ARTICLES

THE IMPACT OF THE ECONOMIC CRISIS ON EURO AREA LABOUR MARKETS[1]

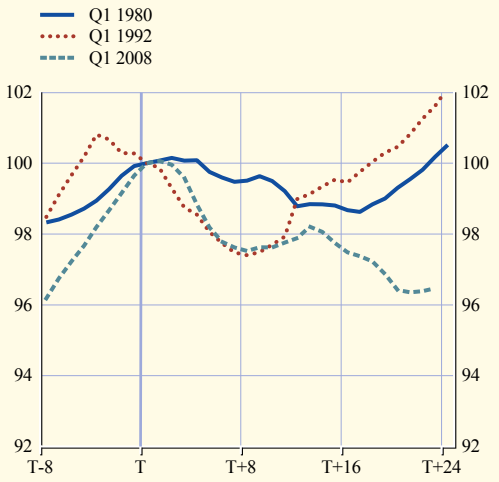
The economic crisis has had a heavy impact on euro area labour markets. A notable feature of the crisis throughout its duration has been the considerable degree of cross-country heterogeneity of labour market adjustments – with some economies emerging relatively unscathed, while others have seen steep and persistent increases in unemployment. This article analyses the impact of the crisis as a whole on euro area labour markets, paying particular attention to the different impacts of the two euro area recessions during the crisis and the interplay of sectoral and institutional features driving labour market outcomes. Despite ongoing structural reforms in some countries, progress has been partial and uneven across the euro area. Further reductions in labour market rigidities are necessary to increase the adjustment capacity of euro area labour markets and to speed up adjustment, thereby helping to reduce the current high levels of structural unemployment.

1 TWO RECESSIONS AND THEIR DIFFERENT IMPACTS ON EURO AREA LABOUR MARKETS

In comparison to the recessions experienced across the euro area countries since the 1980s, the impact of the economic crisis since 2008 has been particularly severe and long-lasting (see Chart 1). Six years after the start of the first euro area recession (which began in the second quarter of 2008), euro area employment remains some 4% below its pre-crisis peak, five and a half million people have lost their jobs and the euro area unemployment rate, having risen from a pre-crisis low of 7.3% to a peak of 12.0% early in 2013, has declined only modestly since then (see Chart 2). In part, this strong impact reflects the systemic – and synchronised – nature of the initial economic crisis, financial crises typically having a much larger and longer-lasting impact than non-financial recessions.[2] However, it also reflects the interplay of sectoral and institutional features of the euro area economies, which have led to considerable cross-country heterogeneity in labour market outcomes, whereby there have been heavy and persistent job losses in some euro area economies, but modest and relatively short-lived deteriorations in others.

Chart 1 Euro area employment across recessions

(index: T=100 at cyclical peak in GDP; intervals are quarters)



Sources: Eurostat and ESCB calculations.

1 This article summarises the work of an ad hoc ESCB task force charged with extending earlier analyses of the impact of the crisis on euro area labour markets to include the second euro area recession. For a more detailed version, including the background research informing this article, see "Comparisons and contrasts of the impact of the crisis on euro area labour markets", *Occasional Paper Series*, ECB, forthcoming. This article built on the ECB's 2012 Structural Issues Report entitled "Euro area labour markets and the crisis", *Occasional Paper Series,* No 138, ECB, 2012, which was summarised in the article of the same name that was published in the October 2012 issue of the ECB's Monthly Bulletin, for which data were available generally only to the end of 2011 and which thus omitted much of the impact of the second euro area recession.

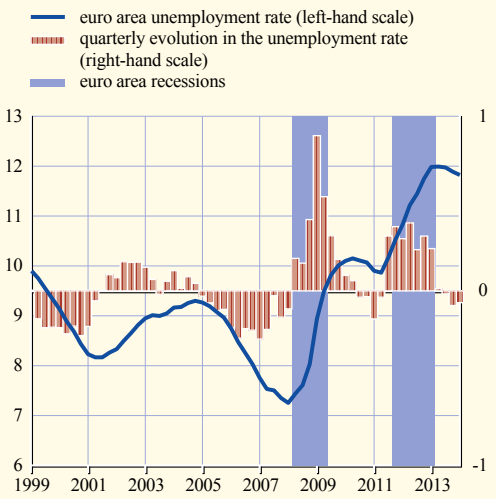
2 See Reinhart, C.M. and Rogoff, K.S., *This Time Is Different: Eight Centuries of Financial Folly*, Princeton University Press, 2008, and more recently, "Recovery from Financial Crises: Evidence from 100 Episodes", *NBER Working Paper*, No 19823, National Bureau of Economic Research, January 2014. The economic and financial turmoil of 2008-09 affected virtually all western economies – albeit to varying degrees – concurrently, while earlier recessions had tended to be more localised, reflecting isolated economic or financial imbalances within affected countries. In addition, the contraction in euro area real GDP was particularly strong over the course of the crisis (almost 6% from peak to trough), and GDP has still not returned to its pre-crisis level.

To some extent, differences in outcomes reflect the different nature of the two recessionary "phases" of the crisis. The first phase encompassed the deep and sharp global downturn in activity and trade (widely referred to as the five-quarter "Great Recession" of 2008-09) and its aftermath, which affected all euro area economies to some extent. The second phase refers to the longer-lasting "second dip" (which resulted in a six-quarter recession for the euro area economy, beginning in the final quarter of 2011, following the emergence of sovereign debt concerns in some countries), in which adjustment was principally concentrated in the most "stressed" economies.

Over the course of the Great Recession, all countries saw some deterioration in their unemployment rates, with national increases ranging from 0.2 percentage point in Germany to 9.8 percentage points in Latvia. Six years on, however, the range of outcomes is more marked still (see Chart 3). By mid-2013, at the upper end, national unemployment rates had increased by some 19 percentage points in Greece and 16 percentage points in Spain, translating into unemployment rates of 27% and 26%, respectively. Overall, seven countries (Ireland, Greece, Spain, Italy, Cyprus, Portugal and Slovenia) stand out as having seen particularly large and persistent increases in their unemployment rates since the start of the crisis. Together, these countries form the group most strongly affected by the financial market stress

Chart 2 Unemployment developments in the euro area

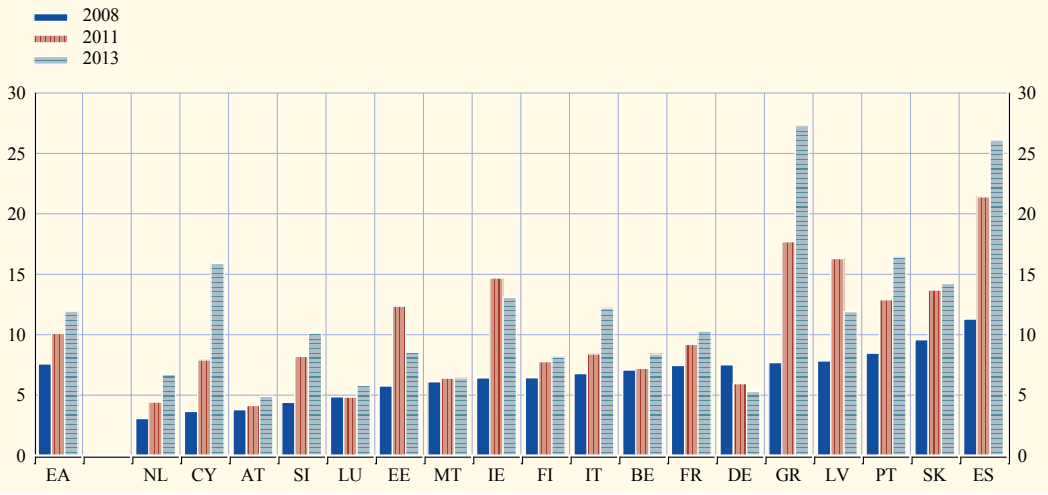
(percentages of the labour force; quarter-on-quarter changes in thousands)



Sources: Eurostat and ESCB calculations.
Notes: Shaded bars indicate euro area recessions, defined in terms of negative quarter-on-quarter GDP growth.

Chart 3 Changes in unemployment rates across the euro area

(percentages of the labour force; countries ordered according to their unemployment rate in 2008)



Sources: Eurostat and ESCB calculations.

(and are henceforth collectively referred to as the "stressed economies"). However, a simple comparison of changes in unemployment rates over the course of the crisis obscures an important facet of the country-level developments observed. In particular, while all countries experienced increases (at least, initially) in their unemployment rates as a consequence of the Great Recession, over the course of the second phase of the crisis, four countries (Germany, Estonia, Ireland and Latvia) managed to reduce their unemployment rates. In Germany, these declines are likely to reflect ongoing improvements to labour market flexibility as a consequence of comprehensive reforms introduced in advance of the crisis. In Estonia, Ireland and Latvia, they reflect the earlier timing of the downturn and the swift and comprehensive measures introduced in response to the adverse labour market effects of the crisis.[3]

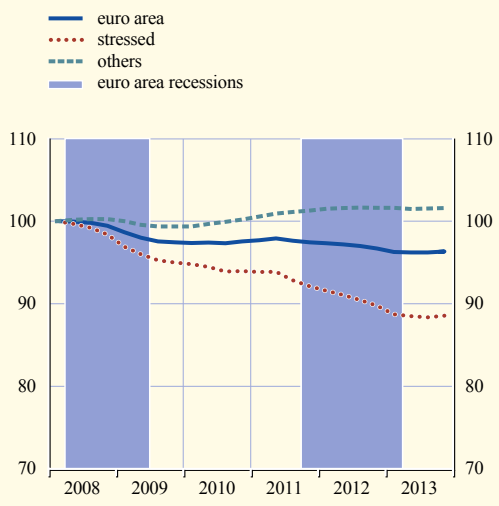
2 THE CONCENTRATION OF JOB LOSSES OVER THE CRISIS

The marked rise in euro area unemployment over the course of the crisis has been heavily concentrated temporally, sectorally, demographically and by country. While virtually all euro area economies were affected to some extent during the first recession, over the course of the second euro area recession the brunt of the job losses was (almost exclusively) borne by the stressed economies (see Chart 4).

The Great Recession had a strong sectoral bias (see Chart 5), with a high proportion of employment losses resulting from marked contractions in industry-dependent sectors (such as manufacturing, transport and business services) and, in particular, in the construction sector. All the euro area

Chart 4 Euro area employment – stressed economies versus other economies

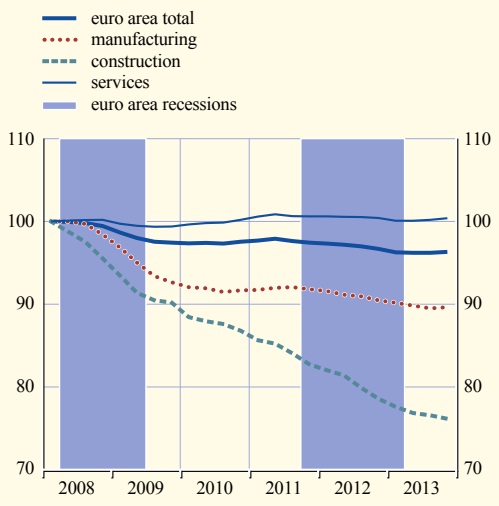
(index: Q1 2008=100)



Sources: Eurostat and ESCB calculations.
Notes: Shaded bars indicate euro area recessions during the crisis, defined in terms of negative quarter-on-quarter GDP growth. The stressed economies comprise Ireland, Greece, Spain, Italy, Cyprus, Portugal and Slovenia.

Chart 5 Euro area employment by sector

(index: Q1 2008=100)

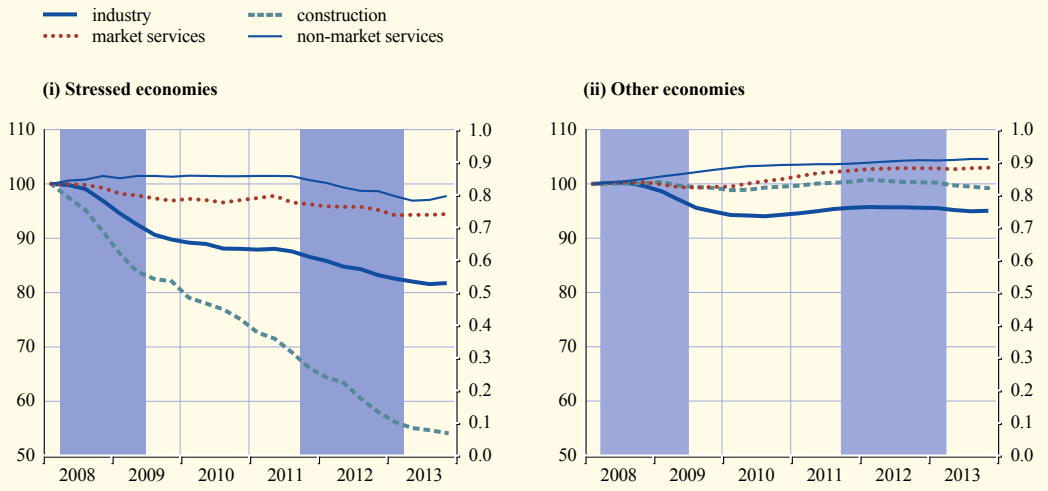


Sources: Eurostat and ESCB calculations.
Notes: Shaded bars indicate euro area recessions during the crisis, defined in terms of negative quarter-on-quarter GDP growth. The stressed economies comprise Ireland, Greece, Spain, Italy, Cyprus, Portugal and Slovenia.

3 Both Estonia and Ireland increased spending on active labour market policies to retrain and reintegrate the unemployed. In addition, employment protection legislation was eased in Estonia, while sectoral wage agreements were reformed in Ireland to make them more responsive to economic conditions. In Latvia, public sector wages were cut sharply.

Chart 6 Euro area employment by sector – stressed economies versus other economies

(index: Q1 2008=100)



Sources: Eurostat and ESCB calculations.
Note: The stressed economies comprise Ireland, Greece, Spain, Italy, Cyprus, Portugal and Slovenia.

economies were hit more or less proportionally, albeit with differences reflecting the sectoral compositions of each economy. The downturn in the industry-dependent sectors reflected the strong downturn in global trade. Meanwhile the credit crunch hit the construction sector particularly hard, leading to a sharp fall in construction activity across the euro area. The most acute impact was seen in countries undergoing the consequences of recently burst housing bubbles. During the second phase of the crisis, however, virtually all of the job losses observed were concentrated in the stressed economies, while employment remained largely stable or even increased elsewhere. In the stressed economies, job losses continued largely unabated in the industry and construction sectors, but intensified strongly in the services sector. Indeed, whereas non-market services – including public administration and predominantly publicly provided activities (such as education and health care) – had continued to contribute positively to employment developments in virtually all countries during the first phase of the crisis, fiscal consolidation during the second phase led to a notable downturn in public sector employment in some of the economies under the severest market stress, reinforcing the employment contraction seen in the other sectors.[4]

EMPLOYMENT LOSSES BY WORKER ATTRIBUTE

EU Labour Force Survey data allow further breakdowns of employment and unemployment developments by gender, age, qualification level, professional status and contract type (see Chart 7).[5] Overall, men, younger workers and the low-skilled have been particularly hard hit by the crisis. The stronger impact on men than women doubtless reflects in part the heavy concentration of the crisis in sectors (industry, construction, transport) in which men are typically strongly represented. This pattern is repeated across countries and over the course of the crisis.

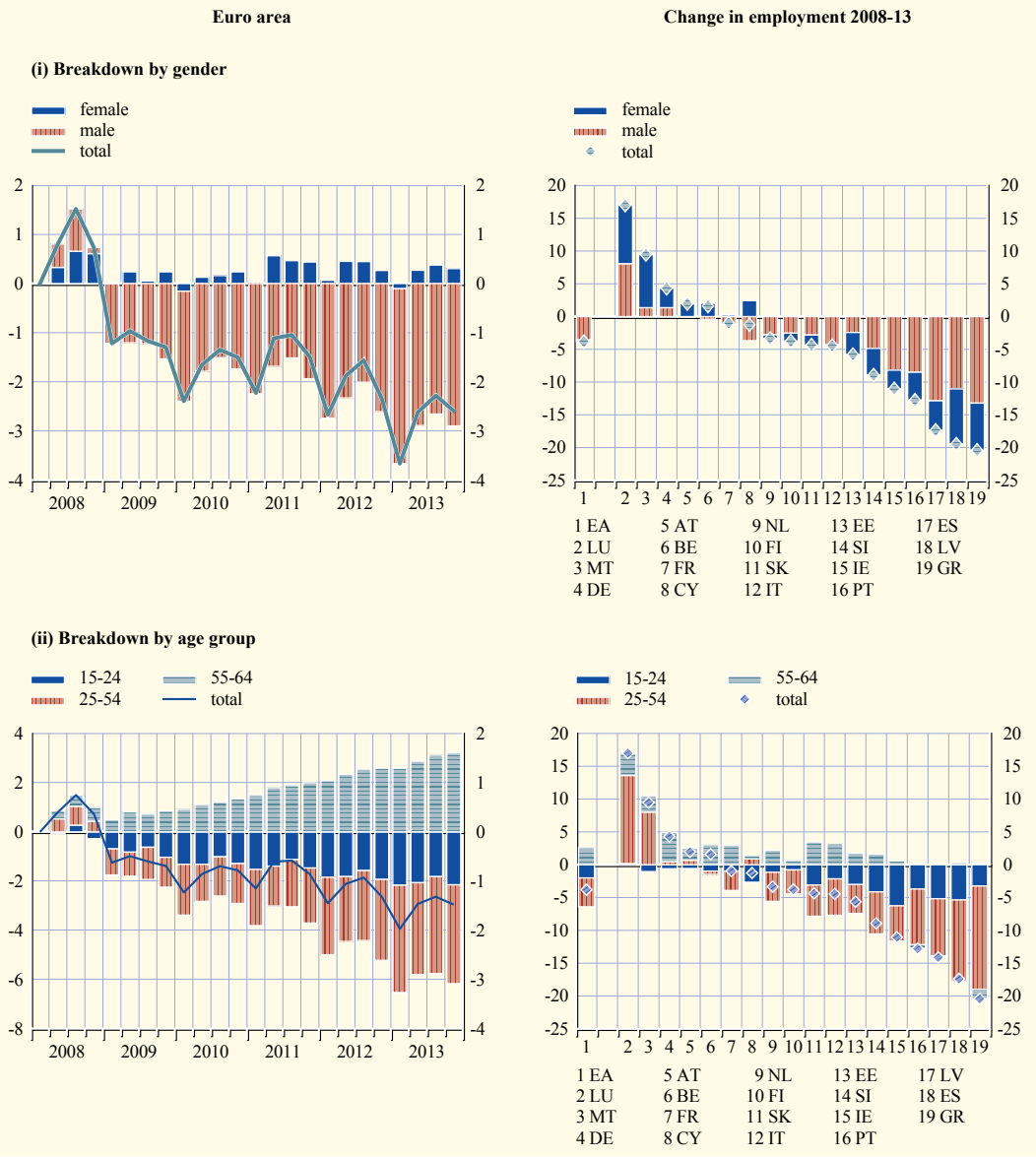
4 See the box entitled "The effect of the crisis on employment and wages in non-market services", *Monthly Bulletin*, ECB, Frankfurt am Main, December 2013.

5 Labour force survey data for Luxembourg need to be interpreted with particular caution, not least since they typically exclude cross-border workers, a group that accounts for roughly 40% of total employment in Luxembourg and which was particularly hard hit by the crisis. As a consequence, employment growth may be overstated, and unemployment developments may be underestimated.

A breakdown by age shows that young workers (aged under 25) and prime age workers (aged 25-54) have been considerably harder hit than older workers (aged 55 and over). (See also Box 1 on youth labour market developments over the course of the crisis.) To some extent, the ongoing growth in employment of older workers is likely to reflect increased financial needs as they replace wealth losses experienced as a result of the financial crisis,[6] as well as ongoing changes in several euro area

Chart 7 Employment developments in the euro area – disaggregated results

(cumulative losses; percentage point contributions)



Sources: Eurostat and ESCB staff calculations.

6 See Duval, R., Eris, M and Furceri, D. (2011), "The Effects of Downturns on Labour Force Participation: Evidence and Causes", *OECD Economics Department Working Papers*, No 875, OECD Publishing, Paris.

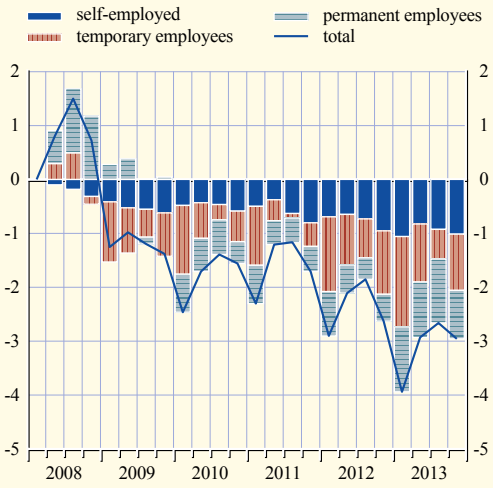
Chart 7 Employment developments in the euro area – disaggregated results (cont'd)

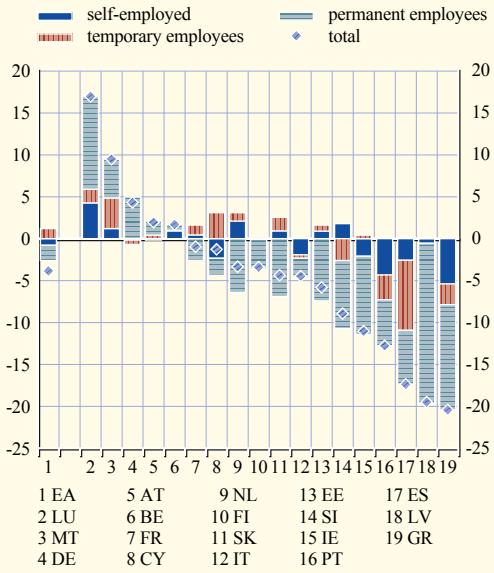
(cumulative losses; percentage point contributions)

Euro area

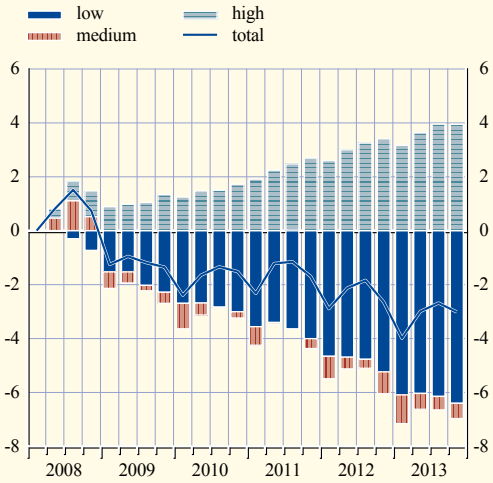
Change in employment 2008-13

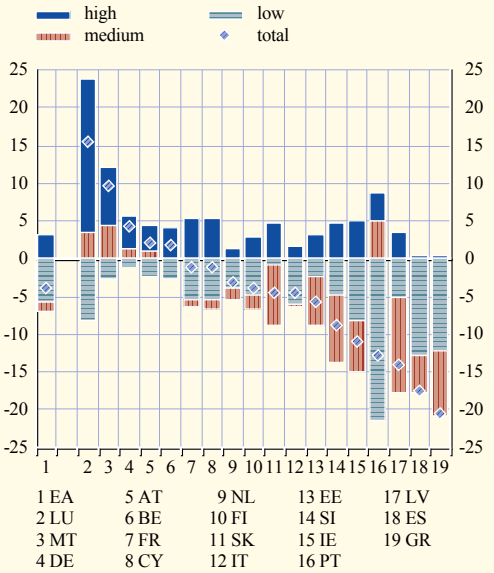
(iii) Breakdown by status and contract type





(iv) Breakdown by educational level





Sources: Eurostat and ESCB staff calculations.

countries to pension entitlements and retirement ages.[7] However, it is also likely to reflect the strong institutional disparities in some euro area economies, in particular strong employment protection legislation for permanent workers, which discourages the selective retention of potentially more flexible and dynamic workers and promotes dismissals along "last in, first out" lines. By dint of both lower tenure and a higher propensity to be employed on temporary contracts, younger and prime age workers are likely to have been less costly to dismiss than older workers (see panel (ii) of Chart 7[8] and the discussion in Box 2).

7 It may also reflect the greater experience and sector or firm-specific human capital embodied in older workers, which make them more valuable than younger workers to firms faced with lay-off decisions.
8 Disaggregating employment reactions to the two phases of the crisis by contract type (see panel (iii) in Chart 7) reveals the disproportionate impact of job losses on temporary workers in both phases of the crisis.

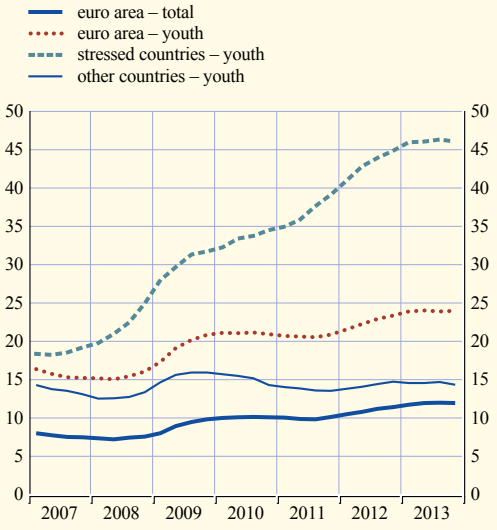
Box 1

YOUTH EMPLOYMENT AND UNEMPLOYMENT DURING THE CRISIS

Youth unemployment (among the under-25s) has risen substantially over the course of the crisis – from around 15.4% in 2007 to around 24% by the middle of 2013. In some euro area countries, the increase has been more substantial still, with youth unemployment rising to over 45% in the stressed economies as a whole (see Chart A) and to 56% in Spain and 59% Greece by the middle of 2013. There are many reasons why youth unemployment rates are typically higher than aggregate unemployment rates, not least the lower experience and firm-specific human capital of young workers and their lower participation rates (discussed below). However, the very rapid rise of youth unemployment over the crisis can also be partly explained by the typically higher representation of the under-25s among temporary workers, who are generally more vulnerable to cyclicality than permanent workers and who were disproportionately displaced from employment during the crisis.[1] The rise in youth unemployment poses a particular challenge for euro area policy-makers, not only because of the possible long-term "scarring" effects[2] of protracted unemployment spells at the beginning of young people's working lives on later career

Chart A Unemployment rates and youth unemployment rates across the euro area over the course of the crisis

(percentages of the respective labour forces)



Source: Eurostat (EU Labour Force Survey).

1 See "Comparisons and contrasts of the impact of the crisis on euro area labour markets", *Occasional Paper Series*, Box 2, Section 2.1.2, ECB, Frankfurt am Main, forthcoming and the box entitled "Developments in youth unemployment in euro area countries since the onset of the crisis", Monthly Bulletin, ECB, Frankfurt am Main, February 2014.
2 See Arulampalam, W., "Is Unemployment Really Scarring? Effects of Unemployment Experience on Wages," *The Economic Journal*, 111(475), 2011, pp. 585-686, which finds "permanent scars" in terms of both wage penalties and re-employment probabilities from protracted unemployment spells early in young people's working lives.

and earnings development, but also because evidence from earlier recessions suggests that these protracted unemployment spells may lead to a higher propensity for discouragement and inactivity among young people, thus having an adverse impact on longer-term developments in the potential labour supply.

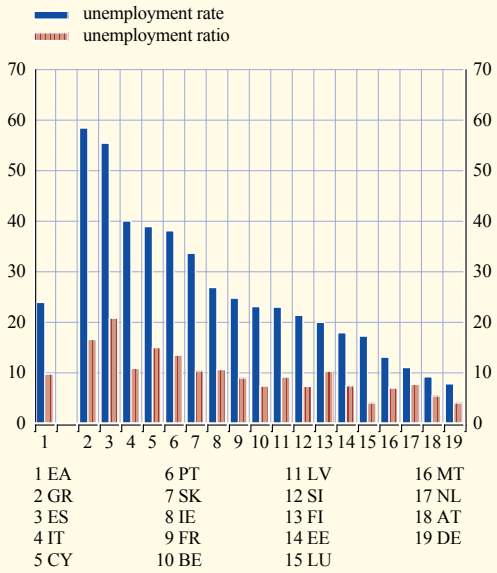
An alternative measure of youth unemployment – unemployment ratios

To some extent, simple comparisons of youth unemployment rates somewhat exaggerate the impact of the crisis on youth labour markets, since the cohort typically includes two distinct groups with very different characteristics: the first group consisting of 15-19 year olds includes a large number of young people who are still at school or in training; the second group, which is made up of 20-24 year olds, may be less likely to be still in education or training, but may have yet to find their first job. Consequently, the first group typically has a significantly lower participation rate than both the latter group and the population of (25-54 year-old) "prime age" workers.[3]

An alternative – and potentially more meaningful – measure is the youth unemployment ratio, which is computed as the ratio of young unemployed to the total cohort. Chart B shows that on this metric, youth unemployment seems to be somewhat less pronounced than is suggested by headline rates, but that substantial differences nevertheless remain across countries, with youth

Chart B Unemployment rates and unemployment ratios for young persons (aged 15-24) in 2013

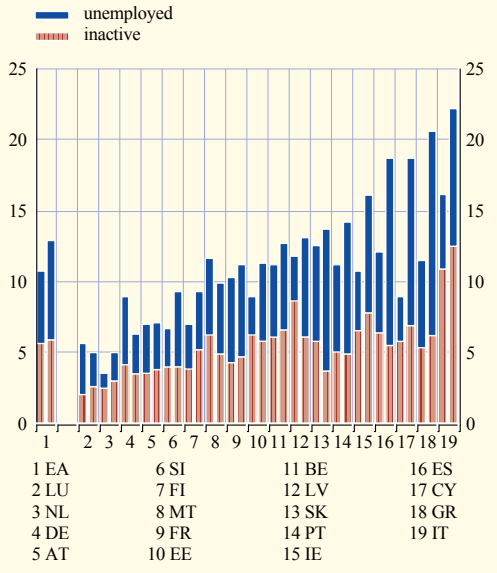
(unemployment rates as a percentage of youth labour force; unemployment ratios as a percentage of the total population aged 15-24)



Source: Eurostat (EU Labour Force Survey).

Chart C Proportion of young people not in employment, education or training, by country, in 2007 and 2013

(percentages of the total population aged 15-24)



Sources: Eurostat and ECB calculations.
Notes: Left-hand bars represent 2007 averages and right-hand bars 2013 averages.

3 In 2012 participation rates (i.e. the proportion of each cohort actively engaged in the euro area labour force) ranged from 19.9% for the under-20s to 64.2% for the 20-24 year-olds, compared with 78.1% for "prime age" workers.

unemployment ratios in the stressed economies standing at around four to five times higher than those of Germany, Luxembourg, the Netherlands and Austria.

Young people not in employment, education or training

Lower unemployment ratios to some extent reflect the fact that it is easier for younger cohorts than older workers to exercise the "outside option" of staying on in education and training during periods of economic downturn. That said, the numbers exercising this option over the course of the crisis appear to have been lowest in those countries characterised by the highest youth unemployment ratios. Chart C combines the proportion of under-25 year olds who are unemployed with that of those who are not in more productive activities (not in employment, education or training). Together, these groups form a category that is typically referred to in the literature as NEETs. It shows that, aside from the strong divergence in youth unemployment ratios across the euro area countries, youth inactivity rates are also highest in those countries where unemployment rates are typically higher. As a consequence, NEET rates increased among the 15-24 year-old age group in all euro area countries over the course of the crisis, with the exception of Germany, Malta and Austria. However, in most countries, the large increase in the NEET rate is mainly explained by a rise in the number of unemployed rather than by an increase in inactivity.

Concluding remarks

Despite diminished labour market prospects, young people who are not yet in education, employment or training nevertheless remain attached to the labour market and are looking for work. While, in time, the EU "youth guarantee" initiative[4] may help to provide access to work experience and productivity-enhancing training for young people who are currently only marginally attached to the labour market, it is no substitute for wider efforts to encourage more flexible labour markets. These will require a dismantling of harmful labour market dualities – including overly rigid employment protection legislation, which effectively reserves job opportunities for incumbent "insiders" and thus significantly reduces young people's access to compete in the labour market.

4 See the Council Recommendation of 22 April 2013 on establishing a Youth Guarantee (OJ C 120, 26.4.2013, p.1), which recommends ensuring that all under-25s are offered some form of employment, traineeship or continued education within four months of leaving education or becoming unemployed.

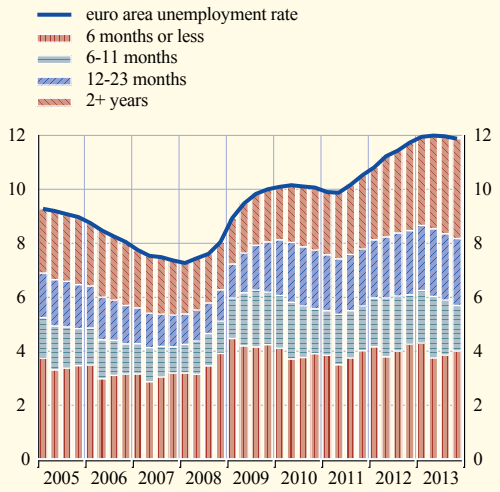
Low-skilled workers have been disproportionately displaced from employment over both phases of the crisis, whereas the employment of high-skilled workers has kept on increasing in all but the worst affected economies. While medium-skilled workers (those with secondary level education or equivalent trade certification) saw something of a reprieve in the rate of job losses during the recovery in euro area GDP between mid-2009 and late 2011, low-skilled workers endured ongoing employment losses. This divergent evolution of employment by skill level appears to have been particularly acute in the stressed economies, where job losses among the low-skilled account for a substantial part of the decrease in employment.

3 STRUCTURAL MISMATCH AND STRUCTURAL UNEMPLOYMENT

At the onset of the crisis, the initial strong (3 percentage point) rise in the euro area unemployment rate was driven largely by increases in short-term unemployment (see Chart 8), as is typical during the

Chart 8 Euro area unemployment rate by duration

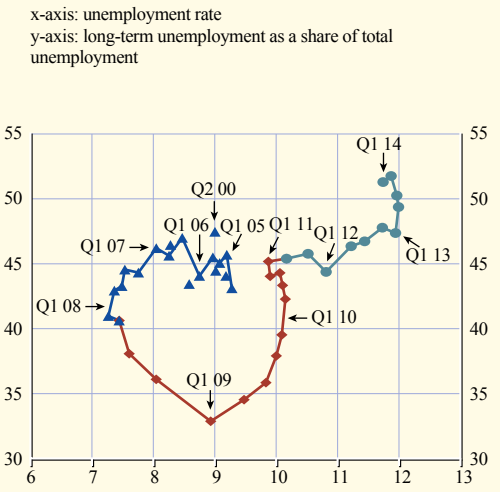
(percentages of the labour force; shares of total unemployment)



Sources: Eurostat and ESCB calculations.
Notes: Long-term unemployment is defined as persons out of work for 12 months or more.

Chart 9 Evolution of the euro area unemployment rate and long-term unemployment share

(percentages of the labour force; shares of total unemployment)



Sources: Eurostat and ESCB calculations.
Notes: Long-term unemployment is defined as persons out of work for 12 months or more. Blue lines show the period from Q2 2000 to Q1 2008 (pre-crisis), red lines cover the first part of the crisis, from Q2 2008 to Q1 20011, while the lines with circles represent the second part of the crisis and the subsequent recovery.

initial job-shedding phases of recessions. However, as the crisis took hold, job-finding rates declined markedly (see Box 2), leading to longer unemployment spells. This raised both the unemployment rate and the share of long-term unemployment (defined here as persons unemployed for 12 months or more). Chart 9 summarises the contemporaneous evolutions of the euro area unemployment rate and the share of long-term unemployment. With the onset of the second phase of the crisis, both metrics deteriorated further, the unemployment rate rising by a further 2 percentage points, while long-term unemployment rose from around 45% (in line with its pre-crisis average) to around 52% of total unemployment. By the end of 2013 the stock of long-term unemployed accounted for over 6% of the total euro area labour force, more than double its pre-crisis level, so that much of the progress made in reducing average unemployment spells from the mid-2000s had been reversed. From a policy perspective, the marked rise in long-term unemployment has been one of the most serious labour market consequences of the crisis, since long unemployment spells may translate into structural unemployment and thus a marked reduction in potential output in the longer term.

Box 2

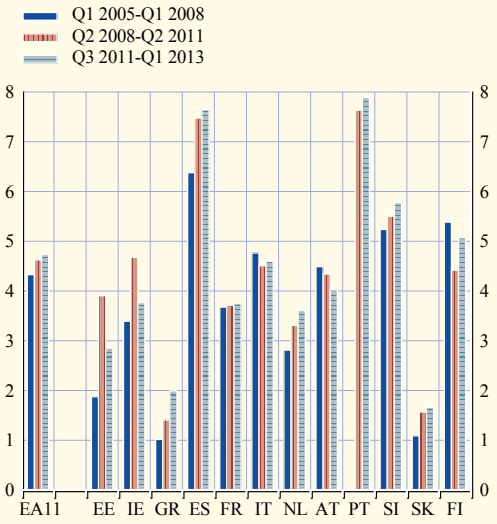
LABOUR MARKET FLOWS OVER THE COURSE OF THE CRISIS

This box uses quarterly Labour Force Survey (LFS) data to analyse labour market flows across euro area countries over the course of the crisis. Reflecting data availability, the analysis covers twelve euro area countries (EE, IE, GR, ES, FR, IT, NL, AT, PT, SI, SK and FI) over the period up to (at least) the end of 2012. These data track changes in the labour market status of

individuals over the consecutive quarters they remain in the survey.[1] To assess the impact of the different phases of the crisis, developments in labour market flows are compared over three distinct periods: the pre-crisis period (from the first quarter of 2005 to the first quarter of 2008), the Great Recession and its aftermath (from the second quarter of 2008 to the second quarter of 2011) and the sovereign debt crisis (from the third quarter of 2011 to the first quarter of 2013). The LFS microdata include detailed information on worker and job characteristics, which permit analysis of the main determinants of worker flows. This analysis focuses on movements between employment and unemployment (job separation rates) and unemployment to employment (job-finding rates).

Chart A Flows out of employment into unemployment over the crisis

(job separation rates; percentages)



Sources: Eurostat (EU Labour Force Survey microdata) and ESCB calculations.
Notes: Separation rates are computed as percentages of those employed in the previous quarter. Separations include voluntary quits.

Chart A shows that, over the course of the crisis, job separation rates[2] – due to job losses and voluntary quits – increased for the euro area 11[3] from around 4.3% to 4.7% during the Great Recession, with a further marginal increase in the second phase of the crisis. At the country level, job separation rates rose sharply in Estonia, Ireland and Spain, and to a lesser extent in Greece, the Netherlands, Slovenia and Slovakia with the onset of the Great Recession. By contrast, France and Italy show a markedly lower cyclical sensitivity, with job destruction rates hardly changing over the whole period. For the most part, job destruction rates rose further over the second phase of the crisis. However, several economies – Estonia, Ireland and Austria – appear to show a subsequent decline in separation rates in the second phase of the crisis, albeit to still elevated rates compared with the pre-crisis period (with the exception of Austria). Analysis of worker characteristics shows that much of the sharp rise in job destruction rates in the first phase of the crisis – particularly in Ireland, Spain and Estonia, and to a lesser extent in Greece, Slovenia and Slovakia – can be attributed directly to the strong downsizing in the construction sector.[4]

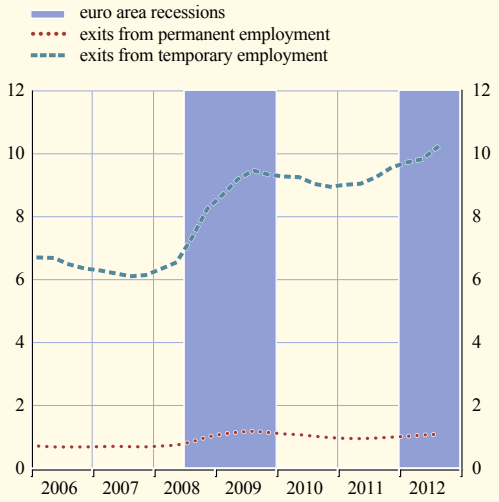
Differences by contract type

At the start of the crisis in 2008, job destruction rates for temporary workers rose sharply, to reach almost 10% of total temporary employment (on a moving average basis; see Chart B), and have remained at similar or even slightly higher levels ever since. By contrast, while job

1 These linked LFS microdata are available only at country level. Flows series have been provided by the respective national central banks.
2 Defined as the ratio of newly unemployed (who were employed one quarter earlier) to total employment.
3 Portugal is not included in these aggregates since data are available only from the second quarter of 2011.
4 There are various reasons for the marked cross-country differences in the starting levels of the flow data, not least, labour market institutions (including employment protection legislation), which can slow both the outflows from and inflows into employment. In Greece, a relatively low ratio of temporary employees also appears to play a role in explaining the low job separation rates there, since rates among permanent workers are similar to those of other euro area economies. (See, also, Section 1.1.2 of the 2012 Structural Issues Report, entitled "Euro area labour markets and the crisis", *Occasional Paper Series,* No 138, ECB, October 2012.)

Chart B Job destruction rates by contract type, euro area 11

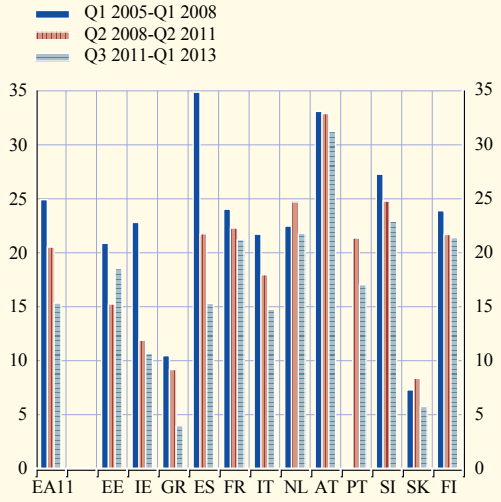
(job destruction rates; percentages)



Sources: Eurostat (EU Labour Force Survey microdata) and ESCB calculations.
Notes: The euro area 11 comprises AT, EE, ES, FI, FR, GR, IE, IT, NL, SI and SK. The data are four quarter moving averages.

Chart C Flows from unemployment to employment over the crisis

(job-finding rates; percentages)



Sources: Eurostat (EU Labour Force Survey microdata) and ESCB calculations.
Note: Job-finding rates are computed as percentages of those unemployed in the previous quarter.

destruction rates among permanent employees also rose markedly at the onset of the crisis – from less than 0.9% in advance of the crisis to 1.4% in 2009, before settling at around 1.2% since then – they remain far lower than the destruction rates seen for temporary employees. Furthermore, job separation rates for euro area workers of both contract types appear to have remained at elevated levels since the onset of the crisis, particularly among temporary workers, despite the typically more limited fall in GDP over the second phase of the crisis.

Flows out of unemployment

Turning to the data on flows out of unemployment and focusing on movements into employment,[5] Chart C shows that in advance of the crisis, roughly 25% of the unemployed across the euro area 11 found a job in each quarter, but that this probability declined notably with the onset of the crisis and has fallen further still – to around 15% – since the second phase of the crisis. At the country level, this downward trend has occurred across virtually all euro area labour markets in the sample, with the exception of Estonia, where a cyclical recovery is evident. Among the countries most affected by the crisis, the probability of exiting from unemployment to employment has declined particularly sharply, falling from almost 35% to 15% in Spain, to 10% in Ireland and to less than 5% in Greece. Job-finding rates in Italy, Portugal and Slovakia have also shown notable declines.

Chart D shows that job-finding rates among the unemployed differ considerably according to unemployment duration. While the duration dependence of unemployment was already clearly

5 For the euro area 11, flows from unemployment to inactivity appear to have shown a moderate decline since the start of the crisis (although to a much lower degree than the decline in flows from unemployment to employment described in the text).

visible in advance of the crisis (with job-finding rates typically considerably higher among those with lower unemployment spells than for those unemployed for more than a year), job-finding rates have fallen substantially for both groups over the course of the crisis. Country-level analyses reveal similar patterns, albeit with some improvements visible in job-finding rates among the shorter-term unemployed in Estonia, Ireland and Finland. The significant downward trend in job-finding rates among those unemployed for 12 months or more warrants particular attention from policy-makers as it points to an elevated risk of a marked increase in structural unemployment across the euro area and potential hysteresis effects.

Chart D Job-finding rates by unemployment duration

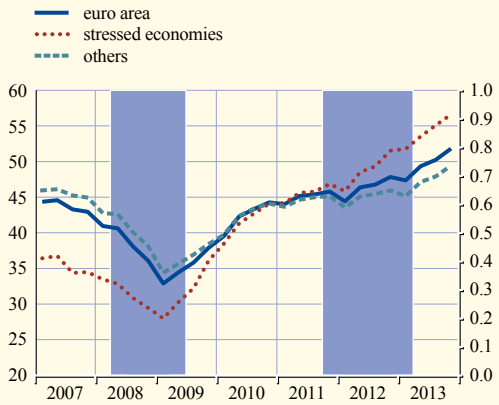
(job-finding rates; percentages)

Sources: Eurostat (EU Labour Force Survey microdata) and ESCB calculations.

While many euro area economies have seen marked rises in long-term unemployment over the course of the crisis, the stressed economies have, on the whole, suffered much steeper increases (see Chart 10). Part of the explanation for this undoubtedly lies in the subdued labour demand conditions still prevalent in many of the stressed economies, but it may also partly reflect a divergence between the labour market characteristics of the unemployed and the skill needs of potential employers. To illustrate more clearly the degree of cross-country heterogeneity, Chart 11 compares the contemporaneous evolutions of unemployment and the long-term unemployment share in Germany and Spain.

Chart 10 Long-term unemployment in stressed economies and other economies

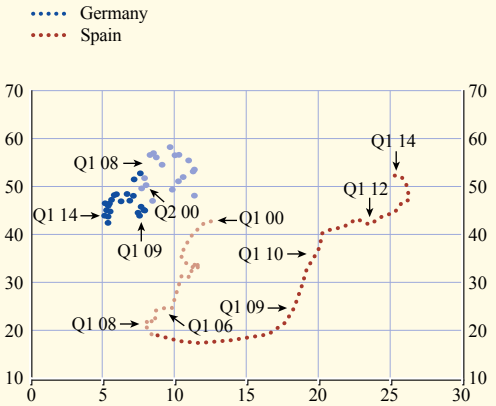
(percentages of total unemployment)



Sources: Eurostat and ESCB calculations.

Chart 11 Evolution of the unemployment rate and the share of long-term unemployment: Germany and Spain

(percentages)



Sources: Eurostat and ESCB calculations.
Notes: Long-term unemployment is defined as persons without jobs for 12 months or more. The lighter shaded parts of the lines show the pre-crisis period.

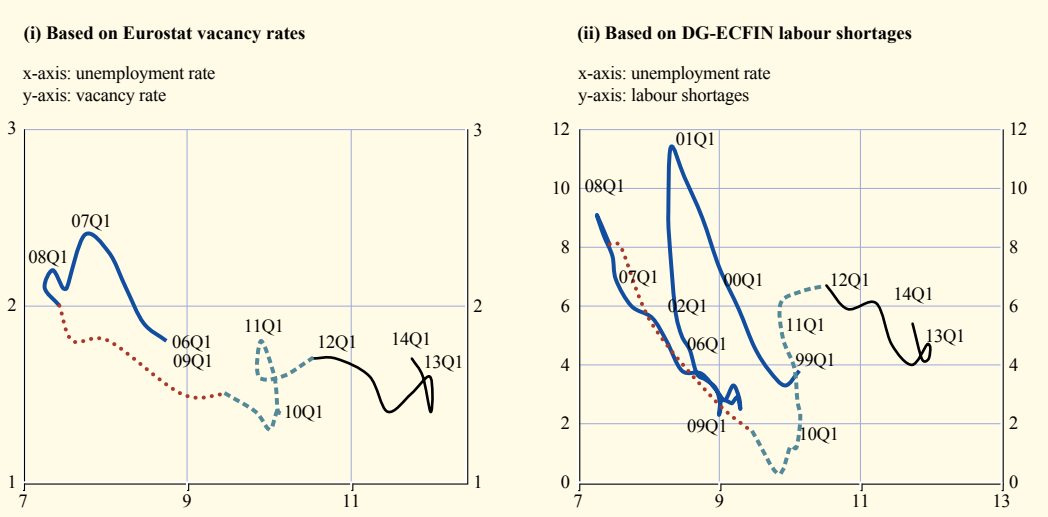
Both countries began the crisis with unemployment rates of around 8%. However, in Germany, the advent of the crisis led to little disruption in the downward trends seen in both the unemployment rate and the long-term unemployment share since the mid-2000s, in part as a consequence of structural reforms introduced at that time. Meanwhile, in Spain, the unemployment rate has increased more than fourfold, while the share of long-term unemployment has risen from less than one-fifth to over one-half of total unemployment. Similar, albeit less pronounced, patterns are seen in all of the stressed economies, suggesting that there are considerable barriers to re-employment in these economies.

AN OUTWARD SHIFT IN THE EURO AREA BEVERIDGE CURVE

Beveridge curve analysis provides a simple and well-established approach to investigating the extent to which developments in unemployment may be the result of a transitory downturn in labour demand or a structural mismatch. Chart 12 shows the euro area Beveridge curve according to two measures of labour demand: (i) euro area vacancy rates; and (ii) employers' perceptions of labour shortages. Prior to the crisis, the counter-clockwise movements observed in the aggregate euro area Beveridge curve from the mid-2000s reflected a typical business cycle pattern, with unemployment falling as vacancies increased. However, as the Great Recession took hold, strong declines in labour demand resulted in a strong increase in euro area unemployment, with the euro area Beveridge curve moving outwards, reflecting low vacancy rates and high unemployment.

During the initial stages of the crisis, it was not clear whether this simply reflected typical cyclical movements along a pre-existing Beveridge curve (and thus the transitory effects of low demand) or the first signs of an outward shift of the Beveridge curve, marking the start of a structural change in the underlying unemployment-vacancy relationship. However, the pick-up in labour demand seen over the course of 2010 only generated a very small decrease in the euro area unemployment rate.

Chart 12 Evolution of the euro area Beveridge curve over the crisis



Sources: Eurostat (harmonised euro area unemployment rate, job vacancy rate and manufacturing employers' perceptions of labour shortages) and ESCB calculations.
Notes: Blue lines show the pre-crisis period from Q1 2006 in panel (i) and from Q1 1999 in panel (ii) to Q1 2008 in both panels; red lines represent the Great Recession period from Q2 2008 to Q2 2009; green lines depict the subsequent recovery from Q3 2009 to Q3 2011, while the black lines trace the evolution of the Beveridge curve since the onset of the second recession and during the subsequent recovery (i.e. from Q4 2011 to the latest observation).

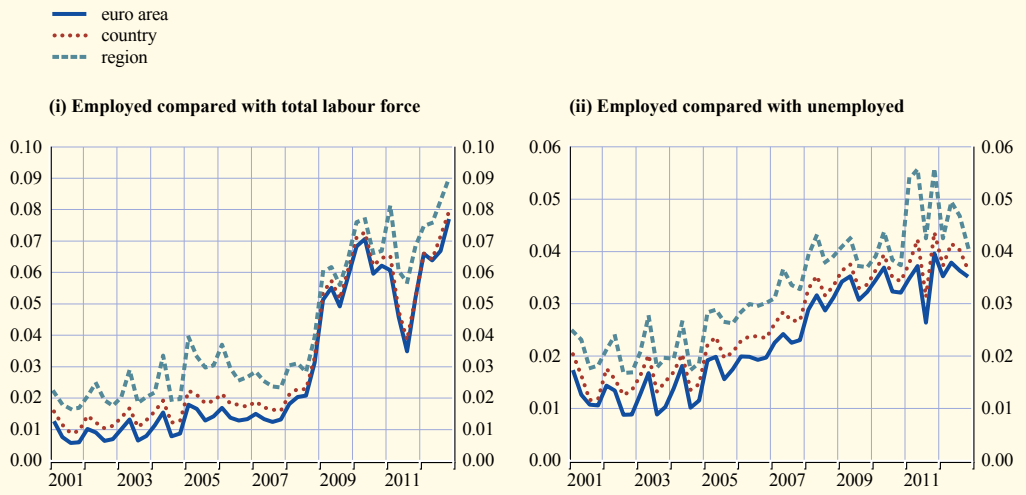
Moreover, the second recessionary episode, starting in the final quarter of 2011, led to a further strong increase in the unemployment rate even though aggregate vacancy rates remained elevated. Accordingly, Beveridge curve analysis shows mounting signs of entrenched mismatch across euro area labour markets. Visual inspection and econometric analysis suggest considerable diversity in Beveridge curve movements at the country level, with strong evidence of notable outward shifts also having taken place in Spain and France by a variety of metrics.[9]

EVIDENCE OF SKILL MISMATCH

An obvious factor that may help to explain the Beveridge curve movements observed over the course of the crisis would be an increase in skill mismatch (that is, the discrepancy between the skills of labour force participants and the skill needs of employers) across the euro area. Analysis of the evolution of skill mismatch[10] across 16 of the euro area economies (subject to data availability) suggests a notable increase in skill mismatch in the initial phase of the crisis at regional, country and euro area level, irrespective of whether mismatch is measured relative to the labour force as a whole or simply by comparing the skills of those in work to those of the unemployed (see Chart 13). In both cases, the gap appears to be higher at the regional level than at the intra-country level, suggesting that at least part of the strong skill mismatch evident at euro area level could be significantly alleviated through higher inter-regional labour mobility.

Chart 13 Skill mismatch indicators for the euro area

(percentage differences)



Sources: Eurostat and ESCB calculations.
Notes: The skill mismatch index (SMI) is computed as the difference between skill demand (proxied by the educational attainments of the employed) and skill supply (proxied by the educational attainments of the labour force or unemployed, respectively). The country index aggregates 16 SMIs computed at country level across six skill levels. The region index aggregates SMIs computed at regional level.

9 Visual inspection suggested that several other candidates (e.g. Greece and Slovenia) showed clear outward shifts, while results for other stressed economies were often inconclusive owing to data limitations or the lag structure of the adjustment process. (See also Bonthuis, B., Jarvis, V. and Vanhala, J., "What's going on behind the euro area Beveridge curve(s)?" *Working Paper Series,* No 1586, ECB, September 2013.)

10 Skill mismatch indices are computed as the difference between skill demand and supply at country and regional level, whereby skill supply is approximated by the share of the labour force (or unemployed, respectively) with a given level of educational attainments (disaggregated according to the six discrete levels of the International Standard Classification of Education) and skill demand is proxied by the educational attainments of those employed. See, also, Section 3.4 of "Comparisons and contrasts of the impact of the crisis on euro area labour markets", *Occasional Paper Series*, ECB, forthcoming, and Section 2.2 of the 2012 Structural Issues Report, entitled "Euro area labour markets and the crisis", *Occasional Paper Series,* No 138, ECB, October 2012.

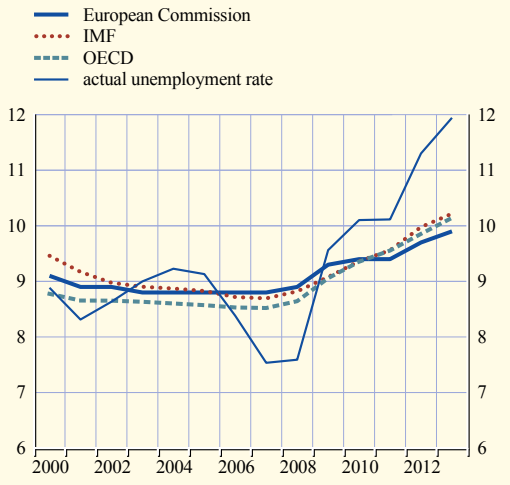
Country-based results suggest particularly marked and immediate increases in skill mismatch at the start of the crisis in Ireland, Greece, Spain and Portugal, probably reflecting a sharp reversal of earlier construction booms, with mismatch emerging somewhat later (albeit to a similar degree) in the remaining stressed economies (Italy, Cyprus and Slovenia). While skill mismatch appears to have remained subdued over the crisis in some euro area economies (Belgium, Germany and Austria, where it has even shown a marked decline beginning in the mid-2000s) or at least to have remained contained within its normal historical limits in others (France, Luxembourg, the Netherlands and Slovakia), Estonia appears to be a remarkable case, in which all the adverse effects of the crisis on skill mismatch were reversed within just a few years, following a wave of far-reaching labour market reforms adopted from 2009. These included a marked easing of employment protection legislation, combined with a trebling of spending on active labour market programmes to retrain the unemployed.[11]

ESTIMATES OF STRUCTURAL UNEMPLOYMENT

The strong increases in both long-term unemployment and measured skill mismatch give rise to important concerns related to structural unemployment. Estimates provided by international organisations – in particular, the European Commission, the OECD and the IMF – suggest that the crisis has resulted in an increase in structural unemployment across the euro area, from an average (across institutions) of 8.8% in 2008, in advance of the onset of the crisis, to 9.4 % in 2010, following the Great Recession, and, further, to 10.3% by 2013, following the emergence of sovereign debt concerns (see Chart 14). Overall, however, these estimates suggest that the average 1.6 percentage point increase in structural unemployment represents around one-third of the almost 5 percentage point increase seen in the headline unemployment rate, while cyclical unemployment represents around two-thirds of the increase. In addition to the strong upward revisions to estimates for the euro

Chart 14 Structural unemployment estimates for the euro area

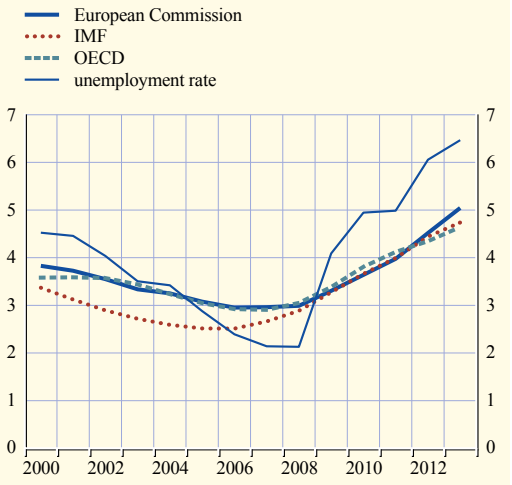
(percentages of the active labour force)



Sources: European Commission, Eurostat, IMF, OECD and ESCB calculations.

Chart 15 Dispersion of structural unemployment estimates across countries

(standard deviations)



Sources: European Commission, Eurostat, IMF, OECD and ESCB calculations.
Note: Dispersion is calculated as the standard deviation of differences between country-level structural unemployment estimates and the euro area average.

11 See Brixiova, Z. and Egert, B., "Labour Market Reforms and Outcomes in Estonia", *IZA Discussion Paper series,* No 6336, IZA, Bonn, February 2012.

area, the crisis has also led to a considerable increase in cross-country dispersion (see Chart 15), reflecting marked increases in structural unemployment estimates for Ireland, Greece, Spain, and Portugal – particularly since the advent of the sovereign debt crisis – while Belgium, Germany, Austria and Finland show stable or slightly declining estimates.

Real-time estimates of structural unemployment are surrounded by considerable uncertainty, varying by institution, by methodology and over time, so that there are sizeable differences in estimates for some economies – in particular, for Greece, Cyprus and Portugal. However, the marked and consistent upward revisions of each subsequent release have been a feature common to all institutions.

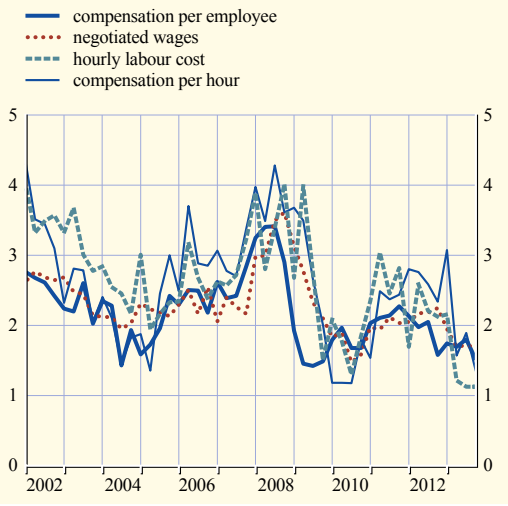
4 WAGE ADJUSTMENT OVER THE CRISIS

Against the background of heavy employment losses, sharp rises in unemployment in some countries and lengthening unemployment spells, Chart 16 suggests that in the initial phase of the crisis, euro area wage responses to labour market conditions were rather limited, with all four main wage indicators continuing to grow strongly into 2009. For compensation per employee and negotiated wages, this ongoing growth largely reflected stipulations in wage contracts concluded before the crisis, that is to say it was a consequence of the longer-run nature of collective bargaining and indexation agreements. For hourly wage series, it also reflected the large downward adjustment in hours worked that was observed in some euro area countries combined with the less-than-proportional reduction in compensation.

Unit labour costs rose sharply in 2008-09 (see Chart 17) on the back of robust wage growth and a strong decline in labour productivity. While some deceleration in the rate of wage growth was apparent by the start of 2009, it remained insufficient to prevent the loss of almost four million jobs across the euro area over this period.

Chart 16 Euro area wage indicators

(annual percentage changes)



Sources: Eurostat and ESCB calculations.

Chart 17 Euro area labour cost indicators

(annual percentage changes)

Sources: Eurostat and ESCB calculations.

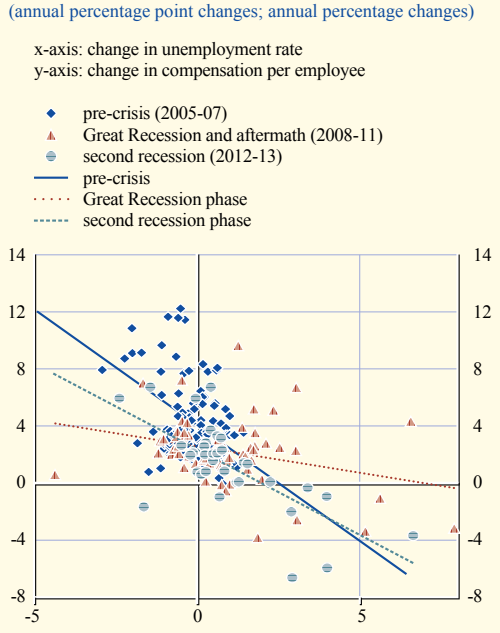
On the whole, the growth of compensation per employee remained robust, averaging over 2% per year well into 2012. Nevertheless, some signs of greater wage responsiveness became apparent as sovereign debt concerns emerged, leading to further job losses in the stressed economies, with the growth in negotiated wages and compensation per employee declining markedly below its long-term average by 2010-11.

Chart 18 depicts a traditional Phillips curve relationship between annual changes in compensation per employee and unemployment rates at the country level in the pre-crisis period and for the two phases of the crisis. It shows that, during the first phase of the crisis (surrounding the Great Recession of 2008-09), the estimated response of wages to changes in the unemployment rate was lower than in the pre-crisis period, but appears to have increased (with a "steeper" Phillips curve) in the second phase.[12]

Turning to wage developments in the private and public sectors across the euro area, Chart 19 shows that, while the growth rate of private sector hourly compensation rebounded in line with the recovery after the Great Recession, compensation growth remained subdued in the public sector,

Chart 18 Phillips curves for the euro area

(annual percentage point changes; annual percentage changes)



Sources: Eurostat and ESCB calculations.
Notes: Data points are country-based contemporaneous relationships over the period shown. Latvia is excluded owing to data limitations.

Chart 19 Euro area compensation per hour – private and public sectors

(annual percentage changes)

Sources: Eurostat and ESCB calculations.

12 These basic Phillips curves charts do not take account of other factors affecting wage developments (such as productivity or inflation). Nevertheless, econometric analysis on the basis of panel estimates for a wage equation covering the majority of the euro area countries shows that the euro area is characterised by downward wage rigidities, with wages typically showing a more muted response to changes in unemployment during downturns (See Section 4.2 of "Comparisons and contrasts of the impact of the crisis on euro area labour markets", *Occasional Paper Series*, ECB, forthcoming). However, the analysis finds that wages were increasingly responsive to rising unemployment as the crisis continued, possibly as a result of "threshold effects" reflecting the large magnitude of the rise in unemployment in some euro area countries, the protracted nature of the crisis, incipient downward pressures on wages following the wave of labour market reforms introduced in some countries and ongoing public sector pay restraint resulting from fiscal consolidation.

in part reflecting fiscal consolidation efforts across many euro area economies, including public sector wage freezes and cuts in some euro area countries. Moreover, as the second phase of the downturn continued, the growth in private sector compensation decelerated markedly, bringing growth rates down towards the lower levels seen in the public sector over the trough of the Great Recession. However, stylised facts based on aggregate data obscure an important element of wage growth over the crisis – namely, the upward impact on aggregate wages of employment composition effects, reflecting the heavy concentration of job losses among lower paid workers (including the low skilled and the young). Therefore, comparisons based entirely on aggregate trends may to some extent underestimate the increase in wage flexibility in the euro area in recent years.[13]

5 CONCLUDING REMARKS

The considerable increase in unemployment observed over the course of the crisis has been heavily concentrated in those euro area economies particularly affected by the financial market stress, where the crisis exposed sectoral overheating, structural imbalances and labour market rigidities. This contributed to sharp falls in output and employment. Some groups (the young, the unskilled, those on temporary contracts and those displaced from earlier overheated construction sectors) were particularly hard hit. Moreover, the crisis has led to a strong increase in long-term and structural unemployment in some countries.

During the first phase of the crisis, the estimated response of wages in the euro area to changes in the unemployment rate was lower than in the pre-crisis period, but appears to have increased (with a "steeper" Phillips curve) as the crisis persisted. In the presence of high unemployment, a more rapid and flexible response of wages to labour market conditions should help to restore competitiveness and encourage job creation. Further reforms to collective bargaining – which enable firm-level wage agreements to better reflect local labour market conditions and productivity developments, and which allow for greater wage differentiation – would improve signalling mechanisms regarding demand for different types of worker.[14]

Labour market reforms have been particularly intense in those countries in receipt of international financial assistance (Ireland, Greece, Spain, Cyprus and Portugal). These efforts notwithstanding, progress in labour market reform remains partial and uneven across the euro area. While the impact of reforms that have already been undertaken may take some time to produce their full effects, more may be required to achieve the degree of labour market flexibility compatible with membership of a monetary union. Enhanced efforts to increase inter-regional and inter-country labour mobility across the euro area economies would help tackle high localised unemployment levels, thus reducing the risk that current high levels of unemployment translate into further increases in structural unemployment, and help alleviate emerging bottlenecks in stronger growing euro area economies. Further reductions in employment adjustment rigidities and labour market dualities would also help to speed up the reallocation of employment to more productive sectors.

Countering the strong rise in long-term unemployment will require greater emphasis on (re-)activation policies, via a reprioritisation of active labour market policies – including targeted retraining measures – so as to enhance the employability of those displaced from permanently

13 For a more detailed analysis of this aspect of wage adjustment, see "Comparisons and contrasts of the impact of the crisis on euro area labour markets", *Occasional Paper Series*, ECB, forthcoming.
14 Some labour market reform recommendations were outlined in Mr Draghi's speech at the 2014 Economic Policy Symposium at Jackson Hole, entitled "Unemployment in the euro area".

downsized sectors. Measures should focus in particular on the young and the less skilled in order to prepare these groups for new employment opportunities, help to alleviate the skill mismatch observed and target higher-productivity activities, all of which will help speed up the restructuring process. However, while active labour market policies can help reintegrate young people and the unemployed into employment and provide access to productivity-enhancing training and experience, they are no substitute for the necessary wider efforts to encourage more flexible labour markets.

Finally, in order to reap the full benefits of labour market reforms, further reforms to product markets will be required in order to increase competition and the resilience of the euro area to future shocks, thus avoiding the higher costs of lost output and higher unemployment associated with slower and more protracted adjustments.