1 year transitions from non-employment to employment	(+)	yes	yes
Long-term unemployment rate	(-)	no	yes
Part-time rate	Ambiguous, excluded from the index	yes	yes
Involuntary part-time	(-)	yes (only for index)	yes
Share of employment with fixed-term contracts	(-)	yes	yes
Older workers (55-64) employment gap	(-)	yes	yes
Gender employment gap	(-)	yes	yes
Gender pay gap	(-)	no	yes
Gender occupational segregation	(-)	no	yes
Participation in education and training	(+)	yes	yes
Upper secondary education attainment	(+)	no	yes
Non-standard hours**	(-)	no	yes
In-work accidents rate	(-)	yes	yes (only for index)

Source: Adapted from Davoine et al. (2008).
*Note: * The data source is the LFS, except for the gender pay gap (European Communities' Households Panel, ECHP) and the in-work accidents' rate (European Statistics of Accidents at Work, ESAW, and national sources).*
*** This variable includes shares of workers working at night, on Saturday, on Sunday and, only for the analysis with Kohonen maps, shift work.*

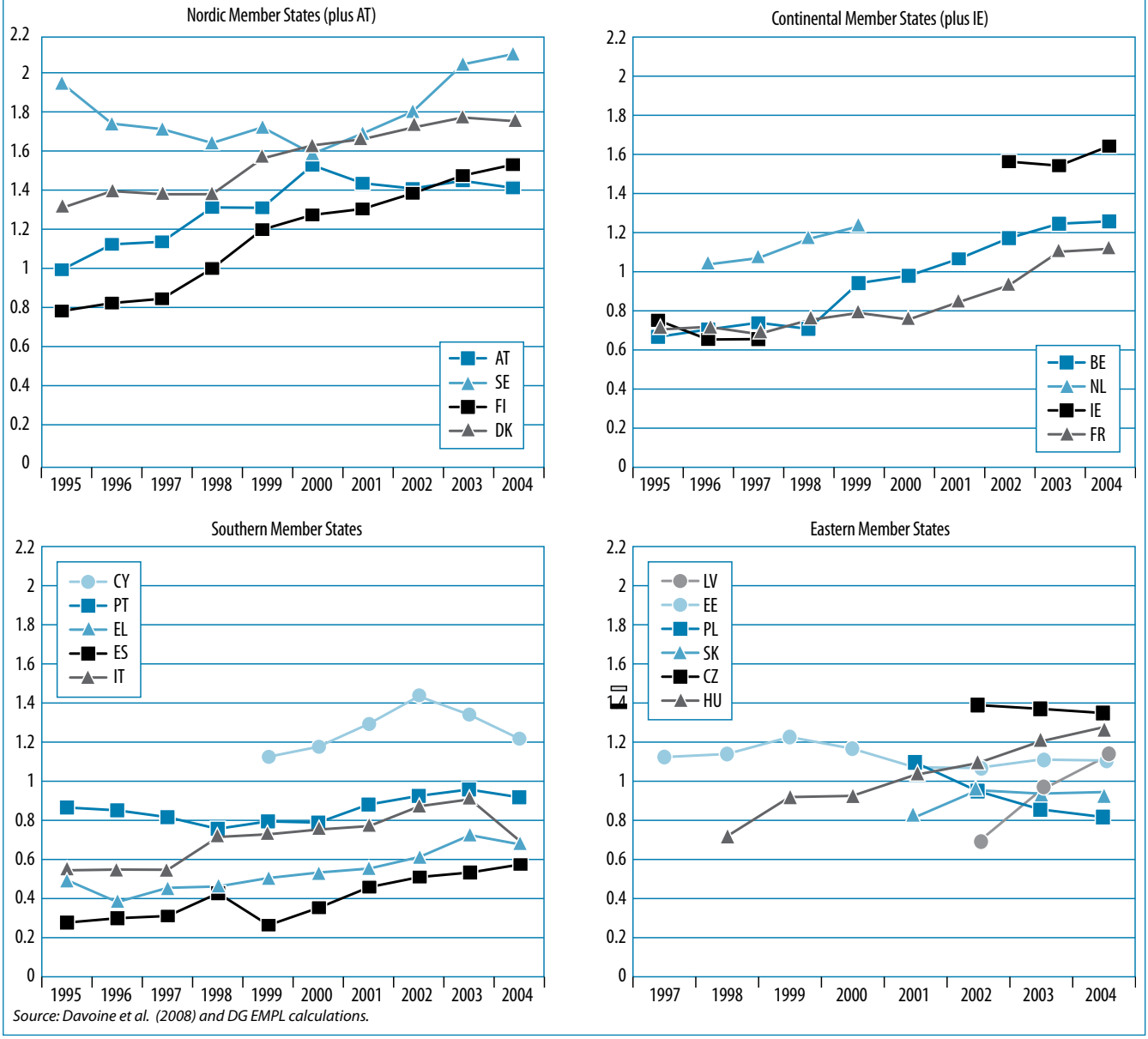
Chart 3: PCA on Laeken portfolio: country scores on the first two axes



Source: Adapted from Davoine et al. (2008).

37 This particular technique was developed at SAMOS (centre of economic research of the Sorbonne University, Paris) (Aaron et al., 2003).
38 Synthetic indicators are computed as follows. First, variables to be included are standardised in order to render them comparable. Second, synthetic indicators are calculated by adding or subtracting the standardised variables according to their likely impact on job quality, respectively, positive or negative. Therefore, variables that have an ambiguous impact are excluded from the calculations. Variables are given equal weights. Table 6 lists the variables included, their respective signs, and time coverage.
39 The more limited country coverage has allowed to include one-year transition rates between non-employment and employment, calculated based on the LFS, which were absent in the cross-section analysis in 3.2. However, this represents only a minor improvement as the LFS does not allow calculating transitions by pay level and contract type and does not provide information other than the individual's activity status the year before the survey.

Chart 4: Synthetic index of job quality



Source: Davoine et al. (2008) and DG EMPL calculations.

Finally, given that some variables are not available before the 1990s[40], the analysis is run for two different periods: from 1983 to 2004 covering the EU-15, and from 1995 to 2004, incorporating the new Member States.

3.3.1. Kohonen maps

Using a Kohonen map, Table 7 shows the evolution of job quality in the EU since 1994. Member States are ranked into 10 classes, which are further divided into four main groups (drawn using different shades). The results of the latter are largely similar to those obtained using the tandem analysis of principal components and CA carried out in section 3.2.

Nordic countries (e.g. Denmark, Finland and Sweden) are grouped together in the best-performing group, while some southern Member States (e.g. Greece and Italy) are included in the worst-performing group. Continental Member States, such as Belgium, France and the Netherlands, stand in an intermediate position. The table records changes in the composition of job quality clusters (or the relative ranking of countries) over time. First, a fourth group appears from 2000, including most new Member States, suggesting that their EU accession has increased the degree of heterogeneity in job quality outcomes. Secondly, some changes in the relative rankings of Member States have taken place over time. On the one hand, Austria, France and Ireland appear to have moved from an intermediate to a top position, suggesting a process of catching-up with Nordic Member States.[41] On the other hand, Estonia and Poland have experienced some deterioration in their relative position.[42]

40 Kohonen maps cannot include variables which are not available throughout the entire period considered.

41 Spain and Portugal also appear to have improved their relative position with respect to Greece and Italy since 2000. However, the ranking of Spain is likely to be overestimated due to the exclusion of the workers' accidents rate.

42 The former has moved from a top to an intermediate position, while the latter has moved from an intermediate to a position at the bottom.

Table 7: A Kohonen map of job quality indicators (1994–2004)

class	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
1		SE	FI	EE	EE	FI	DK	AT	AT	AT	AT
1			SE	FI	FI	SE	FI	DK	DK	DK	DK
1					SE		SE	FI	IE	IE	IE
1								SE	SE	SE	
2	DK								FI	FI	FI
2										FR	FR
2											SE
3		FI	AT	SE	AT	AT	AT	EE	LV	LV	LV
3			DK		DK	EE	EE				
4	BE	DK		DK	NL	DK	HU	SK	EE	EE	EE
4	FR								PL	SK	SK
5		AT	NL	AT	FR	NL	BE	HU	SK		CZ
5				NL				PL			
6	IE	BE	FR		BE	BE	CY	BE	HU	HU	BE
6					HU	FR	FR		CZ	CZ	HU
7		FR	BE	BE		HU		FR	BE	BE	CY
7				FR							
8	EL	IE	IE	IE	ES	IT	ES	CY	CY	CY	ES
8	IT	PT			PT		PT	PT	FR	ES	PT
8									PT	PT	
9			ES	ES		EL		ES	ES		
9				PT							
10	ES	ES	EL	EL	EL	ES	EL	EL	EL	EL	EL
10	PT	EL	IT	IT	IT	PT	IT	IT	IT	IT	IT
10		IT	PT							PL	PL

Source: Davoine et al. (2008).
Note: In each year countries are grouped across squares in the grid, corresponding to decreasing levels of job quality from the top to the bottom along the vertical axis. The number of classes is initially set to 10, yielding a variable number of groups (drawn using different shades).

By reducing the geographical coverage to the EU-15, a Kohonen map can be calculated for a longer period (1983–2004) (see Table 8). The extended time horizon allows for further qualification of previous results. First, southern Member States (e.g. Italy, Greece and Spain) appear to have joined the intermediate group in 1998, suggesting some catching-up in the EU-15. Second, Italy is sometimes located in the middle group, together with Denmark. Third, Austria and France are frequently located close to the Nordic group.

3.3.2. Synthetic indices

A synthetic job quality index is plotted in Chart 4.[43] Results are broadly in line with those obtained in section 3.2. Austria is at the top of the rankings, closer to Nordic Member States, while Southern countries are at the bottom. The Netherlands, France and Belgium are situated in an intermediate position. New Member States also tend to have intermediate scores. Chart 4 suggests that job quality has generally improved across EU Member States over the 1995–2004 period. The rise appears to be more pronounced in Ireland, Finland, France, Belgium, Denmark and Hungary, whereas in Poland and Estonia job quality has slightly deteriorated.

Taken together, the Kohonen maps and synthetic indices suggest an overall positive trend in job quality, particularly in Ireland, France and Austria.[44] Although the heterogeneity across Member States has increased since the 2004 enlargement, Member States can be grouped into a few job quality clusters, the composition of which has remained relatively unchanged over time.

These results should be taken with care, especially those related to synthetic indexes. In fact, results depend on the choice of variables, method of aggregation and weighing scheme. The reader should bear in mind that the range of job quality components considered is relatively limited due to data availability problems. The choice of equal weights is largely arbitrary, although being transparent, simple and in line with the literature which does not establish any clear 'hierarchy' between the different components of job quality.

Nonetheless, these results are in line with those derived from similar exercises undertaken in the literature, such as the Job Quality Index calculated by the European Trade Union Institute (Leschke et al., 2008) and based on 15

43 The index in Chart 4 is calculated by excluding the gender pay gap as this leads to slightly improved time coverage of some Member States. The corresponding index numbers are displayed in the data annex together with those including the gender pay gap.

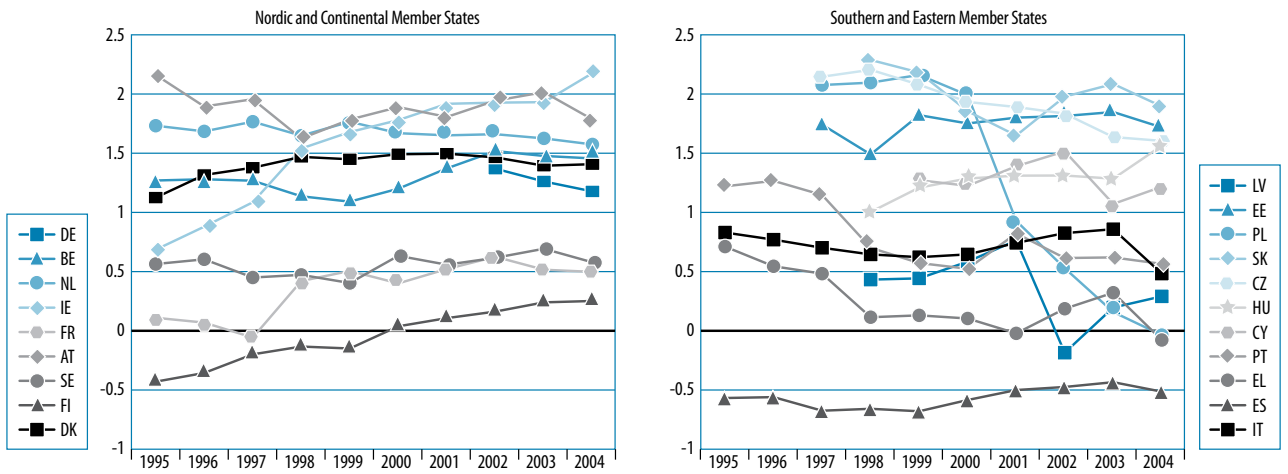
44 This is essentially linked to the fact that these three Member States join the Nordic cluster towards the end of the period in the 1994–2005 Kohonen Map. Looking at the synthetic index alone, however, the evidence is weaker as other Member States display similar improvements. Finally, trends in individual variables should also be examined in order to identify what drives overall job quality improvements. For instance, in the case of France, this is mainly determined by diminishing share of involuntary part-time, declining work accident's rate and older workers' employment gap, as well as increasing training participation.

Table 8: A Kohonen map of job quality indicators (1983–2004)

class	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	DK	DK	DK	DK	DK	DK	DK	DK	DK	DK	DK
2					FR	FR	FR	FR		FR	FR
3	FR	FR	FR	FR	BE	BE	BE	BE	BE	BE	BE
4			BE	BE	IT	IT	IT	IT	FR	IT	IT
5	IT	IT							IT	EL	EL
6	EL	EL	EL, IT	EL, IT	ES, EL	ES, EL	ES, EL	ES, EL	ES, EL	ES	ES
class	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
1	DK	SE	SE	DK, SE	DK, SE	DK, SE	DK, SE	DK, SE	DK, FI, SE	DK, FI, SE	DK, FI, SE
2	FR	DK	DK, FI	FI			FI	FI			
3	BE	FI	AT, FR	AT, FR	ES, FI	AT, FI	AT	AT	AT, IT	DE, BE	AT, FR
4	IT	AT, BE, FR	BE	BE	AT	IT	EL, IT	BE, IT	DE, BE	AT, FR	DE, BE
5	EL	IT	IT	IT	IT	EL		FR	FR	IT	IT
6	ES	ES, EL	ES, EL	ES, EL	BE, FR, EL	BE, ES, FR	BE, ES, FR	ES, EL	ES, EL	ES, EL	ES, EL

Source: Davoine et al. (2008).

Chart 5: Index of flexible employment



Source: Davoine et al. (2008) and DG EMPL calculations.
Note: The index is the average of involuntary part-time rate and temporary employment rate, both with minus sign, augmented by 1.

indicators covering six dimensions[45] of job quality. Preliminary results for the EU-15 point to a slight improvement on average in overall job quality between 2000 and 2005-7 (as the most recent year available differs across the indicators included), confirming familiar country ranking, with high scores for Scandinavian Member States and the UK, and low scores for southern Member States (ETUI, 2008).

3.3.3. Job quality sub-indices

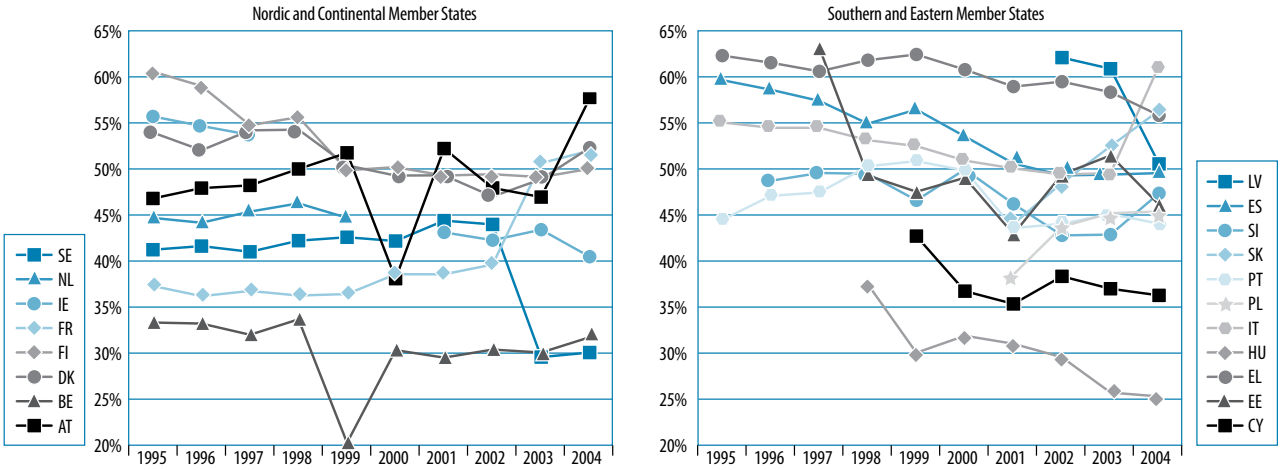
This section calculates sub-indices on the evolution of selected aspects of job quality, such as the degree of flexibility of employment relations, atypical working hours and gender balance.

Covering the period 1995–2004, the sub-index on the degree of flexibility of employment relations combines the rate of involuntary part-time work with the rate of temporary employment. A higher/lower score corresponds to a lower/higher incidence of temporary and/or involuntary part-time employment. The sub-index is plotted in Chart 5. Spain and Greece have low values of this index throughout the period, reflecting a high incidence of precarious forms of employment. A significant deterioration in this index can be observed after 2000 in Poland, because of the rapid growth in involuntary temporary employment. This index has improved in France and Ireland.

The sub-index on atypical working hours is computed by summing up the shares of workers working at night, on Saturdays and on Sundays. Results for the period 1995–2004 are plotted in Chart 6.

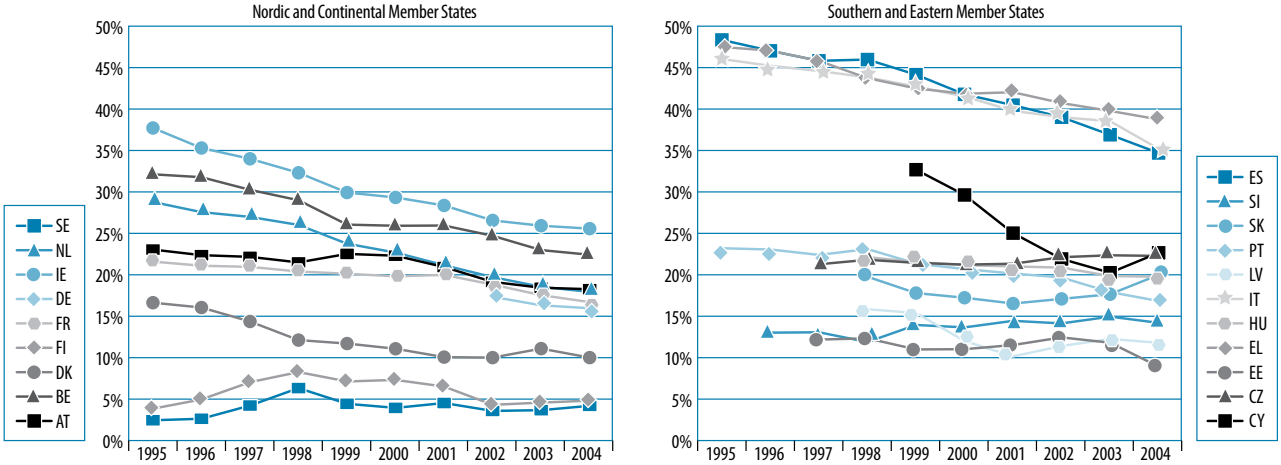
45 i.e. 1) wages; 2) non-standard employment; 3) working time and work–life balance; 4) working conditions and job security; 5) skills and career development; 6) collective interest representation.

Chart 6: Share of workers with atypical working hours*



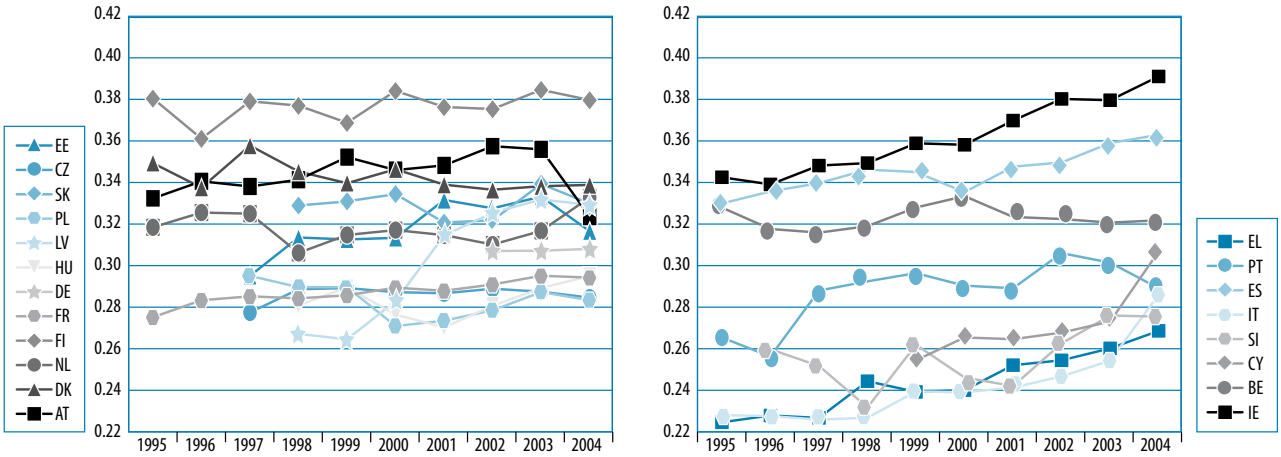
Source: Davoine et al. (2008).
*Note: * i.e. the sum of shares of workers working at night, on Saturday and on Sunday.*

Chart 7: Gender employment gap



Source: Davoine et al. (2008).

Chart 8: Index of gender segregation by sector



Source: Davoine et al. (2008).

Some southern Member States (e.g. Greece, Spain, Italy), new Member States (e.g. Latvia, Estonia and Slovenia), together with Nordic countries (e.g. Denmark and Finland), show a relatively high incidence of non-standard working hours, although it decreases over the period, particularly in Spain. Only in a minority of Member States (e.g. France, Austria, Poland and Slovenia) has an increase in this sub-index been observed over the period.

Chart 7 displays gender employment gaps between 1995 and 2004. It suggests two main developments.

– First, the best performers are Nordic Member States, although new Member States also have relatively low employment gaps.

– Secondly, a convergence pattern across the EU can be identified, as countries with the largest gender gaps at the start of the period (e.g. southern Member States, Ireland and Belgium) also experienced the largest reduction over the period.

Chart 8 displays gender segregation by sector of activity. Comparing Charts 7 and 8 provides some support for the existence of a trade-off between the female employment gap and gender segregation (see section 3.2), as Member States which have reduced the former most tend also to be those where segregation has risen (see the left-hand Graph in Chart 8 – e.g. Ireland, Spain, Greece, Italy and Cyprus).

4. Conclusions

Job quality is fully enshrined in the EES as reflected by the call to achieve more and better jobs. However, significant employment growth in the EU over the last decade has gone together with widespread concerns about the quality of a large share of European jobs related to the growth of temporary work, the larger exposure of jobs to competitive pressures and perceptions of deteriorating working conditions and higher work intensity.

Against this background, this chapter provides a critical review of the EU job quality concept based on recent developments in socio-economic literature and on empirical analysis. While the EU concept acknowledges the multi-dimensionality of job quality and includes both objective and subjective variables, room for improvement can be identified. Firstly, the current concept does not include crucial variables such as wages and work intensity while only partially covering certain dimensions such as training and education. On the other hand, it includes aggregate economic variables not directly related to specific job and worker characteristics

Based on this assessment, this chapter proposes a more developed analytical framework based on four main dimensions of job quality:

i) wages and socio-economic security;

ii) working conditions and work intensity;

iii) skills and training;

iv) the reconciliation of work with private life (including gender equality aspects).

Reflecting this enlarged framework, EU Member States are mapped into a reduced number of job quality models or regimes, highlighting the significant degree of heterogeneity of job quality outcomes across Europe. In 2005–06 four models can be identified in the EU:

i) **Northern, including the UK and the Netherlands** – high wages, good working conditions, but also high work intensity, as well as high educational attainment and participation in training;

ii) **Continental** – close to the average EU situation for most of the indicators;

iii) **Southern** – relatively low wages, low rates of participation in education and training, unfavourable working conditions and relatively larger gender employment gaps;

iv) **New Member States** – low wages, unfavourable working conditions, together with relatively high educational attainment and low gender employment gaps.

A comparison with results based on the Laeken definition of job quality suggests that such an enriched framework would allow for a better taxonomy of European job quality models, essentially by improving the interpretation of the axes along which such models are defined.

Based on a more limited set of variables, and narrower country coverage, the chapter also characterises the dynamics of job quality over time in the EU. Results suggest a slight overall improvement from 1994 to 2004, although trends vary to some extent across Member States, as well as a near stability in the geographical composition of job quality models.

Finally, results suggest the existence of significant synergies between the number of jobs and their quality, as well as between job quality and labour productivity. In fact, countries with the most favourable combinations across various job quality dimensions (such as northern Member States, the Netherlands and the UK) also appear to hold high ranking positions in terms of employment rates and productivity.

The results of this analysis, nevertheless, have to be considered as preliminary and taken with some caution, especially as regards the limited time/geographical coverage and relatively narrow range of variables in the dynamic analysis as well as the insufficient treatment of labour market transitions (by labour market statuses, type of contract and income levels). In particular, an analysis of labour market transitions is necessary to assess crucial aspects of both labour market flexibility and security, such as future career prospects. In the current European context, adequate treatment of labour market transitions is particularly relevant because job quality concerns are often associated with larger perceived risks of job loss and precarious labour market attachment.[46]

46 A detailed analysis of labour market transitions requires use of longitudinal data sets, such as the European Union Statistics on

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Data annex

Table 1a: Description of the data

Variable	Year	Source
Socio-economic security		
Job satisfaction: % of workers who declare "I am satisfied/very satisfied with my working conditions"	2006	Q36, 4th EWCS
"I am well paid for the work I do"	2006	Q37b, 4th EWCS
Mean wage in PPS	2001	ECHP and Davoine et al. (2008)
"My job offers good prospects for career advancement"	2006	Q37c, 4th EWCS
Fixed-term contract as a percentage of total number of employees	2006	LFS
Involuntary fixed-term contracts as percentage of fixed-term contracts	2006	LFS
Percentage of employed whose equivalised disposable income is below 60% of national median equivalised disposable income	2001	EMCO Compendium
Long-term unemployment rate	2006	LFS
Education and training		
Percentage of population aged 25–64 participating in education or training programmes	2006	LFS
Percentage of population aged 55–64 participating in education or training programmes	2006	LFS
Percentage of unemployed participating in education or training programmes	2006	LFS
Cost of Continuous Vocational Training (CVT) courses per participant	1999	CVTS2
Hours of CVT courses per participant	1999	CVTS2
Share of the workforce working with computers (PCs, network, mainframe)	2006	Q11K, 4th EWCS
Percentage of the population aged 18–24 with at most lower secondary education (ISCED level 2) and not in further education or training	2006	LFS, EMCO Compendium
Percentage of the population aged 25–64 having completed at least upper secondary education (ISCED3 level)	2006	ESTAT
Reconciliation-gender balance		
Difference between men's and women's average gross hourly earning as percentage of average men's hourly earning (for paid employees at work)	2001	National sources and ECHP
The difference in employment rates between men and women in percentage points	2006	LFS
The difference in unemployment rates between women and men in percentage points	2006	LFS
Gender segregation by sectors, calculated as the average national share of employment for women and men applied to each sector; differences are added up to produce a total amount of gender imbalance presented as a proportion of total employment (NACE classification)	2006	LFS, EMCO Compendium
Gender segregation by occupation (same as in previous cell by occupation/ISCO classification)	2006	LFS, EMCO Compendium
Part-time employment as a percentage of total employment	2006	LFS
Involuntary part-time as percentage of part-time employment	2006	LFS
Employment impact of parenthood for women: the difference in percentage points in employment rates without the presence of any children and with the presence of a child aged 0-6	2006	LFS, EMCO Compendium
Employment impact of parenthood for men: the difference in percentage points in employment rates without the presence of any children and with the presence of a child aged 0-6	2006	LFS, EMCO Compendium
Childcare: children cared for (by formal arrangements other than family) as a proportion of all children of the same age group (<3 years old)	2006	EMCO Compendium
Childcare: children cared for (by formal arrangements other than family) as a proportion of all children of the same age group (from 3 years old to compulsory school age)	2006	EMCO Compendium
Childcare: children cared for (by formal arrangements other than family) as a proportion of all children of the same age group (from compulsory school age to 12 years old)	2006	EMCO Compendium
Inactive not seeking employment but would nevertheless like to have work, but not searching due to personal or family responsibilities	2005	LFS, EMCO Compendium
Length of maternity leave in months (with benefits replacing at least 2/3 of salary)	2005	EMCO Compendium

Working conditions		
The evolution of accident rate defined as the number of serious accidents at work per 100 000 persons in employment	1999-2004	ESAW, EMCO Compendium
"Job involves painful/tiring positions"	2006	Q11a, 4th EWCS
"Job involves short repetitive tasks of <10min"	2006	Q20a, 4th EWCS
"My health is at risk because of work"	2006	Q33, 4th EWCS
"Working at very high speed"	2006	Q20Ba, 4th EWCS
"Working with tight deadlines"	2006	Q20Bb, 4th EWCS
"Consulted about changes in work organisation and/or working conditions"	2006	Q30b, 4th EWCS
"Working more than 10 hours a day"	2006	Q14e, 4th EWCS
"Working at night for at least 2 hours between 10pm and 5am"	2006	Q14a, 4th EWCS
Socio-economic context		
Difference in employment rates between 55–64 years old and 15–64 years old	2006	LFS
Youth unemployment ratio: total unemployed young people (15–24 years) as a share of total population in the same brackets	2006	LFS, EMCO Compendium
15–64 year-olds' employment rate	2006	LFS
Labour productivity (GDP per hour worked)	2005	ESTAT, EMCO Compendium
Labour productivity (GDP per person employed)	2005	ESTAT, EMCO Compendium
Growth in labour productivity (GDP per hour worked)	2004	ESTAT, EMCO Compendium
Growth in labour productivity (GDP per person employed)	2004	ESTAT, EMCO Compendium

Source: Davoine et al. (2008).
Note: EWCS, European Working Conditions Survey; CVTS, Continuous Vocational Training Survey; EMCO, Employment Committee; LFS, Labour Force Survey; ECHP, European Communities' Household Panel; and ESAW, European Statistics of Accidents at Work.

Table 2a: Synthetic index of job quality, without gender pay gap

	IT	ES	EL	PT	CY	FR	IE	NL	BE	DK
1995	0.54	0.28	0.49	0.87		0.67	0.72		0.64	1.31
1996	0.55	0.30	0.38	0.85		0.69	0.62	0.99	0.67	1.39
1997	0.55	0.31	0.45	0.82		0.65	0.63	1.02	0.71	1.38
1998	0.71	0.43	0.46	0.76		0.72		1.11	0.68	1.38
1999	0.73	0.26	0.51	0.79	1.12	0.75		1.18	0.90	1.56
2000	0.75	0.35	0.53	0.79	1.18	0.72			0.93	1.63
2001	0.77	0.46	0.55	0.88	1.29	0.81			1.02	1.66
2002	0.87	0.51	0.61	0.93	1.43	0.89	1.49		1.12	1.72
2003	0.91	0.53	0.72	0.96	1.34	1.05	1.47		1.19	1.77
2004	0.69	0.57	0.68	0.92	1.22	1.07	1.57		1.20	1.75
	FI	SE	AT	HU	CZ	SK	PL	EE	LV	
1995	0.78	1.95	0.99							
1996	0.82	1.74	1.12							
1997	0.84	1.71	1.14					1.12		
1998	1.00	1.64	1.31	0.72				1.14		
1999	1.20	1.72	1.31	0.92				1.23		
2000	1.27	1.59	1.53	0.93				1.17		
2001	1.30	1.69	1.44	1.03		0.82	1.10	1.07		
2002	1.38	1.80	1.41	1.09	1.39	0.96	0.95	1.07	0.69	
2003	1.47	2.04	1.45	1.20	1.37	0.94	0.86	1.11	0.95	
2004	1.53	2.10	1.41	1.28	1.35	0.95	0.82	1.11	1.12	

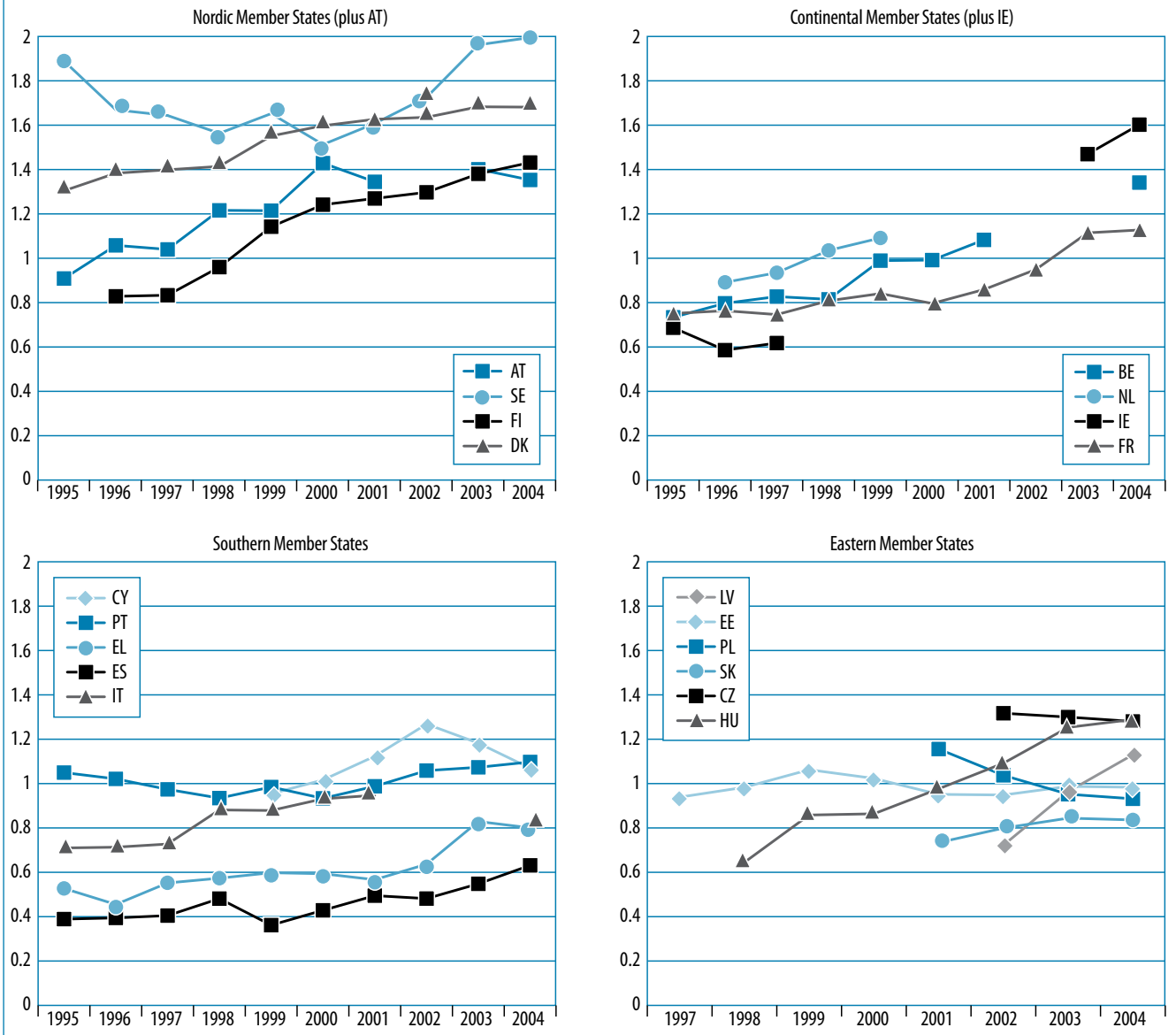
Source: Davoine et al. (2008) and DG EMPL calculations based on LFS, ESAW and national statistical sources.
Note: Chart 4 above is based on these figures.

Table 3a: Synthetic index of job quality, including gender pay gap

	IT	ES	EL	PT	CY	FR	IE	NL	BE	DK
1995	0.71	0.39	0.53	1.05		0.75	0.69		0.73	1.30
1996	0.71	0.39	0.46	1.02		0.76	0.59	0.89	0.80	1.38
1997	0.73	0.40	0.55	0.97		0.75	0.62	0.93	0.83	1.40
1998	0.88	0.48	0.57	0.93		0.81		1.04	0.81	1.41
1999	0.88	0.36	0.60	0.98	0.95	0.84		1.09	0.99	1.55
2000	0.93	0.43	0.59	0.93	1.02	0.80			0.99	1.60
2001	0.95	0.49	0.57	0.99	1.12	0.86			1.08	1.63
2002		0.48	0.64	1.06	1.27	0.95				1.64
2003		0.55	0.83	1.07	1.18	1.11	1.47			1.68
2004	0.86	0.63	0.80	1.10	1.07	1.13	1.60		1.34	1.68
	FI	SE	AT	HU	CZ	SK	PL	EE	LV	
1995		1.89	0.91							
1996	0.83	1.67	1.06							
1997	0.83	1.64	1.04					0.94		
1998	0.96	1.56	1.22	0.64				0.98		
1999	1.14	1.65	1.21	0.86				1.06		
2000	1.24	1.51	1.43	0.86				1.02		
2001	1.27	1.61	1.34	0.98		0.73	1.16	0.95		
2002	1.30	1.73		1.09	1.32	0.80	1.04	0.95	0.72	
2003	1.38	1.96	1.40	1.25	1.30	0.84	0.95	0.99	0.96	
2004	1.43	2.00	1.35	1.29	1.28	0.84	0.93	0.98	1.13	

Source: Davoine et al. (2008) and DG EMPL calculations based on LFS, EMCO Compendium, ESAW and national statistical sources.

Chart 1a: Synthetic index of job quality, including gender pay gap



Source: Davoine et al. (2008) and DG EMPL calculations.

Education and employment: different pathways across occupations

Chapter 5

1. Introduction

One recurrent concern of policy-makers in the fields of education and employment has been the mismatch between workers' skills on the one hand, and job requirements on the other. Better matching could facilitate labour market transitions and yield more stable and high-value jobs, thereby increasing productivity. However, some market imperfections such as incomplete information may produce inefficient matches. Public policy could help improve the functioning of the labour market by (among others) identifying current and future job opportunities and their skill requirements. However, this chapter argues that the links between education and occupations should not be viewed in a simplistic way, but instead as a multi-faceted relationship, depending on numerous factors. An accurate understanding of the complexity of the education–occupation link is paramount in order to enhance the relevance and effectiveness of policy initiatives in this area. Using data from the European Union (EU) Labour Force Survey (LFS) on occupational status and education (both on the level and field of study), this chapter suggests that the relationship between education and occupations is much more complex than might initially be assumed.

1.1. Background

A recurrent and shared concern of policy-makers in the fields of education and employment is the perceived mismatch between workers' education and skill levels, and actual job requirements in the labour market. In this context, actions to strengthen the relationship between education and the world of work and to improve the efficiency of job matching intend to facilitate labour market and school-to-work transitions, raise productivity levels, and produce more stable and high-value jobs. These issues hold a high profile in the European Employment Strategy, as reflected by the European Commission's 2007 Communication on the *Integrated Guidelines for growth and jobs (2008-2010),* particularly in guidelines n°20: *Improve matching of labour market needs* and n°24: *Adapt education and training systems in response to new competence requirements*.

Globalisation, technological change, an ageing population and wider societal changes have all served to increase uncertainty about the future of our economies, contributing to a sense of insecurity. Policy-makers have responded with a variety of initiatives aimed at better anticipating future labour market needs and ensuring better management of the process of change. In this context, the EU has recently launched an initiative aimed at better identifying future job demands and the respective skill requirements. The March 2008 European Council:

> invite[d] the Commission to present a comprehensive assessment of the future skills requirements in Europe up to 2020, taking account of the impact of technological change and ageing populations and to propose steps to anticipate future needs. Given the important role economic migration can play in respect of the labour market and skill shortages, cooperation in the field of legal migration should also be increased.[1]

1.2. The *New skills for new jobs* initiative in the context of flexicurity

Labour market inefficiencies adversely affect the accumulation of human capital by reducing or discouraging investment in skills. It is therefore vital to identify the market failures affecting skill acquisition and to examine the conditions under which they become large enough to create serious social and economic problems, requiring the introduction of appropriate corrective public policies (Booth and Snower, 1996).[2]

1 This invitation followed a resolution on the New skills for new jobs initiative adopted by the Education, Youth and Culture Council in November 2007. This resolution aimed at a more coordinated approach based on existing structures in order to better respond to the objectives of the integrated guidelines of the Lisbon Strategy. In the same way, in December 2007, the Employment, Social Policy, Health and Consumers Affairs Council, in its Conclusions on the European Employment Strategy, highlighted the New skills for new jobs initiative as one of the key areas for the future of the European Employment Strategy.

2 This is particularly so because there is an enormous diversity of government policies towards training, based on different implicit assumptions about how well the market does in encouraging people to acquire skills.

In order to address this issue, policy packages have been advocated that put together comprehensive lifelong learning strategies and effective labour market policies. The 2007 Communication *Towards common principles of flexicurity: more and better jobs through flexibility and security* (European Commission, 2007a) presents a comprehensive policy framework with a strong focus on lifelong learning and 'activation' policies to allow firms and workers to adapt quickly to an economic environment characterised by rapid change and growing uncertainty.

The *New skills for new jobs* initiative aims to map current and future demand for occupations and the corresponding skill requirements, while recognising that the links between the two are more complex than sometimes assumed. Indeed, every job requires a different mix of knowledge, skills and abilities, while its completion requires carrying out a variety of activities and tasks. Moreover, knowledge and skills are accumulated throughout working life through different learning activities, involving different forms and methods of skill accumulation, such as formal education, formal training and work-related experience.

A basic goal of the *New skills for new jobs* initiative is to gather and disseminate information on the knowledge, skills and abilities needed to perform specific tasks and on the different regimes of skill accumulation. This initiative not only aims to identify current skill needs, but also to anticipate their evolution over time, using a range of methods, including scenario building and qualitative analysis. The initiative also provides tools designed for counselling, career planning and exploration, together with useful information for governments to adapt their education and training systems to new needs.

EU Member States are facing a number of common challenges, such as globalisation, rapid technological progress, demographic ageing and societal change. This requires an integrated policy strategy that facilitates transitions, fosters a highly educated workforce and modernises labour market institutions. Flexicurity is such an integrated strategy.

The Commission's 2007 Communication *Towards common principles of flexicurity: more and better jobs through flexibility and security* presented a comprehensive policy strategy to enhance, at the same time, flexibility and security in the labour market. Flexibility, on the one hand, is about facilitating successful 'transitions' during the life cycle (e.g. from school to work, from job to job). It is about upward mobility and the development of talent and fostering flexible work organisations capable of rapidly adapting to new and largely unforeseen circumstances. Security, on the other hand, is different from simply keeping a particular job. It is about equipping people with the skills that enable them to progress in their working lives, making workers more adaptable to changing circumstances and helping them to find adequate job matches. It is also about efficient placement services and adequate unemployment benefits to facilitate transitions and it also encompasses the provision of training opportunities for all workers.

The *New skills for new jobs* initiative can provide a valuable assessment of current and future skill needs, particularly if it uses complementary methodologies (both quantitative and qualitative), takes into account the multifaceted links existing between education and occupations and covers the various time horizons. A regular assessment of future skill needs will be critical for the design of adequate lifelong learning strategies and of efficient labour market policies, therefore facilitating the implementation of flexicurity policies. Moreover, given the time lags involved, a comprehensive and updated intelligence of future skill needs is a crucial input of any planned reform of education and training systems.

1.3. The academic literature

It is usually argued that there is a 'loose' relationship between 'fields of study'[3] and occupations (Giret et al., 2005). Firms often attach more value to the level of education than to the field of study and local imbalances between labour demand and supply for a given diploma are common (Chardon, 2005). Occupational choices are also not only governed by material rewards, since workers differ in their individual preferences and intrinsic attributes (e.g. sex, race, family background) (Corneo and Jeanne, 2007; Constant and Zimmermann, 2003; Dolton and Kidd, 1994; Tsukahara, 2007). By favouring general education at the expense of vocational training, the design of the educational system can also influence the relationship between fields of study and jobs. Finally, the characteristics of labour market institutions, such as the strictness of employment protection legislation, can slow down the reallocation of labour to more productive jobs (Brunello et al., 2007).

Many studies of the links between education and occupations focus on the highest level of education attained (Hartog, 2000; McGuinness, 2006), or the role of general versus specific education. In a European context, fields of study have been used in the framework of school-to-work transitions (e.g. Heijke et al., 2003; Wolbers, 2003). In France, the links between fields of study and occupations were examined by Dumartin (1997) and Chardon (2005).

This chapter essentially applies the methodology developed in Chardon (2005), and originally applied to French data, to EU data, using an enlarged set of variables calculated from the harmonised EU LFS. However, the work carried out here should be seen as preliminary, requiring further analysis, mainly because the LFS only provides details concerning 30 combinations of levels of education with fields

3 The term `fields of study´ is used to characterise the subject(s) studied during the education process either via formal education or vocational training.

of study[4], compared with the 90 that are available using French data.[5] All the rest being equal, a reduced number of fields of study biases results against finding close links between fields of study and occupations.[6]

Examining the role played by the field of study in gaining access to employment during the lifecycle requires other aspects of investment in human capital to be considered besides the decision on formal schooling. For a fraction of the labour force, formal schooling is indeed not a major determinant of either occupational choice or subsequent occupational change. Many workers augment their human capital after completing their formal education, particularly through work-related experience (i.e. learning-by-doing) and continuing vocational training (CVT).

Economists distinguish between two types of training: 'general' and 'specific' (Becker, 1964). General training increases the productivity of an individual for all jobs, while specific training only boosts their productivity for a particular job (Cahuc and Zylberberg, 2004).[7] At the beginning of an employment relationship, the worker and firm have not yet invested in firm-specific skills; therefore, no sunk cost has been incurred with no value outside the firm. Once firm-specific skills are acquired, the worker's productivity in the firm exceeds the wage, while the latter exceeds that which they could earn elsewhere. Firm-specific training implies that (all things being equal) there should be a negative correlation between the probability of job separation and job seniority (e.g. Farber, 1994 and 1999). It also entails that job seniority can influence the relationship between fields of study and occupations, since work-related experience may substitute for initial education.

1.4. Chapter coverage

Against this background, this chapter reports the findings of an empirical investigation on the complexity of the relationship between education and occupations in the EU. To this end, a multivariate analysis is carried out using the tandem approach (Nardo et al., 2005) in which the main dimensions characterising the links between fields of study and occupations are identified using a factor analysis (FA). Occupations are then clustered into a limited number of groups using the scores obtained in the FA.[8]

The chapter is organised as follows. Section 2 presents a brief overview of skill forecasting and related exercises at the EU-wide and United States (USA) levels. Section 3 describes the empirical strategy used in the multivariate analysis of the relationship between study/education levels and occupations using data from the European LFS. Section 4 interprets the results and final comments are made in section 5.

2. Anticipating skill needs (and related exercises) in the EU and USA

There is a long-established tradition in the USA of projecting occupational employment. The Bureau of Labour Statistics (BLS) latest projection covers the period 2006–16 (Franklin, 2007). The BLS methodology begins with projections of labour force growth, which are combined with econometric models to project aggregate economic growth. From this, the BLS derives final demand and output in major industry sectors. Next, BLS analysts translate output in each industry sector into occupational employment in that sector (Hilton, 2008). Every two years, the BLS releases updated projections, regularly evaluating its projections after a 10-year projection period has ended to ascertain their accuracy.[9]

The BLS projections to 2016 employ a series of methodologies, ranging from econometric and time-series models to experts' subjective analysis. The main trends in the BLS projections to 2016 are:

i) slower labour force growth than in the previous decades;

ii) an ageing population and labour force;

iii) a continuing shift of employment to the service sector;

iv) a productivity growth rate of 2¼% per year.

4 15 fields of study by two levels of education.
5 Annual employment survey (Insee).
6 A ´close` link corresponds to a situation where the fields of study predominant in an occupation are also relatively uncommon in the whole economy.
7 Stevens (1997) argues that this 'theoretical' distinction is of limited operational value, because both hardly any training is useful to all firms in the economy nor is there much training that is useful only to one specific firm. Instead, most training is useful to a limited number of firms. This has basically two consequences: i) the limited number of firms must be imperfect competitors for labour, having some market power and thus workers cannot appropriate all returns from their training (i.e. workers' wages are below their marginal productivity); and ii) given that workers are mobile between firms, the potential benefits from training accrue not only to the firm providing it and the worker acquiring it, but also to other firms that can make use of it. This constitutes the `poaching´ externality. Consequently, the greater firms' market power and/or the mobility of workers between firms, the more serious tend to be market failures affecting the provision of training.

8 Examples of the application of this methodology can be found in previous editions of the Employment in Europe report – namely Chapter 2 (European Commission, 2006) and Chapter 3 (European Commission, 2007b).

9 Stekler and Thomas (2005) developed a methodology for evaluating BLS projections for labour force, industry employment and occupational employment. They applied this methodology to evaluate the projections for 2000 that were published in 1989. These projections were compared with benchmarks derived from naïve models. In most cases they find that the accuracy of BLS projections is comparable with estimates obtained using naïve extrapolative models.

Following several initiatives of Member States[10] at national level, the European Centre for the Development of Vocational Training (CEDEFOP[11]) established in 2004 the European network of the early identification of skill needs: Skillsnet. In 2008, CEDEFOP and its network Skillsnet published – for the first time – a consistent and comprehensive medium-term forecast of employment and skill needs across the whole of Europe (CEDEFOP, 2008). The forecast develops macroeconomic projections and alternative scenarios for the EU-25[12] and aggregate results at European level, providing data on future employment developments by economic sector, occupation and qualification until 2015 using comparable data for all Member States.

Forecasts can provide valuable information for occupational guidance to new entrants to the labour market, together with favouring occupational mobility for those already in employment or moving to employment from non-employment (Neugart and Schömann, 2002). In the event of market failure due to insufficient information or incorrect expectations, the information content of skill forecasts can help public services, firms and employees to take the right decisions in terms of job counselling, choice of career paths and retraining in order to enhance occupational mobility.

However, there are many caveats to skill needs forecasting. So that forecasts may reasonably be used for broad policy-guiding purposes, they should be restricted to sufficiently large classes of occupational groups with extensive overlaps in terms of required skills. Too much into detail should be avoided as regards skill forecasting, particularly when dealing with long forecasting periods to minimise the impact of errors. Moreover, skill needs forecasts are often not sufficiently attentive to changes in the content of occupations.

In addition to quantitative projections of future demand for occupational employment, other (more qualitative) methods are also available which can give important insights for anticipating future trends. In particular, these can include academic research on past and recent developments in the world of work, foresight exercises, employer surveys, case studies or job competence modelling and activities related to forecasting, such as the BLS' occupational information network (O*NET).

Important research for the USA economy suggests that the labour market is not simply marked by the increasing skill content of jobs. It is also growing increasingly divided (Autor, Katz and Kearney, 2006; Autor, 2007). Skills and wages are being 'polarised' at the two extremes of the distribution, raising earnings inequality. Researchers suggest that computerisation and outsourcing of work to foreign countries (i.e. globalisation) are the likely causes of such polarisation. The same pattern of rapid growth in occupations at the high and low ends of the labour market is apparent in the United Kingdom (UK) (Goos and Manning, 2007) and Germany (Dustmann et al., 2007).

A simple way to conceptualise the potential impact of computerisation and outsourcing in the economy is to classify occupational tasks into three main groups:

i) manual tasks;

ii) routine tasks;

iii) abstract tasks.

Manual tasks often require adapting to changing physical and social environments (e.g. driving a truck, serving a meal). These tasks cannot be specified with rules and carried out by computers. Routine tasks follow specified rules; therefore computers often substitute for humans in undertaking such tasks (e.g. many clerical tasks). Autor et al. (2006) present evidence suggesting that computers have indeed reduced demand for routine tasks and jobs since the 1960s. As regards abstract tasks (e.g. solving new problems, managing people), workers carrying them out often use computers to complement their skills. In contrast, computers neither complement nor substitute human skills in carrying out manual tasks.

This type of analysis suggests a further bi-polarisation of jobs in the future, with many jobs involving either abstract tasks (e.g. high-education professional and managerial jobs) or manual tasks (e.g. low-education service jobs), and fewer jobs involving routine tasks that pay wages in the mid-range of the wage distribution (i.e. 'middle-class wages'). According to Autor (Hilton, 2008), this type of analysis crucially implies that service occupations will be increasingly important in the future because they are both difficult to automate and outsource.

In conclusion, academic research predicts the further development of an 'hourglass' or 'barbell-shaped' economy. Thus, the future economy will be not only a *knowledge* economy – but also a *service* economy.

Several studies have also suggested that the demand for skills goes beyond academic skills per se, which are often associated with particular curricula. In addition to academic skills, three broad areas of skill competences are becoming increasingly relevant (Stasz, 2001):

- **'Generic' skills** include problem-solving, communications or working in teams. These skills are often transferable across work settings.
- **'Technical' skills** are defined as specific skills needed in an occupation. These skills may include references to academic skills or to knowledge of certain tools or processes. Technical skills are often codified in industry standards.
- **'Work-related attitudes' or 'soft' skills** encompass, for example, motivation, volition and disposition. These skills are most often judged through personal impressions or knowledge of an individual.

10 A more comprehensive overview of skill forecasting exercises in various Member States is beyond the scope of this chapter.
11 CEDEFOP is the European Centre for the Development of Vocational Training. It is the European Agency responsible to promote the development of vocational education and training (VET) in the European Union.
12 The EU excluding Bulgaria and Romania, but including Norway and Switzerland.

Policy-makers have acknowledged that changes in the nature of work and the workplace are transforming the kinds of knowledge, skills and attitudes needed. The perceived demand for different skills has also prompted policy-makers in several industrialised countries to develop conceptual frameworks for identifying skill requirements.

Based on regular establishment–employee surveys and the work of trained job analysts, in the mid-1990s the US Department of Labor created the electronic database O*NET (occupational information network) that collects information on jobs, updating it every six months. The two core elements of O*NET are a content model and an occupational taxonomy (Chart 1). Based on Peterson et al. (1999), the content model organises job information into six broad categories, with three related to the individual worker and three related to the job. There are three types of information related to the individual worker:

1) **characteristics** – e.g. abilities the worker brings to the job;

2) **requirements for entry into the occupation** – e.g. skills, knowledge and education;

3) **experience required for entry** – e.g. training, skills and licensing.

The content model also includes three types of information related to the job:

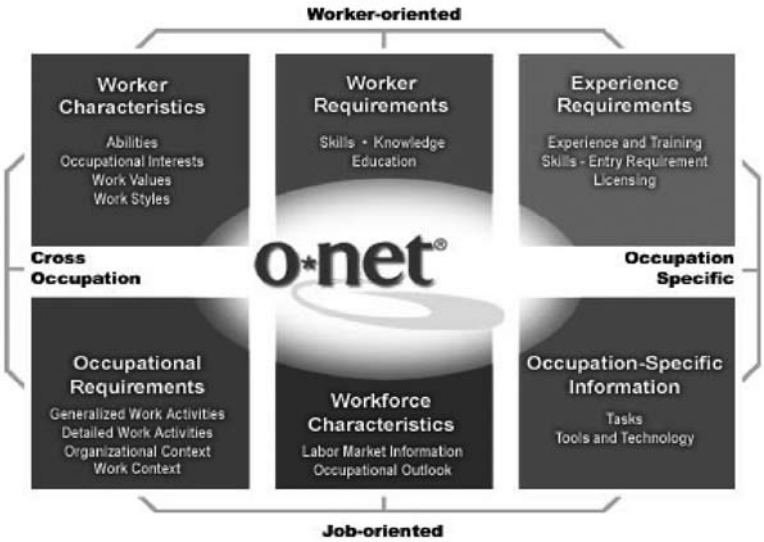
1) **occupational requirements** – e.g. what work activities are performed;

2) **workforce characteristics** – e.g. information on projected demand for this occupation;

3) **occupation-specific information** – e.g. tasks and technology.

Within each one of these broad categories, there is a wealth of additional information and descriptors. The current edition of the database (O*NET-SOC 11.0) includes updated information on 680 occupations.

Chart 1: The O*NET content model



*Source: National Centre for O*NET Development (2007).*

The O*NET database is used by many individuals and organisations for a variety of purposes. Students and job counsellors use it to gain a better view of available occupations and plan for future careers. Job seekers access information on demand for various occupations and the types of skills, knowledge, abilities and education required for entry into those occupations and to perform the related activities. Some organisations are already using O*NET to project future skill demands. In particular, the O*NET database has been linked to the BLS occupational projections in order to forecast future skill demands and potential skill gaps.[13]

The O*NET initiative mainly addresses the problem of incomplete information on the workers' side of the labour market, not being designed to help firms getting information about a particular worker's skills, abilities and productivity. Educational and training credentials convey that information to potential employers (Checchi, 2006).

13 Although the methodology is different, the EurOccupations (www.euroccupations.org) project (funded by DG RTD) can be considered a first step towards a European description of occupational skill needs. EurOccupations aims to build a publicly available occupational database, including information on approximately 1500 occupations for eight European countries (Belgium, France, Germany, Italy, the Netherlands, Poland, Spain and the United Kingdom).

In the framework of the *New skills for new jobs* initiative, it would be interesting to evaluate the appropriateness and feasibility of developing an occupational database in the EU largely based on best international practices.

3. Measuring the relationships between different paths of education and occupations

A number of well-known labour market theories suggest that wages are also used as an incentive mechanism, thereby not clearing the labour market. Moreover, job matching is particularly affected by:

i) information deficits about the nature of a job and of the potential job holder;

ii) transaction costs.

Using data for the EU-27, the analysis carried out in this chapter follows a statistical approach. A different approach would have involved a more qualitative judgement. Before presenting the indicators used in the multivariate analysis in section 3.3, section 3.1 summarises

the economic literature on job matching, and section 3.2 discusses the empirical strategy and some general caveats of its limitations.

3.1. Job matching in economic theory

In a perfectly competitive labour market, the interaction between workers looking for the best job offers and firms opening vacancies in order to maximise profits would result in an efficient allocation of resources or job matching, with each job match (i.e. filled vacancy) attaining its maximum (social) value[14], which would be correctly priced at the going wages. However it is widely recognised that, in practice, the wage mechanism does not clear the labour market in this way, as explained in three different labour market theories – namely efficiency wages, seniority wage profiles and implicit contracts (Neugart and Schömann, 2002).

In the 'shirking' version of the efficient wage theory (Shapiro and Stiglitz, 1984), firms are seen to use wages as an incentive device to deter workers from shirking (i.e. avoiding work) by paying a premium above the market clearing rate. In the seniority wage profiles theory (Lazear, 1981), wages depend on seniority on the job, which creates an incentive for young workers not to shirk on the job; otherwise if caught and fired, they would relinquish future premiums. According to the implicit contract theory (Azariadis, 1975), workers accept a markdown on the wage relative to productivity in exchange for employment and wage stability.[15] In all three theories, wages are being used as an incentive mechanism to deter shirking or to spread risk – hence they are not performing a pure market clearing function.

More generally, labour markets are seen to be subject to numerous imperfections, such as incomplete information, heterogeneity among agents and transaction costs (Borjas, 2008; Cahuc and Zylberberg, 2004), all of which can justify public policy interventions.

Job matching is particularly affected by problems of incomplete information and transaction costs. An individual looking for a job will not have full information about the job, and a firm wanting to fill a vacancy will not have full information about the individual. Both parties will thus have to devote resources in order to search for a job and select among candidates, respectively. One result of these imperfections is the simultaneous presence of unemployed people and vacant jobs in equilibrium.

Incomplete information about a job 'match' implies that its 'value' is not known with certainty at the start of a job; it is only gradually revealed as both parties learn about each other. Over time, both the worker and the firm may come to realise that they have incorrectly assessed the appropriateness of the match, and may decide to separate and look around for a better one or to stay and adapt (e.g. Johnson, 1978; Jovanovic, 1979).

Such job turnover is an effective way of correcting matching errors or coping with technological/demand shocks[16], in order to secure a better and more efficient allocation of resources. However, excessive labour turnover in the economy will be viewed as a sign of inefficiency.

Labour market policies and other initiatives adopted by governments that aim to improve the gathering and sharing of information can help improve job matching. These could include setting up public employment services, establishing unemployment insurance and welfare systems (Cahuc and Zylberberg, 2004), and launching occupational forecasts and related exercises for identifying current and future jobs and their skill requirements (Neugart and Schömann, 2002).

3.2. Empirical strategy

The empirical analysis carried out in this chapter follows the statistical methodology developed by a number of French economists. Dumartin (1997) explores the relationships between fields of study/levels of education and occupations in France using a multivariate analysis (i.e. correspondence analysis) that relates the standard classifications of education with that of occupations. However, this empirical analysis fails to reveal the full complexity of all links because it overlooks some relevant variables characterising human resource policies, such as job seniority and participation in lifelong training.

Instead, Chardon (2005) collects additional socio-economic data that broadly characterise the education–occupations relationships, including variables on firms' human resource policies, ultimately identifying relatively homogenous clusters of occupations. However, any empirical analysis faces a number of limitations that will be discussed below.

An alternative approach to a statistical methodology is to use an expert's (subjective) opinion on the actual relationships between fields of study and occupations. Although a subjective opinion can add some important qualitative insights, it can also bias the analysis by not fully taking into account the information contained in the data. However, a statistical approach is not entirely objective either, due to potential data problems (e.g. accuracy, timeliness, coverage) and a number of (largely arbitrary) decisions, which need to be made on the approach to the analysis and influence results, such as on the nomenclatures and aggregation levels.

An occupational nomenclature is not a pure statistical concept. It reflects not only the nature of the occupations and the logic of the classification system[17], but also institutional arrangements,

14 i.e. workers and firms could not improve on their positions by shopping around for a better match.

15 Workers are assumed to be risk-averse, while firms are assumed to be risk-neutral.

16 Technological/demand shocks can destroy the value of a job match, creating incentives for a separation (e.g. Mortensen and Pissarides, 1994, 1999).

17 Some classifications can be industry- or skill-requirements-oriented, respectively.

such as work organisation and collective bargaining. Moreover, a nomenclature may have difficulties in monitoring changes over time and allowing adequate cross-country comparisons (Ganzeboom and Treiman, 1996).

An educational nomenclature should cover various dimensions, such as the level of education, the fields of study and the orientation of the programme (e.g. general, vocational). In particular, only considering the role of the fields/subjects of study in education would be inappropriate because the curriculum will vary with the level of study (and the orientation of the programme).

Therefore, in order to improve the scope and validity of the empirical analysis, this chapter combines the information in the EU LFS for fields of study with that for the highest level of education attained.

3.3. Data sources and indicators

3.3.1. Data sources

The analysis uses the EU LFS as the main data source,[18] with the unit of analysis as the occupation.[19] The data covers the EU-27 in the period 2003–06. The analysis was carried out for the population aged between 15 and 64 years of age. Although LFS data is not collected using a common standardised questionnaire, the degree of harmonisation of the concepts and definitions used is high.

The LFS uses the International Standard Classification of Occupations (ISCO-88) and the International Standard Classification of Education (ISCED-97) nomenclatures for occupations and education (both levels and fields), respectively. Indicators are calculated using both the ISCO classification at 2 and 3 digit levels, covering a total of 26 and 109 occupations, respectively (Annex 2). Two aggregation levels are employed to evaluate the results' robustness.

ISCED-97 is used to classify individuals into three distinct levels of education: low (ISCED levels 0–2), medium (ISCED levels 3–4), and high (ISCED levels 5–6). Individuals classified in the medium and high levels of education can be further placed into 15 fields of study, according to Eurostat's *Fields of education and training manual* (Eurostat, 1999; Annex 3).

In total, there are 30 combinations of fields of study by levels of education. In 2007, only approximately three quarters of those employed in the EU-27 could be classified in terms of a field of study, because such information is not collected on the remaining one quarter with a low level education due to its limited relevance (Table 1).

For the employed with a medium level of education, the distribution of fields of study differs significantly across age groups (Table 2). Comparing young workers (15–24) with prime-age (25–54) and older workers (55–64), the following fields of study have higher percentages in the former group: `general programmes´, `mathematics and statistics´, `computer science, `computer use´ and `services´; and lower percentages in the following fields of study: `social sciences, business and law´, `engineering, manufacturing and construction´, and `agriculture and veterinary´.

Table 1: Highest education level attained in the EU, 2007 (share in total employment as %)

Level of education	Young workers (15–24)	Prime-age (25–54) and older workers (55–64)
Low	3.4	20.8
Medium	5.8	43.8
High	1.2	25.0

Source: EU LFS data, Eurostat – DG EMPL calculations.

Table 2: Fields of study of the employed with a medium level of education in the EU, 2007 (share in total of age group as %)

Fields of study	Young workers (15–24)	Prime-age (25–54) and older workers (55–64)	Total (15–64)
General programmes	20.7	11.2	12.3
Teacher training and education science	1.2	2	2
Humanities, languages and arts	3.4	3	3
Foreign languages	0.3	0.3	0.3
Social sciences, business and law	19.1	22.2	21.9
Science, mathematics and computing	1.7	1.4	1.4
Life science (including Biology and Environmental science)	0.3	0.2	0.2
Physical science (including Physics, Chemistry and Earth science)	0.3	0.4	0.4
Mathematics and statistics	0.5	0.2	0.2
Computer science	1.2	0.6	0.7
Computer use	0.7	0.3	0.4
Engineering, manufacturing and construction	30.1	39.1	38.1
Agriculture and veterinary	2.8	4.1	4
Health and welfare	6.3	6.2	6.2
Services	11.3	8.8	9.1
Total	100	100	100

Source: EU LFS data, Eurostat – DG EMPL calculations.

18 The Structure of Earnings Survey is only used to calculate wages per employee in 2002 at ISCO 2 digit level. The EU LFS will collect wage deciles from 2009.

19 The European Foundation for the Improvement of Living and Working Conditions is carrying out a project to evaluate the patterns of employment growth in Europe in the period 1995–2006 both in terms of job quantity and quality. `Jobs´ (as opposed to `occupations´) are defined in this project as the cross-tabulation of occupations (ISCO) by sectors of activity (NACE). Wright and Dwyer (2003) developed this methodology for studying job creation in the USA between the 1960s and the 1990s.

Table 3: Fields of study of the employed with a high level of education in the EU, 2007 (share in total of age group as %)

Fields of study	Young workers (15–24)	Prime-age (25–54) and older workers (55–64)	Total (15–64)
General programmes	0.2	0.1	0.1
Teacher training and education science	6.7	10.8	10.6
Humanities, languages and arts	10.5	7.9	8.1
Foreign languages	2	2.5	2.5
Social sciences, business and law	35.5	29.7	29.9
Science, mathematics and computing	1.1	0.6	0.6
Life science (including Biology and Environmental science)	1.9	2	2
Physical science (including Physics, Chemistry and Earth science)	2.1	2.9	2.8
Mathematics and statistics	0.9	1.2	1.2
Computer science	5.3	3	3.1
Computer use	0.4	0.2	0.2
Engineering, manufacturing and construction	13.4	19.2	18.9
Agriculture and veterinary	1.7	2.5	2.4
Health and welfare	11.9	14	13.9
Services	6.3	3.4	3.5
Total	100	100	100

Source: EU LFS data, Eurostat – DG EMPL calculations.

For the employed with a high level of education, the distribution of fields of study is also significantly different across age groups (Table 3). Comparing young workers (15-24) with prime-age (25-54) and older workers (55-64), the following fields of study have higher percentages in the former group: `humanities, languages and arts´, `social sciences, business and law´, `science, mathematics and computing´, `computer science´, `computer use´ and `services´; and lower percentages in the following fields of study: `teacher training and education science´, `engineering, manufacturing and construction´, `agriculture and veterinary´ and `health and welfare´.

3.3.2. Indicators calculated

The analysis carried out in this chapter uses 11 active[20] variables to describe the links between, on the one hand, combinations of levels of education with fields of study, and on the other, occupations. The list of active variables is derived from Chardon (2005), but with the addition of a number of important variables, including labour turnover and formal and non-formal training activities. Indicators are calculated for an aggregate representing the EU-27, provided by Eurostat, for 2003–06.

For each occupation, 11 indicators are calculated, which can be sub-divided into three groups:

i) seven indicators related to work-related experience in the labour market and job seniority in the firm;

ii) two indicators related to training activities;

iii) two indicators directly related to the field of study.

The seven indicators related to work-related experience in the labour market and job seniority in the firm are:

- **Job seniority** – mean tenure of employees with their current employer. It should be positively correlated with firm-specific human capital.
- **Employment stability** – job tenure over total labour market experience for workers with more than 10 years of experience. It should be negatively correlated with skills transferable across employers.
- **Job turnover rate** – ratio of total hires and separations over employment in the previous year. It is negatively correlated with job tenure.
- **Fraction of young workers (aged 15–24) in total hires** – it can help characterising the age profile of hires.
- **Fraction of young workers (aged 15–24) in total occupational employment** – it measures the relative importance of young versus experienced workers.
- **Fraction of young workers (aged 15–24) with a low level of education (ISCED levels 0–2)[21] in occupational employment.**
- **Segregation index based on seniority in the firm** – this compares workers with less than 10 years of seniority to those with more. It is calculated based on the 30 combinations of levels of education with fields of study. It varies between 0 and 2. A value of 0(2) indicates a low(high) disparity in education profiles by seniority. A low disparity in education profiles suggests the importance of initial education, implying that initial education and work-related experience are not substitutes.

The two indicators related to training activities are:

- **Training in the regular education system** – fraction of employees (including apprentices) participating in regular education and training activities in the regular education system.[22]

20 Active variables are those that contribute to the definition of factors; supplementary or illustrative variables are used only to better characterise factors, not entering in their calculation.

21 Individuals with a low level of education are not classified in terms of fields of study.

22 The LFS does not allow a distinction to be made between `specific´ and `general´ training activities in all countries.

- **Training outside the regular education system** – fraction of employees participating in training outside the regular education system – i.e. participation in non-formal learning activities.

The two indicators directly related to the fields of study are:

- **Specialisation index** – a relative Gini coefficient. It shows how the education profile in an occupation (in terms of the combinations of levels of education with fields of study) compares with that in the whole economy. It is calculated based on the 30 combinations. It varies between 0 and 1. A value close to 1 means that an occupation profile is specific to that occupation versus being representative of the average education profile in the economy (close to zero). Dumartin (1997) uses this indicator to measure the strength of the relationship between fields of study and occupations.

- **Concentration index** – a Gini coefficient. Measuring the degree of concentration of combinations of levels of education with fields of study within an occupation, it is calculated based on the 30 combinations. It varies between 0 and 1. A value close to 1(0) means that an occupation profile is very (not very) concentrated around a limited number of fields. Although this indicator is positively correlated with the specialisation index, it still conveys useful information on the relationship between fields of study and occupations (Chardon, 2005).

3.3.3. Importance of specialisation and concentration indices

This section illustrates the usefulness of calculating these indices. There is a 'close' link between education and an occupation when the specialisation index is high (Dumartin, 1997), meaning that workers' diplomas in a particular occupation are not common across the economy. Conversely, there is a 'loose' link when both the specialisation and concentration indices are 'low' (Chardon, 2005) – i.e. when the education profile is well represented in the economy and the degree of concentration is low within that occupation.

A numerical example is given, providing estimates for the notions of closeness and looseness (Tables 4a and 4b). The standardised specialisation and concentration indices are assumed to be normally distributed, and both low and high values represent each 1/10 of the distribution.

Close occupations largely refer to licensed professions.[23] Conversely, the relationship between the occupations of directors, chief executives and managers of small enterprises, and education is very loose, reflecting the heterogeneity in their respective fields of study.

4. Education, training and jobs: different paths across occupations

This section runs a FA on the 11 active variables described above, followed by a cluster analysis (CA) on the factor scores.[24] FA is used to identify a relatively small number of underlying dimensions directly related to important constructs, such as training, work-related experience and hiring practices. Using factor scores, the CA groups occupations based on their similarity. Various clusters of occupations can then be described according to the roles played by the underlying factors identified during the FA (Annex 1). Results of this tandem analysis (i.e. FA and CA) suggest that assessing the links between education and occupations requires taking into account hu-

Table 4a: Occupations 'close' to education, EU-27, 2006

	Weight in total employment (as %)
Health professionals (except nursing)	1.2
Legal professionals	0.6
Life science professionals	0.2
Nursing and midwifery associate professionals	1.3
Nursing and midwifery professionals	0.4
Other personal services workers	0.9
Physicists, chemists and related professionals	0.2
Pre-primary education teaching associate professionals	0.5
Primary and pre-primary education teaching professionals	1.3
Primary education teaching associate professionals	0.3
Religious professionals	0.1
Secondary education teaching professionals	2.0
Special education teaching professionals	0.1
Total	8.9

Source: EU LFS data, Eurostat – DG EMPL calculations.

Table 4b: 'Loose' occupations, EU-27, 2006

	Weights in total employment (as %)
Directors and chief executives	0.7
Managers of small enterprises	3.8
Other teaching associate professionals	0.4
Production and operations managers	2.1
Total	6.9

Source: EU LFS data, Eurostat – DG EMPL calculations.

23 It should be recalled that the limited number of diplomas considered, only 30, is due to bias results against finding `close´ links between fields of study and occupations.

24 Non-missing values are averaged over the 2003–06 period both to smooth the data and reduce the number of missing values.

man resource policies, namely hiring practices and CVT policies.

4.1. Applying factor analysis

Before applying FA, the variables are standardised and outliers excluded.[25] The analysis is carried out both at ISCO 2 and 3 digit levels of aggregation for the FA, but only at ISCO 3 level for the CA. Principal components analysis is the FA method used. Factor loadings (or the correlation coefficient between variables and factors) are presented in Tables 5 and 6.[26] Four factors are extracted – namely those with eigenvalues larger than 1.

4.1.1. Interpreting results at ISCO 3 digit level

The first four factors account for 86% of the total variability in the data. The four factors account for a significant proportion of the variance of each variable.

Table 5: FA at ISCO 3

Factor analysis	Factor 1	Factor 2	Factor 3	Factor 4	Communalities
Variability %	27.8	23.9	19.5	14.9	
Cumulative %	27.8	51.7	71.1	86.1	
Factor loadings after rotation (a,b)					
Employment stability	0.92				0.93
Job seniority	0.93				0.90
Job turnover rate	-0.86				0.83
Fraction of young workers in total hires		0.96			0.94
Fraction of young workers in total employment	-0.47	0.86			0.96
Fraction of young workers with low levels of education	-0.46	0.72	-0.41		0.91
Segregation index				-0.73	0.56
Specialisation index			*0.32*	0.73	0.73
Concentration index			-0.52	0.73	0.88
Training in the regular education system			0.92		0.93
Training outside the regular education system		-0.48	0.79		0.90

Source: EU LFS data, Eurostat – DG EMPL calculations.

Note: Correlations higher than 0.4 in absolute value; otherwise values in italic.
a) Extraction method: principal component analysis.
b) Rotation method: Varimax with Kaiser normalisation.

Factor 1

- **Correlations** – this factor is positively correlated with employment stability and job seniority and negatively correlated with job turnover, the fraction of young workers in total employment and the fraction of young workers with a low level of education.

- **Interpretation** – this factor discriminates between occupations where 'firm-specific human capital accumulated through learning-by-doing or on-the-job training' is important or not. When accumulation of firm-specific human capital is (not) important, occupations are characterised by high (low) job seniority and low (high) turnover and no significant amount of training carried out outside the firm.[27]

- **Examples**[28] – in some occupations well represented by this factor having a positive score (e.g. 'Physical and engineering science technicians', 'Primary education teaching associate professionals', 'Locomotive engine drivers and related workers'), young people with medium or high levels of education have easy access to occupations where the accumulation of firm-specific human capital is important. In this case, initial education is complementary to learning-by-doing or on-the-job training. Conversely, in other occupations also well represented by this factor but having a negative score (e.g. 'Domestic and related helpers, cleaners and launderers', 'Agricultural, fishery and related labourers', 'Mining and construction labourers'), young people with low levels of education have easy access to those occupations where accumulation of firm-specific human capital is not important.

25 Two occupations in a total of 26 and six in a total of 109 are considered outliers (and treated as passive cases), at ISCO 2 and 3 digit levels, respectively.
Occupations considered as outliers at ISCO 2 digit level are: i) Life science and health professionals; and ii) Models, salespersons and demonstrators.
Occupations considered as outliers at ISCO 3 digit level are: i) Health professionals (except nursing); ii) Housekeeping and restaurant service workers; iii) Fashion and other models; iv) Street vendors and related workers; v) Shoe cleaning and other services elementary occupations; and vi) Mining and construction labourers.

26 The correlation patterns between factors/principal components and variables are key to interpret results. The Varimax method of orthogonal rotation is used, which maximises the correlation of a number of variables with the factors, thereby facilitating their interpretation. Rotation does not affect the solution i.e. both the communalities and percentage of total variance accounted for remain unchanged.
Communality is the amount of variance in a variable that is accounted for by the factors. It can vary from 0 to 1, with 0 indicating that the common factors do not explain any of the variance and 1 indicating that all of the variance is explained by the factors.

27 An important conclusion of the REFLEX project – funded by the EU 6th Framework Programme – is that the professional expertise of young tertiary graduates plays a predominant role in determining their success in the labour market. The REFLEX acronym stands for Research into Employment and professional FLEXibility. For detailed information on the project, see http://www.reflexproject.org.

28 Factor scores and squared-cosines are reported in Annex 2. The latter indicate how well an occupation can be accounted for by each factor.

Factor 2

- **Correlations** – this factor is positively correlated with the fraction of young workers in total hires, the fraction of young workers in total employment, the fraction of young workers with a low level of education and the job turnover rate for young workers.[29] It is negatively correlated with training carried out outside the regular education system.

- **Interpretation** – it discriminates between occupations with 'low(high) qualifications and bad(good) career prospects', depending on the sign of the factor score.

- **Examples** – in some occupations well represented by this factor and with a positive score (e.g. 'Cashiers, tellers and related clerks', 'Other personal services workers', 'Food processing and related trades workers'), young workers account for a significant proportion of total hires and employment.[30] In addition, they are subject to high job turnover and have a low level of education, which is not compensated by training. Conversely, in other occupations also well represented by this factor but having a negative score (e.g. 'Legislators and senior government officials', 'Writers and creative or performing artists', 'Other specialist managers'), older workers represent a higher proportion of total employment and have access to training outside the regular education system (i.e. non-formal training).

Factor 3

- **Correlations** – this factor is positively correlated with training and the specialisation index and negatively correlated with the fraction of young workers with low levels of education and the concentration index.

- **Interpretation** – it discriminates between occupations 'open to various fields of study that are not well represented in the whole economy and providing training', and occupations 'open to a limited number of fields of study that are well represented in the whole economy, but do not provide training'. It is interesting to note that, along this third factor, the two forms of training are complementary, not substitutes.

- **Examples** – in some occupations well represented by this factor having a positive score (e.g. 'Other teaching professionals', 'College, university and higher education teaching professionals', 'Artistic, entertainment and sports associate professionals'), young workers with medium and high levels of education can access those occupations, which provide training both inside and outside the regular system. In this case, training is complementary to initial education. Conversely, in other occupations also well represented by this factor but having a negative score (e.g. 'Textile, garment and related trades workers', 'Rubber- and plastic-products machine operators', 'Wood-processing- and papermaking-plant operators'), young workers with low levels of education can gain access to occupations that do not provide any training.

Factor 4

- **Correlations** – this factor is positively correlated with the specialisation and concentration indices and negatively correlated with the segregation index.

- **Interpretation** – it discriminates between 'licensed versus open' professions. In the former, access to employment is gained through few fields of study, which are not well represented in the whole economy, while in the latter access is open to workers holding qualifications from different fields of study that are well represented in the whole economy. The segregation index is low (high) in licensed (open) professions, meaning that education profiles by fields of study are (not) similar for young and experienced workers.

- **Examples** – in some occupations well represented by this factor with a positive score (e.g. 'Health professionals - except nursing', 'Legal professionals', 'Metal moulders, welders, sheet-metal workers, structural-metal preparers and related trades workers'), there is a close link between fields of study and occupations. In this case, training and work-related experience are not a substitute for (formal) education, because young and older workers have similar profiles by fields of study. Conversely, in other occupations also well represented by this factor but having a negative score (e.g. 'Finance and sales associate professionals', 'Business services agents and trade brokers', 'Optical and electronic equipment operators'), there is a loose link between education and fields of study. In this case, training and work-related experience are a substitute for education, because young and older workers have different profiles.

29 The latter is a passive variable not shown in Table 5.

30 This means that gaining access to employment in these occupations can be difficult for older workers.

4.1.2. Interpreting results at ISCO 2 digit level

The profiles of factor loadings are very similar at ISCO 2 and 3 digit levels, suggesting that the analysis is robust to the level of aggregation. Using as a passive variable wage data from the Structure of Earnings Survey for 2002, factors 1 and 2 can now be associated with high and low paying occupations, respectively. In the job quality chapter included in this report, wages are considered to be an important variable in the determination of job quality.

Overview

Results of the FA are summarised in the synoptic Table 7. There is no such thing as a simple one-to-one relation between education and occupations. Human resources policies at the firm level play an important role.[31] The analysis suggests that there are different ways for workers to accumulate skills over the life cycle (e.g. formal education, vocational training and work-related experience) that combine with different forms of gaining access to employment. An implicit `coordination´ mechanism seems to be at work, reflecting, among others, employers/workers choices given the content of occupations and institutional factors, such as employment protection legislation, the degree of centralisation/coordination of social bargaining and the characteristics of education/formation systems.

In a stylised form, the four factors (having positive or negative scores) can be interpreted as defining eight occupational `pathways´ of education (Table 7), describing different modes of access to occupations combined with different regimes of human capital accumulation throughout the life cycle.

Table 6: FA at ISCO 2

Factor analysis	Factor 1	Factor 2	Factor 3	Factor 4	Communalities
Variability %	31	21.7	18.4	16.6	
Cumulative %	31	52.7	71.1	87.7	
Factor loadings after rotation (a,b)					
Employment stability	0.87				0.94
Job seniority	0.94				0.89
Job turnover rate	-0.92				0.92
Fraction of young workers in total hires		0.97			0.96
Fraction of young workers in total employment	-0.52	0.84			0.97
Fraction of young workers with low levels of education	-0.63	0.62	*-0.33*		0.90
Segregation index				-0.77	0.67
Specialisation index			0.56	0.63	0.75
Concentration index			*-0.32*	0.85	0.93
Training in the regular education system			0.9		0.88
Training outside the regular education system		*-0.32*	0.73		0.83
Wages per employee in PPS (c)	0.47	-0.66			

Source: EU LFS data, Eurostat – DG EMPL calculations.

Note: Correlations higher than 0.4 in absolute value; otherwise values in italic.
a) Extraction method: principal component analysis.
b) Rotation method: Varimax with Kaiser normalisation.
c) Passive variable (purchasing power standards, PPS)

4.2. Cluster analysis

CA is used to group occupations according to their similarity. CA is a class of multivariate techniques to identify objects that are similar to each other but different from objects placed in other groups (Hair et al., 1998).[32]

The 11 indicators used in the FA could have been used to group occupations. Instead, occupations are grouped using the four factors extracted during the FA, because in a tandem analysis (i.e. a FA followed by a CA, Nardo et al., 2005) it is common to use the factors extracted instead of the original variables, particularly when the former account for a high proportion of the total variance in the data, discarding the effect of the variance not explained by the common factors on the CA, and thereby facilitating the interpretation of results.

The CA identifies 14 clusters of occupations (Annex 1). Using the FA interpretation, the CA allows for a more detailed characterisation of the occupational pathways of education. In fact, many occupations in order to be satisfactorily characterised require considering combinations of two factors (instead of just one factor as in Table 7).[33]

5. Conclusions and some policy implications

Using LFS data, this chapter analysis the relationships between education, training and occupations at the EU level. The methodology employed is close to that in Chardon (2005) which was originally applied to French data. He finds `close´ links between fields of education/study and occupations for approximately one-third of total employment. `Closeness´ means that the fields of education predominant in an occupation are relatively uncommon in the whole economy, therefore they can be viewed as being `specific´ to a particular occupation.

31 Work organisation practices are also likely to be important, but the LFS is not designed to report on them.

32 A hierarchical method of the agglomerative type, using Ward's method of aggregation, is used.

33 There is a potential maximum of 24 occupational pathways of education: 6 different combinations of 4 factors 2 by 2, multiplied by 4 combinations of their scores' signs.

Table 7: The eight occupational pathways of education identified during FA

Factor	Sign of scores	Access to occupations	Forms of human capital accumulation	Relation between initial education and CVT	Human resources policies	Outcomes	Examples
1	Positive	Young people with medium or high levels of education	Firm-specific through learning-by-doing or on-the-job training	Complementarity	Firm-specific human capital (accumulated through learning-by-doing or on-the-job training)	Long tenure and high wages	'Physical and engineering science technicians'
1	Negative	Young people with low levels of education	None			Short tenure and low wages	'Domestic and related helpers, cleaners and launderers'
2	Positive	Young people with low levels of education	None		General human capital (complemented by training outside the regular education	High job turnover, low wages and bad career prospects	`Cashiers, tellers and related clerks´
2	Negative	Older workers	Non-formal education	Complementarity		Low job turnover, high wages, and good career prospects	`Writers and creative or performing artists´
3	Positive	Young workers with medium or high levels of education, holding diplomas from various fields of study (but not well represented in the whole economy)	Non-formal education	Complementarity	General human capital (complemented by training in the regular and outside the regular education system)		`College, university and higher education teaching professionals´
3	Negative	Young workers with low levels of education, holding diplomas from few fields of study (that are well represented in the whole economy)	None				'Textile, garment and related trades workers´
4	Positive	`Licensed´ professions, having `close´ links between education and occupations	None	No substitute	Licensed based		`Health professionals, except nursing´
4	Negative	`Open´ professions, having `loose´ links between education and occupations	None	Substitute			`Finance and sales associate professionals´

Source: EU LFS data, Eurostat – DG EMPL calculations.

Chardon's (2005) findings highlight the existence of different `modes´ or `pathways´ to gain access to employment i.e. across occupations, employers differ in the importance they give to fields of education versus work-experience. This chapter applies his methodology to a EU dataset, but with the addition of a number of important variables, including on labour turnover and training activities.[34]

Therefore, the methodology employed in this chapter allows for a richer characterisation of the different relationships between 'modes' of access to employment and 'regimes' of human capital accumulation throughout the life cycle. A simplified typology of occupations is proposed. Results suggest that assessing the links between education and occupations requires taking into account human resources policies, namely hiring practices and CVT policies.

However, the work carried out in this chapter should be seen as preliminary, requiring further analysis, mainly because EU LFS provides only a limited breakdown by fields of study, particularly when compared with the original analysis using French data. All the rest being equal, a reduced number of fields of study bias results against finding close links between fields of study and occupations, thereby reducing the potential benefits of any public policies aiming at better anticipating current and future demand for occupations and the corresponding skill requirements. In other words, at this stage of the analysis the `resolution´ provided by EU LFS data does not generate a sharp and complete picture of the complex relationship between education and employment.

Moreover, results from multivariate methods should be taken with caution, because such exercises are poor in institutional detail and do not allow to carry out formal testing on the robustness of results. These methods only allow for a schematic characterisation of the main underlying factors present in the data.

34 Both taking place inside and outside the regular education/formation system.

The results obtained in this chapter raise a number of issues for policy-making in the EU. Workers are increasingly more likely to undergo numerous transitions (e.g. from job-to-job, or between non-employment and employment), together with performing different tasks during their working lives. Consequently, workers need to be supported during their frequent transitions by a series of measures, such as income support, training, counselling and career orientation. Therefore, and in order to facilitate transitions, a key concern of flexicurity policies is to promote quality job matches. This chapter recalls that job matching is particularly affected by market failure due to insufficient information or incorrect expectations. In fact, workers often lack information about the best job opportunities available.

At the heart of the *New skills for new jobs* initiative is the objective to improve both the scope and accuracy of the available information on present and future occupational demand and the corresponding skill requirements, in order to enhance the quality of job matching. One possible way to gather and disseminate such relevant information would be the development of an harmonised EU career exploration tool inspired in best international practices, such as the USA occupational information network (O*NET) that describes in great detail the current skill, knowledge and ability requirements, covering a high number of occupations. In order to maximise its effectiveness, such tool should identify not only those skills that can be acquired through formal education or CVT, but also include other work-related ones, such as technical, generic and soft. Such career exploration tool could be used by many individuals and organisations for various purposes (e.g. job counselling, job seeking and occupational projections).

Despite the usual caveats associated with occupational projections, such exercises constitute an indispensable tool to better inform policy-makers and eventually secure an adequate matching between demand and supply, particularly in those occupations having `close´ links to education.

In addition to occupational demand and skill requirements projections, more qualitative exercises should also be carried out, such as foresight analyses, employer surveys, case studies or job competence modelling exercises. More qualitative exercises are essential to identifying new trends in competence requirements and changes in the content of occupations. An adequate combination of both quantitative and qualitative methods, covering different time spans and updated at regular intervals, would be ideally suited to better inform policy-makers taking the necessary measures to improve the quality of job matching in the EU and adapt education and training systems to new needs.

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Annex 1: Details of cluster analysis

The CA identifies 14 clusters of occupations (Table 1a). The interpretation given to the four factors in the FA plays a key role in the characterisation of clusters. The 'quality' of a cluster's representation on a particular factor is measured using the squared-cosine. 'Test-values' (Lebart et al., 2002) are calculated for all variables to identify those that play an important role in characterising a cluster – i.e. variables that in a given cluster differ 'significantly' from their overall average.

Clusters with a good representation on one (or more) factor(s) and accounting for a significant proportion of total employment in the EU-27 in 2006 are briefly characterised (Table 2a).

Clusters associated with factors 1 and 2

Clusters 6, 8 and 14 are well represented by factors 1 and 2 (Table 3a and Chart 1a), accounting for approximately 3%, 16.5% and 2% of total employment. Clusters 6, 8 and 14 can be illustrated by the occupations: 'Crop and animal producers', 'Shop, stall and market salespersons and demonstrators' and 'Manufacturing labourers', respectively.

The positive score of cluster 6 on factor 1 reflects the higher values (than the average for the whole economy) for the variables: employment stability and job seniority, and the lower values for the job turnover rate and the fraction of young workers in total employment.

Cluster 8 has a negative score on factor 1 and a positive score on factor 2. The negative score on factor 1 reflects the lower value for job seniority and the higher values for job turnover rate, the fraction of young workers in total employment and the fraction of young workers with a low level of education. The positive score on factor 2 reflects the higher values for the fraction of young workers in total hires, the fraction of young workers in total employment and the fraction of young workers with a low level of education.

The negative score of cluster 14 on factor 1 reflects the lower values for the following variables: employment stability and job seniority and higher values for the job turnover rate, the fraction of young workers in total employment and the fraction of young workers with a low level of education.

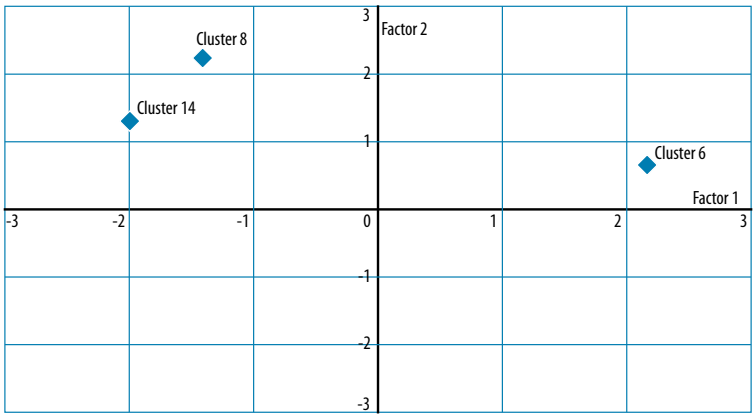
Given the similar results obtained during the FA, independently of the level of aggregation for occupations, it is plausible to speculate that cluster 6 is associated with higher wages than the average for the whole economy, while clusters 8 and 14 are associated with lower wages.

Chart 1a shows that clusters 6, 8 and 14 differentiate from each other mainly along factor 1. Cluster 6 includes occupations where the accumulation of firm-specific human capital is important, while in clusters 8 and 14 there is a limited accumulation of firm-specific human capital. Clusters 6 and 8 also differentiate along factor 2, with the former having jobs with higher qualifications and better career prospects than the latter.

Clusters associated with factors 1 and 3

Clusters 4 and 11 are well represented by combinations of factors 1 and 3 (Table 4a and Chart 2a), accounting for approximately 5½% and 18½% of total employment. Clusters 4 and 11 can be illustrated by the occupations: 'Personal care and related workers' and 'Building frame and related trades workers', respectively.

Chart 1a: Clusters 6, 8 and 14 represented on factors 1 and 2



Source: EU LFS data, Eurostat – DG EMPL calculations.

Table 2a: Main factor(s) of representation of 12 clusters

Factor(s)	Cluster(s)	Weight in total employment in 2006 (as %)
1, *2*	6,14	4.7
1,2	8	16.5
1,3	4, 11	24.2
1,4	5	17.6
2,3	3,10	7.4
2, *4*	1	11.9
2,4	12	6.7
3,**4**	7	5.3
3,4	2	5.7

Sources: EU LFS data, Eurostat – DG EMPL calculations.

Note: In bold factors along which the squared-cosine(s) sum(s) a minimum of about 2/3. In italic factor with the second-largest squared-cosine, when the factor with the largest one already represents about 2/3. Clusters 9 and 13 will not be characterised because they account for a small proportion of total employment.

Table 1a: Average of standardised values per cluster (weighted by employment levels, 2006), test-values and main factors of representation and their signs

	Weight in total employment in %	Employment stability	Job seniority	Job turnover rate	Fraction of young workers in total hires	Fraction of young workers in total employ-ment	Fraction of young workers with low level of education
Cluster 1	11.9	-0.1	0.4	**-0.7**	**-1.6**	**-1.1**	-0.8
Cluster 2	5.7	**1.2**	0.7	-0.5	**-0.8**	**-0.9**	**-0.9**
Cluster 3	4.6	0.3	-0.5	-0.1	**-1.1**	**-0.9**	**-0.9**
Cluster 4	5.5	-0.9	**-1.1**	**1.1**	0.5	0.6	-0.1
Cluster 5	17.6	0.4	0.2	-0.4	0.3	-0.2	**-0.6**
Cluster 6	2.9	**1.7**	**2.3**	**-1.2**	0.4	**-0.5**	-0.3
Cluster 7	5.3	-0.2	-0.7	0.1	0.0	-0.1	-0.5
Cluster 8	16.5	-1.1	**-1.4**	**1.4**	**1.8**	**2.1**	**1.2**
Cluster 9	0.0	-0.9	-0.6	**1.9**	**3.2**	**2.5**	**3.1**
Cluster 10	2.8	0.1	**0.5**	**-0.3**	**0.5**	0.2	0.3
Cluster 11	18.7	**-1.4**	**-0.9**	**0.8**	**-0.6**	0.0	0.3
Cluster 12	6.7	-0.2	-0.1	-0.1	**0.8**	**0.8**	**0.8**
Cluster 13	0.0	**-2.8**	**-2.8**	**4.8**	1.2	**3.4**	**4.2**
Cluster 14	1.8	**-1.6**	**-1.4**	**1.8**	0.8	**1.5**	**2.0**

	Segregation index	Specialisation index	Concentration index	Training in the regular educa-tion system	Training outside the regular edu-cation system	Main factor(s) of representation in the factor analysis] a)	Sign of scores along the main factor(s)
Cluster 1	0.26	**0.34 (-)**	**0.71 (-)**	**-0.8**	0.2	2	-
Cluster 2	**0.16 (-)**	**0.83 (+)**	**0.85 (+)**	0.2	**1.6**	3,4	+,+
Cluster 3	0.22	0.67	0.79	0.2	**0.9**	2,3	-,+
Cluster 4	0.30	0.59	**0.74 (-)**	**1.4**	**0.9**	1,3	-,+
Cluster 5	0.29	0.50	**0.78 (-)**	0.1	0.1	1,4	+,-
Cluster 6	0.35	0.62	0.81	-0.5	-0.2	1	+
Cluster 7	0.36	**0.39 (-)**	**0.71 (-)**	0.4	0.6	4	-
Cluster 8	0.30	0.51	0.78	**1.6**	-0.5	1,2	-,+
Cluster 9	**0.57 (+)**	0.43	0.73	**4.4**	-0.8	2	+
Cluster 10	0.29	0.57	**0.85 (+)**	**-0.7**	**-0.9**	2,3	+,-
Cluster 11	0.25	0.52	**0.84 (+)**	**-0.7**	**-1.0**	1,3	-,-
Cluster 12	**0.15 (-)**	0.59	**0.90 (+)**	0.1	**-0.7**	2,4	+,+
Cluster 13	**1.05 (+)**	0.56	0.87	**2.9**	-0.1	1,2	-,+
Cluster 14	0.34	**0.42 (-)**	0.80	0.0	-0.8	1	-

Source: EU LFS data, Eurostat – DG EMPL calculations.

Note: In bold, averages of standardised values (except for the three indices) corresponding to the test values greater than 2 in absolute value. Test values are carried out on unweighted averages. a) Factors along which the squared-cosine(s) sum a minimum of about 2/3.

Table 3a: Clusters well represented by factors 1 and 2

	Employment weight in the cluster %	Employment stability	Job seniority	Job turnover rate	Fraction of young workers in total hires	Fraction of young workers in total employment	Fraction of young workers with low level of education	Segregation index	Specialisation index	Concentration index	Training in the regular education system	Training outside the regular education system	Main factor(s) of representation in factor analysis a)	Sign of the scores along the factor(s)
Cluster 6														
Crop and animal producers	77.0	1.5	2.4	-1.3	1.1	-0.1	0.2	0.32	0.67	0.84	-0.6	-1.0	1	+
Customs, tax and related government associate professionals	13.4	1.8	2.3	-1.2	0.3	-0.8	-0.7	0.38	0.51	0.78	-0.2	0.4	1	+
Locomotive engine drivers and related workers	0.9	2.2	3.1	-1.5	-0.1	-1.0	-0.7	0.32	0.60	0.88	-1.2	-0.1	1	+
Police inspectors and detectives	0.5	2.4	1.7	-1.4	1.0	-0.8	-1.0	0.43	0.50	0.75	0.2	0.4	1	+
Primary education teaching associate professionals	1.2	1.9	2.2	-0.7	-0.8	-1.1	-1.0	0.51	0.84	0.81	-0.3	0.7	1	+
Public service administrative professionals	7.0	1.9	2.0	-1.0	-1.3	-1.2	-1.0	0.30	0.57	0.75	-0.4	1.0	1	+
Weighted average	100	**1.7**	**2.3**	**-1.2**	0.4	**-0.5**	-0.3	0.35	0.62	0.81	-0.5	-0.2	1	+
Cluster 8														
Cashiers, tellers and related clerks	3.7	0.5	0.0	0.5	2.2	1.2	0.4	0.37	0.50	0.77	1.2	-0.1	2	+
Housekeeping and restaurant services workers	22.9	-1.6	-1.8	2.2	1.6	2.5	1.6	0.34	0.56	0.78	2.0	-0.7	1,2	-,+
Other personal services workers	2.4	-0.2	-0.8	0.5	1.9	2.4	1.6	0.21	0.77	0.86	1.1	0.1	2	+
Shop, stall and market salespersons and demonstrators	71.0	-1.3	-1.6	1.2	1.8	2.1	1.0	0.28	0.44	0.76	1.5	-0.5	1,2	-,+
Weighted average	100	-1.1	**-1.4**	**1.4**	**1.8**	**2.1**	**1.2**	0.30	0.51	0.78	**1.6**	-0.5	1,2	-,+
Cluster 14														
Manufacturing labourers	33.2	-1.4	-1.3	1.4	0.6	1.4	1.7	0.32	0.41	0.81	-0.6	-1.1	1	-
Messengers, porters, doorkeepers and related workers	25.5	-1.4	-1.0	0.6	0.8	0.6	0.6	0.27	0.39	0.76	1.1	-0.5	1,2	-,+
Mining and construction labourers	17.8	-2.5	-2.1	3.6	0.5	2.3	3.5	0.45	0.52	0.85	-0.9	-0.9	1	-
Transport labourers and freight handlers	23.4	-1.3	-1.3	1.9	1.5	2.0	2.3	0.35	0.38	0.80	0.5	-0.6	1,2	-,+
Weighted average	100	**-1.6**	**-1.4**	**1.8**	0.8	**1.5**	**2.0**	0.34	**0.42 (-)**	0.80	0.0	-0.8	1	-

Sources: EU LFS data, Eurostat – DG EMPL calculations.

Note: In bold, averages of standardised values (except for the three indices) corresponding to the test values greater than 2 in absolute value.
Test values are carried out on unweighted averages.
a) Factors along which the squared-cosine(s) sums a minimum of about 2/3.

Table 4a – Clusters well represented by factors 1 and 3

	Employment weight in the cluster %	Employment stability	Job seniority	Job turnover rate	Fraction of young workers in total hires	Fraction of young workers in total employment	Fraction of young workers with low level of education	Segregation index	Specialisation index	Concentration index	Training in the regular education system	Training outside the regular education system	Main factor(s) of representation in factor analysis a)	Sign of the scores along the factor(s)
Cluster 4														
Artistic, entertainment and sports associate professionals	3.4	-0.5	-1.4	1.0	0.7	1.0	-0.0	0.29	0.55	0.69	1.8	0.4	3	+
Client information clerks	7.4	-1.0	-1.5	1.4	1.2	1.7	0.0	0.40	0.49	0.69	1.5	0.6	1,3	-,+
Other teaching professionals	1.5	-0.1	-0.9	0.6	0.0	-0.1	-0.7	0.34	0.66	0.66	2.9	1.6	3	+
Personal care and related workers	84.4	-1.0	-0.9	1.0	0.3	0.4	-0.0	0.27	0.63	0.78	1.0	0.9	1,3	-,+
Social work associate professionals	3.3	-1.1	-1.3	1.0	-0.0	0.0	-0.2	0.30	0.55	0.74	1.5	1.6	1,3	-,+
Weighted average	100	-0.9	**-1.1**	**1.0**	0.4	0.6	-0.0	0.30	0.59	**0.74 (-)**	**1.4**	**0.9**	1,3	-,+
Cluster 11														
Agricultural and other mobile plant operators	2.6	-0.6	0.0	0.1	-0.4	-0.1	0.3	0.21	0.60	0.89	-1.1	-0.9	3,4	-,+
Agricultural, fishery and related labourers	1.8	-2.1	-1.2	3.1	-0.6	0.9	2.0	0.42	0.53	0.78	-0.7	-1.2	1	-
Building caretakers, window and related cleaners	1.0	-1.5	-0.6	0.0	-0.9	-0.8	-0.4	0.23	0.43	0.82	-0.7	-0.8	1,2	-,-
Building frame and related trades workers	21.6	-1.5	-0.9	1.1	-0.4	0.4	0.8	0.17	0.59	0.90	-0.7	-1.0	1,3	-,-
Domestic and related helpers, cleaners and launderers	36.6	-2.1	-1.4	1.4	-0.3	-0.1	0.3	0.34	0.46	0.76	-0.3	-0.8	1	-
Forestry and related workers	0.0	-1.3	-0.3	1.0	-0.9	-0.1	0.2	0.61	0.69	0.86	-0.8	-1.0	1,3	-,-
Garbage collectors and related labourers	0.2	-2.0	-1.3	1.8	-0.9	-0.1	0.4	0.31	0.50	0.86	-1.1	-1.0	1	-
Motor vehicle drivers	31.4	-1.2	-0.7	0.2	-1.1	-0.7	-0.4	0.20	0.52	0.85	-1.1	-1.0	2,3	-,-
Painters, building structure cleaners and related trades workers	2.1	-1.0	-0.6	0.5	0.1	0.5	0.9	0.24	0.54	0.87	-0.1	-1.0	1,3	-,-
Ships deck crews and related workers	0.0	-0.6	-0.2	0.7	-0.5	0.2	0.1	0.39	0.60	0.86	-0.3	-0.7	1,3	-,-
Textile- fur- and leather-products machine operators	0.8	-0.6	-0.2	-0.2	-0.4	0.1	0.5	0.24	0.47	0.85	-1.2	-1.2	3	-
Textile, garment and related trades workers	1.8	-0.8	-0.4	-0.5	-0.5	0.1	0.3	0.15	0.50	0.85	-1.0	-1.3	3	-
Weighted average	100	**-1.4**	**-0.9**	**0.8**	**-0.6**	0.0	0.3	0.25	0.52	**0.84 (+)**	**-0.7**	**-1.0**	1,3	-,-

Sources: EU LFS data, Eurostat – DG EMPL calculations.

Note: In bold, averages of standardised values (except for the three indices) corresponding to the test values greater than 2 in absolute value.
Test values are carried out on unweighted averages.
a) Factors along which the squared-cosine(s) sums a minimum of about 2/3.

Cluster 4 has a negative score on factor 1 and a positive score on factor 3. The negative score on factor 1 reflects the lower value for job seniority and the higher value for the job turnover rate. The positive score on factor 3 reflects the higher values for the education variables and the lower value for the concentration index.

Cluster 11 has negative scores on factors 1 and 3. The negative score on factor 1 reflects the lower values for employment stability, job seniority and the higher value for the job turnover rate. The negative score on factor 3 reflects the higher value for the concentration index and the lower values for the education variables.

Chart 2a shows that clusters 4 and 11 differentiate from each other along factor 3, meaning that occupations in cluster 4 are open to various fields of study, providing training, while occupations in cluster 11 require a limited number of fields of study and do not provide training.

Cluster associated with factors 1 and 4

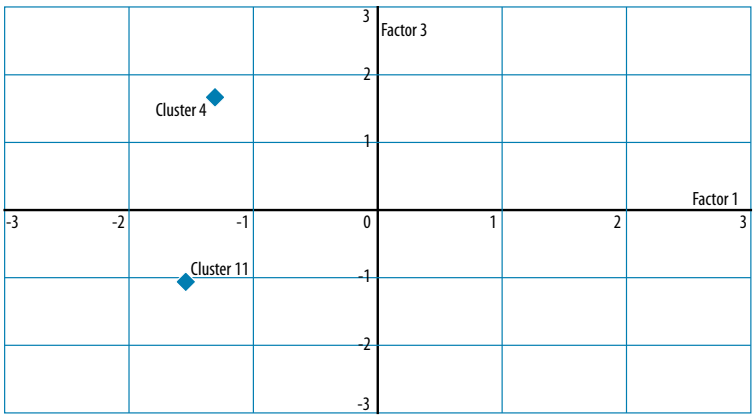
Cluster 5 is well represented by combinations of factors 1 and 4 (Table 5a and Chart 3a), accounting for approximately 17½% of total employment. Cluster 5 can be illustrated by the occupation: 'Administrative associate professionals'.

Cluster 5 has a positive score on factor 1 and a negative score on factor 4. The positive score on factor 1 reflects the lower value for the fraction of young workers with a low level of education. The negative score on factor 4 reflects the lower value for the concentration index.

Clusters associated with factors 2 and 3

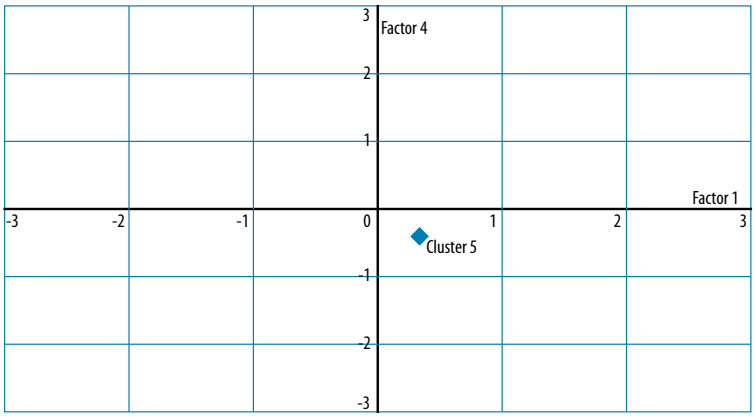
Clusters 3 and 10 are well represented by combinations of factors 2 and 3 (Table 6a and Chart 4a), accounting for approximately 4½% and 3% of total employment. Clusters 3 and 10 can be illustrated by the occupations: 'Architects, engineers and related professionals' and 'Assemblers', respectively.

Chart 2a: Clusters 4 and 11 represented on factors 1 and 3



Source: EU LFS data, Eurostat – DG EMPL calculations.

Chart 3a: Cluster 5 represented on factors 1 and 4



Source: EU LFS data, Eurostat – DG EMPL calculations.

Table 5a: Cluster well represented by combinations of factors 1 and 4

	Employment weight in the cluster %	Employment stability	Job seniority	Job turnover rate	Fraction of young workers in total hires	Fraction of young workers in total employment	Fraction of young workers with low level of education	Segregation index	Specialisation index	Concentration index	Training in the regular education system	Training outside the regular education system	Main factor(s) of representation in factor analysis a)	Sign of the scores along the factor(s)
Cluster 5														
Administrative associate professionals	25.1	0.5	0.4	-0.6	-0.3	-0.6	-0.8	0.30	0.51	0.79	0.0	0.1	1,2	+,-
Archivists, librarians and related information professionals	0.1	1.1	0.8	-0.7	-1.1	-1.1	-1.0	0.30	0.66	0.78	0.1	1.2	1,2	+,-
Library, mail and related clerks	1.4	0.7	0.8	-0.1	1.2	-0.1	-0.4	0.40	0.42	0.72	0.4	-0.2	2,4	+,-
Life science technicians and related associate professionals	0.3	1.2	0.9	-0.5	0.1	-0.5	-0.8	0.43	0.69	0.71	-0.1	0.4	1,4	+,-
Material-recording and transport clerks	6.9	0.0	-0.1	-0.3	0.7	0.3	0.0	0.23	0.38	0.79	0.0	-0.5	2,4	+,-
Numerical clerks	5.5	0.5	0.3	-0.6	0.5	0.0	-0.6	0.28	0.59	0.80	0.7	0.4	1,3	+,+
Optical and electronic equipment operators	0.2	0.6	0.1	-0.2	0.4	-0.2	-0.6	0.34	0.48	0.69	0.1	0.0	4	-
Other office clerks	27.2	0.0	-0.2	0.0	0.7	0.3	-0.4	0.30	0.47	0.76	0.5	0.0	2,3	+,+
Physical and engineering science technicians	18.8	0.8	0.6	-0.6	0.2	-0.4	-0.7	0.29	0.52	0.82	-0.3	0.2	1	+
Precision workers in metal and related materials	0.1	0.2	0.3	-0.6	0.4	0.2	0.2	0.21	0.52	0.80	0.4	-0.5	2	+
Protective services workers	5.0	0.7	0.4	-0.6	0.3	-0.3	-0.6	0.23	0.45	0.76	-0.1	0.3	1,4	+,-
Secretaries and keyboard-operating clerks	9.3	0.0	-0.2	-0.1	0.1	-0.2	-0.7	0.29	0.54	0.75	-0.2	0.0	2,4	-,-
Ship and aircraft controllers and technicians	0.1	0.6	0.5	-0.7	-0.9	-0.8	-0.9	0.29	0.63	0.77	-0.6	0.7	2	-
Weighted average	100	0.4	0.2	-0.4	0.3	-0.2	**-0.6**	**0.29**	**0.50**	**0.78 (-)**	0.1	0.1	1,4	+,-

Sources: EU LFS data, Eurostat – DG EMPL calculations.

Note: In bold, averages of standardised values (except for the three indices) corresponding to the test values greater than 2 in absolute value.
Test values are carried out on unweighted averages.
a) Factors along which the squared-cosine(s) sums a minimum of about 2/3.

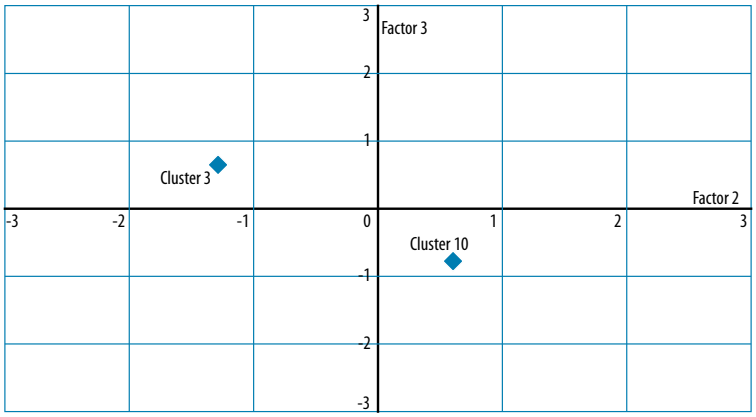
Table 6a: Clusters well represented by combinations of factors 2 and 3

	Employment weight in the cluster %	Employment stability	Job seniority	Job turnover rate	Fraction of young workers in total hires	Fraction of young workers in total employment	Fraction of young workers with low level of education	Segregation index	Specialisation index	Concentration index	Training in the regular education system	Training outside the regular education system	Main factor(s) of representation in factor analysis a)	Sign of the scores along the factor(s)
Cluster 3														
Architects, engineers and related professionals	49.8	0.5	-0.1	-0.3	-1.5	-1.2	-1.0	0.16	0.74	0.85	-0.5	0.5	2,4	-,+
Business professionals	23.0	-0.2	-0.9	-0.1	-1.2	-0.9	-1.0	0.23	0.57	0.79	0.3	1.3	2	-
College, university and higher education teaching professionals	2.6	0.9	0.4	-0.4	-1.1	-1.2	-1.0	0.24	0.72	0.71	1.9	1.3	3	+
Computing professionals	11.8	-0.1	-1.2	0.1	-0.6	-0.6	-0.8	0.33	0.69	0.71	0.5	0.9	2,3	-,+
Social science and related professionals	7.6	0.3	-0.7	-0.2	-1.2	-1.0	-0.9	0.14	0.65	0.82	0.4	1.4	2,4	-,+
Special education teaching associate professionals	0.3	0.6	-0.2	0.8	-0.2	-0.4	-0.8	0.36	0.61	0.71	0.2	1.4	3	+
Writers and creative or performing artists	4.9	0.2	-0.4	0.1	-1.0	-0.8	-0.8	0.23	0.65	0.76	0.2	0.0	2	-
Weighted average	100	0.26	-0.5	-0.1	**-1.1**	**-0.9**	**-0.9**	0.22	0.67	0.79	0.2	**0.9**	2,3	-,+
Cluster 10														
Animal producers and related workers	4.8	0.5	1.4	-0.7	0.5	-0.2	0.3	0.37	0.68	0.83	-0.8	-1.0	1,3	+,-
Assemblers	14.6	-0.3	-0.4	0.5	0.7	0.8	0.5	0.30	0.48	0.85	-0.8	-0.7	2,3	+,-
Blacksmiths, tool-makers and related trades workers	18.7	0.1	0.8	-0.7	0.4	0.0	0.1	0.15	0.64	0.92	-0.6	-1.0	3,4	-,+
Chemical-processing-plant operators	1.2	0.8	0.9	-0.5	0.5	-0.3	-0.2	0.39	0.52	0.85	-0.6	-0.4	1,2	+,+
Chemical-products machine operators	0.4	0.3	0.3	-0.6	0.7	0.2	0.2	0.44	0.46	0.81	-0.6	-0.5	2,4	+,-
Craft printing and related trades workers	1.4	0.2	0.4	-0.8	0.4	0.0	0.0	0.32	0.61	0.81	-0.7	-0.9	1,3	+,-
Food and related products machine operators	2.7	-0.4	-0.4	0.4	0.5	0.4	0.2	0.31	0.45	0.83	-0.7	-0.6	1,3	-,-
Glass, ceramics and related plant operators	0.1	0.3	0.5	0.0	0.5	0.3	0.5	0.57	0.53	0.88	-1.2	-0.9	3,4	-,-
Industrial robot operators	0.2	0.0	-0.4	-0.2	0.8	0.8	0.4	0.43	0.49	0.86	-0.9	-1.1	2,3	+,-
Market gardeners and crop growers	42.9	0.4	1.4	-0.2	0.5	-0.1	0.4	0.26	0.65	0.80	-0.3	-1.1	1,2	+,+
Metal- and mineral-products machine operators	4.2	-0.1	0.0	-0.2	0.8	0.7	0.8	0.22	0.54	0.88	-0.8	-0.9	2,3	+,-
Metal-processing plant operators	1.4	0.6	1.0	-0.9	0.7	0.1	0.3	0.36	0.57	0.89	-0.8	-0.9	1,3	+,-
Miners, shotfirers, stone cutters and carvers	0.7	0.6	1.2	-0.9	-0.1	-0.4	-0.1	0.20	0.61	0.90	-0.9	-1.1	1,3	+,-
Mining and mineral-processing-plant operators	0.1	0.6	0.9	-0.8	0.1	-0.4	0.0	0.41	0.58	0.90	-1.0	-0.7	1,3	+,-
Other machine operators not elsewhere classified	2.6	-0.5	-0.2	-0.3	0.2	0.1	0.3	0.36	0.49	0.84	-1.0	-0.9	3	-
Pelt, leather and shoemaking trades workers	0.5	-0.4	-0.1	-0.8	-0.4	0.2	1.0	0.33	0.46	0.83	-1.1	-1.2	3	-
Potters, glass-makers and related trades workers	0.3	0.0	0.2	-0.6	0.5	0.4	0.8	0.40	0.52	0.82	-0.4	-1.0	2,3	+,-
Power-production and related plant operators	0.6	0.5	1.2	-1.0	-0.7	-0.9	-0.7	0.22	0.59	0.89	-1.1	-0.7	1,3	+,-
Printing-, binding- and paper-products machine operators	0.5	0.2	0.2	-0.2	1.0	0.4	0.3	0.36	0.53	0.83	-0.6	-0.9	2	+
Rubber- and plastic-products machine operators	1.6	-0.4	-0.5	-0.3	0.5	0.6	0.7	0.27	0.49	0.85	-0.9	-1.0	3	-
Wood-processing- and papermaking-plant operators	0.7	0.0	0.2	-0.2	0.5	0.3	0.2	0.32	0.56	0.88	-0.8	-0.8	2,3	+,-
Weighted average	100	0.1	**0.5**	**-0.3**	**0.5**	0.2	0.3	0.29	0.57	**0.85 (+)**	**-0.7**	**-0.9**	2,3	+,-

Sources: EU LFS data, Eurostat – DG EMPL calculations.

Note: In bold, averages of standardised values (except for the three indices) corresponding to the test values greater than 2 in absolute value. Test values are carried out on unweighted averages. a) Factors along which the squared-cosine(s) sums a minimum of about 2/3.

Chart 4a: Clusters 3 and 10 represented on factors 2 and 3



Source: EU LFS data, Eurostat – DG EMPL calculations.

Cluster 3 has a negative score on factor 2 and a positive score on factor 3. The negative score on factor 2 reflects the lower values for the fraction of young workers in total hires, the fraction of young workers in total employment and the fraction of young workers with a low level of education and the higher value for training outside the regular education system. The positive score on factor 3 reflects also the higher value for training outside the regular education system.

Cluster 10 has a positive score on factor 2 and a negative score on factor 3. The positive score on factor 2 reflects the higher value for the fraction of young workers in total hires. The negative score on factor 3 reflects the higher value for the concentration index and the lower values for the education variables.

Chart 4a shows that clusters 3 and 10 differentiate from each other along factors 2 and 3. Compared with cluster 10, cluster 3 represents occupations with higher qualifications and better career prospects (factor 2), as well as occupations more open to various fields of study and providing more training opportunities (factor 3).

Clusters associated with factors 2 and 4

Clusters 1 and 12 are well represented by combinations of factors 2 and 4 (Table 7a and Chart 5a), accounting for approximately 12% and 6½% of total employment. Clusters 1 and 12 can be illustrated by the occupations: 'Production and operations managers' and 'Building finishers and related trades workers', respectively.

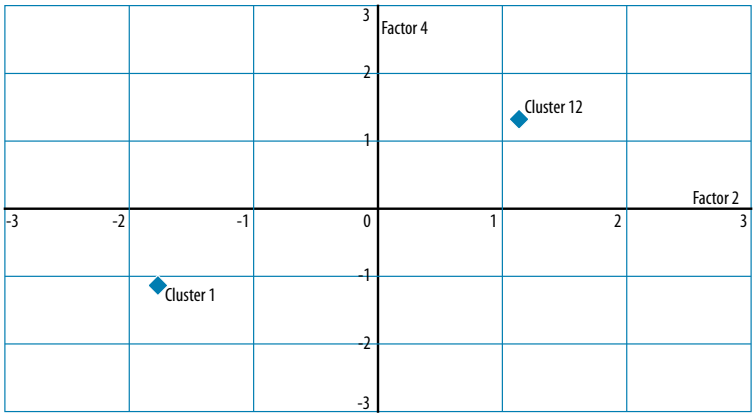
Table 7a: Clusters well represented by combinations of factors 2 and 4

	Employment weight in the cluster %	Employment stability	Job seniority	Job turnover rate	Fraction of young workers in total hires	Fraction of young workers in total employment	Fraction of young workers with low level of education	Segregation index	Specialisation index	Concentration index	Training in the regular education system	Training outside the regular education system	Main factor(s) of representation in factor analysis a)	Sign of the scores along the factor(s)
Cluster 1														
Directors and chief executives	2.2	0.3	0.9	-1.2	-2.0	-1.3	-0.9	0.26	0.34	0.71	-0.9	0.1	2	-
Fishery workers, hunters and trappers	0.0	-0.2	0.8	-0.3	-0.6	0.0	0.5	0.59	0.62	0.80	-1.2	-0.9	3,4	-,-
Handicraft workers in wood, textile, leather and related materials	0.0	-0.5	-0.1	-0.5	-0.9	-0.3	0.1	0.59	0.50	0.79	-1.0	-0.9	3,4	-,-
Legislators and senior government officials	0.1	0.0	0.9	-0.7	-1.7	-1.3	-0.9	0.31	0.49	0.72	-0.7	1.5	2	-
Managers of small enterprises	61.9	-0.3	0.4	-0.8	-1.5	-1.1	-0.7	0.21	0.27	0.70	-1.1	-0.7	2,4	-,-
Other specialist managers	16.9	-0.1	-0.1	-0.5	-1.6	-1.2	-1.0	0.31	0.49	0.74	-0.6	1.3	2	-
Production and operations managers	18.4	0.3	0.7	-0.7	-1.6	-1.1	-0.9	0.25	0.30	0.70	-0.6	1.1	2	-
Safety and quality inspectors	0.5	0.2	0.5	-0.7	-1.0	-0.8	-0.8	0.33	0.37	0.76	-0.5	-0.1	2,4	-,-
Senior officials of special-interest organisations	0.0	0.3	1.2	-0.9	-1.4	-1.4	-1.0	0.54	0.37	0.73	-0.3	1.8	4	-
Weighted average	100	-0.1	0.4	**-0.7**	**-1.6**	**-1.1**	-0.8	0.26	**0.34 (-)**	**0.71 (-)**	**-0.8**	0.2	2	-
Cluster 12														
Building finishers and related trades workers	41.1	-0.6	-0.5	0.3	0.5	0.9	1.0	0.12	0.60	0.91	0.0	-0.7	2,4	+,+
Electrical and electronic equipment mechanics and fitters	10.4	0.5	0.5	-0.5	1.0	0.4	0.2	0.18	0.57	0.89	0.3	-0.3	2,4	+,+
Food processing and related trades workers	4.9	-0.6	-0.6	0.2	1.0	1.2	1.3	0.23	0.49	0.86	0.2	-1.0	2	+
Machinery mechanics and fitters	28.3	0.2	0.4	-0.4	1.4	0.9	0.7	0.12	0.61	0.92	0.5	-0.5	2,4	+,+
Metal moulders, welders, sheet-metal workers, structural-metal preparers and related trades workers	12.4	-0.5	0.0	-0.1	0.1	0.3	0.6	0.13	0.63	0.92	-0.5	-1.0	4	+
Wood-products machine operators	0.0	-0.6	-0.7	0.2	1.3	1.3	1.5	0.28	0.53	0.88	-0.6	-1.0	2	+
Wood treaters, cabinet-makers and related trades workers	2.8	-0.4	-0.4	-0.2	0.6	1.0	1.1	0.18	0.57	0.89	0.0	-1.2	2,4	+,+
Weighted average	100	-0.2	-0.1	-0.1	**0.8**	**0.8**	**0.8**	**0.15 (-)**	0.59	**0.90 (+)**	0.1	**-0.7**	2,4	+,+

Sources: EU LFS data, Eurostat – DG EMPL calculations.

Note: In bold, averages of standardised values (except for the three indices) corresponding to the test values greater than 2 in absolute value.
Test values are carried out on unweighted averages.
a) Factors along which the squared-cosine(s) sums a minimum of about 2/3.

Chart 5a: Clusters 1 and 12 represented on factors 2 and 4



Source: EU LFS data, Eurostat – DG EMPL calculations.

Cluster 1 has negative scores on factors 2 and 4. The negative score on factor 2 reflects the lower values for the fraction of young workers in total hires and the fraction of young workers in total employment. The negative score on factor 4 reflects the lower values for the specialisation and concentration indices.

Cluster 12 has positive scores on factors 2 and 4. The positive score on factor 2 reflects the higher values for the fraction of young workers in total hires, the fraction of young workers in total employment and the fraction of young workers with a low level of education and the lower value for training outside the regular education system. The positive score on factor 4 reflects the lower value for the segregation index and the higher value for the concentration index.

Chart 5a shows that clusters 1 and 12 differentiate from each other along factors 2 and 4. Compared with cluster 12, cluster 1 represents occupations with higher qualifications and better career prospects (factor 2), as well as occupations having looser links with qualifications (factor 4).

Clusters associated with factors 3 and 4

Clusters 2 and 7 are well represented by combinations of factors 3 and 4 (Table 8a and Chart 6a), each accounting for approximately 5½% of total employment. Clusters 2 and 7 can be illustrated by the occupations: 'Primary and pre-primary education teaching professionals' and 'Finance and sales associate professionals', respectively.

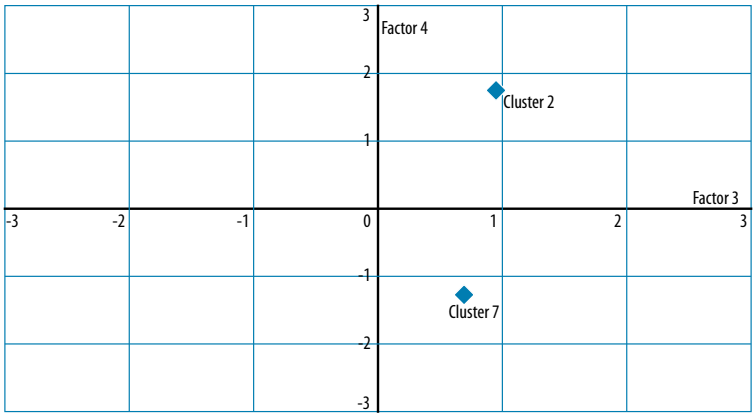
Table 8a: Clusters well represented by combinations of factors 3 and 4

	Employment weight in the cluster %	Employment stability	Job seniority	Job turnover rate	Fraction of young workers in total hires	Fraction of young workers in total employment	Fraction of young workers with low level of education	Segregation index	Specialisation index	Concentration index	Training in the regular education system	Training outside the regular education system	Main factor(s) of representation in factor analysis a)	Sign of the scores along the factor(s)
Cluster 2														
Health associate professionals (except nursing)	13.1	0.5	-0.1	-0.4	0.2	-0.4	-0.7	0.16	0.73	0.80	0.3	1.2	3,4	+,+
Health professionals (except nursing)	13.6	1.4	0.4	-0.5	-1.8	-1.3	-1.0	0.11	0.91	0.93	0.1	3.0	4	+
Legal professionals	3.1	1.6	-0.2	-0.5	-1.5	-1.2	-1.0	0.06	0.82	0.94	-0.3	1.1	4	+
Life science professionals	0.3	1.2	-0.3	-0.4	-1.2	-1.1	-1.0	0.37	0.91	0.84	0.4	1.3	3,4	+,+
Nursing and midwifery associate professionals	15.2	0.3	0.3	-0.4	0.2	-0.5	-0.6	0.12	0.84	0.90	0.9	1.6	4	+
Nursing and midwifery professionals	1.5	1.4	1.1	-0.7	-0.4	-0.9	-1.0	0.16	0.88	0.91	0.0	1.2	4	+
Physicists, chemists and related professionals	0.2	1.0	-0.1	-0.5	-1.4	-1.1	-1.0	0.28	0.85	0.83	0.1	0.9	2,4	-,+
Pre-primary education teaching associate professionals	1.9	0.3	0.2	-0.2	0.0	-0.3	-0.5	0.31	0.86	0.87	0.4	1.2	4	+
Primary and pre-primary education teaching professionals	14.7	1.7	1.3	-0.6	-0.6	-1.0	-1.0	0.23	0.86	0.86	0.2	1.8	1,4	+,+
Religious professionals	0.1	1.1	1.3	-1.1	-1.9	-1.4	-0.9	0.22	0.84	0.86	0.2	0.7	2,4	-,+
Secondary education teaching professionals	36.3	1.8	1.5	-0.6	-1.3	-1.3	-1.0	0.13	0.79	0.77	-0.2	1.1	2,4	-,+
Special education teaching professionals	0.1	0.2	0.3	-0.5	-1.5	-1.2	-0.9	0.32	0.85	0.87	1.1	3.2	3,4	+,+
Weighted average	100	**1.2**	0.7	-0.5	**-0.8**	**-0.9**	**-0.9**	**0.16 (-)**	**0.83 (+)**	**0.85 (+)**	0.2	**1.6**	3,4	+,+
Cluster 7														
Business services agents and trade brokers	3.2	-0.3	-0.7	-0.1	-0.2	-0.3	-0.6	0.37	0.35	0.72	0.2	-0.1	4	-
Computer associate professionals	4.7	0.2	-1.0	0.1	0.5	0.2	-0.7	0.36	0.49	0.65	0.8	0.6	3,4	+,-
Finance and sales associate professionals	90.4	-0.3	-0.6	0.2	0.0	-0.1	-0.4	0.35	0.36	0.74	0.3	0.6	4	-
Other teaching associate professionals	1.4	-0.4	-0.4	0.3	-0.6	-0.5	-0.7	0.41	0.37	0.60	0.6	1.3	4	-
Religious associate professionals	0.0	-1.1	-0.7	-0.2	0.5	-0.6	-0.1	0.76	0.50	0.73	1.1	0.7	4	-
Travel attendants and related workers	0.3	0.5	-0.3	0.3	0.7	0.2	-0.6	0.43	0.50	0.67	0.3	0.6	4	-
Weighted average	100	-0.2	-0.7	0.1	0.0	-0.1	-0.5	0.36	**0.39 (-)**	**0.71 (-)**	0.4	0.6	4	-

Sources: EU LFS data, Eurostat – DG EMPL calculations.

Note: In bold, averages of standardised values (except for the three indices) corresponding to the test values greater than 2 in absolute value.
Test values are carried out on unweighted averages.
a) Factors along which the squared-cosine(s) sums a minimum of about 2/3.

Chart 6a: Clusters 2 and 7 represented on factors 3 and 4



Source: EU LFS data, Eurostat – DG EMPL calculations.

Cluster 2 has positive scores on factors 3 and 4. The positive score on factor 3 reflects the lower value for the fraction of young workers with low levels of education and the higher value for training outside the regular education system. The positive score on factor 4 reflects the lower value for the segregation index and the higher values for the specialisation and concentration indices.

Cluster 7 has a negative score on factor 4. The negative score on factor 4 reflects the lower values for the specialisation and concentration indices.

Chart 6a shows that clusters 2 and 7 differentiate from each other along factor 4, with cluster 2 mainly representing licensed occupations, such as health professionals and lawyers, while cluster 7 includes occupations that are open to different fields of study, such as finance and sales associate professionals.

Annex 2: List of occupations, factor scores, squared-cosines and employment weights for 2006a (sorted by cluster and occupational title)

Cluster	Title	ISCO	Score of factor 1	Score of factor 2	Score of factor 3	Score of factor 4	Squared-cosine of factor 1	Squared-cosine of factor 2	Squared-cosine of factor 3	Squared-cosine of factor 4	% of employment in cluster	% of employment in total
1	Directors and chief executives	121	0.31	-1.99	-0.95	-1.22	0.01	0.61	0.14	0.23	2.2	0.3
1	Fishery workers, hunters and trappers	615	0.45	0.01	-1.24	-1.17	0.07	0.00	0.49	0.44	0.0	0.0
1	Handicraft workers in wood, textile, leather and related materials	733	-0.04	-0.56	-1.24	-1.48	0.00	0.08	0.38	0.54	0.0	0.0
1	Legislators and senior government officials	111	0.17	-1.90	-0.11	-0.79	0.01	0.84	0.00	0.15	0.1	0.0
1	Managers of small enterprises	131	-0.29	-1.79	-1.30	-1.32	0.01	0.48	0.25	0.26	61.9	7.4
1	Other specialist managers	123	-0.32	-1.91	0.02	-0.61	0.02	0.89	0.00	0.09	16.9	2.0
1	Production and operations managers	122	0.08	-1.75	-0.21	-1.28	0.00	0.64	0.01	0.35	18.4	2.2
1	Safety and quality inspectors	315	0.29	-1.05	-0.56	-1.10	0.03	0.41	0.12	0.45	0.5	0.1
1	Senior officials of special-interest organisations	114	0.76	-1.46	0.14	-2.07	0.08	0.30	0.00	0.61	0.0	0.0
1	WEIGHTED AVERAGE		-0.12	-1.77	-0.69	-1.14	0.01	0.61	0.13	0.25	100	11.9
2	Health associate professionals (except nursing)	322	0.16	-0.19	1.10	1.12	0.01	0.01	0.48	0.50	13.1	0.7
2	Health professionals (except nursing)	222	0.38	-1.62	1.10	2.83	0.01	0.22	0.10	0.67	13.6	0.8
2	Legal professionals	242	0.26	-1.35	0.21	2.72	0.01	0.20	0.00	0.79	3.1	0.2
2	Life science professionals	221	0.39	-0.95	1.13	1.17	0.04	0.24	0.35	0.37	0.3	0.0
2	Nursing and midwifery associate professionals	323	0.31	0.03	1.35	2.24	0.01	0.00	0.26	0.72	15.2	0.9
2	Nursing and midwifery professionals	223	1.09	-0.38	0.66	2.15	0.19	0.02	0.07	0.72	1.5	0.1
2	Physicists, chemists and related professionals	211	0.26	-1.23	0.68	1.28	0.02	0.41	0.13	0.44	0.2	0.0
2	Pre-primary education teaching associate professionals	332	0.33	0.06	1.02	1.33	0.04	0.00	0.36	0.60	1.9	0.1
2	Primary and pre-primary education teaching professionals	233	1.25	-0.52	1.13	1.51	0.29	0.05	0.24	0.42	14.7	0.8
2	Religious professionals	246	0.92	-1.31	0.28	1.52	0.17	0.35	0.02	0.47	0.1	0.0
2	Secondary education teaching professionals	232	1.07	-1.13	0.63	1.13	0.28	0.31	0.10	0.31	36.3	2.1
2	Special education teaching professionals	234	0.12	-1.31	1.78	1.53	0.00	0.24	0.44	0.32	0.1	0.0
2	WEIGHTED AVERAGE		0.64	-0.74	0.95	1.74	0.12	0.14	0.21	0.53	100	5.7
3	Architects, engineers and related professionals	214	-0.14	-1.53	-0.08	1.44	0.00	0.53	0.00	0.47	49.8	2.3
3	Business professionals	241	-0.80	-1.47	0.70	0.41	0.19	0.63	0.14	0.05	23.0	1.1
3	College, university and higher education teaching professionals	231	0.30	-0.84	2.09	0.31	0.02	0.13	0.83	0.02	2.6	0.1
3	Computing professionals	213	-0.73	-0.93	1.22	-0.10	0.18	0.30	0.52	0.00	11.8	0.5
3	Social science and related professionals	244	-0.53	-1.38	0.86	1.21	0.06	0.43	0.17	0.33	7.6	0.4
3	Special education teaching associate professionals	333	-0.27	-0.53	1.26	-0.50	0.03	0.13	0.72	0.12	0.3	0.0
3	Writers and creative or performing artists	245	-0.48	-1.04	0.43	0.42	0.14	0.65	0.11	0.11	4.9	0.2
3	WEIGHTED AVERAGE		-0.43	-1.28	0.64	0.73	0.09	0.48	0.22	0.21	100.0	4.6
4	Artistic, entertainment and sports associate professionals	347	-1.25	0.82	2.00	-0.37	0.25	0.11	0.63	0.02	3.4	0.2
4	Client information clerks	422	-1.48	1.31	1.95	-0.99	0.25	0.20	0.44	0.11	7.4	0.4
4	Other teaching professionals	235	-0.83	0.03	3.14	-0.32	0.06	0.00	0.93	0.01	1.5	0.1
4	Personal care and related workers	513	-1.27	0.22	1.26	0.46	0.47	0.01	0.46	0.06	84.4	4.6
4	Social work associate professionals	346	-1.63	-0.33	1.84	-0.04	0.43	0.02	0.55	0.00	3.3	0.2
4	WEIGHTED AVERAGE		-1.31	0.39	1.65	0.02	0.38	0.05	0.52	0.05	100	5.5
5	Administrative associate professionals	343	0.45	-0.46	0.08	-0.37	0.37	0.38	0.01	0.24	25.1	4.4
5	Archivists, librarians and related information professionals	243	0.75	-1.01	0.70	0.15	0.27	0.49	0.23	0.01	0.1	0.0

Cluster	Title	ISCO	Score of factor 1	Score of factor 2	Score of factor 3	Score of factor 4	Squared-cosine of factor 1	Squared-cosine of factor 2	Squared-cosine of factor 3	Squared-cosine of factor 4	% of employment in cluster	% of employment in total
5	Library, mail and related clerks	414	0.85	0.93	0.59	-1.49	0.17	0.21	0.08	0.53	1.4	0.2
5	Life science technicians and related associate professional	321	1.13	0.07	0.74	-0.80	0.52	0.00	0.22	0.26	0.3	0.0
5	Material-recording and transport clerks	413	-0.05	0.56	-0.16	-0.44	0.00	0.59	0.05	0.36	6.9	1.2
5	Numerical clerks	412	0.54	0.43	0.83	0.09	0.25	0.16	0.59	0.01	5.5	1.0
5	Optical and electronic equipment operators	313	0.38	0.11	0.56	-1.17	0.08	0.01	0.17	0.75	0.2	0.0
5	Other office clerks	419	-0.03	0.57	0.63	-0.56	0.00	0.31	0.39	0.30	27.2	4.8
5	Physical and engineering science technicians	311	0.76	-0.03	-0.03	-0.16	0.95	0.00	0.00	0.04	18.8	3.3
5	Precision workers in metal and related materials	731	0.28	0.66	0.06	0.17	0.14	0.80	0.01	0.05	0.1	0.0
5	Protective services workers	516	0.52	-0.02	0.21	-0.48	0.51	0.00	0.08	0.42	5.0	0.9
5	Secretaries and keyboard-operating clerks	411	-0.13	-0.25	0.21	-0.35	0.07	0.25	0.18	0.50	9.3	1.6
5	Ship and aircraft controllers and technicians	314	0.46	-1.03	0.03	-0.03	0.16	0.83	0.00	0.00	0.1	0.0
5	WEIGHTED AVERAGE		0.34	0.11	0.28	-0.40	0.31	0.25	0.17	0.27	100	17.6
6	Crop and animal producers	613	2.29	1.44	-0.55	0.04	0.69	0.27	0.04	0.00	77.0	2.2
6	Customs, tax and related government associate professionals	344	2.19	0.34	0.13	-0.93	0.83	0.02	0.00	0.15	13.4	0.4
6	Locomotive engine drivers and related workers	831	2.68	0.10	-0.94	0.00	0.89	0.00	0.11	0.00	0.9	0.0
6	Police inspectors and detectives	345	2.49	0.80	0.73	-1.36	0.67	0.07	0.06	0.20	0.5	0.0
6	Primary education teaching associate professionals	331	1.98	-0.30	0.42	-0.13	0.93	0.02	0.04	0.00	1.2	0.0
6	Public service administrative professionals	247	1.57	-1.00	0.20	-0.43	0.67	0.27	0.01	0.05	7.0	0.2
6	WEIGHTED AVERAGE		2.17	0.65	-0.21	-0.30	0.74	0.18	0.03	0.05	100	2.9
7	Business services agents and trade brokers	342	-0.50	-0.48	0.22	-1.42	0.10	0.09	0.02	0.79	3.2	0.2
7	Computer associate professionals	312	-0.37	0.12	1.46	-1.28	0.04	0.00	0.54	0.42	4.7	0.3
7	Finance and sales associate professionals	341	-0.57	-0.25	0.52	-1.11	0.17	0.03	0.14	0.65	90.4	4.8
7	Other teaching associate professionals	334	-0.70	-0.98	1.18	-2.15	0.07	0.13	0.19	0.62	1.4	0.1
7	Religious associate professionals	348	-0.20	0.23	1.05	-2.39	0.01	0.01	0.16	0.83	0.0	0.0
7	Travel attendants and related workers	511	0.13	0.39	1.15	-1.55	0.00	0.04	0.34	0.62	0.3	0.0
7	WEIGHTED AVERAGE		-0.52	-0.25	0.69	-1.27	0.13	0.04	0.20	0.63	100	5.3
8	Cashiers, tellers and related clerks	421	0.36	2.27	1.30	-0.66	0.02	0.70	0.23	0.06	3.7	0.6
8	Housekeeping and restaurant services workers	512	-2.18	2.34	1.46	0.12	0.38	0.44	0.17	0.00	22.9	3.8
8	Other personal services workers	514	-0.45	2.74	1.24	1.54	0.02	0.65	0.13	0.20	2.4	0.4
8	Shop, stall and market salespersons and demonstrators	522	-1.55	2.07	1.21	-0.27	0.29	0.52	0.18	0.01	71.0	11.7
8	WEIGHTED AVERAGE		-1.41	2.23	1.29	-0.03	0.26	0.53	0.18	0.03	100	16.5
9	Fashion and other models	521	-0.40	3.36	2.52	-3.57	0.01	0.37	0.21	0.42	0.1	0.0
9	Street vendors and related workers	911	-0.86	4.60	2.84	-1.48	0.02	0.66	0.25	0.07	99.9	0.0
9	WEIGHTED AVERAGE		-0.84	4.56	2.83	-1.55	0.02	0.65	0.25	0.08	100	0.0
10	Animal producers and related workers	612	1.14	0.73	-0.76	-0.04	0.54	0.22	0.24	0.00	4.8	0.1
10	Assemblers	828	-0.49	0.69	-0.77	0.00	0.18	0.36	0.46	0.00	14.6	0.4
10	Blacksmiths, tool-makers and related trades workers	722	0.54	0.53	-0.90	1.37	0.09	0.09	0.25	0.58	18.7	0.5
10	Chemical-processing-plant operators	815	1.02	0.53	-0.50	-0.45	0.58	0.16	0.14	0.12	1.2	0.0
10	Chemical-products machine operators	822	0.65	0.72	-0.56	-0.98	0.19	0.24	0.14	0.43	0.4	0.0
10	Craft printing and related trades workers	734	0.65	0.45	-0.60	-0.09	0.42	0.21	0.36	0.01	1.4	0.0
10	Food and related products machine operators	827	-0.48	0.39	-0.67	-0.27	0.25	0.17	0.50	0.08	2.7	0.1
10	Glass, ceramics and related plant operators	813	0.65	0.84	-1.22	-0.90	0.13	0.21	0.43	0.24	0.1	0.0
10	Industrial robot operators	817	0.15	1.01	-0.95	-0.55	0.01	0.45	0.40	0.14	0.2	0.0
10	Market gardeners and crop growers	611	0.72	0.73	-0.43	0.20	0.41	0.41	0.14	0.03	42.9	1.2
10	Metal- and mineral-products machine operators	821	0.01	1.01	-0.89	0.63	0.00	0.46	0.36	0.18	4.2	0.1

Cluster	Title	ISCO	Score of factor 1	Score of factor 2	Score of factor 3	Score of factor 4	Squared-cosine of factor 1	Squared-cosine of factor 2	Squared-cosine of factor 3	Squared-cosine of factor 4	% of employment in cluster	% of employment in total
10	Metal-processing plant operators	812	1.10	0.91	-0.98	0.05	0.40	0.28	0.32	0.00	1.4	0.0
10	Miners, shotfirers, stone cutters and carvers	711	0.91	0.11	-1.24	0.90	0.26	0.00	0.48	0.25	0.7	0.0
10	Mining and mineral-processing-plant operators	811	0.97	0.26	-1.09	0.02	0.43	0.03	0.54	0.00	0.1	0.0
10	Other machine operators not elsewhere classified	829	-0.14	0.17	-1.10	-0.36	0.01	0.02	0.87	0.09	2.6	0.1
10	Pelt, leather and shoemaking trades workers	744	-0.15	0.10	-1.57	-0.32	0.01	0.00	0.95	0.04	0.5	0.0
10	Potters, glass-makers and related trades workers	732	0.37	0.91	-0.70	-0.50	0.08	0.49	0.28	0.15	0.3	0.0
10	Power-production and related plant operators	816	0.84	-0.71	-1.23	0.66	0.23	0.16	0.48	0.14	0.6	0.0
10	Printing-, binding- and paper-products machine operators	825	0.41	0.97	-0.55	-0.33	0.11	0.62	0.20	0.07	0.5	0.0
10	Rubber- and plastic-products machine operators	823	-0.31	0.64	-1.06	0.12	0.06	0.25	0.69	0.01	1.6	0.0
10	Wood-processing- and papermaking-plant operators	814	0.26	0.61	-0.86	0.26	0.05	0.30	0.60	0.05	0.7	0.0
10	WEIGHTED AVERAGE		0.38	0.60	-0.78	0.20	0.24	0.27	0.36	0.13	100	2.8
11	Agricultural and other mobile plant operators	833	-0.53	-0.33	-1.26	0.91	0.10	0.04	0.57	0.29	2.6	0.5
11	Agricultural, fishery and related labourers	921	-2.85	0.06	-0.97	-0.33	0.88	0.00	0.10	0.01	1.8	0.3
11	Building caretakers, window and related cleaners	914	-1.21	-1.28	-1.16	-0.05	0.33	0.37	0.30	0.00	1.0	0.2
11	Building frame and related trades workers	712	-1.74	-0.22	-1.11	1.33	0.50	0.01	0.20	0.29	21.6	4.1
11	Domestic and related helpers, cleaners and launderers	913	-2.14	-0.68	-0.54	-0.56	0.81	0.08	0.05	0.06	36.6	6.9
11	Forestry and related workers	614	-0.98	-0.48	-1.08	-0.42	0.38	0.09	0.46	0.07	0.0	0.0
11	Garbage collectors and related labourers	916	-2.35	-1.02	-1.42	0.30	0.64	0.12	0.23	0.01	0.2	0.0
11	Motor vehicle drivers	832	-1.24	-1.38	-1.42	0.56	0.27	0.33	0.35	0.05	31.4	5.9
11	Painters, building structure cleaners and related trades workers	714	-1.04	0.46	-0.71	0.68	0.48	0.09	0.22	0.20	2.1	0.4
11	Ships deck crews and related workers	834	-0.69	-0.11	-0.55	0.19	0.57	0.01	0.37	0.04	0.0	0.0
11	Textile- fur- and leather-products machine operators	826	-0.52	-0.25	-1.53	0.18	0.10	0.02	0.87	0.01	0.8	0.2
11	Textile, garment and related trades workers	743	-0.67	-0.35	-1.41	0.61	0.15	0.04	0.68	0.13	1.8	0.3
11	WEIGHTED AVERAGE		-1.54	-0.61	-1.06	0.36	0.48	0.13	0.28	0.12	100	18.7
12	Building finishers and related trades workers	713	-0.76	0.95	-0.45	1.57	0.14	0.22	0.05	0.59	41.1	2.8
12	Electrical and electronic equipment mechanics and fitters	724	0.57	1.15	0.08	0.94	0.13	0.52	0.00	0.35	10.4	0.7
12	Food processing and related trades workers	741	-0.62	1.46	-0.38	0.49	0.13	0.74	0.05	0.08	4.9	0.3
12	Machinery mechanics and fitters	723	0.36	1.70	0.13	1.51	0.02	0.54	0.00	0.43	28.3	1.9
12	Metal moulders, welders, sheet-metal workers, structural-metal preparers, and related trades workers	721	-0.42	0.38	-0.98	1.58	0.05	0.04	0.26	0.66	12.4	0.8
12	Wood-products machine operators	824	-0.51	1.63	-0.82	0.43	0.07	0.70	0.18	0.05	0.0	0.0
12	Wood treaters, cabinet-makers and related trades workers	742	-0.37	1.17	-0.58	1.05	0.05	0.47	0.11	0.37	2.8	0.2
12	WEIGHTED AVERAGE		-0.21	1.14	-0.33	1.31	0.09	0.38	0.07	0.46	100	6.7
13	Shoe cleaning and other street services elementary occupations	912	-3.55	3.53	1.72	-1.71	0.41	0.40	0.10	0.09	100	0.0
13	WEIGHTED AVERAGE		-3.55	3.53	1.72	-1.71	0.41	0.40	0.10	0.09	100	0.0
14	Manufacturing labourers	932	-1.73	1.02	-0.88	-0.35	0.61	0.21	0.16	0.02	33.2	0.6
14	Messengers, porters, doorkeepers and related workers	915	-1.30	0.78	0.55	-0.54	0.58	0.21	0.10	0.10	25.5	0.5
14	Mining and construction labourers	931	-3.39	1.43	-1.07	0.10	0.78	0.14	0.08	0.00	17.8	0.3
14	Transport labourers and freight handlers.	933	-1.81	2.06	0.13	-0.50	0.42	0.54	0.00	0.03	23.4	0.4
14	WEIGHTED AVERAGE		-1.99	1.30	-0.31	-0.34	0.59	0.28	0.09	0.04	100	1.8

a) Employment levels in 2006, or in the most recent year in the period 2003-2006 for which information is available.

Annex 3: Fields of education or training[35]

- General programmes
- Teacher training and education science
- Humanities, languages and arts
- Foreign languages
- Social sciences, business and law
- Science, mathematics and computing
- Life science (including Biology and Environmental science)
- Physical science (including Physics, Chemistry and Earth science)
- Mathematics and statistics
- Computer science
- Computer use
- Engineering, manufacturing and construction
- Agriculture and veterinary
- Health and welfare
- Services

35 Fields collected in the context of the EU LFS. The full list will be collected from 2009, although on an optional basis.