

EURO AREA LABOUR MARKETS AND THE CRISIS

ARTICLES

Euro area labour
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Between the start of the economic and financial crisis in 2008 and the beginning of 2010, almost 4 million jobs were lost in the euro area. This notwithstanding, in historical comparison, given the extent of the fall in GDP, the employment adjustment was relatively muted at the euro area aggregate level. However, the impact on some countries and some specific worker groups was especially strong. The heterogeneity of cross-country reactions reflects not only differences in the severity of the crisis and policy responses, but also the different nature of the shocks hitting euro area economies and the presence of imbalances in the run-up to the crisis.

Regarding the more medium-term consequences of the crisis, increasing signs of a growing mismatch between worker attributes and job requirements can be observed, as well as recent increases in structural unemployment across the euro area countries. In addition, downward wage rigidities limit the necessary flexible response of wages to labour market conditions to foster employment creation. The rise in structural unemployment underlines the urgent need for continued and further comprehensive reforms to remove rigidities in the labour markets of euro area countries.

I INTRODUCTION

Since 2008 the condition of euro area labour markets has worsened dramatically, with a sharp increase in the unemployment rate, which reached 11.3% in July 2012. However, substantial cross-country heterogeneity emerged and some euro area countries experienced dramatic changes in employment and unemployment rates, while the crisis had a more limited impact in other countries. The main goal of this article is to document these developments, to analyse the role of different factors in shaping countries' labour market reactions and to assess what this implies for euro area labour market prospects.¹

The first section presents labour market developments since the start of the crisis by analysing heterogeneity across countries and identifying those worker groups more heavily affected by the crisis. The impact of the crisis on the labour force is also examined and the extent of wage adjustment in response to the weakening of the labour market is shown. In the second section, the possible impact of these developments on some key structural features of euro area labour markets is examined. In particular, the possible increase in mismatch between labour demand and supply arising from the crisis and its impact on structural unemployment is investigated. This is followed by a description of the main policy responses adopted since the start of the crisis. A final section concludes.

2 LABOUR MARKET DEVELOPMENTS SINCE THE START OF THE CRISIS

2.1 EMPLOYMENT AND UNEMPLOYMENT EVOLUTION

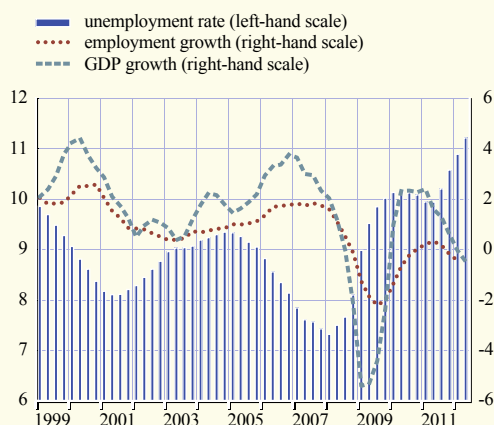
After the start of the financial crisis in 2008, almost 4 million jobs were lost in euro area labour markets, with employment decreasing by 2.6% from the peak in the first quarter of 2008 to the trough in the first quarter of 2010.² In the same period the employment rate fell by 1.7 percentage points to 64.2%. The unemployment rate increased from 7.3% in the first quarter of 2008 – its lowest level since the introduction of the euro – to 10.1% at the beginning of 2010 and, after a brief decline, rose further to 11.3% by July 2012.

However, given the severity of the crisis (see Chart 1), which entailed a fall of euro area GDP of 5.6% between the first quarter of 2008 and the second quarter of 2009,³ employment adjustment was relatively muted at the aggregate euro area level. Labour hoarding practices in euro area labour markets during the initial phases of the crisis contributed to mitigate employment adjustment (measured in heads) as firms showed

- 1 This article is based on "Euro area labour markets and the crisis", *Structural Issues Report*, ECB, September 2012.
- 2 By the first quarter of 2012 employment had declined by more than 4 million (or 2.8%) compared with its peak.
- 3 This was the most severe recession experienced in euro area economies since the Second World War.

Chart 1 Euro area GDP, employment and unemployment

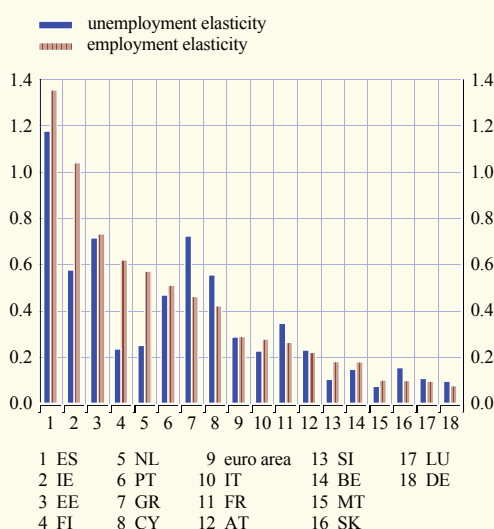
(percentages; year-on-year growth)



Sources: European Commission (national accounts for GDP and employment, and Labour Force Survey for unemployment).

Chart 2 Elasticity of employment and unemployment with respect to output during the crisis

(change in employment or unemployment divided by change in output)



Sources: European Commission (national accounts), EU Labour Force Survey and ECB calculations.

Notes: Elasticities are computed using country-specific peak-to-trough data and annualised growth rates. Peaks are chosen in the period from the first quarter of 2007 to the first quarter of 2009 and troughs in the period from the first quarter of 2009 to the fourth quarter of 2011. Unemployment elasticities are shown in absolute value using the percentage point change in the unemployment rate as numerator.

a widespread preference for forms of internal flexibility, such as cutting overtime and making use of short-time working schemes. In particular, the fall in total hours worked in the euro area (-4.5%) was considerably larger than the decline in headcount employment (-2.6%).⁴

Indeed, a key feature of the crisis is the very substantial degree of heterogeneity observed across individual euro area countries, where accumulated employment losses from peak to trough ranged from -16% to -0.4%. For instance, the number of jobs declined by less than 1% in Belgium, Germany and Luxembourg, despite their GDP fall being similar to the euro area average. By contrast, the number of jobs fell by more than 15% in Estonia and Ireland and by more than 10% in Greece and Spain. Differences in the severity of the crisis provide only a partial explanation of these developments since employment and unemployment elasticities to GDP differed remarkably across the euro area countries over this period (see Chart 2). In particular, the employment reaction to the change in economic activity was very strong in Spain and Ireland.

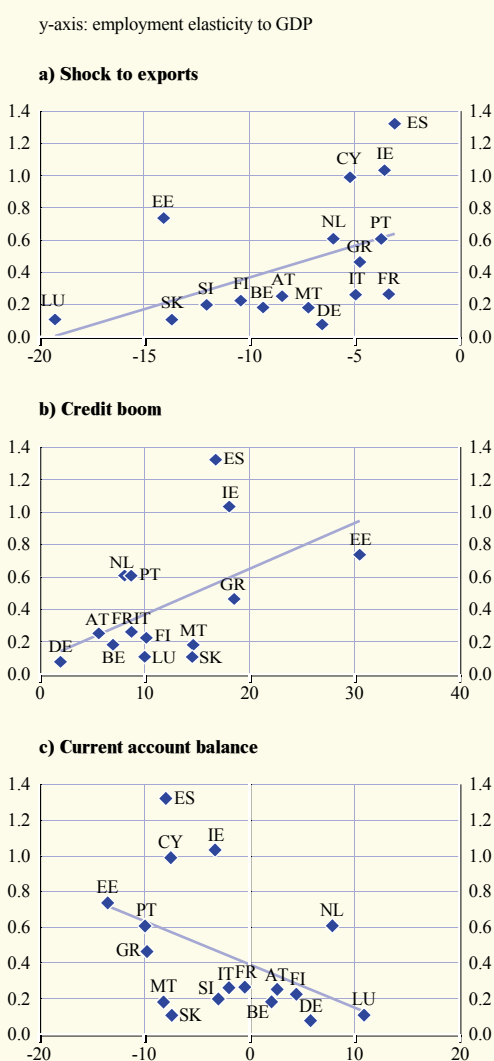
The nature of the shock may be a crucial factor influencing the transmission of the decline in GDP to the labour market. For example, the external component of the downturn (i.e. the collapse in world trade and exports during the initial quarters of the crisis) turned out to be temporary. As firms may have expected the output loss to be transitory, they may have retained workers in anticipation of the trade recovery. In contrast, a bursting property bubble (implying more permanent restructuring) implied a need for more labour adjustment so that firms were less able to retain staff. In this respect, panel a) of Chart 3 suggests a positive (and significant) link between the relative size of the change in exports (in percentage points of

⁴ This is the peak-to-trough decline between the second quarter of 2008 and the third quarter of 2009 and between the first quarter of 2008 and the first quarter of 2010 respectively.

GDP) and the observed employment elasticity across countries.⁵

By contrast, panels b) and c) of Chart 3 show that countries with strong pre-crisis credit growth and current account deficits had a higher

Chart 3 Selected explanatory factors of the employment elasticity to GDP



Sources: Eurostat, European Commission, ECB calculations, national sources for Estonia, Malta and Slovakia, and IMF World Economic Outlook database.

Notes: (a) The export shock is measured as the percentage point change of exports from 2008 to 2009 relative to 2008 GDP (chain-linked volumes). Data for Greece are provisional. (b) Measured as the average yearly credit growth between 2000 and 2008, except for Malta (2005-08) and Slovakia (2002-08). (c) Current account balance as a percentage of GDP; average for the period 2004-07.

employment elasticity. Other country-specific factors also had an impact on the extent of employment adjustment during the crisis; for instance, labour markets characterised by higher shares of temporary contracts before the crisis exhibited disproportionately higher employment losses and increases in unemployment.

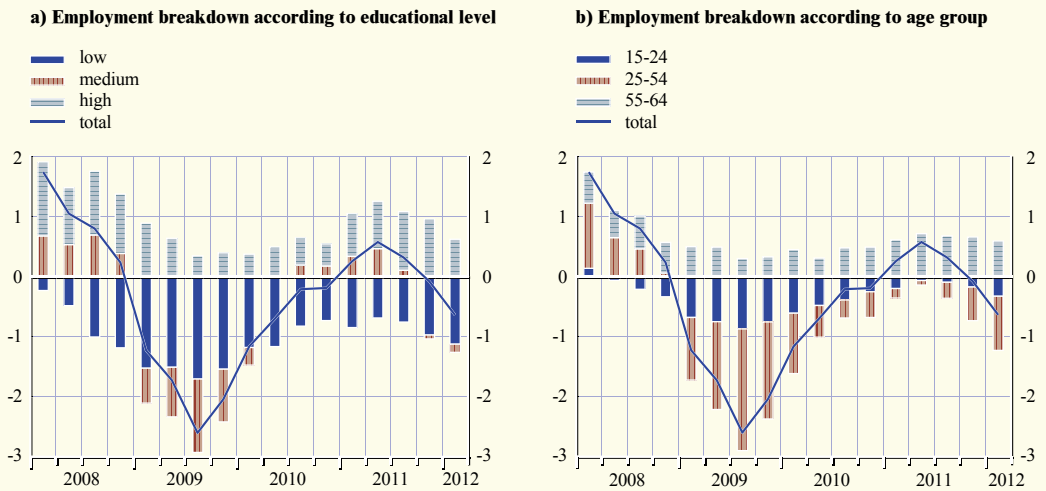
Large divergences were also observed across worker groups in euro area countries. Employment losses were heavily concentrated in manufacturing and construction. The employment adjustment in construction was especially significant in Estonia, Ireland and Spain, in part reflecting a correction to the previous boom in the housing sector. Partly as a result of the strong employment losses in manufacturing and construction, the less-skilled and young workers were the hardest hit by the crisis. In particular, low-skilled workers were more severely affected (see Chart 4a). By contrast, high-skilled employment continued to grow over the whole period, albeit at a slower pace than before. Younger workers were especially hit by the crisis. In contrast, it is remarkable that the employment of older workers (55-64 year olds) showed a clear rise over the crisis period (see Chart 4b). This better labour market performance of older workers may reflect the impact of several recent reforms in a number of countries in previous years, particularly pension reforms encouraging longer participation in employment of older persons.

Finally, developments in long-term unemployment show a significant impact of the crisis. The initial increase in unemployment was due to the newly unemployed who had lost their job. Hence, short-term unemployment rapidly increased between 2008 and 2009. As the crisis continued and the unemployed still experienced difficulties in finding a job, the number of long-term

5 Regarding this result, estimates based on Okun's law (which relates changes in GDP to changes in the unemployment rate) for separate components of GDP also show that unemployment is most sensitive to the consumption component of output, while foreign trade has the lowest impact on unemployment. Thus, the relatively low trade component elasticity seems to help explain why the unemployment rate in some countries did not increase as much as the typical Okun relationship would imply.

Chart 4 Employment developments in the euro area

(annual percentage changes and contributions in percentage points)



Sources: EU Labour Force Survey and ECB calculations.

unemployed (defined as unemployment spells lasting longer than six months) started to increase at the beginning of 2009. Long-term unemployment in the euro area reached 67.3% of total unemployment in the second quarter of 2010, 7 percentage points higher than in the

first quarter of 2008.⁶ Box 1 below adds to the above analysis by looking at labour market flows.

⁶ See Box 2 for a comparison between euro area and US unemployment developments.

Box 1

A FLOWS ANALYSIS OF THE IMPACT OF THE CRISIS IN EURO AREA LABOUR MARKETS

An analysis of the recent evolution of gross worker flows (i.e. movements between employment, unemployment and inactivity) in euro area countries¹ can be very useful in gaining insights into labour market dynamics, since it may uncover differences in the dynamic properties of labour markets across euro area countries and their capacity to adjust to different shocks. This box uses Labour Force Survey (LFS) microdata for 13 euro area countries to analyse labour market dynamics, as these data allow changes in the labour market status of individuals to be tracked.

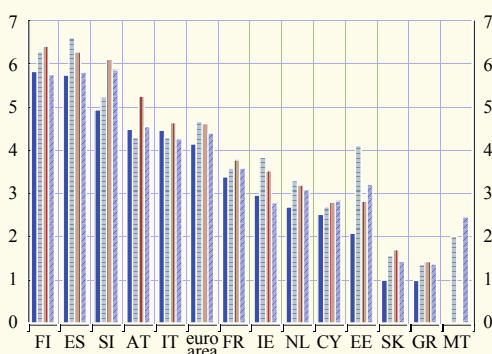
Chart A shows the average size of flows into and out of employment over the pre-crisis period (from the first quarter of 2004 to the second quarter of 2008) compared with the period since the start of the crisis (from the third quarter of 2008 to the third quarter of 2010). For the euro area 13 as a whole, workers representing around 4% of the total labour force have on average moved out of employment in each quarter since 2004. However, there are large differences across euro area countries: flows are around five times higher in countries such as Spain and Finland than in

¹ Belgium, Germany, Luxembourg and Portugal are excluded from this analysis due to the lack of EU Labour Force Survey linked microdata.

Chart A Employment inflows and outflows

(percentage of labour force)

■ outflows, Q1 2004 - Q2 2008
 ■ inflows, Q1 2004 - Q2 2008
 ■ outflows, Q3 2008 - Q3 2010
 ■ inflows, Q3 2008 - Q3 2010

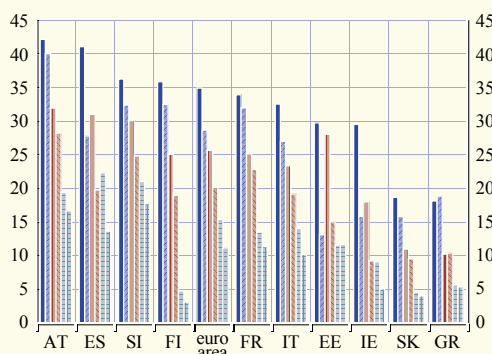


Sources: EU Labour Force Survey and ECB calculations.
Note: BE, DE, LU and PT are not included in the euro area.

Chart B Unemployment outflows by duration

(percentage of unemployment)

■ pre-crisis, 0-6 months
 ■ pre-crisis, 6-12 months
 ■ pre-crisis, >12 months
 ■ crisis, 0-6 months
 ■ crisis, 6-12 months
 ■ crisis, >12 months



Sources: EU Labour Force Survey and ECB calculations.
Note: BE, CY, DE, LU, MT, NL and PT are not included in the euro area.

Greece and Slovakia. Focusing solely upon the period since 2008, as expected, the fall in activity led to an increase in the job destruction rate (measuring movements out of employment) and a decrease in the job creation rate (measuring inflows into a new job). However, a larger increase was observed in the job destruction rate, with flows out of employment increasing from 4.2% to 4.7% of the labour force for the euro area 13 as a whole.

Regarding the impact of the crisis, the differences across countries are considerable. Employment outflows increased markedly in Estonia, Ireland and Spain. In this respect, the increase in exit flows from employment since the start of the crisis was significantly associated with the severity of the GDP fall, with a correlation coefficient of 0.7 between the changes in employment outflows and the accumulated fall in GDP across euro area countries.

LFS microdata allow an analysis of the impact of personal and job-related characteristics on these flows. The main results show that there is a clear pattern between age and the probability of losing a job, with younger workers facing much higher exit probabilities than older workers.² There is also a clear inverse correlation between educational level and the probability of exiting from employment. As regards job characteristics, the employment adjustment is concentrated amongst those on fixed-term (i.e. temporary) contracts, especially in some euro area countries (Spain, France and Finland). Looking at sectors of activity, construction tends to show higher exit rates from employment to unemployment as the scale of the employment adjustment in the construction sector was much more pronounced than in other sectors.

Regarding unemployment flows, unemployment exit probabilities generally decreased in euro area countries during the crisis, albeit to varying degrees (see Chart B, which shows the flows out of unemployment as a percentage of unemployment). As expected, a marked negative relationship is observed between the exit rate probability and the duration of unemployment, suggesting

2 This result holds after controlling for the varying incidence of non-regular contracts and the sectoral composition of employment.

the existence of difficulties faced by the longer-term unemployed in returning to employment. However, short-term unemployment spells have also been directly affected by the crisis. In a number of countries, short-term unemployment has increased rapidly as the probability of finding a new job has decreased markedly given low job creation rates.

Box 2

COMPARING RECENT UNEMPLOYMENT DEVELOPMENTS IN THE EURO AREA AND THE UNITED STATES

Between the start of the recession in 2008 and the end of 2011, total employment decreased by almost 6 million in the United States (around 4.5% of the total prior to the recession), while euro area employment contracted by around 4 million (i.e. 2.6%).¹ At the same time, the contraction in economic activity was of a similar magnitude, with peak-to-trough declines in real GDP of around 5% in both economies.

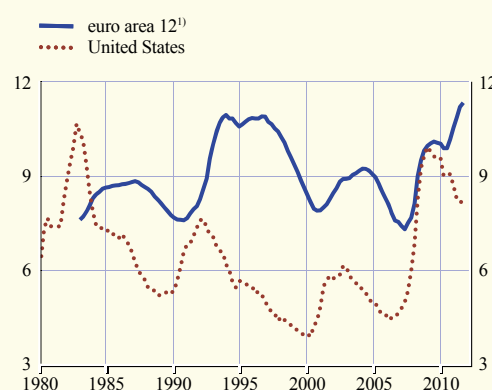
There are a number of reasons which may help to explain the lower employment losses observed in the euro area relative to the United States. These include a relatively lower overall exposure of the euro area to sectoral shocks in the construction and financial sectors, and a greater reliance on short-time working schemes in many euro area countries. The United States also experienced considerable labour supply reductions, which – though adverse in nature – helped to contain the rise in the unemployment rate.

These different labour market dynamics have led to a smaller increase in unemployment in the euro area than in the United States – albeit from a higher initial level (see Chart A). Overall, since the beginning of the crisis, the aggregate euro area unemployment rate has risen by around 4.0 percentage points to 11.3% in July 2012. The US unemployment rate rose initially from 4.8% in February 2008 to a peak of 10.1% in October 2009. By early 2010 both economies recorded unemployment rates of around 10%, but since then developments have been rather different. While the US unemployment rate has been declining, euro area unemployment has continued to climb.

Both economies have seen a considerable increase in the duration of unemployment since the onset of the crisis. Chart B shows

Chart A Evolution of unemployment in the euro area and the United States

(percentage of the civilian labour force)



Sources: Eurostat, US Bureau of Labor Statistics and ECB calculations.

Note: The latest observations are for the first quarter of 2012.

1) Data to 1995 are computed on the basis of developments in the euro area 12, i.e. excluding Cyprus, Estonia, Malta, Slovakia and Slovenia (as data are not available for all euro area countries). Subsequent data are for all 17 euro area countries.

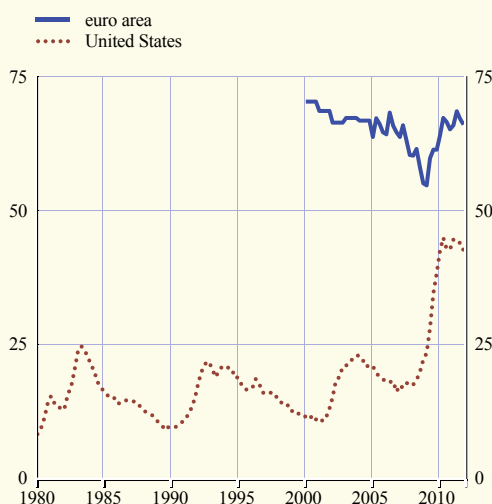
¹ For methodological differences in the compilation of employment data in the euro area and the United States, see the article entitled “Comparability of statistics for the euro area, the United States and Japan”, *Monthly Bulletin*, ECB, April 2005.

the marked increases in the proportions of long-term unemployment (those out of work for six months or more as a percentage of total unemployment). Typically, the share of long-term unemployed in the United States is generally much lower than in the euro area. By contrast, the latest recession has resulted in a considerable increase in long-term unemployment in the United States due, in part, to the severity of the recession, but part is also likely to be due to the extension of unemployment benefit duration from 26 to 99 weeks in 2008, which raised the incentive to register as unemployed beyond the six-month horizon.

All in all, the impact of the crisis was deep in both economies, with a marked increase in unemployment rates, which raises some concerns about a possible increase in unemployment persistence due to the current crisis in both the euro area and the United States.

Chart B Unemployment duration in the euro area and the United States

(those out of work for at least six months as a percentage share of total unemployment)



Sources: Eurostat, US Bureau of Labor Statistics and ECB calculations.

Notes: Euro area data from the first quarter of 2000. The latest observations are for the fourth quarter of 2011.

2.2 THE LABOUR SUPPLY REACTION TO THE CRISIS

Regarding labour supply developments, in the years preceding the crisis, the euro area labour force was growing at an annual average rate of around 1.3%. In 2009 and 2010 labour force growth decelerated to an annual average of 0.2%. The latest data (up to the fourth quarter of 2011) show a similar picture, with an annual growth of 0.3% in total labour supply. Both population growth and participation rate evolutions contributed to this deceleration, although the slowdown in participation rates was stronger than that in population growth. Developments by age and gender show that the female labour force only experienced a deceleration in the positive growth rate, while the male labour force actually shrank during the crisis. By age groups, the labour supply of older workers (55-64 year olds) continued to grow during the crisis at rates similar to previous years, while the labour force of prime-age workers and especially younger workers was heavily negatively affected by the crisis.

Overall, given the intensity of the crisis, labour supply seems to have shown a relatively mild reaction to the deterioration of the euro area labour market. This may be linked to the “added worker effect” (i.e. women entering the labour force in order to replace the lost income when the male of the same household loses his job), as well as the increased participation of older workers partly related to past pension reforms.

2.3 WAGE RESPONSES TO THE ECONOMIC DOWNTURN

Turning to the evolution of wages, all four euro area nominal wage indicators presented in Chart 5 continued their upward movement at the beginning of the downturn in 2008. As regards compensation per employee and negotiated wages, this mostly reflected stipulations in wage contracts concluded before the crisis, since the average length of wage contracts in the euro area ranges between one and three years. The upward trend in negotiated wages and compensation per employee started to reverse around the second half of 2008. When hours worked are taken into

Chart 5 Euro area wage indicators

(annual percentage changes)



Sources: Eurostat and ECB calculations.

account, the upward movement in labour costs continued until the beginning of 2009. This reflected the downward adjustment in hours worked in some euro area countries.

In terms of labour costs, labour hoarding resulted in a sharp drop in productivity per employee during the recession. As a consequence, unit labour costs increased sharply during the early stages of the recession, and then decelerated in the course of 2009 before falling in 2010 as compensation growth moderated and productivity growth rebounded strongly.

However, taking into account the intensity of the crisis, the wage response in euro area countries appears to have been rather limited. This reflects general downward wage rigidities in the euro area countries.⁷ Meanwhile, Box 3 gives a different perspective of wage developments by taking into account employment composition effects.

⁷ See Section 2.4 of “Euro area labour markets and the crisis”, *Structural Issues Report*, ECB, September 2012.

Box 3

REAL WAGE EVOLUTION NET OF COMPOSITION EFFECTS IN EMPLOYMENT

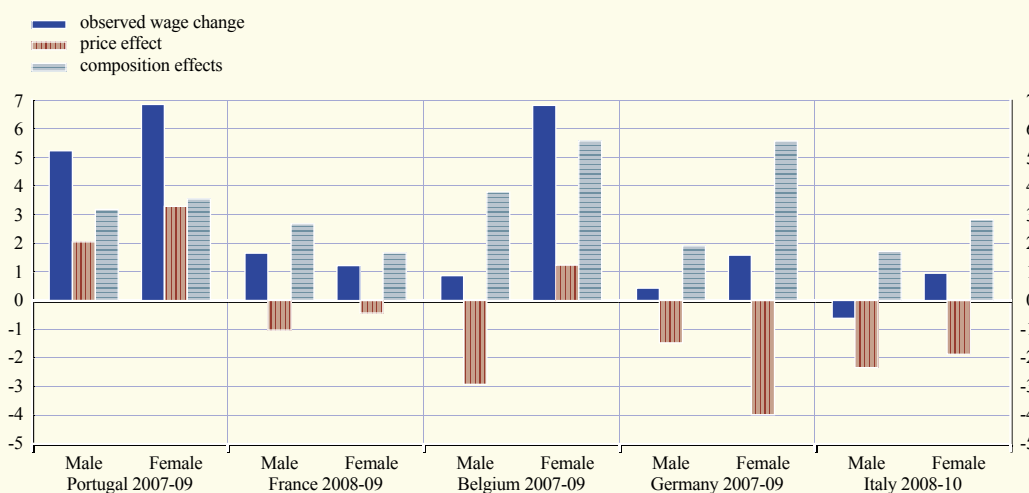
The dynamics of the aggregate wage not only reflect changes in wages of individual workers, but are also influenced by changes in the composition of employment. Composition effects appear to have been particularly important during the most recent recession episode and, in this respect, may also partly explain the limited wage adjustment in the euro area since the start of the crisis. Therefore, this box investigates the relevance of these composition effects in explaining the moderate changes in real wages before and after the recession in five euro area countries, namely Belgium, Germany, France, Italy and Portugal.

The characteristics of the employed have changed in the aftermath of the crisis because many workers with low wages, such as young workers, immigrants and construction workers became unemployed (see Section 2.1). To investigate the effect of this composition change in the wage structure, the changes in the distribution of real wages during the crisis are decomposed into changes due to employees’ characteristics and changes due to wages at constant composition.¹ In the chart, the solid blue bar (for each country) displays the observed change in aggregate

¹ To do so, a counterfactual wage density is computed as if the distribution of the chosen characteristics of individuals had stayed the same as in the initial period. For the methodology, see DiNardo, J., Fortin, N. M. and Lemieux, T., “Labour Market Institutions and the Distribution of Wages, 1973-1992: A Semiparametric Approach”, *Econometrica*, Vol. 64 (5), September 1996, pp. 1001-44; Chiquiar, D. and Hanson, G., “International Migration, Self-selection, and the Distribution of Wages: Evidence from Mexico and the United States”, *Journal of Political Economy*, Vol. 113 (2), April 2005, pp. 239-281; and Machado, J. A. F. and Mata, J., “Counterfactual Decomposition of Changes in Wage Distributions Using Quantile Regression”, *Journal of Applied Econometrics*, Vol. 20 (4), 2005, pp. 445-465.

Changes in real wages and composition effects during the crisis

(percentages)



Sources: Labour Force Survey for France and Italy, GSOEP for Germany, Structure of Earnings Survey for Belgium, Quadros de Pessoal for Portugal and ECB calculations.

Note: Countries ordered from highest to lowest according to observed wage change for males.

wages by gender over the crisis period, while the brown bar (price effect) indicates changes which would have occurred if the distribution of education and experience of employees had stayed the same over the period and workers had been paid according to the wage schedule observed at the end of the period. The light blue bar (composition effects) indicates the increase in the wage which would have resulted only from changes in the composition of workers over the period, if wages had stayed at their initial level.

The chart shows that real wages across the entire distribution have increased over the crisis period but, if the composition of employment had remained constant, the mean wage of males would have declined in all five countries except Portugal. For females, the results are similar, although in this case also in Belgium wages increase over the crisis period when composition effects are controlled for. Overall, this analysis suggests that composition effects – i.e. the shift in employment towards higher-paid workers – account for a large proportion of the increase in aggregate real wages over the crisis.²

² Thus, wage changes may be also reflecting changes in working time and, in particular, they may be affected by the reduction in working time observed in some euro area firms as a reaction to the crisis.

3 THE IMPACT OF THE CRISIS ON SOME STRUCTURAL FEATURES OF EURO AREA LABOUR MARKETS

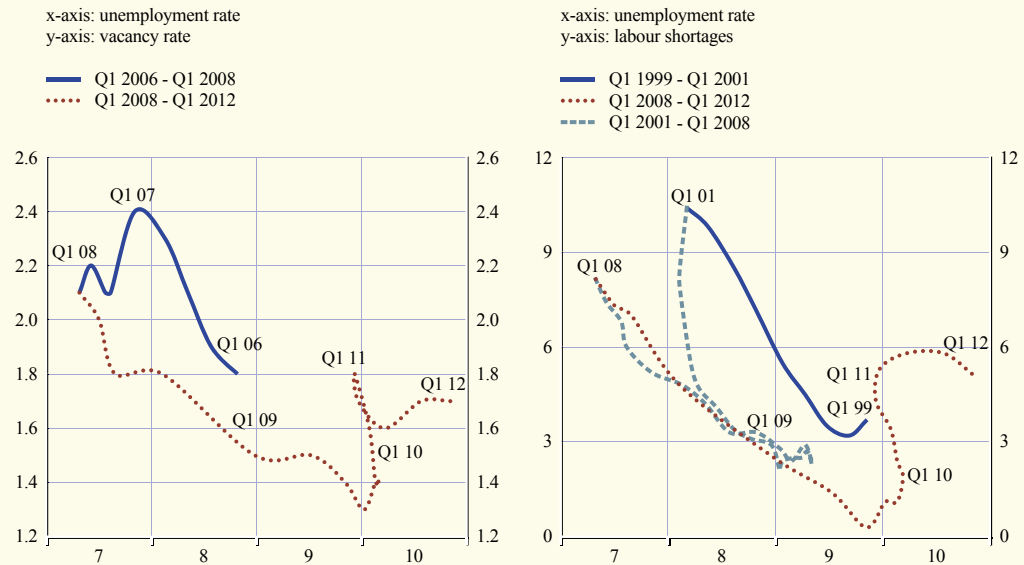
3.1 INCREASING MISMATCH AS A RESULT OF THE CRISIS?

The rise in euro area unemployment masks large cross-country and sectoral differences in job losses and a major increase in the

proportion of long-term unemployed. One way of investigating the extent to which labour market developments reflect growing signs of mismatch between labour supply and demand is to examine developments in unemployment and job vacancies over time, characterised by the Beveridge curve (see Chart 6, left-hand panel). Typically, this curve exhibits a negative relationship between unemployment and vacancy rates over the course of a business

Chart 6 Movements in the euro area Beveridge curve

(percentages)



Sources: Eurostat (harmonised euro area unemployment rate, vacancy rate and manufacturing employers' perceptions of labour shortages) and ECB calculations.
Note: Labour shortages are shown using a diffusion index.

cycle, tracing the evolution of the economy from expansionary phases to contractions in activity. Shifts in the Beveridge curve – to the right or the left – are suggestive of structural changes in the unemployment/vacancy relationship.

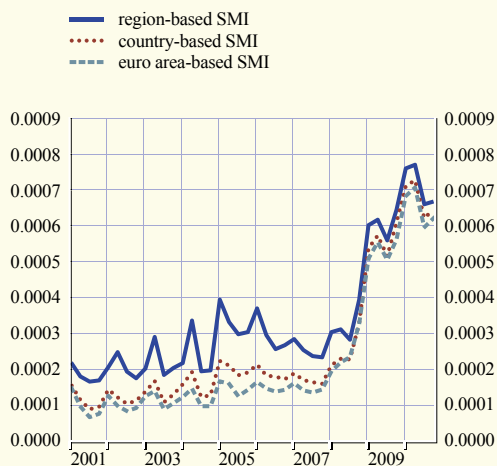
Chart 6 (left-hand panel) shows developments in the aggregate euro area Beveridge curve since the first quarter of 2006 on the basis of new vacancy data available from Eurostat.⁸ As the recession took hold, the vacancy rate fell sharply and unemployment increased strongly, represented by a downward movement along the Beveridge curve. Since the onset of the recovery in economic growth, and despite a strong initial increase in vacancy rates in many countries, the euro area unemployment rate has further increased, possibly indicating an outward shift of the Beveridge curve. Chart 6 (right-hand panel) uses a longer time series on labour shortages (as a proxy for vacancies) to trace the evolution of the Beveridge curve. This also suggests that, despite some signs of structural improvements following the launch of EMU, in the aftermath of the most recent recession there

are signs of an outward shift of the aggregate euro area Beveridge curve, indicating that a higher level of unemployment is associated with a given level of vacancies.

The increase in mismatch between the unemployed and vacancies may be partly related to an increasing discrepancy between the skills of those unemployed and the requirements of new jobs. These mismatches can hinder the reallocation of the labour force and therefore may increase structural unemployment and push down potential growth. A skill mismatch index is computed to assess the extent of skill mismatches in euro area countries by taking the difference between skill demand and supply using EU Labour Force Survey data for the period 1998-2010. Chart 7 shows the skill mismatch index for the euro area as a whole computed at three different levels of aggregation. It shows

⁸ See “The euro area job vacancy rate: a new statistical series”, *Monthly Bulletin*, ECB, October 2010. A number of issues remain with regard to the cross-country comparability of the data and statistical discrepancies in the compilation of the national series which underlie the euro area aggregate.

Chart 7 Skill mismatch index (SMI) for the euro area



Sources: EU Labour Force Survey and ECB calculations.

Notes: Skill demand proxied by educational attainment of the employed and skill supply by educational attainment of the labour force. The euro area index is constructed by using the aggregate skill distributions of labour demand and supply at the euro area level. The country index is constructed by aggregating 16 skill mismatch indices computed using country-level skill distributions. Finally, the regions index is the aggregation of the skill mismatch indices computed at the regional level.

a strong increase during the crisis period, signalling a substantial intensification of labour market mismatch problems.⁹

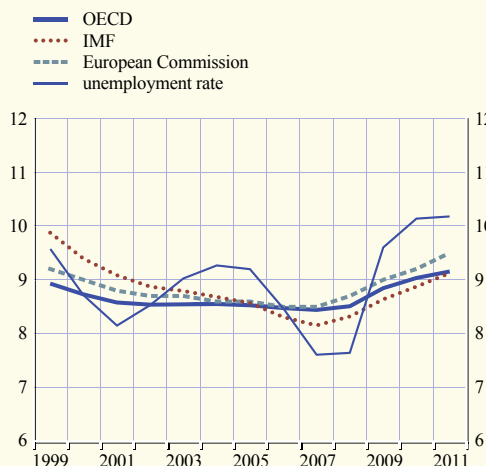
3.2 STRUCTURAL UNEMPLOYMENT DEVELOPMENTS

Additional evidence of the impact of the crisis on the structural features of euro area labour markets can be obtained by looking at available estimates of the NAIRU (non-accelerating inflation rate of unemployment) or structural unemployment in euro area countries. In particular, using IMF, European Commission and OECD estimates, Chart 8 shows the recent evolution of NAIRU estimates for the euro area. These estimates show a downward trend prior to the beginning of the crisis, followed by an increase over 2007-11.

Regarding the factors driving these developments, the evidence seems to indicate the presence of hysteresis effects in unemployment

Chart 8 NAIRU estimates for the euro area

(annual percentage levels)



Sources: European Commission (Eurostat), IMF and OECD.

Notes: The NAIRU (non-accelerating inflation rate of unemployment) estimates are an aggregation of available structural unemployment rates of each international organisation. The European Commission data represent the aggregation of all Member States, the IMF data exclude Estonia, Malta and Slovakia, and the OECD data exclude Cyprus, Malta and Slovenia.

developments in the euro area. One of the main operating channels is via changes in long-term unemployment, which depicts strong and significant correlations with structural unemployment.

Identifying the factors behind hysteresis poses a challenging task given the wide range of institutional features across countries. A statistically significant correlation of NAIRU developments with the above indicators of skill mismatch is found, while a statistically significant positive relationship between the NAIRU and the gap between the youth unemployment rate and the unemployment rate for the rest of the labour force is also evident.¹⁰

⁹ Regarding individual countries' results, the skill mismatch index has increased sharply in those labour markets severely affected by housing booms, such as in Estonia, Ireland and Spain. For more details, see "Euro area labour markets and the crisis", *Structural Issues Report*, ECB, September 2012.

¹⁰ For further details, see "Euro area labour markets and the crisis", *Structural Issues Report*, ECB, September 2012.

3.3 POLICY REACTIONS TO THE CRISIS

Following the financial crisis in 2008, initial policy measures focused on supporting aggregate demand and boosting employment in the euro area. To mitigate the impact of the crisis on employment, measures encouraging shorter working-time arrangements also emerged. As the crisis evolved, policy reactions changed in more fundamental ways, especially in those euro area countries more affected by the crisis where the need for far-reaching structural reforms became more evident.

During the crisis, labour market reforms have been particularly intense in Greece, Ireland and Portugal, which are countries currently receiving international financial assistance. In the case of labour market institutions, in Greece these reforms included the reduction in the level of the minimum wage, the shift away from sectoral-level collective agreements to firm-level collective agreements, the possibility for firms to opt out of the sectoral-level agreement, and the relaxation of severance payments.

In Ireland, sectoral wage agreements are being reformed to ensure that they are more flexible and responsive to economic conditions, while labour market activation and training policies have also been strengthened. In Portugal, a significant reduction of severance payments was implemented, together with an increase in the flexibility of working time and a larger scope for collective bargaining at the firm level. In addition, the unemployment insurance system has been revised by reducing benefit replacement rates and the maximum duration of benefits.

Several other countries, such as Spain and Italy, have also recently implemented labour market reforms with the objectives to increase flexibility and enhance employment.

4 CONCLUSIONS

This article has shown that differences in the severity of the economic downturn during the

crisis provide only a partial explanation of heterogeneous labour market developments across countries: other explanatory factors include the different nature of the shocks hitting euro area economies and the presence of imbalances in the run-up to the crisis (such as previous booms in the construction sector). Labour supply reacted in a relatively muted fashion to the downturn compared with previous cyclical adjustments, with participation rates for females and older workers evolving favourably. A relatively limited wage adjustment in euro area countries has been observed despite the severity of the recession, consistent with downward wage rigidities, although the marked changes in employment composition towards higher-paid workers partly explain the aggregate wage evolution.

In terms of the medium-term consequences of the crisis, it seems to have heralded a significant outward shift of the aggregate euro area Beveridge curve – that is, a higher level of unemployment associated with a given level of vacancies, along with a significant increase in skill disparities between labour demand and supply indicative of a higher degree of labour market mismatch. Also, available estimates show a recent marked upward trend in structural unemployment.

In this context, a flexible response of wages to labour market conditions should be a key priority in euro area labour markets, so as to also facilitate the necessary sectoral reallocation which underpins employment creation and reductions in unemployment. This clearly calls for further major labour market reforms across the euro area countries in order to limit the risks of a permanent increase in the NAIRU and a decrease in potential output growth. This reform strategy is also a key ingredient for a solid economic recovery in euro area economies, which would also facilitate additional positive spillovers regarding the correction and prevention of macroeconomic imbalances, fiscal consolidation and financial stability.