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The German Labour Market: Preparing for the Future

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THE GERMAN LABOUR MARKET: PREPARING FOR THE FUTURE

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By Felix Hüfner and Caroline Klein

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ABSTRACT/RÉSUMÉ

The German labour market: preparing for the future

The strength of the German labour market response to the financial crisis of 2008-09 demonstrated the benefits of past labour market reforms, which raised work incentives, improved job matching and increased working hour flexibility. Going forward, the government should build on this success and address the remaining challenges which include raising the labour participation of females and older workers (which among other things will necessitate adjustments to the tax and education system) and fostering migration, notably of skilled workers. The significant ageing-related decline in the labour force exemplifies the urgency of further structural reforms in this area.

This Working Paper relates to the *2012 Economic Survey of Germany*, *www.oecd.org/eco/surveys/germany*.

JEL classification: J11, J21, J22, J24, J26, J61, J63

Keywords: Germany; unemployment; labour shortages; labour force participation rates, female employment, older workers, migration

* * * * *

Le marché du travail en Allemagne : préparer l´avenir

La résilience dont a fait preuve le marché du travail allemand face à la crise financière de 2008-09 témoigne du bien-fondé des réformes passées, qui ont permis d'améliorer les incitations au travail, de garantir une meilleure adéquation entre offres et demandes d'emploi et de renforcer la flexibilité du temps de travail. Les pouvoirs publics allemands doivent s'appuyer sur ce succès pour relever les défis qui subsistent, à savoir augmenter le taux d'activité des femmes et des seniors (ce qui impliquera notamment des ajustements sur le plan de la fiscalité et du système éducatif) et encourager l'immigration, surtout des travailleurs qualifiés. La contraction importante de la main-d'œuvre sous l'effet du vieillissement de la population témoigne de l'urgence de nouvelles réformes structurelles dans ce domaine.

Ce document de travail se rapporte à l'*Étude économique de l'OCDE sur l'Allemagne 2012, www.oecd.org/eco/etudes/allemagne*.

Classification JEL: J11, J21, J22, J24, J26, J61, J63

Mots clés: Allemagne; chômage; besoins de main d'œuvre ; taux d'activité ; emploi des femmes ; travailleurs âgés ; migration

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TABLE OF CONTENTS

Past labour market reforms paid off handsomely during the crisis 5
Increased work incentives and better job matching 7
Increased working-time flexibility at the firm level 11
Long-term challenges remain 15
Raising incentives for secondary earners 17
Further increasing employment of older workers 20
Continuing with education reforms 24
Avoiding the development of a dual labour market 26
Adapting migration policy 27

Bibliography 34

Annex A1. Estimating Okun's law for Germany 39
Annex A2. The impact of the sectoral composition of the recession on the unemployment response 41
Annex A3. The impact of labour shortages on labour market outcomes 43

Tables

1. Decomposing the increase in the unemployment rate 7
2. Timeframe of labour market reforms in Germany during the last decade 8
3. Contributions to changes in average annual working hours per employee 13

Figures

1. Unemployment rates and Okun coefficients 6
2. NAIRU and Beveridge curve 10
3. Wage moderation prior to the crisis and employment during the crisis 11
4. Hours worked adjustment in the crisis and hourly labour productivity in the crisis 12
5. Short-time work schemes - take-up by firms 14
6. Projected labour force development 16
7. Fiscal disincentives and working hours of second earners 18
8. Employment rates of older workers 21
9. Seniority wages, tertiary education and hiring of older workers 23
10. Participation in training and effective retirement age 24
11. Share of German youth prepared for university 26
12. Aspects of migration to Germany 28
13. International students staying in Germany 32
A1.1. The German Okun coefficient over time 40
A1.2. Actual vs. simulated labour market outcomes 40
A2.1. Change in employment by sector 41
A2.2. Actual versus projected quarterly employment growth across sectors, ... 42
A3.1. Indicators of labour shortages 43
A3.2. Impact of labour shortages on unemployment and employment growth 45

Boxes

Box 1. Alternative explanations for the benign unemployment response 6
Box 2. Impact of ageing on economic growth 16
Box 3. What Germany can expect from opening its labour market to new EU member states 29

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THE GERMAN LABOUR MARKET: PREPARING FOR THE FUTURE

By Felix Hüfner and Caroline Klein[1]

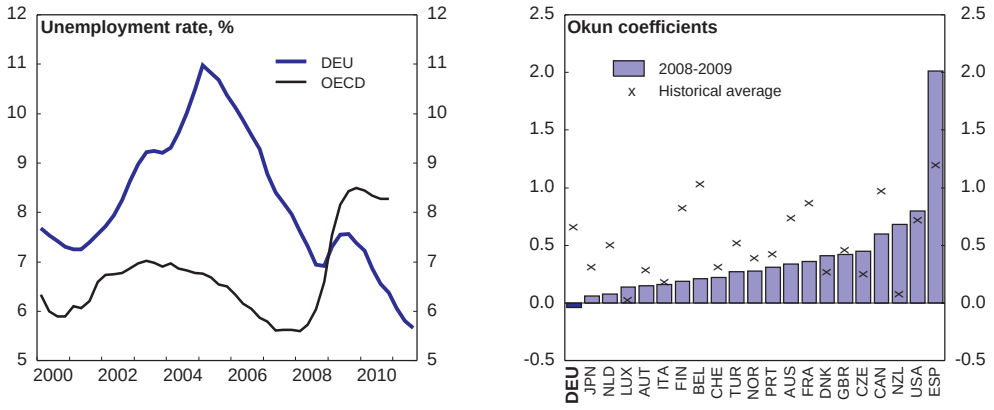
The performance of the German labour market during the past crisis stands out among developed countries. Employment was preserved to a much larger extent than in other countries, notably when compared with the scale of the downturn, and this forcefully demonstrates the working of past reforms. At the same time, challenges remain. Policies to raise participation of some groups of the labour market, such as female and older workers, are urgently needed. Also, migration policy needs to be rethought. Finally, the structure of employment is rapidly changing with the share of fixed-term contracts rising, possibly risking the development of a dual labour market with adverse effects on training (limiting productivity growth and the possibility to work longer) and potentially income inequality. The urgency of addressing these issues is exemplified by rapid population ageing which will significantly reduce the working-age population.

Past labour market reforms paid off handsomely during the crisis

The increase in unemployment in Germany during the past recession was the lowest among OECD countries, amounting to just 0.2 percentage point between 2008 and 2009 (Figure 1, left panel). This compares with an OECD average of 2.2 percentage points (comprising a wide range of outcomes with the maximum increase over that period being 8.3 percentage points as registered in Estonia). This development is even more surprising given that the German economy suffered an above-average decline in real GDP in 2009 (-5.1% compared to an OECD average of -3.8%). As a result, the relationship between the unemployment rate and real GDP, as exemplified by the Okun coefficient, was the lowest among OECD countries in this crisis (Figure 1, right panel).

1. The authors are respectively senior economist and economist on the Germany/Slovakia desk in the Economics Department of the OECD. This paper is drawn from the OECD Economic Survey of Germany published in February 2012. The authors would like to thank Andreas Wörgötter, Robert Ford, Andrew Dean, Mark Keese, Deborah Roseveare, Monica Queisser, and Jean-Christophe Dumont for their useful comments but retain full responsibility for any errors and omissions. The paper benefitted from consultancy work by Thorsten Ehinger, from discussions with German government officials and researchers, and from comments during a workshop at DIW, in particular from our discussant Michael Burda. Research assistance was provided by Margaret Morgan and technical preparation by Josiane Gutierrez.

Figure 1. Unemployment rates and Okun coefficients



Note: Okun's coefficient is the peak-to-trough ratio of the percentage point increase in the unemployment rate to the percentage decrease in GDP. It is calculated for the peak and trough during 2008-09.

Source: OECD, *Economic Outlook database* and *Employment Outlook 2010*.

Moreover, the labour market reaction also differed markedly from previous episodes in Germany. Historically, the German Okun coefficient was very similar to other OECD countries (Figure 1, right panel). A model based on past relationships of real activity and unemployment would have over-predicted the actual unemployment response by around 2.8 percentage points (Annex A1). While many OECD countries saw a decline in their Okun coefficient in 2008-09 compared to the past, several other countries experienced a stronger unemployment reaction in this crisis compared to the past, such as New Zealand, Spain and, to a smaller extent, the United States (Figure 1, right panel).[2]

The main factor behind the benign unemployment outcome in Germany is a profound change in labour market institutions that occurred over the past decade. Other factors that are sometimes discussed, such as the impact of the specific sectoral composition of the recession in Germany, the role of prior labour shortages in firms' decision to hoard labour, employment protection legislation or demographic factors also played a role; however, none of those is able to fully explain the differences in behaviour during this crisis compared to historical developments in Germany and to other countries during 2008-09 (Box 1).

Box 1. Alternative explanations for the benign unemployment response

The benign unemployment response to the recession in Germany is frequently seen as the outcome of a range of factors (see Möller [2010] or Burda and Hunt [2011] for an overview). Compared with the changes in institutional settings (labour market reforms and working hour flexibility) described in the text, however, most other explanations are likely to have played only a small role.

Differences in demographics

One factor that is putting the small increase in the unemployment rate somewhat in perspective is that the labour force increase during the crisis has been smaller than in other countries. Between 2008 and 2009, working-age population in Germany declined by ½ per cent, while it increased by 0.6% in the average OECD country (Table 1). Even though labour force participation increased much more in Germany during this period, the rise in the labour force was less than half of the increase in the OECD average. Hypothetically assuming that working age population and labour force participation in Germany had evolved as in the OECD average (and using the actual employment

2. Merkl and Wesselbaum (2011) find that since 1970 the quantitative impact of the extensive margin (*i.e.* hiring and firing of workers) is of similar magnitude in Germany and the US. This further underlines that the labour market reaction in the 2008-09 recession has been unusual.

reaction), the unemployment rate had increased by 1pp more than it actually did. However, since employment is endogenous to the development of the labour force, such a counterfactual scenario of the unemployment response is difficult to interpret and, if anything, should be viewed as an upper limit.

Table 1. Decomposing the increase in the unemployment rate

Percentage change between 2008 and 2009

	Employment	Labour force	Working age population	Labour force participation rate*	*Memorandum:* change in unemployment rate*
Germany	0	0.2	-0.5	0.7	0.2
OECD average	-1.8	0.5	0.6	-0.1	2.2

* Percentage point difference.

Source: OECD, *Economic Outlook database*.

Differing sectoral composition of the downturn

One significant feature of this recession was the diverging sectoral impact of the crisis across countries: while some countries suffered significant declines in domestic demand (*e.g.* as construction output and private consumption fell when housing bubbles unwound) the recession in Germany was almost solely focussed on the tradable sector, notably manufacturing. This matters for employment outcomes since the non-tradable sectors are typically more labour intensive with a lower productivity level; thus, recessions in those sectors tend to affect employment more than in tradable sectors. However, simulations at the sectoral level for Germany indicate that past unemployment-GDP relationships would have predicted a much higher employment decline in manufacturing and in services than what was actually observed (Annex A2); this suggests that institutions must have changed compared to past recessions, supporting the view that those factors are more important than just the sectoral composition of the recession.

Labour shortages prior to the crisis

In theory, confronted with recruitment difficulties, employers may limit layoffs and accept a decrease in labour productivity during downturns to save recruitment costs during the recovery and to conserve firm-specific human capital. In doing so, they also ensure production factors are available when activity recovers. Indeed, in Germany, firms hit by crisis were those having a particularly high growth rate and experiencing significant labour shortages before the crisis (Möller, 2010), suggesting labour shortages could explain a low unemployment response compared to the past and to other OECD countries (Schaz and Spitznagel, 2010; Schütt, 2010). However, indicators for labour shortages at the aggregate level were neither particularly high with regard to the past nor when compared to other countries. Indeed, cross-country empirical evidence indicates that labour shortages prior to the recession contributed only to a very small extent to the benign unemployment response (Annex A3).

Differences in employment protection legislation

Another explanation rests on differences in employment protection legislation (EPL) across countries, notably the relatively strict legislation in Germany preventing layoffs and softer legislation in the US leading to more layoffs. However, since EPL in Germany, notably for regular work contracts, has not been changed over the years preceding the recession, it cannot explain the different behaviour in this crisis compared with past recessions. If anything, protection of fixed-term contracts had been relaxed in Germany prior to the recession, which would have argued for a stronger unemployment reaction this time. For these reasons, empirical evidence for the importance of EPL in explaining the low unemployment response in this crisis is lacking (Möller, 2010).

Increased work incentives and better job matching

Germany stands out among OECD countries as having implemented a large number of labour market reforms in the years preceding the crisis. These reforms have profoundly changed the institutional environment of the labour market and thus help explaining the differences in labour market outcomes relative to past recessions. The reforms are likely to have reduced structural unemployment, an adjustment that is still going on, and to have offset some of the cyclical increase that would otherwise have occurred. While most commentators focus on the *Hartz* reforms in the period 2002-05, notably their impact on the level of benefits and on eligibility (mainly *Hartz* IV), reforms were much more wide-ranging, covering

improvements in job placement, a general cut in unemployment benefit duration and, importantly, the phasing out of early retirement options (Table 2).

Table 2. Timeframe of labour market reforms in Germany during the last decade

Reform	Implementation date	Main measures	Likely effect
Job-AQTIV	2002	• Introduction of qualitative profiling of jobseekers • More efficient use of ALMP	Improved job search efficiency
Hartz I	Jan. 2003	• Enlisted private firms to help workers search for jobs	Improved job search efficiency
		• Tightened conditions for acceptability of jobs and introduced sanctions for unemployment benefit recipients	Raising incentives for taking up employment
		• Liberalisation of temporary agency work	
Hartz II	Jan. 2003	• Reform of small jobs, *e.g.* mini- and midi-jobs with limited social security contributions	Raising incentives for taking up employment
		• Subsidies for unemployed who become self-employed	
Hartz III	Jan. 2004	• Reorganisation of the Federal Employment Agency towards a more efficient service provider	Improved job search efficiency
		• Simplification of active and passive policy measures	
Hartz IV	Jan. 2005	• Merging of unemployment assistance and social assistance into the means-tested unemployment benefit II	Raising work incentives for welfare recipients (reduction in reservation wages)
Shortening unemployment benefit duration	Feb. 2006	• Benefit duration was cut to a maximum of 12 months for recipients up to 54 years (from a maximum of 26 months before) and to 18 months for recipients aged 55-64 years (from up to 32 months before)	Increase work incentives, notably for older workers
Phasing out of early retirement options	2006-10	• Increase in age threshold for the early pension for unemployed (*Altersrente wegen Arbeitslosigkeit*) from age 60 to 63 from 2006 to 2008	Increase work incentives for older workers
		• Phasing out of the regulation that unemployed persons aged 58 can receive benefits without actively searching for jobs (*58er Regelung*) in January 2008	
		• Subsidised part-time employment scheme for older employees (*Altersteilzeit*) closed for new entrants from January 2010	

Source: Wunsch, C. (2005), "Labour Market Policy in Germany: Institutions, Instruments and Reforms since Unification", *University of St. Gallen Discussion Papers* 2005-06; OECD (2008a), *Economic Surveys: Germany*, OECD, Paris, *www.hartz-iv-iii-ii-i.de*.

The main impact of the reforms on the labour market that is relevant for the crisis reaction can be summarized as follows:

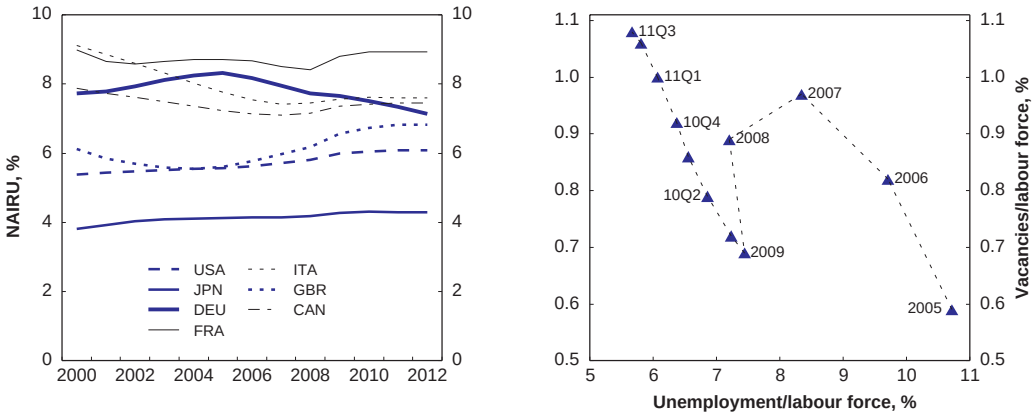
- Work incentives, notably for low-income workers, were increased as *Hartz* IV reduced the benefit replacement rate, thus lowering reservation wages. In fact, the OECD summary measure of benefit entitlements declined by more than twice the OECD average between2003 and 2007.[3] OECD (2008a) estimates that this benefit cut the NAIRU by around ½ percentage point. It seems likely that the impact of these reforms occurred over time, thus exercising downward pressure on unemployment even during the crisis (Figure 2, left panel).

- Matching efficiency has increased as is visible in the inward-movement of the Beveridge curve (Gartner and Klinger, 2010). This is mostly the result of the first three of the *Hartz* reforms, which, for example, allowed private firms to help in placing unemployed and mandated a reorganisation of the employment agency. These measures significantly accelerated the outflows from unemployment to employment (Fahr and Sunde, 2009). As the Beveridge curve was still moving inward between 2008 and 2009, it is likely that improved matching contributed to the good crisis performance (Figure 2, right panel).

- Incentives for working longer significantly increased employment among older workers (OECD, 2008a). Reforms that limited early retirement options meant that unions probably did not agree as easily as in previous recessions to lay-offs, thus making it more costly for employers to arrange consensual job-separations for older workers. Indeed, the unemployment rate of 55-64 year olds decreased and employment increased in the crisis, in contrast to previous recessions. Dlugosz *et al.* (2009) show that the cut in benefit duration for unemployed older workers significantly decreased the probability of entering into unemployment since the reform took place in 2006, notably for those with long tenures working in large companies. The development of employment rates for older workers demonstrates the positive effects of these reforms: they increased by 19 percentage points since 2003, almost five times as much as in the average OECD country and, at 58% in 2010, was 4 pp above the OECD average. By contrast, employment rates of 25-54 year olds rose by only 3 percentage points over the same period (at least until 2008, this was almost the same as the OECD average).

3. The OECD summary measure is defined as the average of the gross unemployment benefit replacement rates for two earnings levels, three family situations and three durations of unemployment. For further details, see OECD (1994), The *OECD Jobs Study* (Chapter 8) and Martin, J. (1996), "Measures of Replacement Rates for the Purpose of International Comparisons: A Note", *OECD Economic Studies*, No. 26, *www.oecd.org/els/social/workincentives*.

Figure 2. NAIRU and Beveridge curve



Note: NAIRU is the unemployment rate at which inflation is non-accelerating.

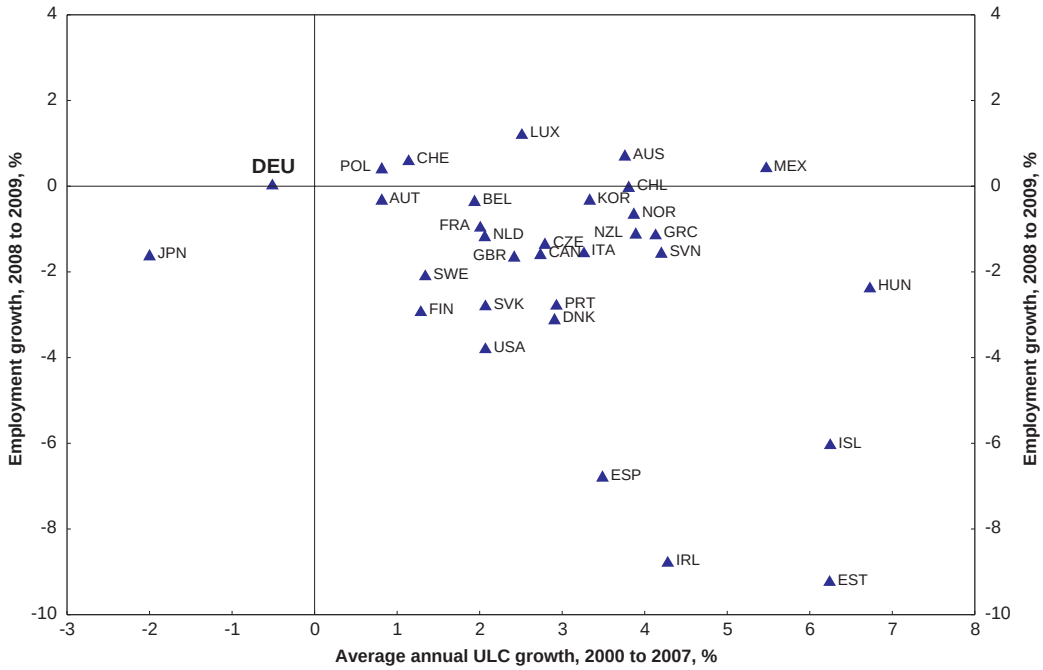
Source: Deutsche Bundesbank; Federal Statistical Office; OECD, *Economic Outlook* and *National Accounts databases*.

Wage moderation in the wake of labour market reforms

Wage moderation during the 2000s was remarkable in Germany, both across OECD countries and in historical comparison. Unit labour costs fell by 2% from 2000 to 2007, compared to an increase of 22% in the average OECD country. Historically, unit labour costs in Germany rose by 15% in the 1990s, 20% in the 80s and 69% in the 70s. The decline during the 2000s was linked to the labour market reforms as increased work incentives increasingly led the unemployed to accept lower-paid jobs (Gartner and Klinger, 2010). Similarly, trade unions lost bargaining power as trade union density (the share of trade union members in all employees) declined by over 6 percentage points between 1999 and 2008 and at 19% in 2008 stood 8 percentage points below the average OECD country. The share of companies following collective wage agreements fell from 63% in 2001 to 47% in 2006 (Antonczyk *et al.*, 2011).

Cross-country evidence suggests that differing developments in unit labour costs in the years leading up to the crisis are related to labour market outcomes during the crisis (Figure 3; Boysen-Hogrefe and Groll, 2010). Labour cost increases may not immediately lead to layoffs as the costs of hiring and firing induce some kind of threshold. Firms in Germany may have been further away from this threshold due to this earlier wage moderation compared to other countries (Boysen-Hogrefe and Groll, 2010). In addition, Burda and Hunt (2011) argue that the moderation increased employment ahead of the crisis and damped unemployment by 0.4 pp during the crisis (they compare with a counterfactual in which wages rise from 2005 onwards with their earlier trend).

Figure 3. Wage moderation prior to the crisis and employment during the crisis

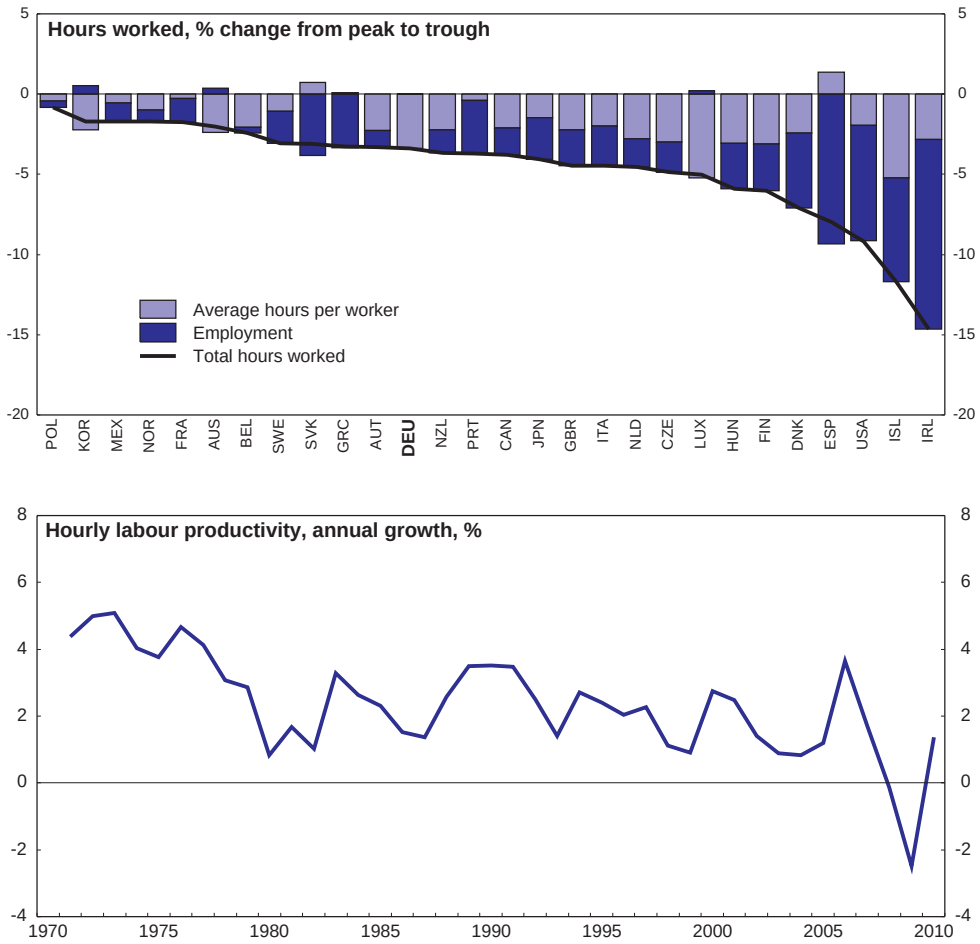


Source: OECD, *Economic Outlook database*.

Increased working-time flexibility at the firm level

Instead of reducing labour input through layoffs, German companies - as in Korea and Luxembourg - resorted to a decrease in average hours worked per worker. By contrast, in many OECD countries, layoffs accounted for more than one-half of the reduction in labour input (Figure 4, upper panel). However, the flip side of limited employment adjustment was a steep decline in productivity, since the reduction in hours worked was smaller than the decrease in output. Hourly labour productivity declined substantially during this recession, for the first time and in sharp contrast to prior recessions when hourly labour productivity tended to increase (OECD, 2010b; Burda and Hunt, 2011; Figure 4, lower panel).

Figure 4. Hours worked adjustment in the crisis and hourly labour productivity in the crisis



Note: Peak and trough are respectively the pre-crisis peak and trough for each country. Labour productivity components for 1970 to 1990 were estimated by back casting data for Germany using the growth rate of the data for western Germany.
Source: OECD, *Economic Outlook 89*, May 2011, and *National Accounts database*.

To some extent, the outstanding reduction of working hours in Germany is related to the prior labour market reforms. For example, better matching of employees may have induced companies to hold on to them more than in earlier times or lower working hours were used for older workers which were kept in the company due to significantly reduced early retirement options. However, more important were arguably reforms and policies that increased working hour flexibility at the firm level in the form of the short-time work scheme (*Kurzarbeit*), a reduction in paid overtime, decreases in working-time account balances as well as declines in weekly working hours (Table 3). This flexibility has increased substantially over the years preceding the crisis and thus helps to explain the favourable unemployment response.

Table 3. Contributions to changes in average annual working hours per employee

Changes in 2009 relative to 2008

	Change in hours
Short-time work	-13.4
Weekly working hours	-10.1
Paid overtime	-7.9
Working time accounts	-7.0
Other	-2.9
Total	**-41.3**

Source: Dietz, M., M. Stops and U. Walwei (2011), "Safeguarding jobs in times of crisis - Lessons from the German experience", *ILO Discussion Papers*, No. 207.

Short-time work scheme

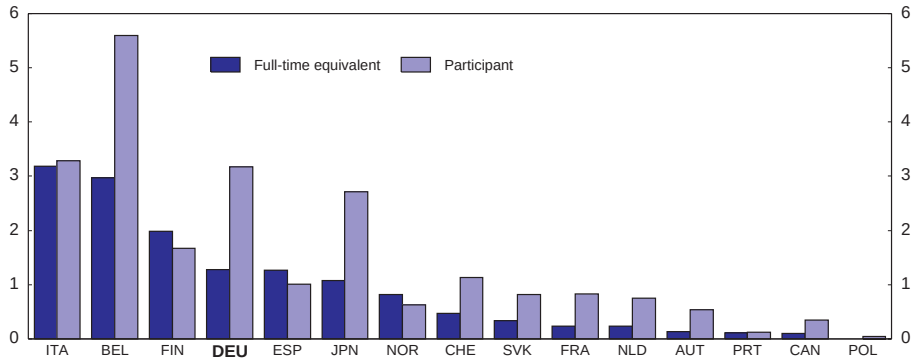
The extension of the short-time work scheme (STW) during the crisis is frequently mentioned as a main explanatory factor for the German job miracle. The basic scheme, which has existed in various incarnations in Germany for over 100 years, provides income support for employees whose working time and, thus, compensation decrease temporarily. Employers are obliged to pay the social security contributions on the hours not worked which adds to the residual fixed costs of employment, thereby providing some incentive to exit the scheme when it is not needed anymore.

In reaction to the crisis, the generosity and eligibility of short-time work was widened until March 2012.[4] The costs for employers for hours not worked were thus much lower than in many other OECD countries operating such schemes (Hijzen and Venn, 2011). At the peak, around 1.5 million employees were on short-time work in mid-2009, since then their number has fallen to below 100 000 by mid-2011. In 2009 on average, around 3% of all employees were on short-time work, one of the highest shares among OECD countries (Figure 5). A simple accounting exercise suggests that with the average reduction in working time amounting to around 30%, potentially up to 500 000 full-time jobs were saved through this scheme. However, such a calculation does not take into account the size of deadweight (STW subsidies that were paid for jobs that would have been retained anyway) and displacement (if STW subsidies preserve jobs that are not viable without the subsidy and thus present a barrier to job creation) effects; in order to derive the true number of jobs saved, *i.e.* after accounting for such effects, the crisis experience must be compared to a counterfactual. Using countries without short-time work schemes as a counterfactual, Hijzen and Venn (2011) estimate that around 235 000 jobs were saved (0.6% of employment), the second highest in the OECD after Japan.

4. Generosity was increased by refunding some part of the social security contributions borne by employers for the hours not worked by the employee in the first six months of short-time work. No contributions had to be paid after six months or in case the employee was participating in a non-firm specific training measure. The maximum duration of short-time work was increased from 6 months to 24 months for all new entrants during 2009, to 18 months for new entrants during 2010 and to 12 months for entrants during 2011. Conditions for eligibility were relaxed (*e.g.* the rule requiring that at least a third of employees incur a 10% loss of earnings in order to introduce short-time work) and temporary work agencies were allowed to use it (OECD, 2010b).

Figure 5. Short-time work schemes - take-up by firms

2009, %



Note: Full-time equivalent (FTE) take-up rates are calculated as: total short-time work (STW) hours / (total FTE hours worked in the economy + total STW hours) using country-specific assumptions. Participant take-up rates are number of participants/number of employees.

Source: Hijzen, A. and D. Venn (2011), "The role of short-time work schemes during the 2008-09 recession", *OECD Social, Employment and Migration Working Papers*, No. 115.

An important feature of any short-time work system is the costs imposed on employers, which provide incentives not to overuse the scheme. Too generous subsidisation, by contrast, risks keeping ailing companies alive, thus preventing needed structural adjustment (Dietz *et al.*, 2011). The German system in 2009 struck a reasonable balance in this regard: the costs for employers, including the reductions legislated during the crisis, amounted to around 8% of total labour costs - roughly the median among 24 OECD countries.

While short-time work explains some of the discrepancy of the unemployment response to other countries, it was not exceptional *vis-à-vis* past experience in Germany. For example, the increase in short-time workers in 2009 was comparable to the recessions in the early 1990s and also to the 1970s (Burda and Hunt, 2011; Boysen-Hogrefe and Groll, 2010).[5]

Reduction of weekly working hours

The substantial reduction in weekly working hours during the crisis period (usually associated with a proportional reduction in pay) was made possible by a much increased wage bargaining flexibility (Reisenbichler and Morgan, 2011). With sectoral wage bargaining becoming less popular, reflecting in part the decline of membership in unions and in employer associations, collective agreements have been made more flexible by giving more leeway to companies (Bellmann *et al.*, 2008). Examples are the introduction of 'opening clauses' (*e.g.* exemptions from working time regulations concluded in a collective agreement) or 'hardship clauses' (*e.g.* exemptions from a contracted wage level during a precarious economic situation). Often the consent of unions to the application of such measures is connected to explicit pledges by employers, such as employment guarantees. Such 'company-level pacts for employment' or 'job alliances' aim at strengthening long-term employment relationships by increasing the flexibility of employment conditions, thereby contributing to safeguarding jobs in crisis periods. Apart from agreeing on flexible working hours, such pacts also allow for suspension in annual bonus payments, holiday pay or outright wage cuts. Finding agreements among the social partners on such pacts was facilitated by a government decision to base unemployment benefits on the initial income of an employee and thus not to

5. The increase in short-time work at the beginning of the 1990s may not be fully comparable to today: it was then mostly used to cushion the short-time effects of the need for restructuring the east German economy after unification with most of those employees on short-time work being laid off at the end (Möller, 2010).

take into account a temporary reduction in pay for the benefit calculation (Dietz *et al.*, 2011). Such pacts have become more widespread since the mid-1990s and, particularly among companies with more than 250 employees, more than half of all companies had concluded them by 2010.

Working time accounts

A further important feature of this flexibility is the increased use of working-time accounts. By 2009, half of all employees had such accounts, up from one-third in 1999; in the manufacturing sector, which was hit hardest in the recession, the share is higher than in others (Zapf and Brehmer, 2010). These accounts allow for a smoothing of working time over the business cycle with balances being built up during booms and drawn down during recessions. Implicitly, this should also lead to less hiring in an upswing (mirrored by fewer lay-offs during downswings) and indeed Burda and Hunt (2011) find evidence that hiring in the years prior to the crisis was less than would have been expected based on past experience.

The cumulated surpluses in such accounts increased substantially in the years preceding the crisis. As these surpluses represent financial liabilities that companies owe to laid-off workers, their existence may have postponed a decrease in employment. By the time the account balance was back to zero, it may have already been sufficiently evident that the recession would prove short-lived (Burda and Hunt, 2011).[6]

Long-term challenges remain

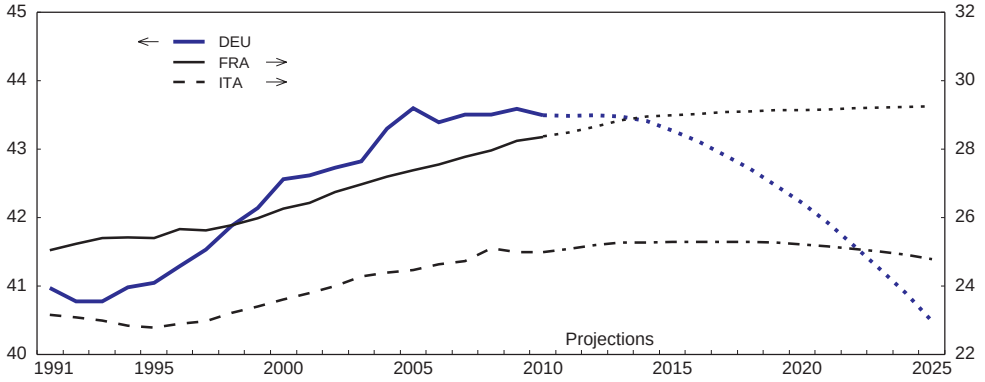
Overall, the fruits of the substantial progress made in improving the labour market - both at the aggregate level by raising work incentives and improving job matching as well as at the company level by increasing working time flexibility - were forcefully demonstrated during the 2008-09 crisis and provide important lessons for other countries. This success should be an encouragement to address the substantial challenges that still lie ahead for the German labour market. Labour market participation of women is still much lower than in other countries due to a low number of hours worked. Employment of older workers needs to be raised further, which requires efforts also in the area of education. Migration needs to be stepped up as labour shortages are expanding in some specific occupations, pointing to a mismatch of supply and demand in particular for high-skilled occupations (notably those requiring MINT qualifications [mathematics, information technology, natural sciences and technology]; McKinsey, 2011).

The urgency of progressing further in these areas is exemplified by rapid population ageing, which will have a profound impact on the economy and the labour market. It will reduce GDP per capita growth, due to its negative effects on different growth drivers: the labour force, productivity growth, investment capacity, wages and domestic demand (Box 2). In particular, both the decline in the size of the population and their different participation rates will adversely affect the labour force (Figure 6). Some simulations of the total impact of ageing on growth (including the direct effect on labour supply and the more indirect effects on productivity and domestic demand) show that ageing may reduce GDP per capita growth by -0.4% per year between 2011-20 and -0.8% between 2021 and 2030 (Oliveira Martins *et al.*, 2005).

6. Burda and Hunt (2011) report that a November 2007 court ruling stated that an employer could not lay off a worker if any co-worker doing the same job had a surplus in her account. This may have added to the disincentive to lay off workers.

Figure 6. Projected labour force development

Million persons



Note: Labour force projections take into account proposed pension reforms and are based on dynamic cohort analysis using the labour force participation rates from 2002 to 2007.

Source: OECD, *Economic Outlook database*.

Box 2. Impact of ageing on economic growth

In theory, ageing weighs on economic growth through four main channels: labour force, productivity growth, wages and domestic demand. In Germany, it will mainly have a negative economic impact by reducing labour supply.

Ageing reduces the productive capacities of the economy as the available labour force declines. The fall in working age population will create permanent labour shortages which cannot be sustained in the long run. In Germany, the simple mechanical demographic effects of the reduction in labour supply is estimated to reduce potential GDP growth by -0.2 percentage point in 2011 and -0.9 percentage point in 2025.

Some studies find evidence for a U-inverted relationship between ageing and productivity growth (Werding, 2008). Not all of the main channels through which ageing may have a negative impact on productivity are equally important in the German context:

- First, recent literature finds that productivity is not decreasing over the working life. Even if older workers appear to be less innovative, their experience and accumulated knowledge compensate other negative ageing effects on productivity, such as the depreciation of knowledge or age-related trends in physical and cognitive capacities (Sachverständigenrat, 2011).

- Second, the change in age structure should not modify the average level of qualifications in Germany. While this mechanical impact of ageing on educational level is generally positive in OECD countries with tertiary attainment rising from one generation to the next, it is likely to be neutral in Germany due to the fact that tertiary educational attainment for younger cohorts is comparable to the older one.

- Third, ageing may change the composition of domestic demand towards less productive sectors or sectors where margins for productivity growth are low. For instance, the shares of housing, energy, and health care spending in total consumption increase with age. According to simulations using household surveys, this impact will be relatively modest (Oliveira Martins *et al.*, 2005).

- Fourth, according to the life cycle theory, savings should decrease with ageing and may create a deficit in capital accumulation (asset meltdown). As the old-age dependency ratio is significantly and negatively correlated with the saving rate (Oliveira Martins *et al.*, 2005), a decline in domestic investment and thus in TFP growth should be anticipated.

Ageing may also lead to an increase in labour costs and losses in price competitiveness. Wages should rise with ageing as labour shortages will emerge. Competition between firms for labour force will develop thus putting upward

pressure on remuneration. Besides, the age-earning link - the fact that wages increase with age independently from productivity change - is quite strong in Germany (OECD, 2011b).

Finally, the impact of ageing on economic growth through the demand channel will crucially depend on the capacity of German consumers to smooth their consumption over the time and on the impact of ageing on old-age poverty. Rapid and extensive ageing in Germany may weigh on elderly disposal income by reducing pensions allocated through the first pillar. In Germany, the sustainability of the first pillar is supported by decreases in the old-age replacement rate (through the automatic pension adjustment formula). As a consequence, ageing will lead to a decline in pension levels drawn from the first pillar. The impact of this drop in pensions on future domestic consumption will differ depending on whether the decreases in income are well anticipated, on whether efficient policies are implemented to encourage savings and to enable workers to save in the short run to smooth their consumption over time.[1] By contrast, increased wage inequalities and the development of a dual labour market may worsen the impact of ageing on domestic demand by reducing the savings capacities of more vulnerable individuals. In addition, a reduced pension level will also weigh on consumption by lowering work incentives for low income workers whose pensions are close to the level of assistance income.[2] This may increase the number of inactive and poor old persons and the burden for tax payers associated with the welfare system, thus reducing disposal income of a larger share of the German population.

1. The income level may drop for workers not able to anticipate this decline in pension or those who are not able to save money due to budgetary constraints, thus weighing on domestic demand.

2. Arent and Nagl (2010) find a growing risk of old age poverty in Germany.

Raising incentives for secondary earners

Female labour participation compares unfavourably with other OECD countries, in particular for married women and mothers. This is primarily due to the number of hours worked rather than actual employment (Figure 7, upper panel). For example, the overall employment rate of women at 66% in 2010 is above the OECD average of 57%; similarly, employment rates for mothers are also higher, though by a smaller margin.[7] However, female work is often less than full-time: one-fifth of all women in the workforce work less than 20 hours per week, the third highest share in the OECD (average 10%) after Switzerland and the Netherlands. This holds notably for mothers: in only 17% of all parental couples do both parents work full-time, less than half the OECD average. But there is also a clear difference between married and single women, even if both do not have children, with the latter working more hours (OECD, 2008a). The share of couples without children with both spouses working full-time is 61%, one of the lowest among European countries.

The low full-time participation of women is unlikely to be voluntary; by contrast, surveys indicate that half of all female employees would want to work longer hours if the framework conditions would be more supportive (Wanger, 2011). Married women and mothers face severe disincentives to work longer hours. Lack of childcare facilities and fiscal disincentives - which tend to have a larger effect on female than on male employment - are the most obvious ones (OECD, 2008c; OECD, 2011c).

Reduce fiscal disincentives

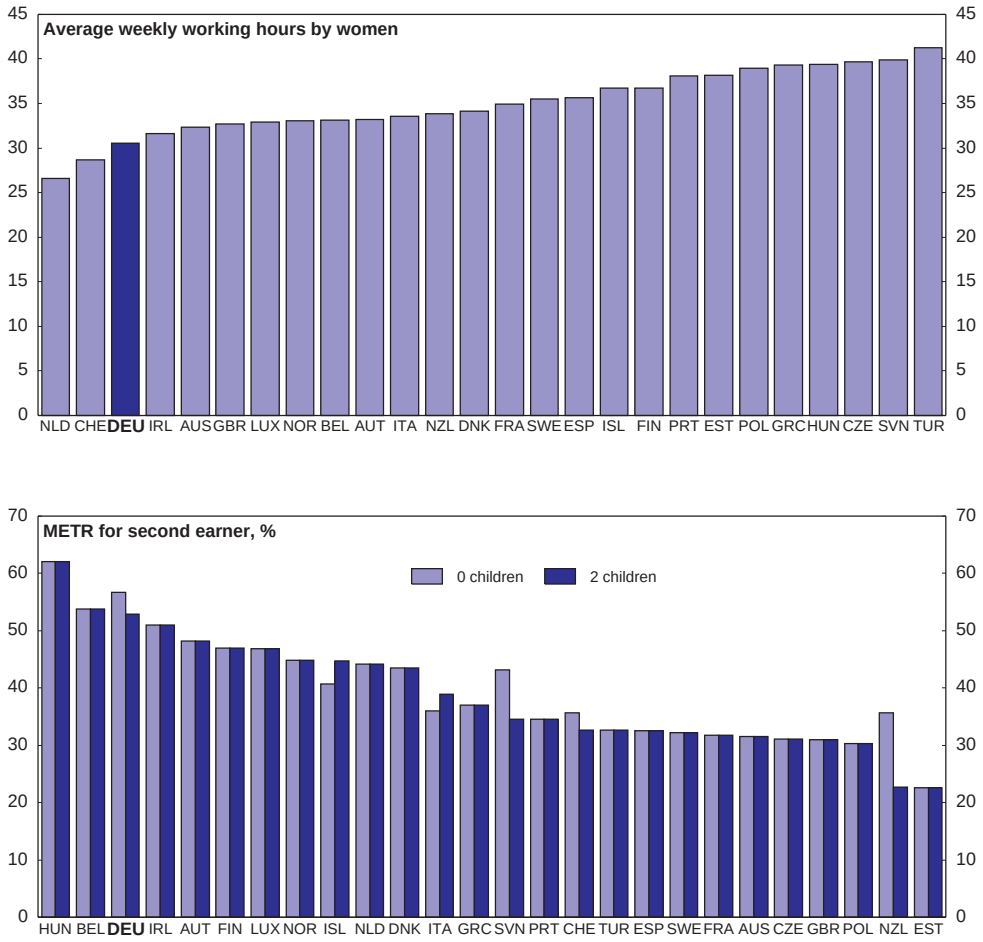
In their paid work decisions, couple households have to consider how the tax/benefit system treats earnings by different partners. Only in Germany does the mix of tax and benefit policies significantly favour single-earner over dual-earner couples, thereby exerting significant disincentives for secondary earners (Figure 7, lower panel; OECD, 2011c).[8] This is due to two factors: the free health-insurance

7. Maternal employment rates are 56% (OECD: 51%) for mothers with children aged <3 years, 64% (OECD: 63%) for mothers with children aged 3-5 years and 66% (OECD: 66%) for mothers with children aged 2-14 years (*OECD Family database*; all data refer to 2008).

8. Average taxes when moving from single- and dual-earner couples increase by between 5 and 21% in Germany. By contrast, they decrease by between 16 and 23% in the average OECD country. This

coverage for non-working spouses and the joint taxation of income for married couples (*Ehegattensplitting*).

Figure 7. Fiscal disincentives and working hours of second earners



Note: Hours worked are average usual hours per week worked by women in employment aged 25 to 54 years. The marginal effective tax rate (METR) is the earnings which are lost due to increased taxes and reduced benefits. The graph shows the case of earners on the average wage, the second earner having changed from a situation of not working. All data refers to 2009.
Source: OECD, *Hours worked* and *Benefits and Wages databases*.

Free health insurance coverage for non-working spouses means that secondary earners face a high marginal tax rate when taking up work. This helps explaining why many of those, who decide to work, do so only in a so-called *Mini-Job* (marginal employment not liable for health insurance if earnings remain below EUR 400 per month) with only few working hours. Women account for two-thirds of all employees which are working only in *Mini-Jobs*. Moving from such a job into regular full-time employment results in a jump in costs due to the need to take up an own insurance, helping to explain the low prevalence of

simulation compares the average net payments to government of a single-earner couple with two children aged 6 and 11 earning 133% (200%) of the average wage with a dual-earner couple (where earnings are equally distributed): the net transfers of the dual-earner couple are 5% (21%) higher than in the single-earner case; by contrast, in the average OECD country net transfers decline by 23% (16%) when switching from single-earner to dual-earner couples (source: *OECD Family database*).

two-earner couples with full-time jobs. The free-health insurance coverage should be abolished, possibly within a larger reform of healthcare financing (OECD, 2008a).

The tax system provides a further disincentive to work for secondary earners. Married couples can chose to be taxed jointly; in this case, the tax rate is applied to the average income of both spouses, doubling the resulting tax amount. In Germany's progressive tax system, the tax advantage (relative to individual taxation) is largest if both incomes are distributed unequally. The maximum advantage amounts to roughly EUR 8 000 and is reached if one spouse earns more than EUR 100 000 and the other is not working. Women, who are often the second-earners, thus face a high marginal tax rate when they increase their labour input, and this is one reason why many of them work only few hours if they work at all. Thus, compared to a system of individual taxation, the system of joint taxation favours one-earner couples and contributes to the low labour participation of married women (Dearing *et al.*, 2007). Following a reform of the system in 2009, married couples can now chose a tax option whereby the monthly wage tax takes into account the actual relation between the incomes of the first and second earner for the calculation of the marginal tax burden (*Faktorverfahren*). However, as this reform simply leads to a different distribution of the annual tax advantage among the member of the household during the year while its overall amount stays the same, it does not alter the adverse incentive effects on second earners.

It is true that income taxation on a purely individual basis likely is not compatible with the German constitution.[9] At the same time, other taxation options are available which would satisfy the constitutional requirements, while reducing fiscal disincentives. One such option is to allow the option of transferring the personal tax allowance from the non-working partner to the working spouse within a system of individual taxation (OECD, 2008a). An alternative option would be to allow transfers of income up to a certain cap from one spouse to the other (limited real income splitting or *Realsplitting*) or family tax splitting (dividing household income by the number of family members), but these are likely to have much smaller positive effects in terms of labour participation (Sachverständigenrat (2007); Steiner and Wrohlich (2008) and references therein).[10]

Expand childcare as planned

Childcare is another factor determining the working decision of second-earners; maternal employment is significantly higher in those countries where childcare possibilities are larger (OECD, 2008a). At 18% in 2008, enrolment rates in formal care for children under 3 years of age compares unfavourably with the OECD average of 30%.[11] Childcare supply for toddlers is particularly low in the western *Länder* while the

9. The German constitutional court ruled in 1957 that married couples should not be disadvantaged relative to non-married couples and that an equal share of the total household earnings belongs to each person in a marriage. Before 1957, both incomes were added and taxed in the progressive system; this resulted in a tax disadvantage for married persons as both incomes would be subject to the higher marginal tax rate. Reforms led to the current joint taxation system which satisfies the constitutional court ruling requirement by allowing a notional transfer from the higher-income to the lower-income spouse (of half the difference between both incomes). However, it is not the only system that satisfies the constitutional requirement; the notional transfer notably could be smaller than currently.

10. *Sachverständigenrat* (2007) argues that in limited real income splitting the transfer from one partner to the other must be at least EUR 15 000 as this is roughly the legal support payment for divorced couples (the paying partner can deduct it from his income, the receiving partner pays taxes on it). If individual taxation is coupled with transfers lower than this amount, divorcing could become fiscally attractive which may counter the constitutional protection of marriage.

11. This difference is not offset by informal care *(e.g.* provided by relatives, friends, neighbours, babysitters or nannies) as such arrangements are used by only 15% of children, fewer than in most other OECD countries (*OECD Family database*, PF3.3).

eastern *Länder* for historical reasons have a higher supply; this may be one reason why the share of women who work full-time is much higher in eastern Germany compared to the west (54.6% *vs.* 46.3%) (Wanger, 2011). Based on a German household panel, Felfe and Lalive (2010) find that female weekly working hours increase by 2.9 hours following an increase in local childcare supply by ten places. Acknowledging the lack of supply, the government has started to implement a reform starting in 2005 with the aim of being able to offer a childcare place for 35% of children aged three or below by 2013 (and installing a legal claim for a place for all children aged two years). The plans appropriately target the challenge and should be implemented as planned. However, the government should refrain from introducing an additional benefit for mothers who are not using childcare facilities for their kids as this risks offsetting the positive incentive effects from an increase in childcare supply (OECD, 2008a).

Participation in childcare is more favourable for children aged 3-5 years with an enrolment rate of 93%, one of the highest among OECD countries. The high share is in part a consequence of the introduction of a legal claim for a place in kindergarten in 1996 (Spieß, 2011). However, these facilities are often not available on a full-time basis, notably in the western *Länder*; there, only a quarter of children in this age group attend kindergarten for more than seven hours daily. In the eastern *Länder*, the share is almost 80% (Spieß, 2011). Similarly, there is a lack of supply of full-day primary schooling (again with similar differences between eastern and western *Länder*; Spieß, 2011) and only 6% of children aged 6-11 are in out-of-school-hours care services - in Sweden and Denmark, the share is more than 60% (OECD, 2011c). The government has started to support the *Länder* in implementing full-day schooling supply since 2003. These efforts should continue.

Reducing fiscal disincentives and improving childcare supply could well have very large effects on female full-time participation. This is because some other parameters in German family policy are favourable. For example, the recent parental leave reform (*Elterngeld*) may have contributed to an increase in participation by reducing the duration of parental leave benefit payments (Spieß, 2011; Bergemann and Riphan, 2009). Indeed there is some evidence from household surveys that labour participation of mothers rose by about 8% since 2006 (when the new parental leave benefit system was introduced and the extension of child care facilities started). Also, full time employment rates (>32 hours) of mothers with their youngest child up to 2 years old increased by about 6 percentage points over the same period. Cross-country evidence indicates that such reforms also have a significant impact on fertility which in Germany is at the lower end of OECD countries (OECD, 2011c).

Further increasing employment of older workers

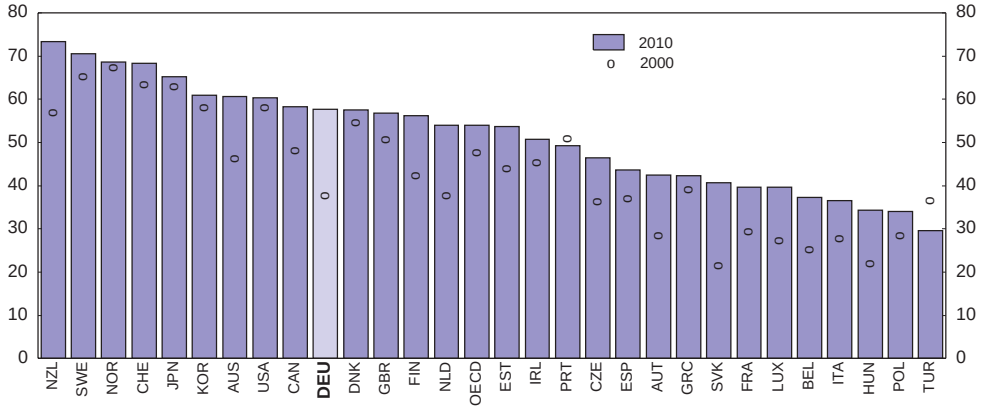
A further challenge is to extend the length of working lives, which requires both activating the elderly workforce through a rise in effective retirement age and improving the employability of older workers to avoid creating unproductive and costly pathways from work to retirement.

Labour force participation of older people has increased considerably over the past few years (Figure 8). The employment rate of the 55 to 64 year olds rose by two thirds (from 38% to 58%) between 2000 and 2010. That increase was stronger than in any other age group and is the third highest among OECD countries (after Hungary and Slovakia). Reforms on the labour market and in the pension system encouraged both labour demand and supply for older workers. On the supply side, increased reductions in benefits for early retirees and in unemployment benefits increased work incentives for older workers (OECD, 2005; OECD, 2011b). In addition, subsidized part-time employment schemes for older workers (*Altersteilzeit*) have been phased out and wage subsidies are provided to older employees who take up a new job that pays less than his/her previous position.[12] The increase in legal retirement age (from 65 to 67

12. Wage subsidies were introduced in 2007 for older workers accepting a job which pays less than their unemployment benefits or facing the risk of being laid off unless they accept a reduction in wage resulting

by 2029) will contribute further to the improvement in older worker participation. On the demand side, employment opportunities of older persons were further enhanced by easing restrictions for the use of fixed-term contracts for older workers and by subsidizing firms for hiring older workers (*Gesetz zur Verbesserung der Beschäftigungschancen*).

Figure 8. Employment rates of older workers



Note: Employment rate of older workers is employment as a percentage of the population aged 55 to 64 years.
Source: OECD, *Labour Force database*.

Notwithstanding this improvement, the elderly employment rate could be further raised. It is now above the OECD average but still below those of best performing countries (Figure 8). While the effective retirement age is progressively converging to the 2004-09 OECD average (age 64 in 2010), it is still below the legal retirement age. In addition, the unemployment rate of older workers (aged 55-64) was 1.6 percentage points above the OECD average and 0.6 percentage point above the total unemployment rate in Germany in 2010.

Lowering the incentives to retire early

Incentives for workers to remain in the labour market beyond a certain age could be further enhanced, in particular for low income workers. One the one hand, pension incentives to work between age 60-64 are high by international comparison, as the pension level is low (thus encouraging longer work) and as the change in net pension wealth related to an additional year of work after 60 is around the OECD average (OECD, 2011b).[13] On the other hand, these incentives are much lower for low income workers as their accumulated pension rights over a working life may not surpass the social assistance level, thus discouraging employment. The sustainability factor in the pension formula (automatically adjusting pensions to changes in the ratio between contributors and pensioners) may accentuate this effect by reducing the gap between the pension level and the level of assistance income for low income workers. One option to counter this effect would be to make the pension system progressive, for example by increasing the value of points for low income workers at the end of their carrier or introducing a minimum pension. Redistribution in the German pension system, as measured by the progressivity index, is lower

in a net wage below their unemployment benefits they are eligible for. The scheme is set to expire end 2011.

13. The German pension system is a point system (each year worked provides one point). The legal retirement age is progressively increased to age 67 but early retirement is possible from age 63 with 35 years of contributions with reduced benefits and from age 65 without deductions after 45 years of contributions. A 6% increment for each year of additional work is provided after the age of 67.

than 21 of the other OECD countries (OECD, 2011b) and studies suggest that introducing progressivity may have a positive impact on welfare by reducing the risk of old-age poverty (Fehr *et al.*, 2011). The impact of this measure on public finances should be carefully examined to avoid undermining the sustainability of the pension system. Besides, additional adjustment to pension and labour market systems should help further encouraging old workers to remain on the labour market:

- The pension system could be reformed to include larger pension decrements for early retirees and larger benefit increments for later retirement, so as to ensure actuarial neutrality. OECD simulations show that the 3.6% decrement for early retirement is not high enough and should be raised to 5.5-6% (OECD, 2005). Another option would be to put a higher value to points allocated after the minimum of 45 years of contribution.

- Despite significant reforms to phase out early retirement, some options are still available for workers to exit the labour market before the legal retirement age. For example, the duration of unemployment benefits is higher for workers above 50 years of age, reaching 24 months for those aged 58 or above (compared to 12 months for workers aged up to 50 years of age), thus supporting the unemployment pathway to retirement (OECD, 2008a). The extended duration payments for older workers should be phased out.

Increasing employability

Measures are also needed to increase the employability of older workers (such as their adaptability to labour market needs) by preventing the emergence of wage-productivity gaps at older ages and by countering discrimination against older workers. Empirical studies suggest that discrimination against older workers is significant and has increased in Germany over the last decade (OECD, 2011b). In addition, the chances for older workers to be hired are significantly lower than the chances of being employed until retirement (Heywood *et al.*, 2010). Different factors may explain the low employability of older workers:

- Labour costs of older workers are above average as they receive seniority wages (wages increase with age irrespective of a worker's productivity growth). Higher seniority wages are correlated with a low hiring rate of older workers (OECD, 2011b; Figure 9, left panel). In Germany, older workers earn around 60% more than younger workers (OECD average is 43%), suggesting that seniority wages are hampering old-age employment. While Germany uses wage subsidies for firms employing workers over the age of 50, thus lowering the adverse effects of seniority wages, consideration should also be given to change the remuneration system.[14] One option is to further shift away from seniority clauses towards performance clauses in the public sector. In addition, social partners should be encouraged to assess in how far current wage schemes inhibit older worker employability.

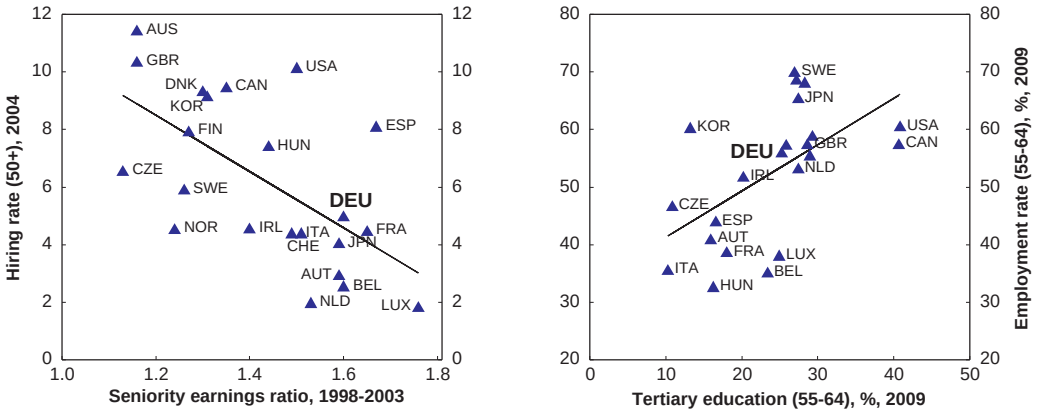
- Training older workers is less attractive given their lower remaining working life and thus, investment in human capital tends to decline with age. Also, while firm specific human capital develops with experience, general knowledge erodes over time, limiting adaptive capacities and creating barriers to job mobility. Employability of older workers improves with education level: the unemployment rate of tertiary graduates aged 50-64 years is less than half the rate of those with the lowest education level and employment rates of older workers are correlated with tertiary education attainment (Figure 9, right panel). Lifelong training is therefore crucial for

14. In addition to subsidies, integration vouchers have been introduced in 2008 for all older workers unemployed for at least 12 months. Wage subsidies are found to increase the likelihood of employment (IAB, 2006).

old-age activation as it helps preventing human capital depreciation over the working life, improving adaptability of older workers to firm's requirement, and increasing the education level. Overall, Germany ranks among the ten best performing OECD countries regarding adult participation in formal and non-formal education (OECD, 2011d). However, participation rates in education in Germany remain significantly below those of Nordic countries, on average as well as for older workers. Less than 30% of those aged 55-64 participated in education or training in 2007 while around 60% did so in Sweden (OECD, 2011d). The increase in the retirement age from 65 to 67 provides new incentives for participation in training as the increase in the length of the working life mechanically raises the rate of return of training. Cross-country evidence suggests that the effective retirement age is positively correlated with participation in training (Figure 10). However, more specific measures are needed to foster lifelong learning, such as implementing a standardized system for the recognition of non-formal and informal qualifications and providing better guidance on adult education opportunities (OECD, 2010b). In addition, raising the participation of older workers in training requires improving further its effectiveness by adapting training to the needs of seniors (Zwick, 2011).

- Discrimination is also related to a biased perception of old-age performance. This could be addressed by providing public information and encouraging age diversity in the workplace. Some initiatives to support old-age employment exist in collective agreements (*e.g.* the Joint German Occupational Safety and Health Strategy and the New Quality of Work Initiative). Legislative measures in favour of an older workforce should be used with caution, however, since they may increase protection towards insiders having permanent jobs, thus reducing employability and job mobility (OECD, 2011b).

Figure 9. Seniority wages, tertiary education and hiring of older workers

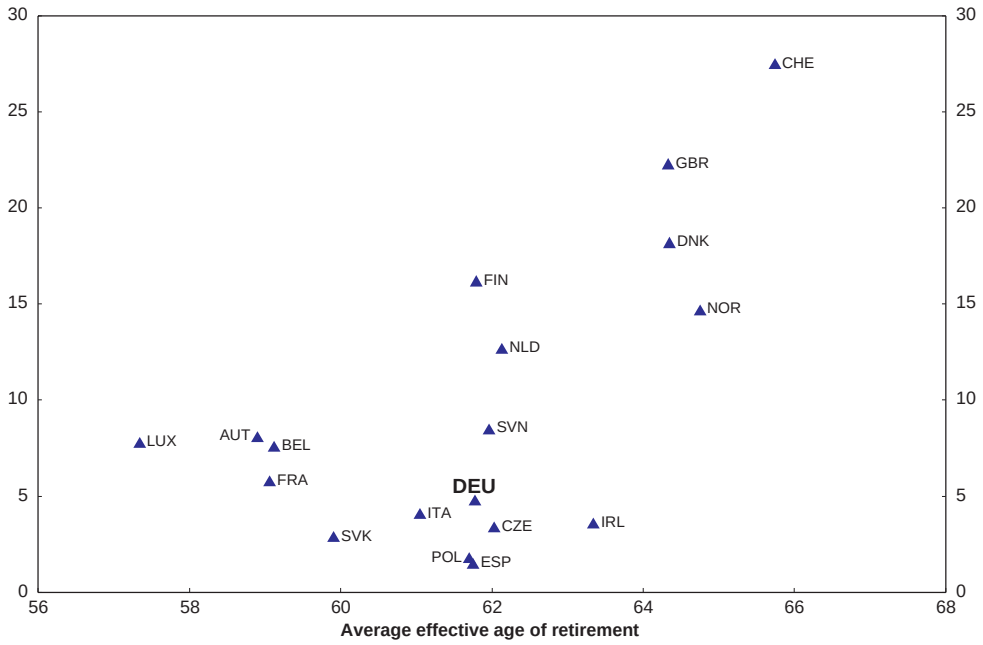


Note: The hiring rate is the number of employees with less than one year of tenure relative to total employees aged 50-64 years. The seniority earnings ratio is the ratio of earnings of males aged 55-59 to those aged 25-29 years. The earnings data cover full-time workers only for various years over the period 1998-2003. Tertiary education refers to the percentage of persons aged 55-64 years who have attained tertiary type A or B or advanced research programmes. Countries in the graphs are 22 OECD members for which data is available.

Source: OECD, *Pensions at a Glance 2011* and *Education at a Glance 2011*.

Figure 10. Participation in training and effective retirement age

% of males, aged 50-59 in 2009, who participated in education and training



Note: The average effective age of retirement is calculated as a weighted average of (net) withdrawals from the labour market at different ages over a 5-year period for workers initially aged 40 and over. In order to abstract from compositional effects in the age structure of the population, labour force withdrawals are estimated based on changes in labour force participation rates rather than labour force levels.

Source: Eurostat and OECD, *Ageing and Employment Policies - Statistics on average effective age of retirement*.

Continuing with education reforms

Raising education outcomes and fostering training are key measures for addressing the challenge of an ageing workforce and the associated drop in potential growth (OECD, 2011a). Employment rates tend to be higher for the better educated (thus raising labour input) who also are more productive and innovative. In addition, ageing and technological progress will increase the need for high-skilled workers, which will account for a large share of future labour shortages (Bundesministerium für Arbeit und Soziales, 2011). Employment rates for workers with tertiary education decline slower at older ages than for those with other education levels (OECD, 2010a). Tertiary education attainment is low in Germany and has not increased from generation to generation (at 26%, the level of tertiary attainment of the 25-34 year-old is only 1 percentage point higher than the one of the 55-64 year-old and stands 11 percentage points below the OECD average). At the same time, the wage premia for tertiary graduates are high compared to other OECD countries, suggesting shortcomings in high-skilled labour (OECD, 2011d). Tertiary education attainment is expected to increase because of recent reforms in the education system, notably the reduction in the duration of secondary education. However, more needs to be done to further raise the education level in Germany.

Some reforms are now being implemented to improve the accessibility of tertiary education and make it more attractive. Universities received more autonomy to select their students and to introduce tuition fees, creating incentives for tertiary institutions to improve performance. Some *Länder* which introduced tuitions fees have since abolished them to improve university access for low income students. However, there is little evidence that tuition fees deter access to university when they are coupled with measures helping low income students to invest in their education (such as income-contingent loans) (OECD,

2008b).[15] Also, Germany has implemented measures facilitating access to university for students with low social background, such as the provision of loans to finance tuition fees. The funds provided rose by 23% since 2005, amounting to EUR 2.7 billion in 2009 (0.1% of GDP). Besides, exemptions from the repayment of loans have been implemented and part-time courses have been developed allowing students to work to finance their studies. In addition, the *Higher Education Pact 2020* contributes adapting to the increasing demand for tertiary education.[16] Other measures also aim at improving the attractiveness of tertiary studies by providing information on opportunities offered to tertiary graduates and assisting students in the transition to professional activity (*e.g.* the establishment of career services). These measures should be further supported as more disadvantaged individuals tend to underestimate the net benefits of tertiary education (OECD, 2008b).

Further reforms are needed to increase tertiary education attainment. In international comparison, the share of upper secondary graduates prepared to enter university is 10 percentage points lower than the OECD average (Figure 11). Access to university is limited by the early selection of pupils at age 10 into different tracks, significantly influencing the type of education they will receive (academic or vocational). In 2009, around 40% of pupils were in the upper track – the Grammar school (*Gymnasium*) – which leads to an unrestrictive university entrance certificate (*Abitur*). Notwithstanding some improvements over the past few years, the probability of changing tracks after the selection remains low - notably of moving from a lower to an upper track. This suggests that the disadvantaged tertiary education attainment is related to some extent to the low share of students going into the Grammar school, even though it needs to be acknowledged that graduates from vocational schools represent an increasing share of students at universities. In addition, evidence suggests that in systems with early tracking, children are selected to a large degree on the basis of their social backgrounds and not on their ability, thus contributing to reproducing existing social inequalities without improving educational outcomes (OECD, 2008b). Germany has made significant progress in improving the school system in terms of quality and equity but reforms to reduce entry barriers of the system should be continued. Some *Länder* have implemented a wide range of measures to reduce the stratification in the school system, notably by delaying the tracking decision to a later age and reducing the number of school tracks but also through targeted support to disadvantaged groups. Similar approaches should be adopted in the remaining *Länder*. In addition, more opportunities should be created to allow pupils to change tracks. Also, the exchange between academic and professional spheres should be improved, for example by further easing access of qualified workers to university. Indeed, the education system should be made more flexible and more responsive to labour market needs as it is not offering enough possibilities for students or professionals to pursue their studies outside of standard training.[17] Recent measures made the access to tertiary education for vocational training graduates easier (OECD, 2010d) and start to show results.[18] Opportunities for higher qualification

15. Graduates from secondary schools in those German *Länder* that charge tuition are no less likely to attend university than those in *Länder* which do not charge such fees (Jaeger and Heine, 2010).

16. The Higher Education Pact 2020, amounting to EUR 4.7 billion in its second phase 2011-15, is a response to the increasing demand of the labour market for high skilled persons, to the demographic development and the increase of new entrants into higher education due to the shortened duration of secondary schooling and the suspension of compulsory military service.

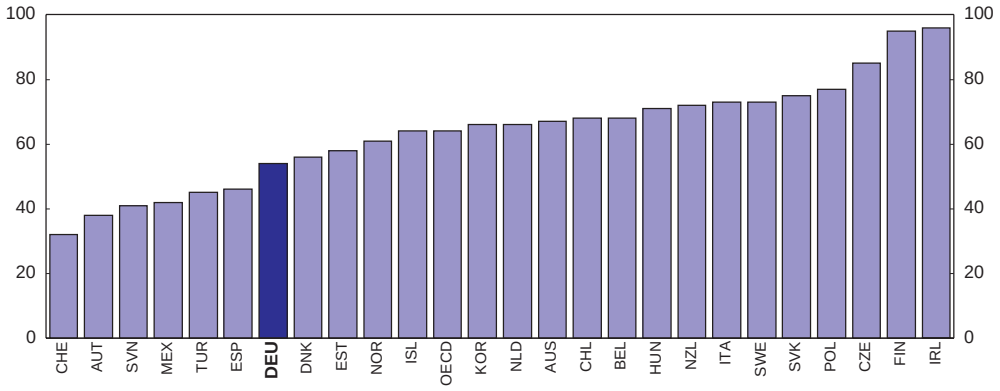
17. The government is considering reforming the educational system in this direction and will allocate EUR 250 million (0.01% of GDP) between 2011 and 2020 to the project "Aufstieg durch Bildung: Offene Hochschulen" ("Advancement through Education: Open Universities").

18. In 2010, 1.9% of the new tertiary students came from the vocational education system compared to 1.3% in 2009 and 0.4% in 2000. Since 2009, graduates with advanced vocational qualifications (with the Master craftsman (*Meister*), technician or *Fachwirt* titles) have full access to university. Graduates from upper secondary vocational programmes with 3 years of work experience have access to tertiary education in relevant subjects. In addition, the recognition of knowledge and skills acquired outside of the higher

thus developed contributing to a better utilization of existing qualification potentials. Efforts should continue in this direction and remaining barriers to an increased flexibility of the education system should be removed. For instance, pathways from vocational training to tertiary education should be made more transparent and support measures for less academically trained people wanting to attend university should be provided (OECD, 2010d).

Figure 11. Share of German youth prepared for university

Graduation rate, %, from upper secondary and post-secondary non-tertiary programmes designed to prepare students for tertiary-type A education, 2009



Note: Gross graduation rates are estimated as the number of graduates divided by the population at the typical graduation age. Data in the graph refers to upper secondary and post-secondary non-tertiary programmes, which are designed to prepare for direct entry to tertiary-type A education. Tertiary-type A programmes are largely theory-based and are designed to provide sufficient qualifications for entry to advanced research programmes and professions with high skill requirements, such as medicine, dentistry or architecture. Other upper secondary programmes, which prepare for other tertiary programmes focusing more on practical, technical or occupational skills, are not considered here. Data for Australia refers to 2008

Source: Education at a Glance 2011 (Figure A2.2).

Avoiding the development of a dual labour market

The share of workers with a fixed-term contract has risen substantially: in 2010, they accounted for just below 15% of all dependent employees compared to an OECD average of 12.4%. The gap to the other OECD countries has significantly widened since around the middle of the 2000s. This concerns exclusively the younger workers: among those aged 15-24 years, 57% have a fixed-term work contract, more than twice the OECD average. By contrast, the share (at around 10%) is almost equal to the OECD average for prime age workers (25-54 years old) and at 4.6% is half the OECD average for older workers (55-64 years old). While it is true that fixed-term contracts among the younger population were always more widespread in Germany than elsewhere, as apprentices in vocational training are usually hired on this basis, this cannot explain the dramatic increase in the share by almost 20 percentage points since the mid-1990s (while the OECD average rose by less than 5 percentage points over the same period).

Changes in employment protection legislation are likely to play a role in this development. Not only is regulation of regular work contracts one of the strictest among OECD countries; the difference between EPL for regular work contracts and fixed-term work contracts is also higher than in many other OECD countries and has increased significantly since 2000 as the use of fixed-term contracts was eased substantially.

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education system has been integrated into the higher education provisions of all *Länder*. Advanced training programmes for working adults are also implemented at the regional level.

Fixed-term contracts increase employers' flexibility and can be a stepping stone into permanent employment (around half of all workers on fixed-term contracts obtain regular contracts after the limitation period has ended (Hohendanner, 2010). However, fixed-term employment can have adverse effects on long-run employability, especially for young workers, notably because firms are less likely to invest in their training (OECD, 2004). It also contributes to higher income inequality as fixed-term workers tend to earn less than permanent ones (Koske *et al.*, 2012). To lower the risk of dualisation in the labour market, the protection of permanent work contracts should be lowered along the lines suggested in OECD (2010b), for example by moving towards a unified job contract with the degree of protection rising with tenure.

Adapting migration policy

Migration flows are low and not labour-oriented

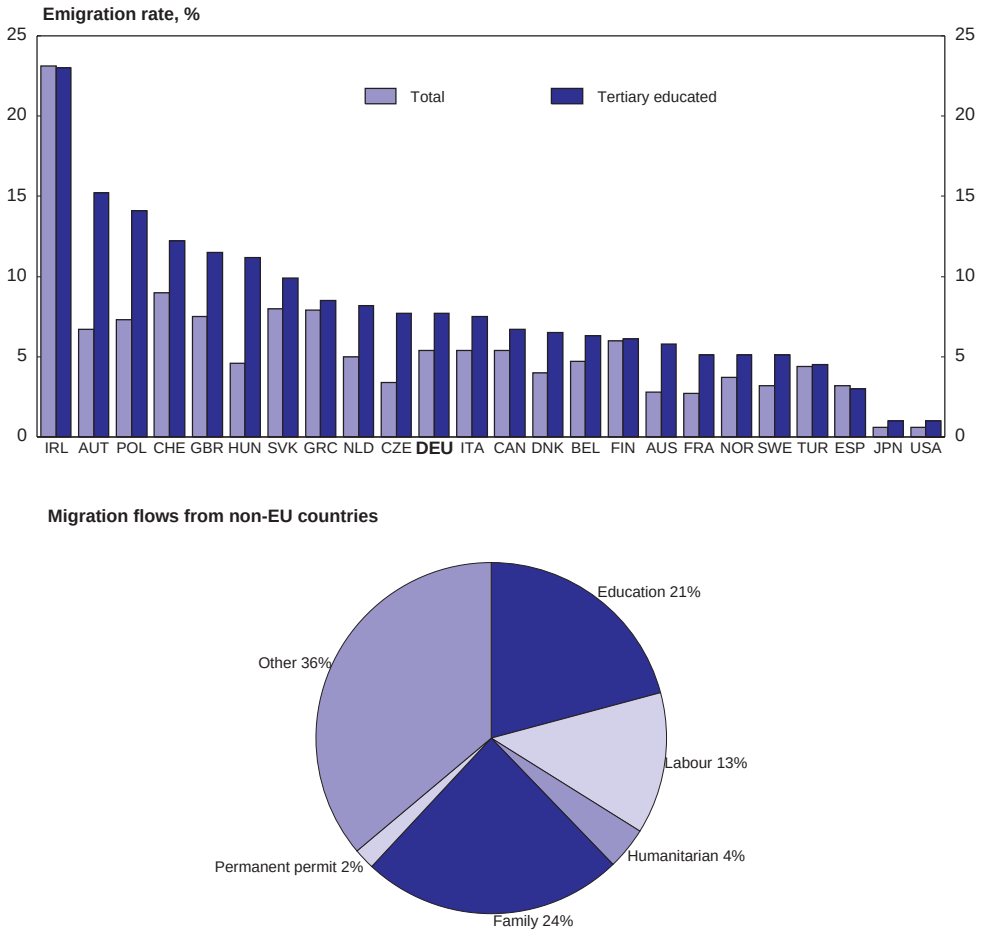
Migration is an important part of the labour market policy toolbox as it provides direct access to labour force with specific knowledge such as language and information on foreign markets or technologies. Also, it can help to address labour shortages and Germans are increasingly supportive of migration policy to address this objective.[19] Last but not least, migration is an important factor to counter the decline in the labour force, notably as the pool of German native workers will not be sufficient to offset the rapid ageing of the population (IMF, 2008; Bundesministerium für Arbeit und Soziales, 2011). While it alone cannot alleviate the impact of population ageing, particularly on the financial viability of pension schemes (Coppel *et al.*, 2001), increasing migrant inflows has a quite rapid effect on labour supply, thus mechanically increasing the productive capacities of the economy.

Current immigration to Germany does not adequately serve these purposes. Net migrations declined over the past few years, both due to an increase in emigration and a decrease in immigration. In particular, the emigration rate is high compared to other OECD countries, notably for high-skilled workers (Figure 12, upper panel). Moreover, by international comparison, German migration policy is not work-oriented (OECD, 2011b). Work permits account for only 13% of total migration inflows from non-EU countries (Figure 12, lower panel). In addition, migrants are less skilled than the native average and the share of high-skilled migrants is below the OECD average (OECD, 2010b). Recent migration flows consisted on average of better educated migrants compared to the past and also to the native-born population. This is partly due to a greater selectivity, which, however, also tends to reduce migration inflows.

Free labour mobility in the EU is likely to play only a limited role in addressing age-related labour shortages. According to surveys, EU countries are a less attractive destination for migrants than non-EU English speaking countries even for EU citizens (Chaloff *et al.*, 2009). In addition, most EU member states face rapid ageing themselves and are already competing for skilled workers. Finally, enlargement to eastern European countries and the recent opening of the German labour market to new EU members states is estimated to have only little impact on migration flows (Box 3). This suggests a need for reforming migration policy towards third country citizens.

19. A survey sponsored by the Council for Integration and Migration shows that 60% of those surveyed are in favour of more migration of skilled workers in order to overcome labour shortages.

Figure 12. Aspects of migration to Germany



Note: The emigration rates are percentages of the native population (total or tertiary educated) of country *i* residing abroad around 2000. Permanent permit includes permits delivered to high-skilled, who account for only 0.7% of the total. Other includes temporary authorization to stay for migration candidates. Remaining categories are temporary residence permits.

Source: Dumont *et al.* (2010), "International Migrants in Developed, Emerging and Developing Countries: An Extended Profile", *OECD Social, Employment and Migration Working Papers*, No. 114, and related database; Bundesamt für Migration und Flüchtlinge, Migrationsbericht 2009.

Box 3. What Germany can expect from opening its labour market to new EU member states

The transition period entitling older EU member states to restrict labour mobility from the countries that entered EU in 2004 (NMS-8) expired on 1st May 2011 and Germany opened its labour market to NMS-8 citizens.[1] According to recent studies, this removal of barriers to labour mobility may increase migrations to Germany by between 100 000 and 400 000 per year in the medium term (Schäfer, 2011).[2] The cautious estimates are supported by a first assessment of migrations from NMS-8 since May 2011 by the German labour office, showing only a slight increase.

The wide range of estimates is partly explained by the complexity of projecting migrations flows, as the propensity to migrate depends on numerous factors which are difficult to measure (OECD, 2009b). Economic factors such as gaps in wages and in unemployment rates play a central role in migration decisions. However, academic studies show that these factors can only partly explain migration flows and that other determinants should be taken into account (see for instance Martin, 2003; Massey *et al.*, 1993; Mayda, 2010; Zimmermann, 1995). The role of diasporas already present in the host country, the attractiveness of the language and the degree of acceptance in the host country also influence the number of migrants. In addition, and particularly in the case of EU enlargement, taking into account competition from other countries and thus their relative attractiveness is also essential.

Some of the factors determining migrations are now arguably more favourable in the case of Germany relative to earlier time periods. For example, Germany was the preferred destination country of NMS citizens for work migration in 2009 (TNS Opinion & Social, 2010). Also, while gaps in GDP per capita and average wages significantly fell during the last decade between Germany and the NMS-8, differences in unemployment rates actually widened; a tighter German labour market may now attract more migrants than in earlier periods. The share of pupils in upper secondary education learning German declined in the NMS-8, but remains higher than in other European countries and account for more than 50% for most of the NMS-8. The number of NMS-8 citizens living in Germany increased since 2000, reinforcing diasporas effects.

However, the opening should not lead to a huge increase in migration flows and thus should not significantly impact the labour market (OECD, 2011e). Indeed, most of the mobile NMS-8 citizens already immigrated to countries which removed restrictions at an early stage, thus reducing the number of candidates to migration. Inflows from NMS-8 to Germany also increased after the enlargement in 2004 and NMS-8 migrants had already the possibility to work (for instance under self-employed status).[3] Migration flows should also be damped in the short run as the German economy is now phasing a soft patch, limiting job opportunity for migrants.

The skill level of future migrants from NMS-8 remains broadly undetermined. On the one hand, potential migrants are younger and better educated than the average citizen in NMS-8. Also, the cohort with a high willingness to migrate (25-34 years-old) is more educated than the German average of this age in most of the NMS.[4] On the other hand, it is unlikely that high-skilled migrations increase dramatically since skilled workers already had the opportunity to work in Germany since the labour market was opened to tertiary graduates from NMS in January 2009. In addition, the risk that qualified migrants may be under-employed due to a lack of recognition of foreign qualifications may act as a barrier to high-skilled migration.

Apart from the uncertainty related to the size of migrations, the economic impact of the opening to NMS is likely to be positive. For example, the Bundesbank estimates that an increase of 100 000 migrants (per year) would increase potential GDP by 0.7% by 2013 through its positive impact on labour supply and capital stock adjustment (Bundesbank, 2011). The risk of big perturbations on the labour market is limited, as stressed by past experience of EU countries opening their labour market to NMS-8. Also, the opening may help to curb fraud (illicit uses of manpower, excessive use of subcontracting) and illegal work with a positive effect on tax revenues.

1. From 2004 to 2009, NMS citizens had to obtain a work permit as non-EU citizens. The restrictions limited migrations from NMS-8 to Germany: only 9% of migrants from NMS-8 went to Germany between 2004 and 2010 (compared to 60% expected with a total opening) (Bundesministerium für Wirtschaft und Technologie, 2007).
2. On the low side, the German government and the European Commission expect around 100 000 migrants from NMS-8 per year while the IAB (Institut für Arbeitsmarkt- und Berufsforschung) and the Ifo institute are projecting between 100 000 and 140 000 annual entries of migrants during the next 10 years (Bass and Brücker, 2011). On the high side, the Institut der deutschen Wirtschaft projects 400 000 new migrants from NMS-8 in 2011 and 2012 (Institut der deutschen Wirtschaft, 2011) and the Polish Ministry of Labour estimates that around 400 000 Poles could look for a job in Germany within 3 years. As Poland accounts for around 70% of total migrations from NMS-8, migrations to Germany according to this scenario may increase to 570 000 by 2013.
3. The number of migrants from NMS-8 will increase as those already in the country will formally register, but this will not have a major effect on labour supply.
4. Compared to Germany, the share of 25-34 years old having at least an upper secondary education level in 2008 was higher in Poland, Czech Republic, Slovakia and equivalent in Hungary.

Migration policy should help to address emerging and persistent labour shortages

As stressed in OECD (2010b), migration policy should focus more on high-skilled workers, whose adaptive capacities are higher than the average and who are already and increasingly needed in the German labour market. Shortages are currently concentrated in specific high-skilled sectors, such as mechanical and electrical engineering and IT services providers. However, they are also developing in certain occupations in mid- and low-skilled sectors, such as health care (DIHK, 2011; Fuchs *et al.*, 2010; Anger *et al.,* 2011). With ageing, increasing qualification levels of younger cohorts, and higher female labour participation rates, labour shortages will emerge in sectors intensive in mid-skilled labour, such as food services, construction, household production substitutions services and long term care. As some occupations are not adapted to old age work and not attractive for the native population, the domestic workforce may not be sufficient to address these needs in mid- or low-skilled workers (OECD, 2009a). The need for mid- and low skilled migration should thus be assessed when designing the migration policy.

Designing a targeted migration policy

German migration policy limits the hiring of a non-EU worker by requiring employers to prove that they cannot fill the position with a domestic worker or an EU national before recruiting him. This administrative procedure - the labour market test - is burdensome and creates uncertainty in the recruitment process. Identifying tight occupations and establishing a shortage list exempting employers from the labour market test could reduce this administrative burden and limit arbitrariness in the permit allocation.[20] In addition, by making the migration system more transparent, this measure would increase the attractiveness of Germany as a location country. Migration policy targeted on labour shortages should be coordinated with other related policies (such as education, training, labour market and pension policy) and be based on an objective analysis of labour market needs. In the UK, an independent consultation body (the Migration Advisory Committee) analyses labour shortages and advises the government on the list of occupations to be opened to migrants. In 2011, Germany introduced a shortage list including a very limited number of occupations which should be revised by the Federal Labour Office on a biannual basis. Consideration should be given to establish an organ of labour market experts charged with designing and assessing labour migration policy or at least creating an independent body evaluating the existence of labour shortages as done in the UK. In the evaluation process, employers' preferences to hire specific foreign workers should receive attention.

However, past and international experiences suggest designing a shortage list will not be sufficient to attract adequate workforce. For example, the German green card initiative, facilitating the recruitment of IT specialist between 2000 and 2005, did not succeed in attracting the additional expected workers. Besides, non-English speaking countries are now investing in active migration policies to attract skilled migrants as lowering administrative barriers proved insufficient for countries with non-widely spoken language to recruit foreign skilled workers (Chaloff *et al.*, 2009). Establishing a shortage list should thus be complemented with measures to improve the visibility of the policy and the capacities of employers to recruit abroad. On the supply side, selection criteria and conditions on how to obtain a work permit should be published in a transparent way. In particular, they should be easily accessible by migration candidates and detailed on the web and in languages which are spoken by the target population. In addition, unique contact points should be created, providing all necessary information to settle in Germany. On the demand side, the development of placement services could be considered, in particular for SMEs which have more difficulties to recruit from abroad and in specific sectors such as live-in care and home care for which meeting candidates directly is crucial to ensure a good matching (OECD, 2009a). Placement services could be developed by creating a private employment agency specialized in foreign recruitment that could be jointly financed by employers and public employment services. Such services could also be developed in

20. Burkert *et al.* (2008) show evidence for discretion in permits attribution in Germany.

Public Employment Services (as it is the case in UK). Finally, as recommended in OECD (2010b), improving recruitment policy by developing international job fairs and multilingual job postings could also contribute to improving employers' access to the global labour market.

Facilitating entry for high-skilled migrants

Notwithstanding some progress over the past few years, German migration policy has not succeeded in attracting high-skilled migrants. Reforms in 2005 and 2009 created several pathways for high-skilled migrants (*New Immigration Act* 2005, *Beitrag der Arbeitsmigration zur Sicherung der Fachkräftebasis in Deutschland* 2009). In particular, the labour market test was removed for academics, graduates from a German university during their first year of job search, for specific occupations (scientists, engineers, doctors) and for executives with annual salaries above a wage threshold of EUR 66 000.[21] However, these reforms have not yet led to a significant increase in high-skilled migrations. For instance, fewer than 800 high-skilled migrants entered under the income condition since 2005 (only 163 permits have been allocated in 2010; Bundesamt für Migration und Flüchtlinge, 2011). The 2009 measures are quite recent and were implemented when migration flows were significantly and internationally reduced due to the economic crisis (OECD, 2010c). Nevertheless, migration policy is still too restrictive and complex to be attractive for high-skilled migrants. In particular, as the wage threshold which allows an exemption from the labour market test is significantly higher than the average wage earned by young skilled professionals, high-skilled migrants (who tend to be young) are less likely to come to Germany.[22]

Migration policy towards high-skilled migrants needs to be adapted in several ways to improve the attractiveness of Germany as a migration destination. The wage threshold for getting a permanent work permit should be reduced. This could be done by applying the conditions set by the EU Directive for work permits for high-skilled non-EU citizens ("Blue Card"): possessing a tertiary diploma or by derogation having five years of experience in an occupation requiring tertiary education and having a job contract or a job offer with a gross income of at least 50% above the national average.[23] Making the migration system more supply-oriented would also increase the attractiveness of Germany as a location country for high-skilled migrants. As many other OECD countries, Germany should consider introducing a point system offering automatically a work permit to migration candidates if they satisfy a certain number of conditions (on occupation, work experience, education, age, language skills). This system is transparent, simple, easily adaptable in function of its outcomes and more attractive for migrants than a system based on multiple exemptions. In addition, it is better understood by the domestic population as it is based on objective selection criteria targeted to meet economic and labour market purposes. The system increased the level of qualification of migrants in the UK and in Canada, as well as their employment rate and earnings (National Audit Office, 2011; Citizenship and Immigration Canada, 2010). However, in some cases, a point system may lead to over-qualification and difficulties for migrants to integrate into the labour market, for instance when migrants are selected without having a job offer or adequate language proficiency (Chaloff *et al.*, 2009). When designing a point system, particular attention should be given to the employability of migration candidates, for instance by giving more consideration to language ability

21. High-skilled workers still need to have a specific job offer with the same work conditions according to German standards to obtain a permit.

22. Young high-skilled can get a temporary work permit by passing the labour market test but do not benefit from this pathway, as the average starting salaries for a bachelor's degree is EUR 38 000, and less than EUR 40 000 for a Master's degree (*www.alma-mater.de/img/almamater-PDF/Unternehmen-Gehaltsstudie-2011-final.pdf*).

23. The average wage of a full-time employee in 2011q1 was around EUR 39 200, so the threshold to get a Blue Card would be EUR 58 800. However, as the Blue Card is a temporary work permit and needs to be renewed at least after four years, high-skilled workers will not benefit from a permanent permit as is currently the case for those earning more than EUR 66 000 per year.

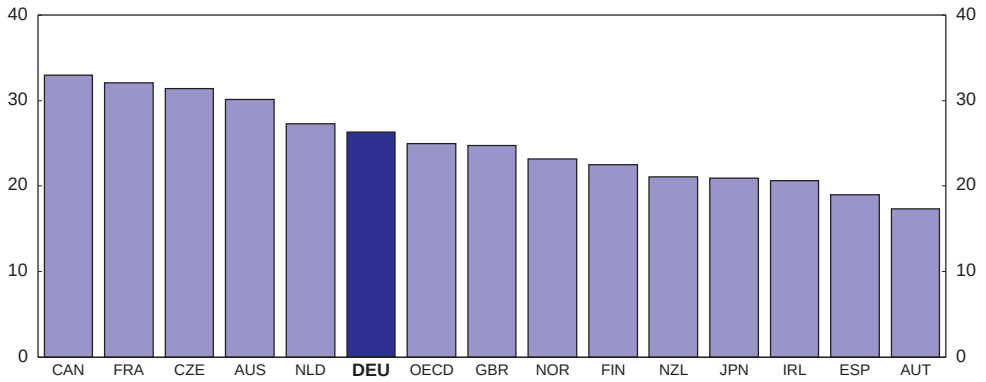
and demonstrated prior success. At the same time, the point system should relax conditions of entry for high-skilled migrants, in particular by allowing high-skilled young professionals from third countries to search for a job in Germany.

Opening further the labour market for foreign graduates

Germany should also focus on retaining non-EU graduates of German universities after the completion of their degree and attracting non-EU students who graduated in other EU universities. The number of foreign students is large in Germany compared to the OECD average (11% of foreign students in total tertiary enrolment versus 8.5% on average in the OECD). Graduates from German tertiary education institutions are already an important source of labour immigration, accounting for one third of labour immigrants in 2009. Retaining more students is feasible: while the stay rate of international students, *i.e.* the percentage of foreign students remaining in the country after graduation, is above the OECD average, it is significantly lower than in other migration countries (Figure 13). Germany implemented programmes to retain foreign students by removing the labour market test for foreign graduates from German universities if they take up a job in their field.[24] This condition could be further softened by not restricting the job field of foreign graduates but rather conditioning the labour market test only to the remuneration level (which should correspond to the average wage earned for a given qualification level) or by attributing more points to migrants with German diploma in the point system. In addition, relaxing conditions for students who graduated in other EU universities should be considered. Finally, efforts to harmonize education practice among EU and tightening links with foreign universities could also increase the attractiveness of Germany for young skilled foreigners (EU and non-EU).

Figure 13. International students staying in Germany

% of international students not renewing their student permits who stay on



Note: The figure illustrates the stay rate which is estimated as the ratio of the number of persons who have changed status (whether for work, family or other reasons) to the number of students who have not renewed their permits; the latter are not necessarily graduates. Data for Germany is for 2008 and either 2008 or 2009 for other countries. It covers only students from outside the European Economic Area. Data for Canada includes changes from student to both permanent status and other temporary statuses. OECD is the average of country ratios in the figure.

Source: OECD, *International Migration Outlook*, 2011, SOPEMI.

Improving Germany's attractiveness as a migration destination

As migration policy is only one factor entering in the migration decision, improving the attractiveness of Germany for migrants necessitates a comprehensive set of measures. Pull factors for migration are complex: economic opportunities in a particular field (for the migrant and his/her family), career development, wage level, quality of life, likelihood of extending their residence permit as well as language,

24. In 2007, less than 50% of international students changed status for work-related reasons while it was a majority in other OECD countries (OECD, 2010c).

cultural and historic links can all play a role in attracting qualified migrants (OECD, 2009b). Structural reforms that modify the above mentioned factors would contribute to the success of targeted migration policy. For instance, policies improving working conditions and promoting domestic investment are complementing migration policy as high-skilled labour is a complementary production factor to capital and thus tends to follow investment flows (IMF, 2008). Therefore, structural reforms such as liberalising the services sector, lowering the level of labour taxation or expanding childcare supply may all be beneficial in attracting immigrants, besides their overall positive effect on potential growth.

Improving the recognition of foreign diploma would also raise the attractiveness of Germany as a host country for foreign skilled workers as it would facilitate the matching of employers' needs and migrants' skills and limits over-qualification of migrants. The foreign-born population in Germany tends to be underemployed and encounters difficulties integrating on the labour market. In 2007, the percentage of high-skilled foreign born working in low skilled occupations was four times higher than for native born (OECD, 2009c). The lack of information on foreign qualifications is an important factor in the relative over-qualification of immigrants (OECD, 2007). This could deter high-skilled migrants to work in Germany and hamper the recruitment of skilled workers by German employers. Recently, Germany passed a "Law to improve the assessment and recognition of foreign professional qualifications (Recognition Act)": regardless of their country of origin or nationality, everyone has the legal right to receive an official evaluation of their foreign qualifications and credentials. The Recognition Act applies to non-regulated vocational qualifications as well as professional qualifications regulated at the federal level (*e.g.* certain advanced vocational qualifications, medical doctors, nurses). This law aims at providing employers and companies with reliable and nation-wide standardized information on the foreign qualifications which migrants have gained abroad. In addition, the government planned to provide this information online in an internet-based database. It also supports a nation-wide network of contact points and labour market-oriented advice services for the migrants seeking recognition. These measures are highly welcome but their implementation should be carefully monitored. In particular, they should not focus only on the degree level but also include an assessment of non-formal or informal qualifications.[25]

25. The OECD and UNESCO provide guidelines on how to facilitate the recognition of foreign qualifications and diplomas (OECD, 2005, *Guidelines to Quality Provision in Cross-border Higher Education*).

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Annex A1

ESTIMATING OKUN'S LAW FOR GERMANY

The negative relationship between movements in the unemployment rate and real GDP is referred to as Okun's law, following Okun (1962) who originally estimated for the US that a 3 percentage points decline in output is typically associated with a 1 percentage point rise in the unemployment rate. Studies typically find that the Okun coefficient differs across countries and over time with differences and changes in labour market institutions (such as EPL) having a large influence (IMF, 2010). In general, the Okun coefficient is found to have increased over time across countries as labour markets have become more flexible.

There are several alternative ways to estimate Okun's law (Knotek, 2007): in the static difference approach, the change in unemployment is regressed on the contemporaneous change in real GDP. The dynamic approach instead takes into account the fact that unemployment tends to react with a lag to changes in output. Estimations along these lines mostly include also lags of the dependent variable in order to eliminate serial correlation in the error terms. The standard specification for this approach, which is applied here to Germany, is:

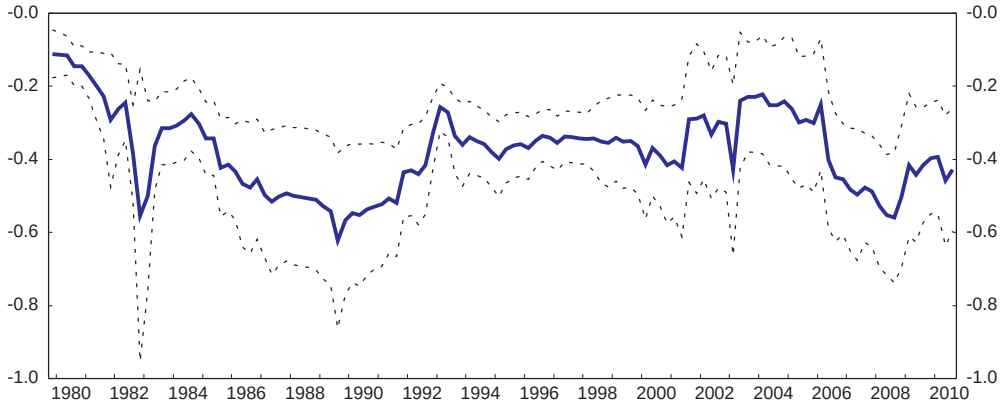
$$\Delta unr_t = \alpha + \sum_{s=0}^{\infty} \beta_s \Delta gdp_{t-s} + \sum_{i=1}^{\infty} \gamma_i \Delta unr_{t-i} + \varepsilon_t \text{ , Okun coefficient} = \frac{\sum_{s=0}^{\infty} \beta_s}{1 - \sum_{i=1}^{\infty} \gamma_i}$$

with *unr* being the unemployment rate and *gdp* the log level of real GDP.

The sample period covers 1970 to 2010 at a quarterly frequency and the optimal lag length according to the Akaike criterion for GDP was 1 and 2 for the unemployment rate, respectively. The equation contains in addition a dummy variable that takes the value of 1 in 1991q1 to account for a break in the series due to unification. When estimated over the whole sample period, the Okun coefficient is calculated at -0.35, *i.e.* a 1% decline in GDP growth is associated with a 0.35 percentage point increase in the unemployment rate, respectively. Applied to the latest crisis, the peak to trough output loss of 6.6% between the first quarters of 2008 and 2009 would have translated into an increase in the unemployment rate by 2.3 percentage points, compared with an actual increase of ½ percentage point.

This point estimate, however, masks significant changes over time in the Okun relationship. To analyse the time-variability of the Okun coefficient, rolling regressions using a ten-year window were estimated (applying the same specification as above). Results show significant fluctuations in the coefficient over time, possibly reflecting the impact of labour market reforms at different points in time (Figure A1.1). The coefficient notably decreases - that is, becomes more negative - somewhat in the years preceding the crisis; therefore, one would have expected an even stronger response of unemployment to the output loss than during the 1990s, for example.

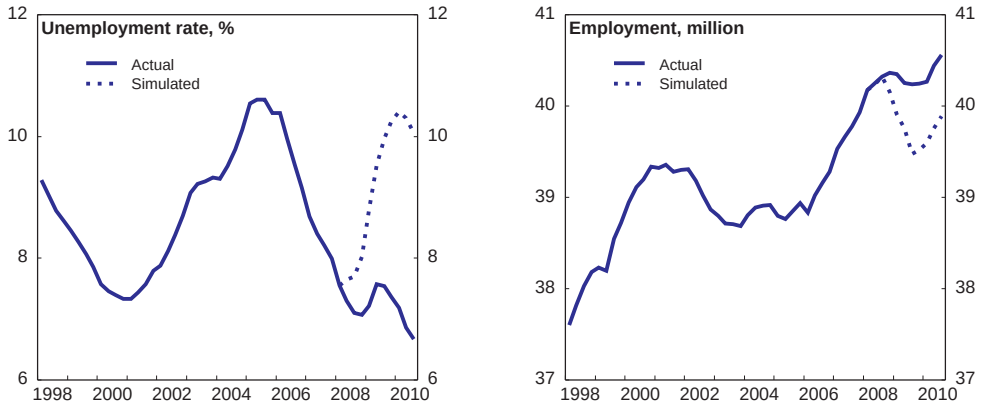
Figure A1.1. The German Okun coefficient over time



Note: Estimations were done using a 10-year rolling window with the coefficients referring to the 10-year period just prior to the date marked on the x-axis. Dotted lines denote estimated standard deviations.
Source: OECD calculations.

Applying the Okun coefficient estimated over the 10 years up to the first quarter of 2008 to the crisis period exemplifies that such a model would have predicted a much more pronounced increase in the unemployment rate than actually happened (Figure A1.2, left panel). The difference between the predicted and the actual unemployment rate increase amounts to 2.8 percentage points. A similar exercise can be done using employment instead of unemployment - thus abstracting from changes to the labour force that may impact the unemployment rate. Again estimating a relationship over the ten years preceding the crisis and on this basis simulating employment throughout the crisis would have suggested an employment decline by 2% relative to the actual outcome (equivalent to around 750 000 jobs) (Figure A1.2, right panel).

Figure A1.2. Actual vs. simulated labour market outcomes



Note: In Panel A, coefficients were estimated over the period 1998q1 to 2008q1 (using the same specification mentioned in the text) and then applied to the actual real GDP developments (inserting the fitted values for the lagged unemployment rate). In Panel B, coefficients were estimated similar to Panel A, but with log changes in total employment (instead of the unemployment rate) and contemporaneous GDP and lag 2 of GDP.
Source: OECD calculations.

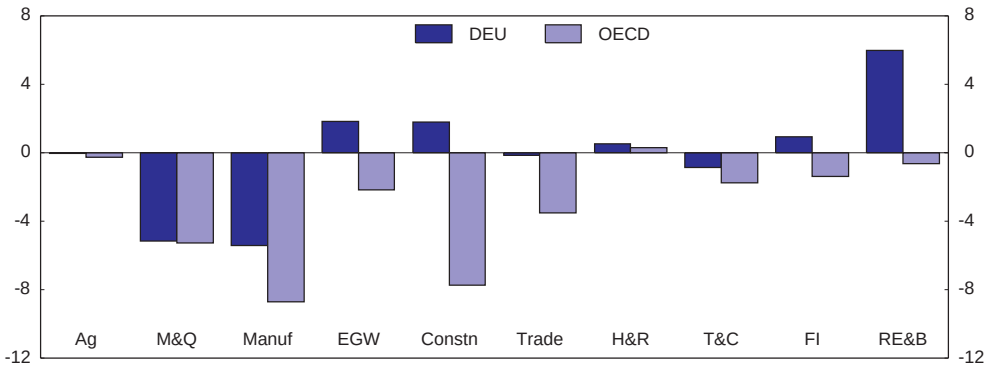
Annex A2

THE IMPACT OF THE SECTORAL COMPOSITION OF THE RECESSION ON THE UNEMPLOYMENT RESPONSE

Employment outcomes differed significantly across sectors in 2008-09: manufacturing employment declined sharply in Germany (though still less than in the average OECD country) along with the quantitatively less important mining and quarrying sector (Figure A2.1). By contrast, employment increased in the labour-intensive construction, energy and services sectors, while the average OECD country registered sharp declines. Employment in wholesale/retail trade was flat, compared to sharp decreases in other countries.

Figure A2.1. Change in employment by sector

% change between 2008Q4 and 2009Q4

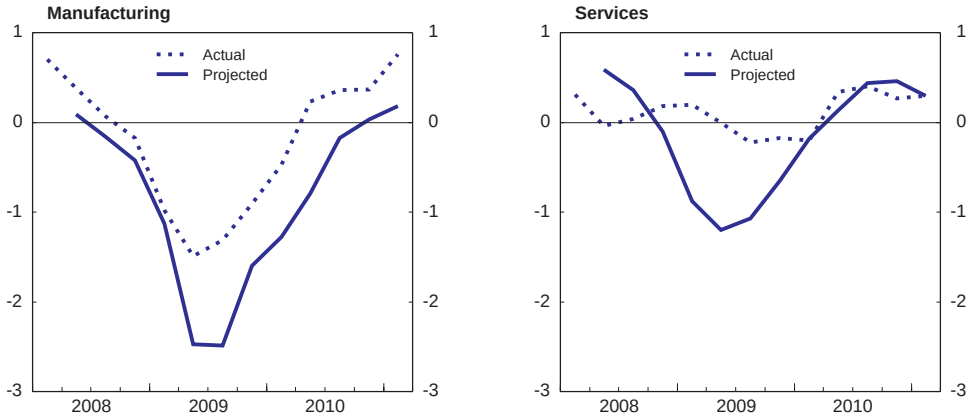


Note: OECD is EU15 (excluding Luxembourg), Australia and USA. Sectors: Ag: Agriculture, forestry and fishing; Trade: Wholesale and retail trade; vehicle repair; M&Q: Mining and quarrying; H&R: Hotels and restaurants; Manuf: Manufacturing; T&C: Transport and communication; EGW: Electricity, gas and water supply; FI: Financial intermediation; Constn: Construction; RE&B: Real estate and business activities.

Source: OECD, *Employment Outlook 2010*.

However, the sectoral structure of the crisis does not fully explain the overall employment reaction; this is because even within the sectors, layoffs were smaller than would have been projected based on past relationships (Figure A2.2). Projected employment is simulated using coefficients from a regression of log changes in manufacturing (services) employment on its own lags and on log changes in gross value added in manufacturing (services) with the lag structure being based on the Akaike criterion. The sample period for the estimation is 1991q2 to 2008q1. The results show that, based on past experience, the projected employment decline given the decrease in value added would have been twice as large. In the services sector, employment was broadly stable, even though past experience would have suggested a decline. This reflects notably a structural increase in public sector service employment, such as in the areas of health and education, which continued during the crisis.

Figure A2.2. Actual versus projected quarterly employment growth across sectors,



Note: Projected employment is simulated using coefficients from a regression of log changes in manufacturing (services) employment on its own lags and on log changes in gross value added in manufacturing (services) with the lag structure being based on the Akaike criterion. The sample period for the estimation is 1991q2 to 2008q1.

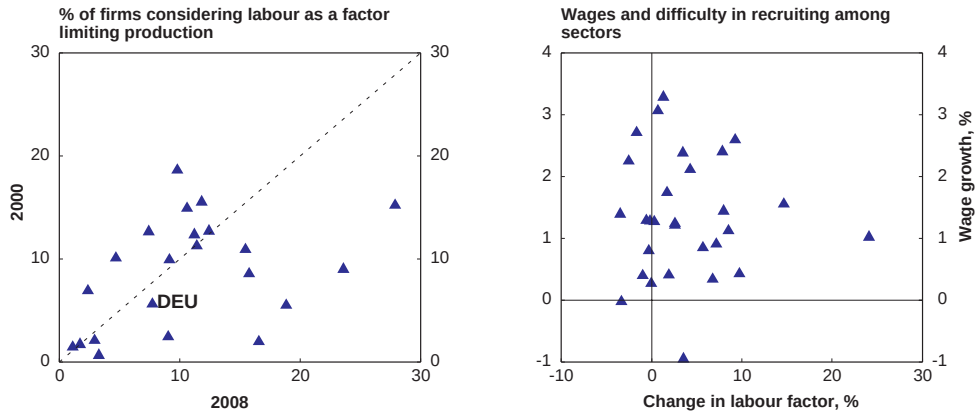
Source: OECD, own calculations based on national accounts data.

Annex A3

THE IMPACT OF LABOUR SHORTAGES ON LABOUR MARKET OUTCOMES

Even though German firms hit by crisis were those having a particularly high growth rate and experiencing significant labour shortages before the crisis (Möller, 2010), labour shortages were not exceptionally prevalent on an economy-wide level before the crisis. For instance, when considering the percentage of firms declaring labour as a barrier to production in the European Commission Business Survey, Germany was not particularly outstanding compared to other OECD countries with only 8% of firms seeing difficulties to recruit (close to the European average, Figure A3.1, left panel). The same indicator did not show any particular trend increase. The percentage of firms having difficulty in recruiting is highly cyclical and reached a comparable level in 2000 and in 2008. Other indicators for labour market tightness, such as the number of vacancies (both compared to the number of unemployed or to the total number of jobs), had levels ahead of the crisis that were comparable to past upturns. In addition, wage developments do not support the view that labour shortages were widespread before the crisis. For example, wages did not increase more in the sectors where recruitment difficulties were rising (Figure A3.1, right panel).

Figure A3.1. Indicators of labour shortages



Note: Data in the left panel refer to manufacturing firms. In the right panel shows the link between the change in the share of firms considering labour as a barrier to production (labour factor) and the annual growth rate of wages by sector in Germany between 2000 and 2008 (2004/2005 to 2008 for services sectors).

Source: *EC Business Climate Indicators*; *OECD STAN database for Structural Analysis*.

Cross-country empirical analysis also suggests labour shortages only played a minor role in damping the unemployment response during the crisis. In theory, the importance of labour market tightness on unemployment response is uncertain. Labour shortages may limit the turn-over on the labour market and in particular increases in unemployment during downturns as employers could limit lay-offs to spare recruitment costs which are higher when shortages are prevalent (in particular, the opportunity cost of not being able to hire when the activity recovers). However, other economic mechanisms could limit its effects as a high level of labour shortages may induce a higher unemployment rate through three mechanisms. *First*, labour shortages may increase wages by developing competition between firms for labour and thus

weigh on cost competitiveness. *Second*, they may encourage labour market participation.[26] *Third*, they lower potential growth by limiting the creation and development of new firms.[27]

Two approaches are used here to assess the impact of labour shortages on the unemployment response. *First*, an extended Okun's law is estimated to test whether labour shortages could partly explain the significant gap between the actual unemployment rate and the unemployment rate predicted by Okun's law (see estimates in Annex A1). The level of labour shortages - approximated by the share of firms considering labour as a factor limiting production in the manufacturing sector (European Commission Business Survey) - is included in the standard specification for the Okun relationship linking the change in unemployment to the change in GDP.[28]

$$\Delta u_t = \underset{(0.03)}{0.31} \cdot \Delta u_{t-1} - \underset{(0.01)}{0.10} \cdot \Delta \log(gdp_t) - \underset{(0.01)}{0.08} \cdot \Delta \log(gdp_{t-1}) - \underset{(0.00)}{0.01} \cdot ls_{t-1}$$

with *u* being the unemployment rate, *gdp* the level of gross domestic product (in volume), *ls* the percentage of firms considering labour as a barrier to production in the manufacturing sector, and standard errors in parentheses.

The second approach consists of estimating an employment equation using an Error Correction Model specification. This approach allows for testing the long- and short-run relationships between labour shortages and the employment level, partly reflecting employer's hiring decisions. The specification is derived from a CES production function, linking hourly labour productivity to labour costs, but including the proxy for labour shortages:

$$\Delta \log e_t = \underset{(0.03)}{0.26} \cdot \Delta \log(e_{t-1}) + \underset{(0.01)}{0.11} \cdot \Delta \log(gdp_t) + \underset{(0.02)}{0.09} \Delta \log(gdp_{t-1}) - \underset{(0.01)}{0.04} \cdot \Delta \log(w) + \underset{(0.00)}{0.01} \cdot (ls_{t-1} - ls_{t-4}) - \underset{(0.01)}{0.04} \cdot resid_{t-1}$$

$$resid_t = \log(e_t) - \underset{(0.01)}{0.36} \cdot \log(gdp_t) + \underset{(0.08)}{0.52} \cdot \log(h_t) + \underset{(0.02)}{0.10} \cdot \log(w_t) - \underset{(0.03)}{0.09} \cdot ls_t + \underset{(0.91)}{8.60}$$

with *e* being the level of total employment, *gdp* the level of gross domestic product (volume), *w* the real compensation rate of the private sector, *h* the number of hours worked per employee, *ls* the percentage of firms considering labour as a barrier to production in the manufacturing sector, and standard errors in parentheses.

These equations are estimated for a sample of 21 EU countries over the period 1996q2 to 2010q1. The sample is unbalanced with quarters not covered for all countries. The equation is estimated with OLS including country fixed effects, which control for country-specific explanatory variables such as institutions and labour market policies. Other specifications have been tested. The lags of explanatory variables which were not statistically significant were removed from the final equation. Results are unchanged when extending the indicator of labour shortages to other sectors covered by the Business Survey and when taking the moving average of the indicator over one year.

While the level of labour shortages in the manufacturing sector is found to have a significant negative impact on the change in unemployment, it is rather small. A one point increase in the share of firms having

26. Labour participation may increase due to higher wage level and higher probability to be employed when the labour market is tight.

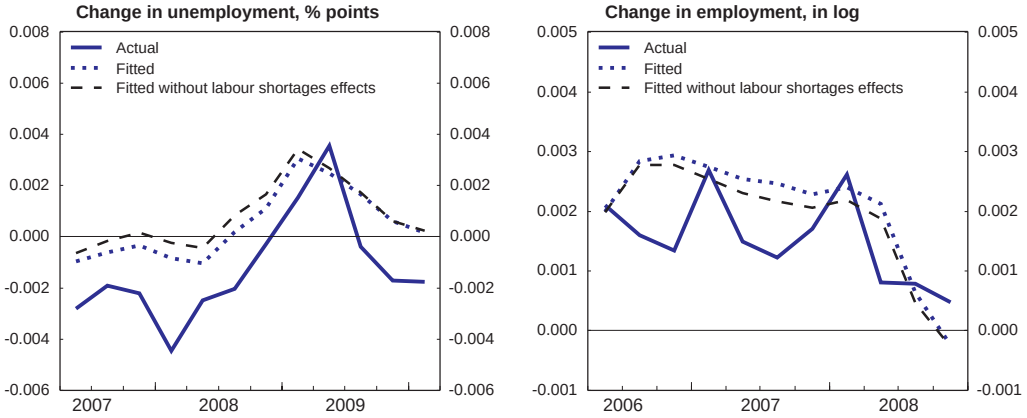
27. Labour shortages have an impact on relocation decisions and domestic investment (Marin, 2004).

28. More details on the Okun's law are available in Annex A1. The vacancy rate or the labour market tightness indicators were not selected here to approximate the level of labour shortages because of endogeneity issues.

difficulties to recruit reduces the quarterly growth rate of unemployment by only 0.01 percentage point. Similar results are obtained for employment, showing a small but significant positive effect of labour shortages on employment growth, suggesting that labour demand decreases less during downturns when firms had difficulties to recruit.

Neither employment growth nor the unemployment response seems to have been strongly influenced by labour shortages in Germany during the crisis. Applying the coefficients estimated to the crisis period shows that the unemployment rate would have been only slightly higher (and employment lower) without the labour shortages effect (Figure A3.2). For instance, the level of labour shortages reduced quarterly unemployment growth by only 0.001 percentage point in 2008. This result is supported by other studies which find labour shortages played no, or only a minor, role in labour hoarding decisions (Klinger *et al.*, 2011).

Figure A3.2. Impact of labour shortages on unemployment and employment growth



Note: In the left panel, fitted values correspond to quarterly change in unemployment rate (in percentage points) estimated with the first specification. In the right panel, fitted values correspond to quarterly change in employment (in logarithm) with the second specification. The dotted lines correspond to the fitted value without the contribution of the labour shortages (without the short run effect for the right panel).

Source: OECD calculations.

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