The labor market for older workers, pension reform, and early retirement in Germany

Viktor Steiner[*)]

Freie Universität Berlin

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Abstract: The paper describes labor market developments for older workers in Germany in recent years. It provides a brief comparison of recent labor market developments in Germany to those in other OECD countries with a focus on older workers and a summary of the main changes in labor market and pension policies in Germany which might have contributed to these developments. The main part of the paper offers, on the basis of micro data from the Social Economic Panel (SOEP), empirical evidence on changes in employment and long-term unemployment, early retirement as well as relative wages by age for Germany in the period 2000-2011. Based on this empirical analysis, some possible implications for labor market policies and the public pension system in Germany are discussed.

Zusammenfassung: In diesem Beitrag wird die Arbeitsmarktentwicklung für ältere Arbeitnehmer in Deutschland in den letzten Jahren beschrieben. Der Beitrag vergleicht die Arbeitsmarktentwicklung älterer Arbeitnehmer in Deutschland und anderen OECD-Ländern und fasst wichtige Änderungen in der Arbeitsmarkt- und Rentenpolitik in Deutschland zusammen, die diese Entwicklung beeinflusst haben könnten. Im Hauptteil des Beitrags werden die Ergebnisse einer empirischen Analyse auf Basis des Sozioökonomischen Panels (SOEP) zur Entwicklung der Beschäftigung, langfristigen Arbeitslosigkeit, Frühverrentung und der Lohnentwicklung nach Altersgruppen präsentiert. Auf Basis dieser empirischen Analyse werden mögliche Implikationen für die Arbeitsmarkt- und Rentenpolitik in Deutschland diskutiert.

[*)] Viktor Steiner
Fachbereich Wirtschaftswissenschaft
Empirische Wirtschaftsforschung und Wirtschaftspolitik
Freie Universität Berlin
Boltzmannstr. 20
14195 Berlin
viktor.steiner@fu-berlin.de

1 Introduction

Until recently, policy discussions in Germany have been dominated by concerns about high unemployment, employment uncertainty, increasing earnings inequality, and the long-term impact of these developments on the public pension system. In particular, long-term unemployment and early retirement of older workers have been one of the more problematic features of the German market. However, in the wake of the severe economic recession in 2009, the performance of the German labor market improved significantly with increasing employment and decreasing unemployment rates, and the labor market situation has been improving also in east Germany after a prolonged period of mass unemployment since unification. An important recent development has been the substantial improvement of the labor market situation of older workers, which is the topic of the present study.

The factors which might have contributed to these developments remain controversial. As discussed by Dietz and Walwei (2011), labor market reforms as well as a series of pension reforms enacted in the late 1990's and early 2000's (see Chapter 3) may have been of particular importance for explaining to higher employment and lower unemployment rates of older people in Germany. The pension reforms were clearly targeted at increasing the effective early retirement age. The reform of the unemployment compensation system was mainly intended to increase work incentives and not especially targeted at older workers, but may still have had relatively strong effects on them. Other labor market reforms were aimed at increasing employment opportunities of older people with little earnings potential.

A couple of studies have estimated the partial effects of some of these reforms.[1] Taken together, these studies seem to suggest that recent labor market and pension reforms may have contributed to the increase in employment and the reduction in unemployment of older workers.[2] Although there seems to be no quantitative assessment on the overall economic effects of these reforms on older workers, their overall direct contribution to the substantial employment increase of older workers is likely to have been relatively small. These reforms might have contributed to the increasing wage and earnings inequality in Germany (see, e.g.,

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[1] There is a couple of evaluation studies on the effects of previous unemployment benefit reforms which raised maximum benefit-entitlement periods for older workers (see, e.g., Steiner, 1997; Fitzenberger and Wilke, 2010). These ex-post evaluations studies treat unemployment benefit reforms as "natural experiments", the results of which are specific to these particular reforms and cannot be generalized to the more recent reforms under consideration here. There are also a number of evaluation studies on the employment and wage effects of recent labor market programs for Germany which are not particularly targeted at older people, although they may have had disproportionate effects on them (for summaries see, e.g., Fitzenberger, 2009; Steiner, 2009; Wolff and Stephan, 2013).

[2] On recent labor market reforms disproportionally affecting older workers, see Ammermüller et al. (2006), Steiner and Schmitz (2007), Dlugosz et al. (2014); on pension reform, see, e.g., Börsch-Supan and Berkel (2004) and Hanel (2008).

Möller and Hutter, 2011), but there seems to be no empirical research yet on the importance of these indirect effects on employment and unemployment among older workers.

In this paper, I will try to establish some stylized facts about the development of the labor market for older workers in Germany in recent years. For this purpose, I will start with a brief overview comparing recent labor market developments in Germany to those in other OECD countries with a focus on older workers. In Chapter 3, I briefly summarize the main changes in labor market and pension policies which might have contributed to these developments. Then, I will present some more detailed evidence on employment and unemployment structures as well as relative wages by age for Germany based on micro data from the Socioeconomic Panel (SOEP). Based on this empirical analysis I will discuss some implications for labor market policies in the concluding Chapter 5.

2 Recent labor market developments in Germany in comparative perspective

To set the scene for the subsequent empirical analysis of the labor market for older workers in Germany, this chapter presents the aggregate picture of recent German labor market developments in general and for older workers, and compares these developments to those in other OECD countries. Labor market developments in Germany are compared to those in Austria and the OECD average in the period 2000-2013. I chose Austria here as a single country with similar macroeconomic performance and institutional structures, which also implemented a couple of labor market and pension reforms in the observation period. The macroeconomic performance and institutional structures of the various OECD countries is much too diverse to compare them on a single-country basis. Still, it may be of some interest to compare the labor market performance in Germany to the OECD average.

Figure 1 confirms what has become to be known as the “German employment miracle” in the popular literature. As shown by the upper panel, the overall employment rate has increased from less than 70 percent in the early 2000’s to almost 80 percent, thereby substantially outpacing the OECD average and even the favorable employment increase in Austria. Furthermore, starting in 2005 the German unemployment rate has been declining from about 10 percent to about 5 percent, almost reaching the notoriously low unemployment rate prevailing in Austria. The lower panels of Figure 1 show that these developments are driven by different age patterns in employment and unemployment rates. While, starting from a relatively low level, the employment increase in Germany in the observation period was particularly strong in the age group 60-64 years, the decline in the unemployment rate was most pronounced in the age group 55-59 years. By the end of the observation period, the employment rate of the 60-64 years’ old has reached the OECD average, and is more than double the very low Austrian level, while the unemployment rate of this group is about the OECD aver-

age and still substantially above the low Austrian rate. It seems interesting, and perhaps suggestive for the potential impact of the German labor market reforms, that the substantial decline in the unemployment rate of older people took place after 2005, when the unemployment compensation reform became effective (see Chapter 3). Another interesting observation from Figure 1 is that, in contrast to the OECD average, the positive labor market development in Germany was not interrupted by the severe financial and economic crises in 2009/2010.

Fig. 1 about here

For selected years before and after the crises, Figure 2 shows significant gender differences in the evolution of employment rates, which are especially pronounced for the older age groups. While average employment rates across OECD countries increased for both men and women in the older age groups, employment rates of older people increased relatively more for women than for men especially in Germany. Starting at relatively low levels in 2000, employment rates in the older age groups in Germany are above average for both men and women at the end of the observation period. In contrast, employment rates of people aged 60-64 years in Austria have increased relatively little during the observation period and are still at a very low level compared to the OECD average in 2013, and this is especially true for older women.

Fig. 2 about here

Employment rates may also be affected by the availability or part-time work, and this may be of particular importance for older people as preferences for leisure may be increasing in age. Other reasons, such as deteriorating health or institutional regulations concerning, e.g. withdrawal rates on labor income in case of early retirement, may also play an important role. Figure 3 shows that part-time employment very much dominates full-time employment for women in all OECD countries by a large margin, both in the younger and the older age groups, and that part-time employment has also been gaining in importance among men, especially younger men. In Germany, the share of part-time employment among older men has only slightly increased in the observation period, and remains substantially below the OECD average also in this age group.

Fig. 3 about here

One important feature of German labor market developments has been the persistence of unemployment, as usually measured by the share of long-term unemployed people (interrupted unemployment spell with duration of more than one year). Although long-term unemployment has slightly declined both for men and women after the financial crises (see Figure 4), it remains significantly above the OECD average and, in particular, Austria which fea-

tures only about half the German level among people aged 25-54 years. As for the younger population, the share of long-term unemployed people in Germany has also declined somewhat for the age group 55 and older after the crises 2009/10 (see lower panel of Figure 3), but remains at a fairly high level, not only in absolute terms but also in comparison to the OECD average and Austria. The much lower share of long-term unemployed women in Austria may be related to still existing special early retirement possibilities for women (see below). Furthermore, the much shorter entitlement periods for unemployment benefits for older workers in Austria compared to Germany (see, e.g., see Famira-Mühlberger et a. 2014) also may explain part of the long-term unemployment differential among older workers in these two countries. As described in Chapter 3, recent reforms of the unemployment compensation system might have contributed to the observed decline of the share of long-term unemployment of older workers in Germany, although Figure 4 seems to suggest this decline does not differ between younger and older people.

Fig. 4 about here

Early retirement, i.e. effective retirement before the legal retirement age, is the rule rather than the exception in Germany and most other OECD countries. There are large country differences in the legal retirement age, both regarding its general level and special regulations for certain groups, e.g. women (for a comprehensive survey see Toft and Whitehouse, 2015). In Germany, the legal retirement age has been 65 years, for both men and women, but has recently been increased to eventually, after a fairly long transition period, reach 67 years (see Chapter 3). Figure 5 shows that in the reference year 2000 the average effective retirement age of about 62 years for men and less than 61 years for women has been well below the legal retirement age of 65 years and also substantially below the OECD average. In Austria, the effective retirement age is even lower that in Germany. This is related to special regulations for old-age pensions facilitating early retirement in general, and the low legal retirement age of 60 years for women in Austria (see Famira-Mühlberger et a. 2014). Partly due to changes in pension regulations which became effective in the observation period (see Chapter 3), the average effective retirement age in Germany has been increasing for men and women, but remains well below the OECD average which also increased in the observation period.

Fig. 5 about here

3 Recent labor market and pension reforms

There have been a number of labor market and pension reforms in Germany which may have had quantitatively important effects on older people in the observation period of this study labor market. These reforms, as far as they are relevant for the subsequent empirical

analysis, are summarized in Table 1 and briefly discussed below. I do not consider all policy changes which, although not specifically targeted at older people, may nevertheless have disproportionally affected this group. Training programs and public-works programs subsidized by the Federal Labor Agency are traditional instruments of "active" labor market policy (see, e.g., Caliendo and Steiner, 2005) which have also been adjusted in the wake of the labor market reforms 2003-2006. In particular, while subsidized training programs and traditional public-work programs have substantially been reduced, public-work programs have been invented for recipients of the new means-tested unemployment compensation (unemployment benefit II). There was also a reform concerning employment relationships with only a few working hours and little pay not covered by employees' social security contributions (so-called "mini-jobs"). This reform, too, was not at all targeted at older people but intended to increase employment of long-term unemployed people, especially women with little qualification and small children. Employment protection regulation which was also adapted in the wake of these reforms is another example which might well have disproportionally affected older workers, but which is also not included in the list below (see, e.g., Jahn and Walwei, 2003).

Tab. 1 about here

Labor market reforms

One important aim of the labor market reforms introduced in Germany in 2003-2006 was to increase work incentives for people with low earnings potential. Probably the most controversial reform introduced to achieve this aim concerns the unemployment compensation system. The reform partly was a reaction to the perceived disincentive problems related to two features of the previous system: First, the rather long maximum unemployment benefit entitlement periods especially for older workers and, secondly, the generally unlimited eligibility for means-tested unemployment assistance after the expiration of the entitlement to unemployment benefit. Both of these regulations were changed by the recent reform, and the new rules became effective in 2005 and 2006, respectively. In particular, maximum entitlement periods for unemployment benefits, now termed unemployment benefit I (UB I), were substantially reduced, especially for the older unemployed from a maximum of 32 months to 18 months. However, this reduction was partly undone only two years after it became effective; already in 2008 the maximum UB I entitlement-period for older workers was increased from 18 to 24 months. The change of unemployment assistance into unemployment benefit II (UB II) for "employable" people defined as being able to work at least 3 hours a day implied a tighter means test and, depending on previous earnings, possibly a reduced level of benefits. For older workers with relatively high earnings in their last job this could mean a substantial reduction in means-tested transfers, because UB II is no longer related to previous earnings as unemployment assistance was, but only covers the social

minimum in case the now somewhat more stringent means test concerning household income and wealth is passed.

Special labor market programs targeted at older workers include in-work benefits for older workers (*Entgeltsicherung*) and temporary wage subsidies (*Eingliederungszuschuss*). In-work benefits are paid to unemployed people aged 50 years and older who are entitled to UB I instead of this social insurance payment (see Dietz et al., 2011). The program was introduced in 2003 and prolonged twice until 2011. The subsidy is paid for up to two years and covers 50 percent of the difference of an individual's net earnings in the previous and the new job in the first year, and 30 percent of this difference in the second year. Temporary wage subsidies (*Eingliederungszuschuss)* are paid to firms employing people with severe placement difficulties, of which old age is considered to be one (see Ruppe und Stephan, 2009). The subsidy amounts, on average, to 50 percent of the gross wage including employers' social security contributions and is usually paid for a period of 24 months. They have existed in Germany already before the recent reform but have been slightly adjusted for older workers. In 2004 the subsidy for older workers was integrated into a general temporary wage subsidy for "hard-to-place" people; however, already in 2007 a special subsidy for unemployed people aged 50 years and older was re-introduced. For older workers the subsidy may be paid for a maximum duration of 36 months on a declining scale. As on alternative to this special subsidy, a voucher was introduced which can be redeemed by firms that hire unemployed people aged 50 years and older. As reported by Dietz and Walwei (2011) these instruments have not been widely used, however.

Pension reforms

There have been a number of important pension reforms in the 1990's which, however, became only fully effective about a decade later due to the long transition period (see the summary in Dietz and Walwei, 2011, Table 2). Among several other important changes, this reform introduced deduction factors for early retirement (0.3 percent per month before the legal retirement age). Another reform in 1994 concerned a special regulation for unemployed people aged 58 years or older who were no longer counted as unemployed if they agreed to retire at the earliest possible early retirement age, which was still 60 years at that time. This regulations, known as the "58-years rule" was prolonged in 2000 but eventually abandoned in 2005. Also in 1994, the legal retirement age for unemployed workers or for persons after partial retirement was raised from 63 to 65 years, where this change became only effective in a stepwise fashion at the beginning of the next decade. Public subsidies for partial retirement schemes ended in 2009. In 1997, the retirement age for long-term insured people was raised from 63 to 65 years and for women from 60 to 65 years with stepwise implementation between, respectively, 2000 to 2001 and 2000 to 2004. The gen-

eral retirement age was raised from 65 to 67 years in 2008 and will increasingly affect younger birth cohorts in the transition period 2012 until 2029.

In 1999, the retirement age for disabled people was raised from 60 to 63 years in a stepwise fashion beginning in 2000. In these transition periods, early retirement was still possible, but the pension was cat by 0.3 percent per month. Also from 2000 on, early retirement for (older) people who cannot continue working in their occupation for health-related reasons ("*Berufsunfähigkeitsrente*"), where the labor market situation was taken into account, was abolished and integrated into a categorical disability pension ("*Erwerbsminderungsrente*"), where the full disability pension is only paid if the person is assessed to be able to work less than 3 hours a day. In 2001, older workers were partially exempted from this reform and partial compensation for the pension deductions in case of early retirement were introduced for this group.

Also in 1999, the pension formula was adjusted by a demographic factor to stabilize the contribution rate to the public pension system in the long run in the presence of the projected increase in the number of pensioners relative to employees. Also, the pension reform 2001 introduced the subsidy of a supplementary capital-based private pension at a modest scale ("*Riesterrente*") and added another adjustment factor to the pension formula to account for the contribution rate to this scheme which also reduced the level of the public pension over the transition phase. Although these changes will have substantial long-term effects on the level of public pensions (see, e.g., Geyer and Steiner, 2013), their effects on the labor market of older workers within the observation period of this study are uncertain and probably negligible.

4 The German labor market for older workers

The comparative look at labor market developments showed some interesting age patterns in labor market developments in Germany in comparison with other OECD countries. In this chapter I will provide a more detailed and quantitative empirical analysis of these developments using micro data from the German Socioeconomic Panel (SOEP). The SOEP is a survey for Germany providing panel information on employment patterns, wages, incomes, personal characteristics, and household structure (see www.diw/soep). Compared to other micro data sets for Germany it has the advantage of a panel and that it contains detailed information on labor market variables, including individual earnings and working hours. The disadvantage of the SOEP is its limited sample size, which renders estimation of population statistics for small groups rather imprecise. I use SOEP data for the following analysis be-

cause part of it requires panel data and information on hourly wages, which alternative data sets do not provide.[3]

The aim of the following analysis is to estimate changes in various labor market indicators for various age groups over time, where I distinguish these groups by gender, region, and the level of education. The observation period is 2000-2011, where the latter year is given by data availability in the SOEP. I compare the year 2001 and the pre-crises year 2008 to the reference year 2000. I will present the estimations for the total working-age population, defined as people in the age group 25-64 years, the younger population aged 25-54 years and the two older age groups 55-59 years and 60-64 years, respectively. The regional differentiation referring to east and west Germany is motivated by previous research of the author and others which has established important differences in labor market outcomes between these two regions. The gender differentiation seems especially important for the analysis of labor market of older workers, where gender differences persist between east and west Germany even 25 years after unification. Finally, the level of education is known to be very important factor for individual labor market outcomes, where this factor may also differ by age. Given the relatively small share of especially older people with no vocational qualification in east Germany, I have aggregated those with low and medium education level into one education group in east German. In west Germany, education level is differentiate between low, medium and high education, where medium mainly consists of vocational education and special types of secondary schooling and higher education of university education and polytechnical schools ("Fachhochschulen").

To allow changes in labor market outcomes over time to differ between age group, gender, and education level, I estimate within-group OLS regressions. I apply SOEP weighting factors throughout the analysis in the estimation of population statistics and parameters and estimate robust standard errors accounting for the panel structure of the data. The estimates are best interpreted as descriptive. They show the average within-group change in the various outcome variables between, respectively, 2008 and 2011 relative to the reference year 2000.

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[3] The Labor Force Survey ("Mikrozensus") of the Federal Statistical Office has no panel structure and does not provide information on earnings at the individual level. The Employment Statistics of the Federal Labor Agency has only limited information on working hours and no information on household structure. There is also the problem that for a very large share of all cases information on the education variable is missing in this latter data set.

4.1 Employment and unemployment

Full-time employment rates

Estimation results in Tables 2 and 3 show for the various groups the *percentage* chance of the full-time employment rate in 2008 and 2011 relative to the year 2000 in west and east Germany. On average, for the working-age population (25 – 64 years) the full-time employment rate has changed little between 2000 and 2008 as well as between 2008 and 2011. In fact, except for west German women the change in the average full-time employment rate has not changed significantly in this period (robust standard errors are reported in parenthesis below estimated average effects). For this group, the full-time employment rate increased from about 32 percent to 35 percent in 2008 and to by another 0.7 percentage points between 2008 and 2001 to almost 36 percent at the end of the observation period. This increase by 3.5 percentage points between 2000 and 2011 is statistically significant at the 1 percent significance level.

Estimation results differ somewhat by education level. In particular, full-time employment rates of women in both regions and of men in east Germany have significantly increased between 2000 and 2011, whereas estimated changes for the other education groups are small and statistically insignificant. It should be noted, however, that the significant increases of the full-time employment rate of east German men of about 6 percent in the observation period refers to a relatively low employment level for this group in 2000 (about 74 percent, compared to about 85 percent for west German men).

Tab. 2 and 3 about here

As shown in the lower part of Tables 2 and 3, estimation results significantly differ by age group and, within age groups, by education level.[4] While the full-time employment rate of men aged 25-54 years declined significantly in the observation period in both east and west Germany, with the larger decline occurring between 2008 and 2011, it substantially increased for older workers in both regions, on average. The most dramatic change is observed for east German men aged 60-64 years, for whom the share of full-time employed people more than doubled from 18 to 25 percent. The full-time employment rate also increased substantially for older west German men and for women in the oldest age group. The picture only changes slightly when differences in the level of education are taken into account. Except for west German men, the increase in the full-time employment rate of older people with higher education was higher than for people in the same age but other education

[4] It should be noted that the relatively large (robust) standard errors of some of the estimated average effects are related to the relatively small sample sizes for some of the groups.

group. The smaller increase in the full-time employment rate for west German men with higher education in the oldest age group has to be interpreted with respect to this group's relatively high level of full-time employment in the reference year 2000. Even after the exceptional increase by more than 30 percentage points estimated for east German men in the same age and education group between 2000 and 2011, the full-time employment rate of this group in east Germany in 2011 (about 55 percent) is still considerably smaller than the corresponding west German rate of more than 60 percent (see Tables 2 and 3).

Unemployment

Unemployment rates by gender, region, age group, and education level are derived from answers to the SOEP survey question which refer to registered unemployment in the month before the individual survey month. The unemployment rate calculated from SOEP data thus resembles more the unemployment rate as measured by national statistics than the internationally comparable concept based on self-assessed job searching activities, which is also used by the OECD and other international organizations. Still, for various reason the SOEP unemployment rate may deviate from the unemployment rate based on register data from the Federal Labor Agency.

For the reference year 2000, Tables 4 and 5 confirm some well-known facts: The average unemployment rate in east Germany is much higher than in west Germany; unemployment rates also differ significantly by gender between the two regions; unemployment rates differ widely by education level, both in east and West Germany; and unemployment rates are particularly high for the older age groups, for whom early retirement is not yet an option (except for the case of disability), whereas for those aged 60 years and older unemployment rates are reduced through early retirement.

Tab. 4 and 5 about here

On average, unemployment rates have changed little in the observation period, which ends before the recent decline in the average unemployment set in.[5] However, estimated average effects differ widely by age group and, within age groups, by education level. Whereas unemployment rates of people aged 25-54 years seem to have changed little in the observation period (or changes are at least not statistically significant), the unemployment rate has declined substantially among people aged 55-59 years in recent years, especially for men and east German women. This decline in unemployment rates of older people in the observation period was not restricted to those with higher education, but also seems to have occurred

[5] The small changes in average unemployment rates reported in the first line of the tables are not statistically significantly different from zero at the 5 percent significance level.

among those with medium education (although the large point estimate of -7.8 percentage points for east German women with low/median education is not statistically significantly different from zero due to the large standard error). Still, it is important to note that the unemployment rate remains at a fairly high level for people aged 55-59 years with low and medium qualification in east Germany.

Except for west German men, average unemployment rates of people aged 60-64 years have increased significantly in the observation period. Estimation results in Tables 3 and 4 reveal that the increase in unemployment for these groups is driven by people with only a low (west German women) or at most a medium (east German men and women) level of education. Although the level of unemployment in this age group was fairly low, at least relative to people in the age group 55-59 years, the subsequent increase resulted in a high unemployment rate of almost 25 percent for east German men with low or medium education at the end of the observation period (note the large standard error on the estimated coefficient, however). Also, starting from a very low level, the unemployment rate of older west German women with a low education level increased by about 12 percentage points in the observation period.

As already documented in Chapter 3, long-term unemployment is an important phenomenon in the German labor market and especially severe among older workers. Thus, age differences in unemployment rates documented in Tables 4 and 5 may not properly reflect the unemployment burden especially for older workers. Instead of simple measuring long-term unemployment by the share of people with interrupted unemployment durations in their current spells of more than one year, as long-term unemployment is usually defined, Using retrospective data on time spent in various labor market states over the individual lifecycle, I apply an alternative and potentially more useful concept here. This concept measures the cumulated duration of unemployment a person at a given age has spent in unemployment as a share of this person's lifespan since the age of 15 years. For example, if the cumulated duration of unemployment of a person aged 55 is 2 years, this share is 5 percent. For women I aggregate the durations spent in unemployment and non-employment since for them these two states are close substitutes.

Tab. 6 and 7 about here

Estimation results summarized in Tables 6 and 7 show that, on average, the share of time spent in unemployment or non-employment has substantially increased in east Germany for both men and women in the observation period, while it has remained constant at a relatively low level for west German men, and has decreased from a relatively high level for west German women. For east German men and especially women aged 60-64 years the increase in the share of cumulated unemployment was less than for the younger age groups. For west

German women aged 60-64 years, the share of the cumulated duration in unemployment and non-employment was still about 30 percent at the end of the observation period, although it has declined by almost 10 percentage points since 2000. In this period, the respective share for older east German women remained at about 10 percent. Estimation results also show that, within age groups, people with a higher level of education have generally performed better in the labor market in terms of the cumulated duration spent in unemployment or non-employment. For example, while the share of the cumulated duration spent in unemployment by east German men aged 55-59 years with low or medium education level increased by about 6 percentage points in the observation period, the respective share for people in this age group with high level of education remained fairly constant. A similar pattern can also be observed for east German women in this age group and for men in the oldest age group.

4.2 Early retirement and part-time work among older people

As described in Chapter 2, early retirement in Germany has been high and decreasing in comparison to other OECD countries. Until recently, early retirement after an extended period of unemployment was possible from the age of 60 years on, although since 2000 only at a reduced public pensions (see Chapter 3). Other reasons for early retirement also became more restrictive over the observation period and are no longer available now. Early full retirement before the age of 60 years has always been restricted to so-called disability pensions, although the criteria for such a pension have also been changing over time. Extended entitlement periods in the unemployment compensation system functioned as a bridge into early retirement until the labor reforms in 2005/2006 changed this. Special regulations in the unemployment compensation system Partial early retirement by working-time reductions has been possible for some time but this, too, has changed over the observation period.

In the following I will provide some additional information on the evolution of early retirement by age groups, gender, region, and education level. I do not explicitly analyze transition rates from employment into unemployment here, which is often done in the empirical retirement literature, but simply use SOEP data on an individual's retirement status in a particular year and estimate OLS within-group regressions to analyze how the average share of retired people within an age group has changed over time. Since part-time work among older people, as measured in the SOEP data, might actually represent a form of partial retirement (see Chapter 3), I also estimate time effects in part-time employment rates for older workers using the same methodology.

Early retirement

Estimation results for early retirement are summarized in Table 8. In the reference year 2000 the share of retired men aged 60-64 years is, on average, more than 60 percent in west Germany and about 70 percent in east Germany; for women, the respective shares are about 50 percent in the east and almost 90 percent in the west. These regional differences are clearly related to the special regulations facilitating early retirement for older birth cohorts who spent most of the working life in the former GDR. Still, the very large gender difference in retirement rates in the two regions may seem striking, but can be explained by the fact that most east German women in this age group had spent most of their adult life in full-time employment at the time of unification when they were in their early fifties. Also, women in this age group often remained in full-time employment, typically in the public sector or in public works programs, during the first couple of years in the transition process until they could retire at relatively favorable terms. This was less the case for east German men in this age group who spent more time in unemployment during the transition process and had less favorable opportunities to retire early. Still, the retirement rate of east German men in this age group exceeds that of west German men, on average, by almost 10 percentage points. In contrast retirement rates for people aged 55-59 years are less than 20 percent, on average, and differ relatively little between east and west German men, but are still significantly different for women. To some extent, this can be explained by the fact that the younger birth cohorts, who were in their early forties at the time of German unification, profited much less from the special employment factors described for older female birth cohorts above.

Tab. 8 about here

Another interesting fact documented for the reference year 2000 in Table 8 is that retirement rates of men, both in west and east Germany differ substantially by the level of education, whereas female retirement rates differ little by educations levels. These differences are particularly striking for west German men aged 60 to 64 years: for persons with high education attainment the average retirement rate is about 40 percent, compared to about 70 percent for those with a low level of education. Although the levels were much lower in the reference year, the relative differences in retirement rates are also striking for men aged 55-59 years in both west and east Germany.

The most striking result in Table 8 is the dramatic decline in retirement rates in east Germany for people aged 60-64 years over the observation period. For men the average retirement rate declined from about 70 percent in the reference year 2000 by almost 15 percentage points until 2008 and by 36 percentage points until 2011, when it reached only half the 2000 level. the level of the retirement rate for people with a low or medium level of education exceeded that of those with higher education by about 10 percentage points in the reference

year 2000, changes in retirement rates differ little by education level within this group. The decline in the retirement rate for east German women was, on average, almost as impressive: it declined from almost 90 percent in 2000 by about a third to less than 60 percent in 2011.

Starting from a much lower level in 2000, retirement rates in east Germany also markedly declined for people aged 55-59 years. The female retirement rate in this age group dropped from about 18 in 2000 to 9 percent in 2011, while for men a similar reduction already occurred until 2008 but seems to have been partially reversed subsequently. This at least seems to be suggested by the much smaller point estimate for 2011. However, due to the relatively small number of retired people within this group and the relatively large estimated standard errors, the differences of the average time effects for 2008 and 2011 are not statistically significant. The decline in the retirement rate of east German women in this age group seems to be driven by those with higher education, while for men with a low or medium level of education the estimated reduction of the retirement rate is larger than that for people with higher education. Due to the relatively small number of retired people within the respective groups, average effects are estimated rather imprecisely, however.

Retirement rates of people aged 60-64 have also dropped significantly in west Germany, if at a somewhat lower rate than in the east. For west German men in this age group the retirement rate, which reached a level of about 60 percent in the reference year 2000, dropped by about 20 percentage points in the observation period. Starting from a much lower level in the reference period, for women in this age group the retirement rate declined by more than 7 percentage points and reached about the same level as that for men in 2011. Although average effects by educational level within this age group are imprecisely estimated, the relative declines in retirement rates in this age group seem to have been particularly strong for men with higher education and for women with a low level of education. In absolute terms, the largest decline in the retirement rate within this age group in west Germany is estimated for men with a medium level of education, most those with completed apprenticeship training, whose retirement rate dropped from about 70 percent to about 40 percent. Overall, retirement rates in this age group, for both west German men and women, seem to have been converging towards a level of about 40 percent at the end of the observation periods.

Retirement rates of west German men aged 55-59 years, on average, have also declined significantly in the observation period, while the average decline for women in this age group estimated at 2.5 percentage points is not statistically significant. Although average time effects by education level are only rather imprecisely estimated due to the small sample size within groups, these estimates do suggest that the decline in the average retirement rate within this age group is driven by men (women) with a low (high) level of education.

Part-time employment

Changes in early retirement in the observation period may also have been affected by adjustment of partial-retirement regulations (see Chapter 3). Furthermore, people on early retirement may also have tried to compensate for reduced pension income by part-time work. Furthermore, through the expansion of so-called “mini” and “midi” jobs, i.e. employment at reduced working time and not or only partially covered by social security regulations, it might have become easier for pensioners to take up part-time work. It seems also possible that part-time work has become more important for older men, not eligible for early retirement without pension deductions anymore, as a bridge from full-time work into a regular old-age pension.

As shown for the reference year 2000 in Table 9, the share of west German working-age (25-64 years) in part-time employment was about 30 percent, almost double the level for east German women. While these shares are about the regional average for women aged 55-59 years, they were much smaller for women aged 60-64 years in both regions in the reference year. In contrast, the share of men aged 60-64 years working part-time was substantially higher than average in both regions, although the difference to the regional average among men was much larger in east Germany in that year. In both regions, the part-time employment share of men aged 60-64 years is relatively high for those with higher educational attainment. This perhaps suggests that part-time work was heavily used by this group as a partial-retirement option still available mostly at very favorable (subsidized) terms in the reference year.

Tab. 9 about here

While the overall share of part-time employment apparently did not change for men in the observation period, it declined by 4 percentage points for women in west Germany and increased by about 4 percentage points in east Germany. Table 9 reveals some interesting age differences driving these average results, however: The average share of part-time employment of men aged 60-64 years fell substantially in the observation period, especially in east Germany where it dropped from about 9 percent in 2000, on average, to about 2 percent in 2011. Within this age group and time period, the part-time employment share of men with high educational attainment dropped from 14 percent to virtually zero in east Germany and from about 8 percent to 4 percent in west Germany. This change could be related to the deterioration of the terms for partial-retirement in the observation period, but could of course also be related to other factors not statistically controlled for in the estimation of average effects in Table 8. Since part-time employment rates of women in the oldest age group, on average, remained stable in west Germany and significantly increased in east Germany, some other factors than just these regulations affect part-time employment which are not

identified by the within-group regressions conducted here. Given the small sample size within age and education groups, estimated average effects can only be estimated rather imprecisely for most of these groups (see Table 9), and it seems unlikely that splitting the sample further by other potentially interesting individual and household characteristics would improve the precision of estimates without imposing further restrictions on the estimating equations.

4.3 Real hourly wages

As mentioned in the introduction, increasing earnings and wage inequality has been a very important topic in academic and policy discussions of recent labor market developments in Germany over the last decade or so, although relatively little seems to be known about how older workers have been affected by these developments, which is the topic of this section. Of course, changes in earnings and wage inequality may be driven by very different factors due to changes in working hours and selection effects into and out form employment. Since these latter factors have already been discussed above as far as they seem relevant for the topic of this paper, Hourly wages are constructed from SOEP data by dividing individual labor earnings by the actual hours worked by the same individual in the month before the interview in a particular survey year. Nominal hourly wages are deflated by the consumer price index for all Germany to get a measure of the real gross hourly wage. I use real hourly wages for the following analysis to abstract from overall changes in the overall level of wages over time (inflation) and the potentially important impact of changes in the taxation of labor income. As a relatively large share of people, especially in the older age groups, are not employed in the month before the SOEP interview, and no wage can therefore constructed for them, I estimate selectivity-corrected OLS wage regressions on the subsample of employed people only. The selection-correction term is statistically significant in all estimations indicating that unobserved individual factors in the wage und employment equations are correlated and need to be controlled for in the estimation. Following the standard approach in the estimation of wage regressions, I derive the selection-correction term in these regressions from a first-stage reduced-form probit model with other household income than the individual's labor income, marital status, and the number of children in the household as exclusion restrictions. Estimation results for west and east Germany from the selectivity-corrected wage equations are contained in Tables 10 and 11.[6]

Tab. 10 and 11 about here

[6] I do not account for the selection-correction term, which also includes time dummies, in the calculation of time effects on within-group average wages.

Estimated average wages in the reference year 2000 for the total working age population more or less confirm what is known form many previous wage regressions: There is still a substantial average wage differential between east and west Germany; this wage differential is substantially larger for men than for women; the hourly wage of women is about 25 percent less than that of men in west Germany, and there is no or only a very small gender wage differential in east Germany. Furthermore, estimation results for the reference year confirm the relatively large educational wage differentials that exist in both regions. Estimation results also show that, within groups defined by gender and region, average wages differ little between the broad age groups analyzed here, and this result also seems to hold within education groups. This result is perhaps less easily reconciled with estimation results form standard wage regressions reporting relatively high “returns to labor market experience”, but could be due to the aggregation of individual ages in broad age groups.

More interesting than these standard results are, in the context of this study, changes in wages over time, and how these changes vary by age group. As shown by the estimated average time effects in the upper part of Tables 10 and 11, average real wages for the working-age population have generally been decreasing over time, where this decline has been stronger in east Germany where real wages decreased by about 8 percent between 200 and 2011. This strong decline in east German real wages seems especially striking in view of its low level compared to the west German level. However, the strongest relative decrease in the real wage for the working-age population as a whole is estimated for west German men with low education level; the real wage of workers in this group declined by 17 percent between 2000 and 2011, compared to 7 percent for east German men with low or medium education. For women with low or medium educational level the decline in the real wage was similar in the region in this period.

Estimation results also suggest that the average real wage seems to have declined less in the oldest age group, conditional on gender and region, but for most of these groups the precision of the estimated average time effects is rather low due to the relatively small sample sizes in most of the groups of older people. I had therefore to aggregate people aged 55 years and older into one age group. For people aged 25-54 years there is clear evidence that real wages have declined significantly, on average, for both men and women in east and west Germany, whereas real wages of people with higher educational attainment increased substantially during the observation period, except for east German women whose real wage in 2011 attained the same level as in the reference year 2000. Note, however, that the precision of the estimated time effects is fairly low within this age group. Due to the very imprecise estimates resulting when the sample is split by education group (see the lower panels in Tables 10 and 11), no general conclusions regarding the impact of educational attainment on the evolution of wages in the observations period can be drawn for the older age group.

5 Implications for labor market policy

The increase in employment rates and decline in unemployment rates of older workers have contributed significantly to the substantial improvement of the German labor market, both relative to the situation prevailing in Germany about a decade after unification and to other OECD countries. In the period 2000-2013 long-term unemployment among older men and women has markedly declined, while the effective retirement age has increased. At the same time, wage and earnings inequality has been increasing substantially in Germany, where this increase has been driven by the expansion of a low-wage sector and substantial real wage losses among low-qualified workers. Using data from the German Socioeconomic Panel, the present study has shown that these general labor market trends are driven by important differences between and within age groups, and within these groups between east and west Germany as well as by the level of educational attainment. Detailed estimation results do not support simple generalizations regarding age effects on changes in the labor market position of older workers. In particular, the study has identified important differences in labor market trends for people aged 55-59 years and 60-64 years, respectively. It was shown that, although labor market outcomes still differ significantly between east and west Germany, and within region by gender, employment and unemployment rates of older workers seem to converge, on average, between these two regions. This can also be observed for average retirement rates in the age group 60-64 years which, starting from a very high level in east Germany at the beginning of the observation period, the year 2000, were reduced much more for men and women in east Germany than in west Germany. This regional difference in retirement rates cannot be observed for people aged 55-59 years, which may be due to cohort effects related to special regulations in the pension system and labor market policies in the wake of German unification. Furthermore, in addition to the well-known facts about wage differentials by gender, region, and education, estimation results also suggest that these wage differentials and, in particular their changes over the observation period, differ between age groups and, within age groups by the level of educational attainment.

Knowledge of these facts may be important for the effective targeting of future labor market policies for older workers. Probably more controversial are conclusions about the potential effects of the labor market and pension policies in the observation period and summarized in Chapter 3 of this paper. In policy discussions the substantial improvement in the labor market situation of older workers in recent years is often related to these policies. However, there is little empirical evidence for the view that these reforms can explain the substantial improvement in the labor market situation of older workers. Although a couple of empirical studies cited in the introduction to this paper suggest that some of these reforms may have increased employment rates and reduced unemployment rates of older workers, the estimated effects seem much too small to explain recent labor market developments for older workers

in Germany. Furthermore, these studies at best report average effects for older workers and do not account for the large heterogeneity within this group. As discussed above, age effects on labor market outcomes vary substantially by gender, region, and the level of educational attainment, and some average effect across these groups may be of very limited relevance for labor market policy. Furthermore, it might be difficult to separate age and cohort effects, especially in east Germany where labor market policy in the wake of the unification process might have had long-term effects on labor market outcomes for people now in their early sixties. And, perhaps most importantly, changes in various labor market and pension policies are closely interrelated and may have affected older people of different birth cohorts quite differently.

Thus, it might be very difficult if not impossible to clearly define “control” and “treatment groups” in order to identify the “causal” effects of particular policy reforms. This seems particularly true for the level of aggregation on which the estimated group and time effects of this study are based. Thus, estimated differences in estimated average effects for older and younger age groups before and after the year 2008, when all the policy reforms considered here had already become effective, may contain both the effects of these policy reforms as well as group specific trending unobserved factors affecting labor market outcomes. This would render the interpretation of this difference-in-difference estimates as average treatment effects for particular groups extremely difficult. Such an interpretation is not attempted here but should be high on the agenda for future empirical research.

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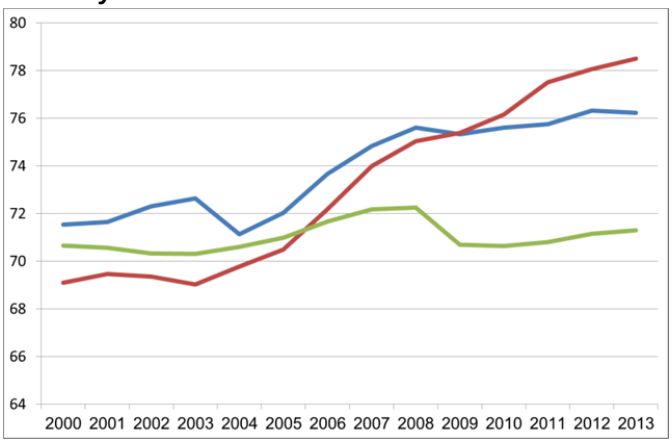
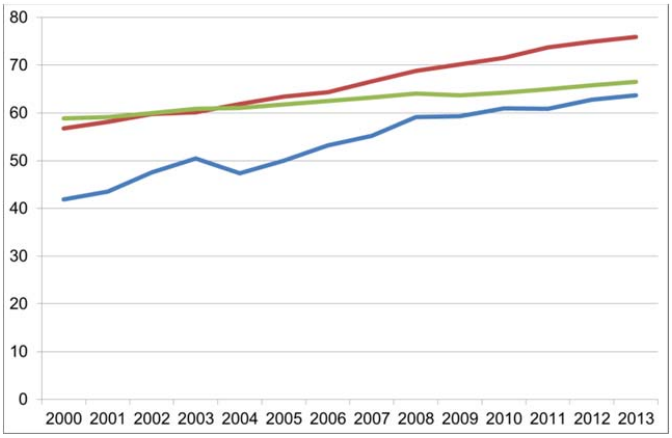
Figure 1: Employment and unemployment rates (in percent) by age group in Germany, Austria and the OECD

Employment Rate

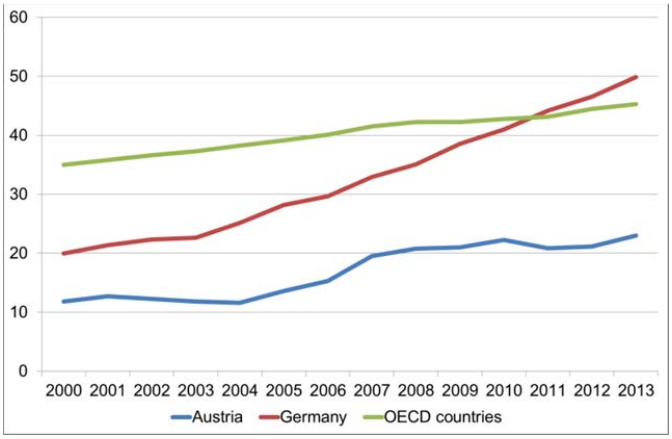
25 – 64 years



55 – 59 years

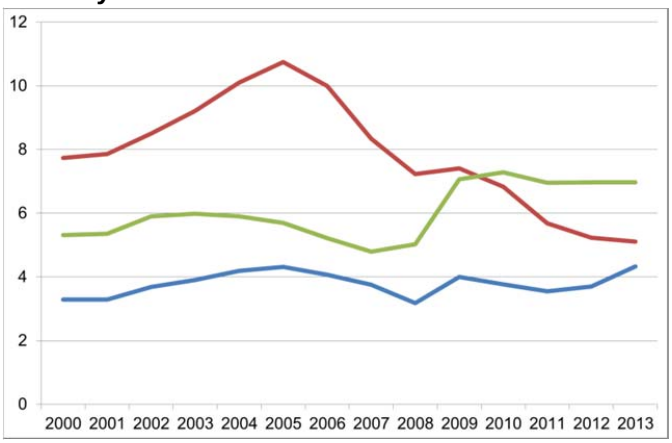


60 – 64 years

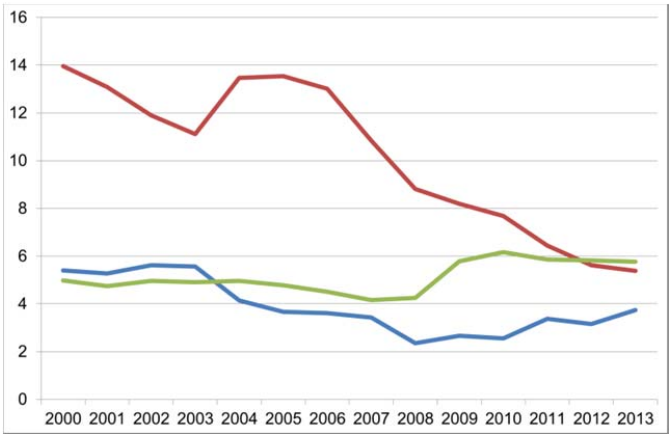


Unemployment Rate

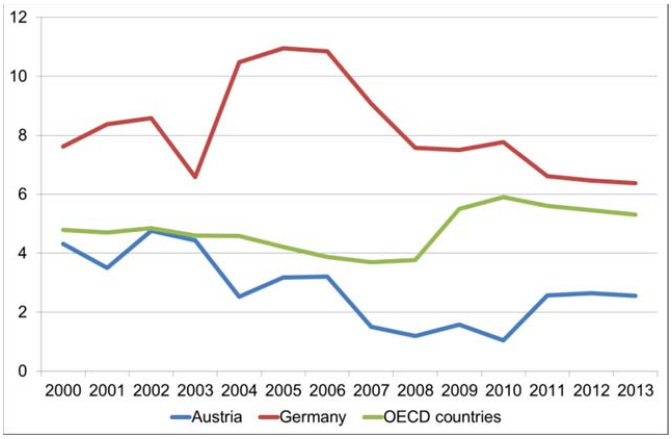
25 – 64 years



55 – 59 years



60 – 64 years

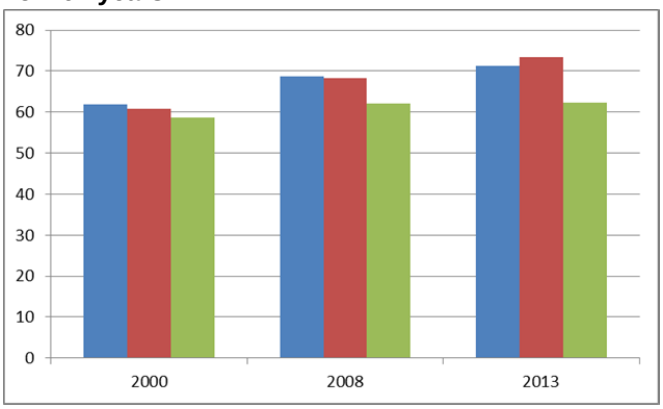


Source: OECD

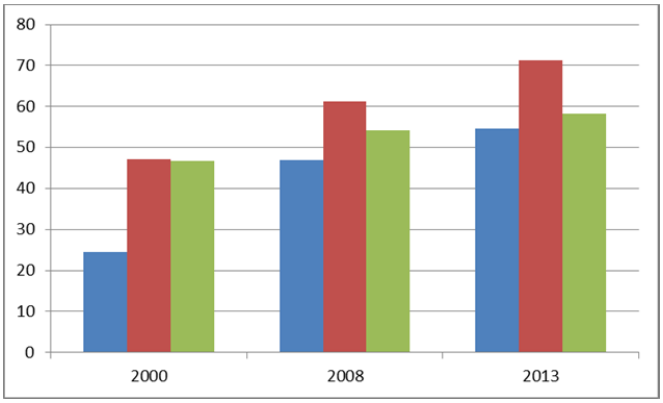
Figure 2: Employment rates (in percent) by gender and age group in Germany, Austria and the OECD

Women

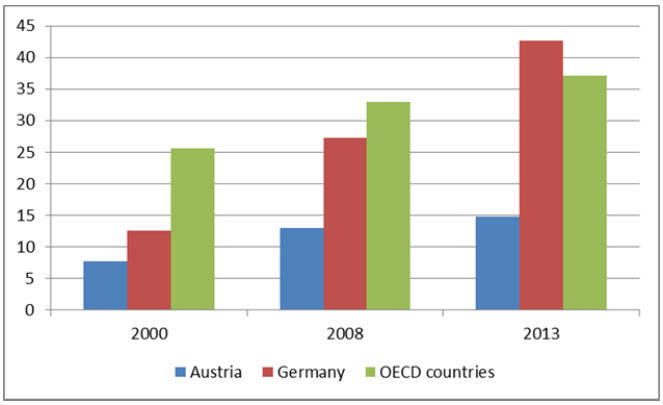
25 – 64 years



55 – 59 years

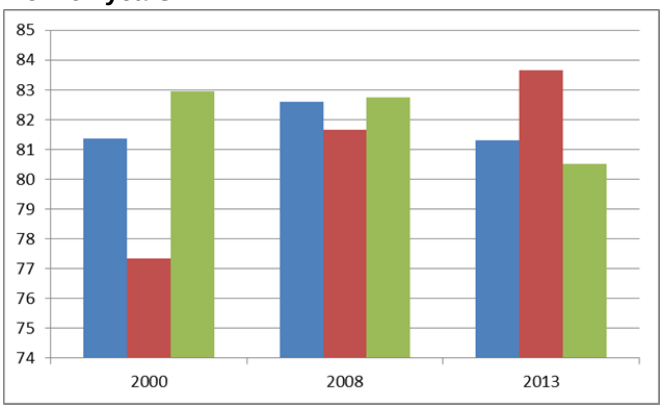


60 – 64 years

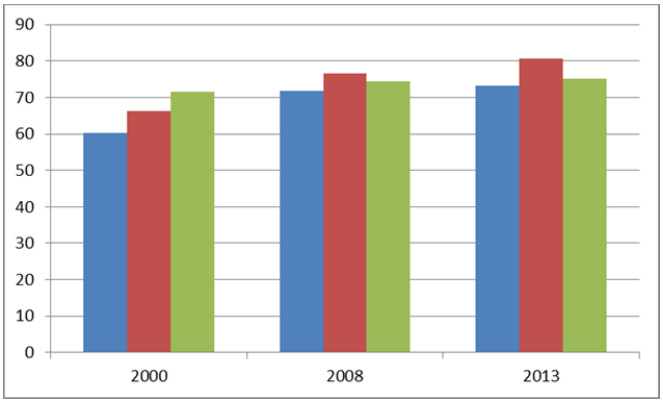


Men

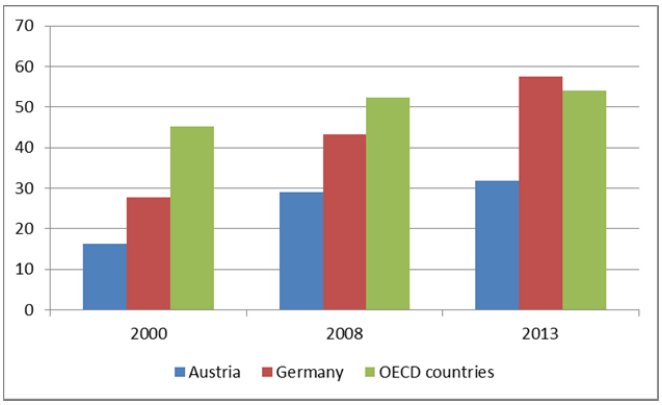
25 – 64 years



55 – 59 years



60 – 64 years

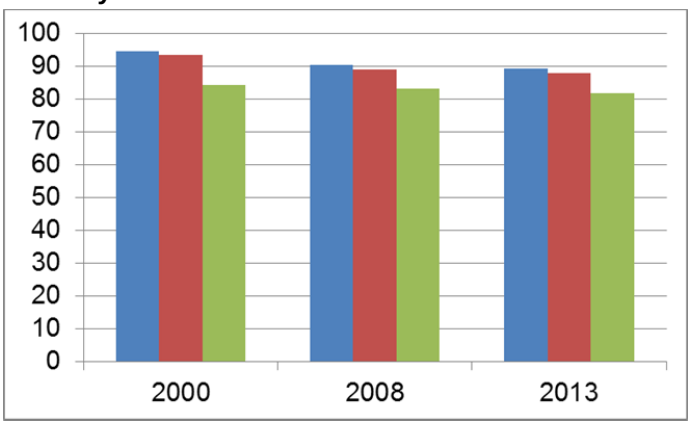


Source: OECD

Figure 3: Part-time employment (part-time/full-time share in percent) by gender and age group in Germany, Austria and the OECD

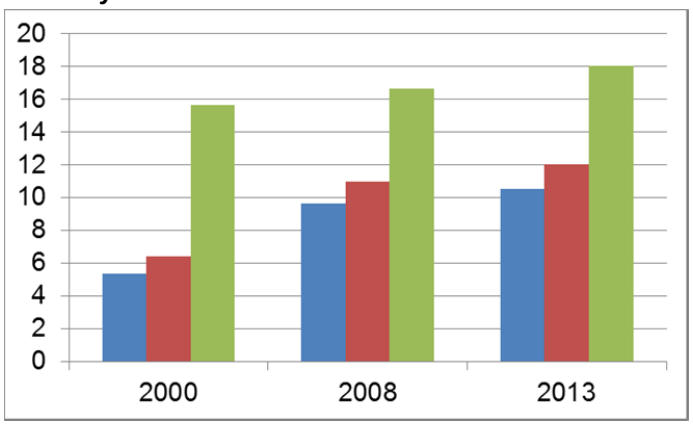
Women

50 – 54 years

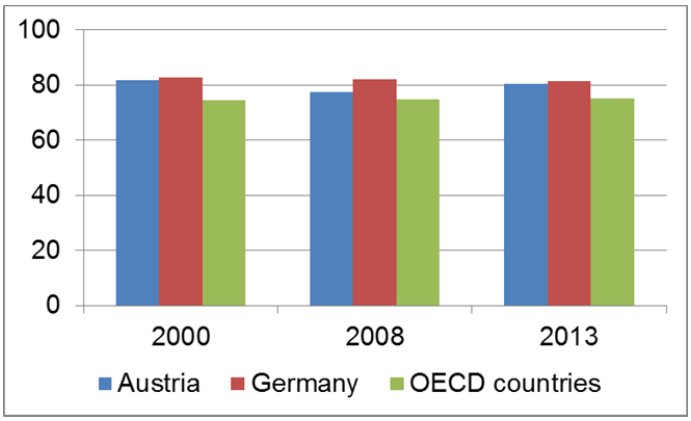


Men

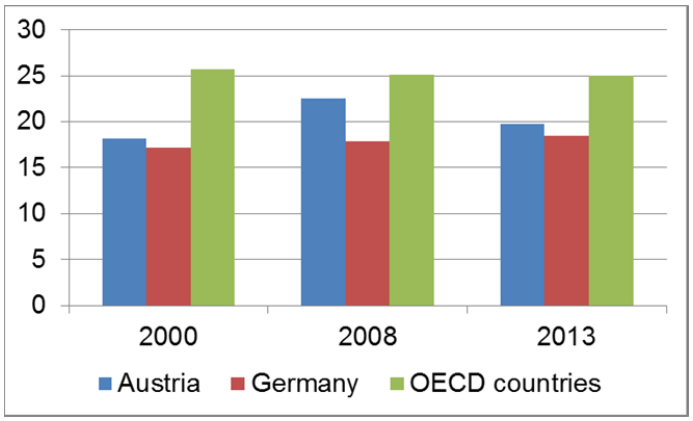
50 – 54 years



55 - 64 years

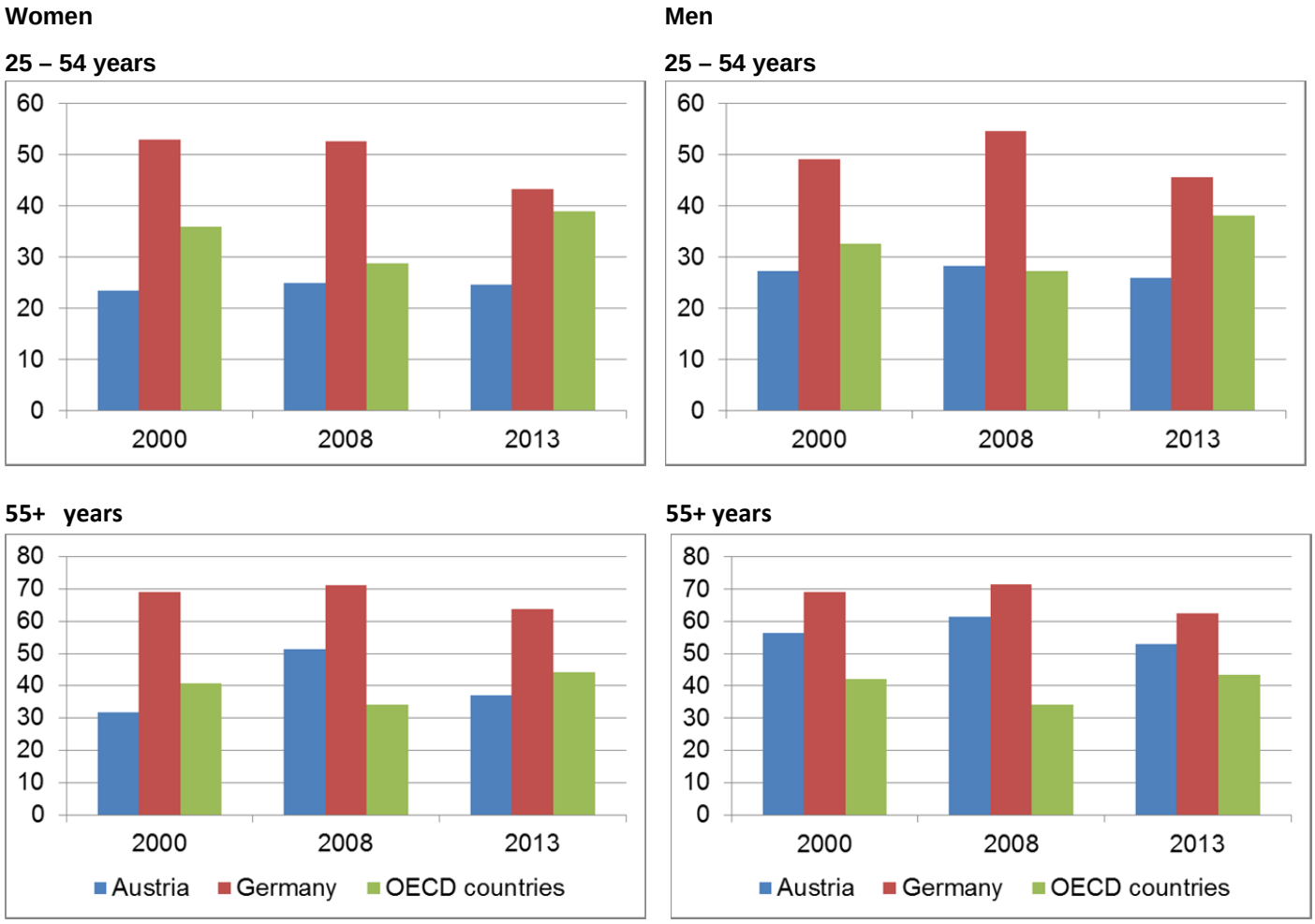


55 - 64 years



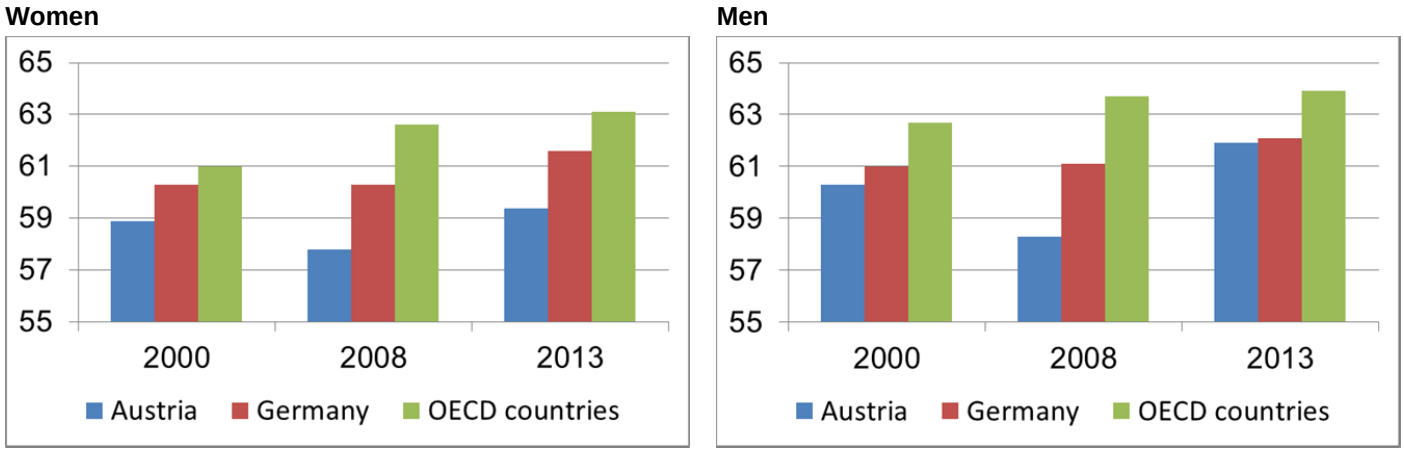
Source: OECD

Figure 4: Long-term unemployment share (in percent) by gender and age group in Germany, Austria and the OECD



Source: OECD

Figure 5: Average effective retirement age by gender and age group in Germany, Austria and the OECD



Source: OECD

Table 1: Recent changes in labor market policies affecting older workers and public pension regulations in Germany

Unemployment compensation	
2004	Lower duration of unemployment benefit I (UB I) for older workers (from a maximum of 32 months to a maximum of 18 months) and tightening of entitlement criteria regarding an individual's previous employment record; became first effective in 2006.
2005	Integration of social assistance and unemployment assistance into the new means-tested unemployment benefit II which replaces social assistance for all "employable" people
2008	Longer duration of unemployment benefits for older workers (from a maximum of 18 months to a maximum of 24 months
Special labor market programs for older workers	
2003	In-work benefits (*Entgeltsicherung*) to unemployed people aged 50 years and older who are entitled to UB I
2004	Temporary wage subsidies (*Eingliederungszuschuss)* to firms employing people with severe placement difficulties including old age; integration of special subsidy for older workers into general temporary wage subsidy for "hard-to-place" people
2007	Re-introduction in 2008 of a special subsidy for unemployed people aged 50 years and older and introduction of a wage-subsidy voucher for older people
Reforms of public pension regulations	
1992	Introduction of deduction factors for early retirement (0.3 percent per month before the legal retirement age), fully phased in by 1999 for young birth cohorts
1994	Lengthening of regulation which imply that unemployed being 58 or older have not to be at the disposal of unemployment agencies and are not counted as unemployed (until 2000)
1997	Raising of retirement age for long-term insured from 63 to 65 years (stepwise 2000 until 2001) and for women from 60 to 65 years (stepwise 2000 until 2004)
1999	Raising of retirement age for disabled Adjustment of pension formula by a demographic factor to stabilize the contribution rate to the public pension system
2000	Lengthening of regulation which imply that unemployed being 58 or older have not to be at the disposal of unemployed agencies and are not counted as unemployed (until 2005)
2001	Reform of pensions for persons who are not capable for work Introduction of subsidy of a supplementary capital-based private pension ("*Riesterrente*")
2005	Lengthening of regulation which imply that unemployed being 58 or older have not to be at the disposal of unemployed agencies and are not counted as unemployed (until 2007)
2008	Raising of general retirement age from 65 to 67 years (stepwise from 2012 until 2029)
2009	End of public subsidies for partial retirement schemes

Source: Adapted from Dietz and Walwei (2011), other references are cited in the main text.

Table 2: Share of people in full-time employment by gender, year, age, and education – West Germany

	Men			Women		
	2000	2008	2011	2000	2008	2011
	pct	ppt change to 2000		pct	ppt change to 2000	
Age 25-64 years	76.9	1.3	1.1	32.2	2.8	3.5
		(1.2)	(1.1)		(1.3)	(1.2)
Education level						
Low	66.7	-1.7	1.2	23.1	0.2	-0.0
		(3.9)	(3.5)		(2.9)	(2.6)
Medium	75.3	0.9	0.7	31.7	1.8	1.2
		(1.7)	(1.5)		(1.7)	(1.5)
High	84.6	2.2	0.2	52.2	3.5	6.5
		(1.7)	(1.6)		(2.8)	(2.5)
Age 25-54 years	86.4	-1.5	-3.3	36.6	2.4	2.5
		(1.2)	(1.1)		(1.5)	(1.4)
Education level						
Low	78.9	-1.7	-5.1	28.6	0.4	-2.0
		(4.1)	(3.8)		(3.8)	(3.4)
Medium	85.4	-2.4	-3.9	35.9	1.6	0.3
		(1.6)	(1.5)		(2.0)	(1.8)
High	91.5	-0.4	-2.4	44.3	2.9	6.1
		(1.7)	(1.6)		(3.1)	(2.8)
Age 55-59 years	67.2	1.3	10.5	30.2	-3.8	4.3
		(4.0)	(3.1)		(3.5)	(3.4)
Education level						
Low	55.7	-17.8	12.4	24.3	-12.6	-2.1
		(10.4)	(9.7)		(5.9)	(6.6)
Medium	65.7	1.6	11.6	31.0	-5.4	2.2
		(5.3)	(4.2)		(4.7)	(4.5)
High	75.3	11.6	6.0	35.8	9.4	12.6
		(5.7)	(5.2)		(8.5)	(7.5)
Age 60-64 years	26.6	13.5	17.7	6.8	7.1	6.6
		(3.8)	(3.4)		(2.5)	(2.1)
Education level						
Low	19.4	6.2	15.3	4.9	3.5	4.6
		(8.6)	(8.9)		(3.9)	(3.4)
Medium	19.8	16.7	20.5	5.6	5.7	5.6
		(4.8)	(2.3)		(2.7)	(2.4)
High	45.1	8.2	11.6	20.6	8.4	7.0
		(7.3)	(6.4)		(10.0)	(8.8)

Notes: Estimates based on OLS within-group regressions using SOEP weighting factors. Robust (Huber-White) standard errors are in parentheses.

Source: Own calculations based on SOEP data.

Table 3: Share of people in full-time employment by gender, year, age, and education – East Germany

	Men			Women		
	2000	2008	2011	2000	2008	2011
	pct	ppt change to 2000		pct	ppt change to 2000	
Age 25-64 years	69.5	3.0	0.3	43.0	1.6	1.8
		(2.3)	(2.1)		(2.4)	(2.2)
Education level						
Low/Medium	66.9	1.5	-2.8	35.7	2.8	-1.6
		(3.0)	(2.8)		(3.1)	(2.6)
High	73.9	6.3	6.6	55.0	-1.3	5.6
		(3.4)	(3.2)		(3.8)	(3.4)
Age 25-54 years	81.9	-3.4	-7.6	52.0	-2.8	-2.7
		(2.4)	(2.4)		(2.8)	(2.6)
Education level						
Low/Medium	77.8	-3.4	-9.4	45.1	-1.9	-6.0
		(3.1)	(3.1)		(3.7)	(3.3)
High	90.2	-2.7	-3.9	62.5	-4.7	0.8
		(3.4)	(3.2)		(4.3)	(4.0)
Age 55-59 years	61.0	2.8	4.9	39.9	-3-1	5.1
		(6.7)	(5.8)		(6.4)	(5.6)
Education level						
Low/Medium	52.7	0.7	7.4	28.2	1.2	1.4
		(9.0)	(7.9)		(7.9)	(6.6)
High	70.3	5.0	8.5	59.9	-9.8	8.6
		(9.3)	(8.0)		(10.2)	(8.7)
Age 60-64 years	18.3	9.6	25.0	4.2	4.4	11.0
		(5.7)	(5.5)		(2.9)	(3.5)
Education level						
Low/Medium	13.2	8.4	18.0	3.4	2.2	9.7
		(7.3)	(6.7)		(2.8)	(4.1)
High	23.7	12.6	31.2	6.0	7.2	14.1
		(8.5)	(8.2)		(6.0)	(6.2)

Notes: Estimates based on OLS within-group regressions using SOEP weighting factors. Robust (Huber-White) standard errors are in parentheses.

Source: Own calculations based on SOEP data.

Table 4: Unemployment rate by gender, year, age, and education – West Germany

	Men			Women		
	2000	2008	2011	2000	2008	2011
	pct	ppt change to 2000		pct	ppt change to 2000	
Age 25-64 years	6.2	0.2	0.2	4.0	2.1	1.8
		(0.7)	(0.6)		(0.6)	(0.5)
Education level						
Low	11.1	4.2	3.0	6.6	5.4	6.6
		(3.1)	(2.6)		(2.2)	(1.9)
Medium	6.6	-0.4	0.7	3.5	1.9	1.3
		(1.0)	(0.9)		(0.8)	(0.6)
High	3.2	0.2	-1.0	2.8	1.1	0.8
		(1.0)	(0.7)		(1.1)	(0.9)
Age 25-54 years	5.0	0.7	1.1	3.8	1.8	1.9
		(0.8)	(0.7)		(0.7)	(0.6)
Education level						
Low	11.0	3.8	3.8	7.6	3.8	7.1
		(3.5)	(3.2)		(2.5)	(2.5)
Medium	5.2	0.3	2.0	3.0	1.9	1.4
		(1.0)	(1.0)		(0.9)	(0.7)
High	2.1	0.7	-0.7	2.9	1.1	0.8
		(1.0)	(0.6)		(1.2)	(1.1)
Age 55-59 years	12.9	-2.6	-5.8	7.5	1.7	-2.6
		(2.9)	(2.2)		(2.3)	(1.6)
Education level						
Low	14.4	6.9	1.2	9.5	5.3	-3.6
		(9.9)	(7.6)		(6.9)	(4.5)
Medium	14.7	-5.6	-8.0	8.0	1.9	-2.1
		(3.4)	(2.8)		(2.9)	(2.1)
High	8.7	-2.1	-3.8	3.3	-2.4	-1.7
		(4.9)	(3.6)		(2.0)	(2.2)
Age 60-64 years	8.1	-0.5	-0.8	2.3	3.5	5.5
		(2.2)	(1.9)		(1.8)	(1.7)
Education level						
Low	9.2	1.4	-0.4	1.5	10.2	12.3
		(7.7)	(5.1)		(5.2)	(4.1)
Medium	8.9	-0.3	-0.7	3.0	0.3	3.3
		(3.1)	(2.8)		(1.7)	(2.0)
High	5.8	-1.3	-0.7	0.7	5.8	4.2
		(3.1)	(2.6)		(4.4)	(3.0)

Notes: Estimates based on OLS within-group regressions using SOEP weighting factors. Robust (Huber-White) standard errors are in parentheses.

Source: Own calculations based on SOEP data.

Table 5: Unemployment rate by gender, year, age, and education – East Germany

	Men			Women		
	2000	2008	2011	2000	2008	2011
	pct	ppt change to 2000		pct	ppt change to 2000	
Age 25-64 years	12.7	1.4	1.8	16.6	-0.3	-2.9
		(1.8)	(1.6)		(1.9)	(1.6)
Education level						
Low/Medium	16.3	0.6	3.4	22.2	0.2	-2.1
		(2.3)	(2.3)		(2.7)	(2.3)
High	6.7	2.0	-1.9	7.4	-0.1	-3.2
		(2.6)	(1.6)		(2.0)	(1.5)
Age 25-54 years	12.0	0.6	1.9	17.1	-1.4	-3.6
		(2.0)	(1.9)		(2.2)	(1.9)
Education level						
Low/Medium	16.0	-0.8	3.5	24.0	-2.7	-3.8
		(2.6)	(2.7)		(3.2)	(2.9)
High	4.2	3.0	-1.4	6.7	0.9	-2.4
		(2.9)	(1.5)		(2.3)	(1.8)
Age 55-59 years	20.5	3.4	-5.3	27.9	-6.7	-10.2
		(5.9)	(4.6)		(5.7)	(4.7)
Education level						
Low/Medium	27.3	5.3	-8.5	35.7	-4.8	-7.8
		(8.6)	(6.7)		(8.0)	(6.8)
High	12.8	1.4	-5.8	14.7	-10.5	-12.3
		(7.6)	(5.0)		(5.2)	(4.3)
Age 60-64 years	9.7	4.1	8.6	5.4	8.9	3.8
		(4.4)	(3.9)		(3.6)	(2.8)
Education level						
Low/Medium	9.1	6.5	15.0	5.8	13.0	4.5
		(6.6)	(5.8)		(5.1)	(3.6)
High	10.4	1.1	2.3	4.5	2.9	1.8
		(5.3)	(5.3)		(4.3)	(4.5)

Notes: Estimates based on OLS within-group regressions using SOEP weighting factors. Robust (Huber-White) standard errors are in parentheses.

Source: Own calculations based on SOEP data.

Table 6: Share of cumulated duration in un-/non-employment by gender, year, age, and education – West Germany

	Men			Women		
	2000	2008	2011	2000	2008	2011
	pct	ppt change to 2000		pct	ppt change to 2000	
Age 25-64 years	2.4	0.9	1.1	26.9	-4.1	-5.5
		(0.2)	(0.2)		(0.6)	(0.6)
Education level						
Low	4.6	2.7	3.3	39.4	-0.7	-2.9
		(1.0)	(0.9)		(1.8)	(1.7)
Medium	2.6	1.0	1.5	26.8	-4.1	-4.9
		(0.3)	(0.3)		(0.8)	(0.7)
High	1.1	0.2	0.0	16.1	-2.5	-3.9
		(0.2)	(0.2)		(1.0)	(0.9)
Age 25-54 years	2.5	1.0	1.3	24.1	-3.2	-4.3
		(0.3)	(0.3)		(0.7)	(0.6)
Education level						
Low	5.1	2.8	3.7	37.7	-0.8	-1.1
		(1.2)	(1.1)		(2.2)	(2.1)
Medium	2.7	1.2	1.7	24.0	-3.2	-3.5
		(0.4)	(0.4)		(0.8)	(0.8)
High	1.1	0.3	-0.0	15.0	-1.9	-3.9
		(0.2)	(0.2)		(1.0)	(0.9)
Age 55-59 years	2.4	0.5	0.6	32.1	-5.2	-8.4
		(0.6)	(0.6)		(2.0)	(1.7)
Education level						
Low	3.2	2.0	2.2	38.1	3.4	-4.4
		(2.4)	(2.1)		(4.8)	(4.0)
Medium	2.4	0.8	0.9	33.1	-7.3	-10.1
		(0.7)	(0.7)		(2.5)	(2.2)
High	2.1	-0.7	-0.4	20.4	-4.9	-3.2
		(0.8)	(0.9)		(3.8)	(3.8)
Age 60-64 years	2.0	0.7	0.7	39.8	-6.7	-9.7
		(0.4)	(0.5)		(2.2)	(1.9)
Education level						
Low	2.8	2.8	2.0	45.3	-1.4	-6.8
		(1.5)	(1.5)		(4.3)	(4.0)
Medium	2.3	0.1	0.5	39.3	-5.1	-9.2
		(0.5)	(0.7)		(2.8)	(2.3)
High	0.8	1.1	0.8	24.9	-8.2	-6.4
		(0.6)	(0.4)		(4.7)	(4.8)

Notes: Estimates based on OLS within-group regressions using SOEP weighting factors. Robust (Huber-White) standard errors are in parentheses.

Source: Own calculations based on SOEP data.

Table 7: Share of cumulated duration in un-/non-employment by gender, year, age, and education – East Germany

	Men			Women		
	2000	2008	2011	2000	2008	2011
	pct	ppt change to 2000		pct	ppt change to 2000	
Age 25-64 years	3.4	3.5	5.0	11.5	3.1	2.4
		(0.5)	(0.7)		(0.7)	(0.7)
Education level						
Low/Medium	4.3	4.5	7.0	14.3	4.5	4.2
		(0.7)	(1.0)		(1.1)	(1.0)
High	1.9	1.5	1.1	6.8	1.4	0.3
		(0.5)	(0.4)		(0.8)	(0.6)
Age 25-54 years	3.8	3.6	5.4	12.1	3.5	3.0
		(0.6)	(0.9)		(0.9)	(0.9)
Education level						
Low/Medium	4.8	4.4	7.4	15.3	4.9	5.1
		(0.9)	(1.3)		(1.3)	(1.2)
High	1.9	1.9	1.3	7.2	1.6	0.4
		(0.6)	(0.6)		(0.9)	(0.8)
Age 55-59 years	2.8	2.9	4.6	9.6	1.3	1.9
		(1.1)	(1.2)		(1.7)	(1.4)
Education level						
Low/Medium	3.4	5.3	6.1	12.8	1.7	3.0
		(1.7)	(1.7)		(2.3)	(2.0)
High	2.0	0.3	0.6	4.3	0.3	0.8
		(0.8)	(0.7)		(1.4)	(1.2)
Age 60-64 years	2.4	2.2	2.4	10.1	0.3	-0.4
		(0.7)	(0.7)		(1.4)	(1.3)
Education level						
Low/Medium	2.5	2.7	3.9	11.6	1.2	-0.1
		(1.2)	(1.1)		(1.9)	(1.8)
High	2.2	1.4	0.9	6.6	0.1	-1.1
		(0.7)	(0.8)		(1.8)	(1.6)

Notes: Estimates based on OLS within-group regressions using SOEP weighting factors. Robust (Huber-White) standard errors are in parentheses.

Source: Own calculations based on SOEP data.

Table 8: Share of retired people by gender, year, region, age, and education

	Men			Women		
	2000	2008	2011	2000	2008	2011
	pct	ppt change to 2000		pct	ppt change to 2000	
West Germany						
Age 55-59 years	16.8	0.2	-6.2	10.2	0.9	-2.5
		(3.2)	(2.3)		(2.5)	(2.1)
Education level						
Low	28.0	16.2	-13.0	11.0	-2.0	2.5
		(11.0)	(7.3)		(4.2)	(5.2)
Medium	17.5	-1.4	-6.1	8.9	4.8	-2.2
		(4.3)	(3.1)		(3.4)	(2.4)
High	10.0	-5.9	-2.2	13.5	-9.6	-8.2
		(2.9)	(3.5)		(5.2)	(5.5)
Age 60-64 years	62.4	-13.9	-20.2	49.0	-8.2	-7.4
		(4.0)	(3.5)		(3.9)	(3.4)
Education level						
Low	71.0	-10.0	-14.5	50.0	-8.9	-13.3
		(10.3)	(9.4)		(7.7)	(6.6)
Medium	69.3	-17.7	-26.4	49.0	-3.9	-4.3
		(5.3)	(4.5)		(5.0)	(4.3)
High	43.1	-5.7	-8.5	45.5	-18.6	-8.5
		(7.0)	(6.2)		(9.8)	(9.4)
East Germany						
Age 55-59 years	18.5	-9.5	-3.4	18.4	-2.9	-8.9
		(4.8)	(4.8)		(4.9)	(3.9)
Education level						
Low / Medium	24.1	-11.9	-6.5	19.5	-3.4	-5.6
		(7.2)	(6.8)		(6.4)	(5.1)
High	12.1	-6.7	-2.7	16.4	-2.2	-13.6
		(5.9)	(6.3)		(7.5)	(6.1)
Age 60-64 years	70.8	-14.8	-36.0	89.0	-18.2	-31.9
		(6.6)	(5.6)		(4.7)	(4.8)
Education level						
Low / Medium	76.1	-13.3	-37.8	89.6	-20.4	-36.2
		(9.1)	(7.6)		(6.0)	(6.0)
High	65.2	-18.3	-33.7	87.5	-14.5	-21.6
		(8.9)	(5.2)		(7.8)	(7.3)

Notes: Estimates based on OLS within-group regressions using SOEP weighting factors. Robust (Huber-White) standard errors are in parentheses.

Source: Own calculations based on SOEP data.

Table 9: Share of older workers in part-time employment by gender, year, region age, and education

	Men			Women		
	2000	2008	2011	2000	2008	2011
	pct	ppt change to 2000		pct	ppt change to 2000	
West Germany, 25-64 yrs.	4.4	-1.2	-0.3	29.9	-6.0	-4.0
		(0.5)	(0.5)		(1.2)	(1.1)
Age 55-59 years	4.2	-0.9	-1.6	27.7	-5.4	-0.2
		(1.5)	(1.1)		(3.3)	(3.1)
Education level						
Low	6.0	-	-4.2	26.8	-10.5	-8.6
		(-)	(3.3)		(7.5)	(6.2)
Medium	3.5	0.9	-1.3	28.2	-5.1	3.9
		(2.3)	(1.5)		(4.3)	(4.2)
High	4.7	-1.6	-1.1	27.3	-1.4	-4.2
		(2.1)	(2.2)		(7.6)	(6.5)
Age 60-64 years	6.2	-4.3	-2.0	12.1	-0.7	0.4
		(1.3)	(1.5)		(2.5)	(2.3)
Education level						
Low	4.7	-2.7	-4.4	9.7	-4.8	-3.6
		(2.8)	(2.4)		(3.0)	(3.6)
Medium	5.5	-5.1	-0.4	13.4	0.3	1.1
		(1.3)	(2.0)		(3.7)	(3.2)
High	8.5	-4.0	-4.2	11.8	0.2	2.4
		(3.6)	(3.3)		(5.9)	(6.0)
East Germany, 25-64 yrs.	3.6	-1.3	-0.0	16.2	2.9	4.2
		(0.8)	(0.8)		(1.9)	(1.7)
Age 55-59 years	3.8	-0.5	0.1	15.2	2.1	6.5
		(2.5)	(2.4)		(4.4)	(4.4)
Education level						
Low / Medium	2.5	-	0.9	17.3	-6.3	4.0
		(-)	(3.2)		(5.1)	(6.0)
High	5.2	1.7	-0.4	11.8	16.8	10.5
		(4.6)	(3.6)		(7.8)	(6.4)
Age 60-64 years	9.2	-8.4	-6.8	4.2	0.0	7.3
		(2.4)	(2.6)		(2.3)	(3.4)
Education level						
Low / Medium	4.5	-	0.0	4.5	-0.4	7.7
		(-)	(3.1)		(3.0)	(4.5)
High	14.2	-12.3	-14.0	3.6	0.9	6.2
		(4.5)	(4.1)		(3.6)	(4.0)

Notes: Estimates based on OLS within-group regressions using SOEP weighting factors. Robust (Huber-White) standard errors are in parentheses. The sign "-" indicates that the respective average effect could not be estimated due to insufficient within-group variation.

Source: Own calculations based on SOEP data.

Table 10: Real hourly wages by gender, year, age, and education – West Germany

	Men			Women		
	Real hourly wage € 2000	2008	2011	Real hourly wage € 2000	2008	2011
		pct change to 2000			pct change to 2000	
Age 25-64 years	16.10	-5.7	-3.3	12.08	-1.5	-4.3
		(1.9)	(1.8)		(1.9)	(1.8)
Education level						
Low	13.05	-14.7	-17.2	9.47	3.4	-9.2
		(6,8)	(5.5)		(5.0)	(4.5)
Medium	14.40	-7.9	-5.3	11.18	-1.7	-4.1
		(2.3)	(2.1)		(2.4)	(2.2)
High	20.01	1.2	2.9	15.88	-1.3	1.2
		(2.8)	(3.0)		(3.3)	(3.2)
Age 25-54 years	15.95	-11.6	-11.1	12.01	-8.6	-13.1
		(2.3)	(2.2)		(2.1)	(2.2)
Education level						
Low	13.14	-17.1	-20.9	9.42	-7.3	-19.3
		(8.4)	(7.8)		(5.7)	(7.0)
Medium	14.32	-5.0	-1.5	11.16	-5.7	-10.2
		(3.2)	(3.7)		(3.7)	(4.2)
High	19.80	16.5	22.4	15.47	2.2	6.0
		(4.2)	(5.0)		(4.2)	(4.8)
Age 55-64 years	17.08	-2.7	0.2	12.57	-1.2	-6.6
		(5.2)	(5.0)		(5.2)	(4.7)
Education level						
Low	12.49	-11.0	-11.3	9.65	13.5	-15.2
		(21.6)	(16.7)		(14.5)	(9.5)
Medium	15.10	-4.2	-1.9	11.35	-5.3	-4.7
		(6.8)	(5.9)		(5.9)	(5.9)
High	21.26	4.8	10.7	19.86	-5.4	-6.7
		(6.0)	(7.7)		(10.7)	(10.2)

Notes: Real hourly wage is hourly wage in current year prices deflated by the CPI (2000=100). Estimates based on selectivity-corrected OLS within-group regressions using SOEP weighting factors. The first-stage probit employment equation includes as exclusion restrictions other household income, marital status, and the number of children. Robust (Huber-White) standard errors are in parentheses.

Source: Own calculations based on SOEP data.

Table 11: Real hourly wages by gender, year, age, and education – East Germany

	Men			Women		
	Real hourly wage € 2000	2008	2011	Real hourly wage € 2000	2008	2011
		pct change to 2000			pct change to 2000	
Age 25-64 years	10.87	-6.3	-7.6	10.34	-18.7	-8.5
		(3.1)	(3.2)		(3.4)	(3.1)
Education level						
Low/Medium	9.20	-1.0	-7.5	8.54	-17.1	-8.1
		(3.5)	(3.9)		(4.8)	(4.2)
High	13.31	-4.2	2.8	12.52	-10.8	-0.5
		(5.9)	(4.8)		(4.1)	(4.1)
Age 25-54 years	10.83	-15.2	-19.1	10.36	-31.2	-25.2
		(3.3)	(4.1)		(4.1)	(3.5)
Education level						
Low/Medium	9.26	8.2	4.5	8.51	-19.1	-9.1
		(4.5)	(5.2)		(7.9)	(8.1)
High	13.50	24.2	39.8	12.69	-10.8	-0.3
		(7.6)	(9.4)		(6.9)	(7.8)
Age 55-64 years	11.07	-6.4	-10.6	10.18	-12.6	-7.9
		(8.6)	(7.7)		(7.7)	(8.5)
Education level						
Low/Medium	8.67	-0.0	-4.5	8.89	-16.9	-16.5
		(10.8)	(9.2)		(10.9)	(12.3)
High	12.68	-2.5	0.5	11.36	-3.9	5.4
		(12.5)	(11.0)		(10.6)	(10.8)

Notes: Real hourly wage is hourly wage in current year prices deflated by the CPI (2000=100). Estimates based on selectivity-corrected OLS within-group regressions using SOEP weighting factors. The first-stage probit employment equation includes as exclusion restrictions other household income, marital status, and the number of children. Robust (Huber-White) standard errors are in parentheses.

Source: Own calculations based on SOEP data.