

Understanding Changes in Relative Wages during East Germany's Transition

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Abstract

Older cohorts are often considered especially vulnerable to the sweeping changes in technology and institutions during economic transition. Previous research from Russia suggests that older workers suffered substantial wage losses during economic transition relative to younger ones. This paper analyzes the determinants of relative wage changes across age groups during East Germany's transition. After unification, workers above 45 start with low wages. Estimates suggest that skill depreciation resulted in relative wage declines of up to 30 percent relative to the pre-1990 period. Over the course of the 1990s, there is little further change in relative wages as all age groups experience large gains. While selective withdrawal from the labor market overstates wage gains of older employees by up to 20 percent, it cannot alone account for their good labor market performance. While employment in the public sector played only a small role, evidence is provided that labor market institutions protected older employees from a further erosion of wages.

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1 Introduction

After the collapse of communist regimes, the wage structure in Central and Eastern European countries underwent dramatic changes. Previous research finds that returns to education increased while returns to work experience and the gender wage gap generally decreased in the transition process.¹ Though the basic trends have been well documented, much less is known about the underlying mechanisms. Distinguishing labor supply responses from technological change and the impact of labor market institutions is however crucial to evaluate the success of restructuring and prospects for future economic growth.

Among all demographic groups, older cohorts are often considered especially vulnerable to the sweeping changes of economic transition. Technological change and new investments in capital accompanying the restructuring process could have made some labor market skills obsolete.² Since older cohorts worked a greater fraction of their working career with the often outdated technologies and production methods, they are affected most by potential skill loss. Second, older employees might be less adaptable to the new organization of production after the regime change. In particular, older cohorts have a lower incentive to update their skills to new technologies because of shorter remaining work lives. Prior evidence from Russia provides evidence that older employees indeed suffered substantial wage losses relative to the average worker and recent labor market entrants during the 1990s (Brainerd, 1998).

This paper analyzes the determinants of relative wage changes during East Germany's

¹See Rutkowski (1996) and Keane and Prasad (2002) for Poland; Munich, Svejnar and Terrell (1999) for the Czech Republic and Brainerd (1998) on Russia. Orazem and Vodopivec (1997) find increasing returns to both experience and education in Slovenia. For East Germany, Krueger and Pischke (1995) and Bird, Schwarze and Wagner (1994) show that there was little change in returns to education after unification. Svejnar (1999) provides a comprehensive survey of the available evidence on changes in the wage structure across transition economies.

²Anecdotal evidence for example suggests that part of the specific knowledge accumulated in the socialist combines was how to deal with the lack of resources. Since most firms had only one supplier and production plans were fixed centrally, production processes were frequently interrupted because of missing inputs. It is expected that the strategies employed to solve resource shortage lost its value.

transition. East Germany's transition is characterized by several unique features: through its rapid unification with West Germany, East Germany underwent a high-speed and very radical transition compared to other countries.³ Older cohorts might be hit especially hard by the chosen fast track to a new economic and political order. Second, East Germany inherited the West German institutional framework with rigid labor market institutions and high government involvement.⁴ Government intervention inside and outside the labor market might have benefitted some groups more than others. Finally, the common institutional framework with West Germany provides a unique opportunity to evaluate the speed of labor market adjustment and its underlying causes in the East.

The data reveal two stylized facts. Immediately after unification in 1990, older men earn just 25 percent of West Germans in the same age category. East Germans born after 1965 in contrast earn more than 40 percent of the wages of young West Germans. The East-West ratio reaches almost 70 percent for those born after 1970, a group that enters the labor market shortly before unification. Previous studies have focused on convergence in aggregate wages, which obscures the heterogeneity in starting positions (Burda and Schmidt, 1997; Burda and Hunt, 2001; Franz and Steiner, 2000). Second, all age groups in East Germany experience substantial wage gains during the 1990s.⁵

The empirical analysis first shows that the low relative wages shortly after unification are driven by limited transferability of labor market skills. Specific skills as measured by potential work experience fully depreciated with the regime change. In addition, older employees

³Large investments in physical capital and new technologies were undertaken mostly financed by companies from West Germany and foreign countries. Economic adjustment was however not limited to industrial production. Changes likewise affected teachers, lawyers and public servants, who had to adapt to the new legal, administrative and educational system from West Germany.

⁴Large financial resources from West Germany created a much softer budget constraint for the government than in other transition countries.

⁵Hunt (2001) found that age had little effect on wage growth in East Germany between 1990 and 1996.

earn lower returns to educational and occupational skills than younger ones. Calculations show that employees 45 and above in 1990 lose between 23 and 30 percent of their relative earnings power compared to a scenario where returns had remained at 1989 levels.⁶

The fact that older employees experienced similar wage gains than the average employee over the 1990s, is more puzzling. Especially since older employees lose further because they are less likely to change jobs and migrate to West Germany, both sources of wage growth for young East Germans. Since older East Germans have dropped out of the labor market at much higher rates than younger ones, relative wage gains might be confounded with selection bias. Many studies on the transition process ignore the substantial composition changes of the workforce and its implications for the evolution of relative wages.⁷ Selection into employment is positive and corrected wages for older employees are by up to 20 percent lower.

The analysis then turns to the role of the government and labor market institutions in protecting older employees remaining in the labor market. While older East Germans are more than proportionally employed in the government sector, this played a minor role in explaining their relative wages. Further evidence is provided that a substantial part of the recovery is attributable to the fact that labor unions and state owned companies pushed up relative wages for older workers.⁸

The structure of the paper is as follows. The next section describes the basic features of the East German transition process. Section 3 introduces the data and describes the

⁶Similar results have been found for international migrants, who earn lower returns to education and experience acquired abroad than Natives (Friedberg, 2000).

⁷An exception is Chase (1998) who finds significant selection effects on the returns to experience and education in the Czech Republic and Slovakia in the early 1990s.

⁸This paper focuses on the labor market performance of different age groups. For a detailed analysis of changes in household income, relative economic position and how this affected the voting behavior of East Germans after unification, see Gathmann (2004a).

changes in the wage structure across age groups in East Germany. Section 4 shows that the low relative wages of older workers early in the transition estimates is driven by skill depreciation. Section 5 investigates the importance of selection bias for relative wage gains of older workers. Section 6 provides evidence about the role of the government and unions in protecting older East Germans from further wage losses. Section 7 discusses the policy implications and concludes.

2 When East Met West Germany

With currency union in June 1990, East Germany imported the legal and economic system from West Germany as well as most of its labor market institutions. The liberalization of prices and sudden exposure to foreign and West German competition together with the official exchange rate of 1:1 hit the Eastern economy hard⁹. Gross Domestic Product declined by 15.6 percent in 1990 and another 22.7 percent in 1991 (see Figure 1). At the low point in 1991, East Germany's GDP was only two-thirds of its 1989 level. After that, GDP grew a sizeable seven or eight percent but regained its pre-unification level only in 1995. Since then, output has grown by no more than one percent - well below West German levels.

East Germany's economic recovery was accompanied by large inflows of capital and technology from West Germany and other advanced economies. The old capital stock and the technology it embodied was to large parts obsolete and most of it got scrapped over the first years of the transition. Estimates shortly after unification show that capital per capita in East Germany was only one-fourth of West Germany's (DIW et al, 1999). Over the first decade, more than 1.5 trillion German Marks were invested, which amounts to roughly

⁹See Akerlof et al. (1991) for a lucid analysis of the initial economic shock.

100,000 German Marks per inhabitant. Investments in physical capital were heavily encouraged by the federal government with generous tax breaks and investment subsidies of up to 50 percent. Over the 1990s, there was substantial convergence of East Germany's capital stock per capita to West Germany. Today, capital intensity is close to West German levels.

A large portion of the capital inflow occurred as part of the privatization of East Germany's state-owned enterprises. Production in the socialist economy, organized in large industrial conglomerates (so called *Kombinate*), had been highly concentrated both vertically and horizontally¹⁰. The *Treuhand* (trust agency), a federal agency established in March 1990, sold around 25 percent of Eastern German companies to investors by the end of 1991 and over 75 percent by the end of 1994 when it was dissolved. Early on, the *Treuhand* often heavily subsidized currently unprofitable companies under its management to secure jobs.

Mirroring the initial collapse of production, aggregate employment plummeted by 25 percent in the first two years and declined a further 10 percent in 1992. While all transition economies have experienced large declines in their workforce early in the transition, employment decline has been especially pronounced in East Germany (see Burda and Hunt, 2001). To ease the initial blow, the federal government heavily engaged in active labor market policies¹¹. Most importantly, it introduced an early retirement program for Eastern workers allowing them to retire as early as age 55. Almost 900,000 people at or above 55 left the labor force until the program expired in December of 1992. Incentives to leave the

¹⁰In the socialist regime, industrial production was concentrated in only 8,000 *Kombinate*, which together employed around 3.7 million workers. Most firms had only one supplier and no competitors. The central planning agency took care of distributing the goods, determined its price and worker compensation. Though some conglomerates could be privatized as a whole, most had first to be restructured and split into smaller firms to make them attractive to investors.

¹¹5.1 percent of the sample (6.7 percent from 1990-95) were employed in active labor market programs (ALMP). The incidence is higher among young workers (for example, 6.4. percent of 25-34 years old but only 3.1 percent of those 55 and older or 4.6 of the 45-54 years old during 1990-1995). Since wages earned while employed in active labor market programs are lower than if employed in a regular job, this understates wages of younger workers. See Eichler and Lechner (2001) for an analysis of the wage effects of ALMP in East Germany.

labor force in that age group remained strong throughout the 1990s as the newly introduced (West) German pay-as-you-go system pension system encourages early retirement (Boersch-Supan and Schmidt, 2001). Pension benefits amount to around 70 percent of average lifetime earnings while in socialist East Germany, very low pensions encouraged people to remain in the workforce as long as possible. Figure 2 plots the fraction of East Germans not in the labor force by age group. Nonemployment rates have risen for all age groups but the increase is most dramatic among those 55 and older. Nonemployment rates remain above the level at unification for all age groups throughout the 1990s. Further, unemployment rates have reached 20 percent in the late 1990s, roughly twice West German levels.

Labor unions were another powerful player early in the East German transition process where wage bargaining like in the West takes place on an industry and state level. Immediately after unification, the employer side was not well organized. Most managers had no experience with wage bargaining and their employment prospects in the firms they managed were just as uncertain as the fate of their firms. This led to little resistance to large wage increases in the initial period after unification. In contrast, on the union side, bargaining was quickly taken over by Western unions. The success of Western unions was impressive: until 1991, membership rates were on average 50 percent compared to 33 percent in the West (Burda and Funke, 2001). Union coverage reached almost 100 percent as all companies in the employers' association are bound by the negotiated wage agreements. After 1993, unions increasingly lost support as it became clear that most companies could not sustain the negotiated wage increases. Union membership rates dropped to only 22 percent in the East until 2000. Today, roughly thirty percent of employees have their wages set by firm-level negotiations with many paying below the bargained wages at the industry level (*Tariflohn*).

3 Data and Descriptive Evidence

3.1 German Socio-Economic Panel

The analysis is based on the German Socio-Economic Panel (GSOEP), which began in East Germany in June 1990, just before currency union between East and West Germany was established. For East Germany, the sampling population consisted of all households, whose head was a citizen of the former German Democratic Republic in 1990. The survey follows household members that move within Germany as well as new households that split from sample households. The East and comparison West German samples are defined on the basis of residence in June 1990 and not where the household has lived in the year of the survey. Thus, the East German sample contains both households, that reside in East Germany and those that moved to West Germany at some point after unification. The dataset contains detailed labor market histories, demographic variables, wages and other sources of income for over 6,000 West Germans and 4,000 East Germans from 1990 until 2001. The samples are restricted to men between age 20 and 60. In addition, the self-employed, individuals in the military forces or full-time education and those not working full-time in 1989 are excluded.¹²

Table 1 (contains both men and women) presents summary statistics for the East and West German sample from 1990 until 2001. Educational attainment in East Germany is actually higher than in West Germany. This is mainly because only 5 percent East Germans have no vocational degree while the fraction in the West German sample is 18 percent. Employment rates and unemployment rates are much higher in East Germany. Labor force participation, especially among women and older cohorts, was heavily encouraged under the

¹²The survey structure of the GSOEP is very similar to the Panel Study of Income Dynamics (PSID) in the United States. See Appendix A for details on the construction of the sample and definition of key variables. Wagner et al. (1993) provide a good introduction to the English public-use file of the GSOEP.

socialist regime. Whereas migration from West to East is negligible, more than 5 percent of the East German sample moves to the West over the sample period. The fraction increases to 11 percent once commuters who work in the West but live in the East are included. For the analysis, age groups or cohorts are defined by 10-year intervals. At unification in 1990, the oldest group (born before 1936) still active in the labor market is 55 or older. The youngest cohort (born after 1965) was 25 years or younger when the wall fell.

3.2 Changes in Relative Wages after Unification

Figure 3 shows the evolution of the 90th-10th percentile differential in log hourly wages for East German men.¹³ Wage inequality rises throughout the transition, but is smaller than for Poland (Keane and Prasad, 2002). It also plots the 90-10th percentile difference in wage residuals from a log earnings equation with dummies for five-year experience groups, the three education groups and interaction terms between experience and education as regressors. To account for changing returns to labor market skills over time, the equation is estimated year-by-year. Residual wage inequality is substantial as the pooled regression explains only between 10 to 20 percent of the overall variation in wages. Similar results have been found for Poland where the residual also accounts for 80 percent of overall wage inequality. Inequality within education and experience groups exhibits a strong upward trend during the 1990s.

East Germany experienced remarkable aggregate wage growth over the 1990s with average annual growth rates of 14 log points. Most of it was concentrated in the first five years, when wages grew a stunning 23.1 log points per year. Between 1990 and 1995, wage growth is uniform across age groups, but substantially higher for low-skilled workers without vocational

¹³The analysis was also done for monthly wages and yielded very similar results. This implies that changes in the distribution of hours worked among age groups is not a driving factor of age-specific wage differentials.

degree. The pattern reverses later in the transition when wage growth is higher for the young and university graduates.

As a consequence of the large wage gains in the East, there was substantial wage convergence between East and West Germany over the 1990s. Focusing on aggregate wages as done in the literature (Burda and Schmidt, 1997; Burda and Hunt, 2001; Franz and Steiner, 2000) however masks substantial heterogeneity in wage regional convergence across cohorts. Figure 4 shows wages of East Germans relative to their cohort counterpart in West Germany. Two facts stand out: first, older cohorts in East Germany start out with lower relative wages shortly after unification. The two oldest cohorts, between age 35-44 and 45-54 in 1990 respectively, earn just about one-fourth of West Germans belonging to the same cohort. In contrast, the youngest cohort under 25 in 1990 starts out with close to 40 percent of the wages earned by the same cohort in West Germany. The initial East-West wage ratio is over 50 percent for the cohort born 1970 that enters the labor market shortly before unification (not reported). Second, all cohorts experience considerable wage convergence over the course of the transition. Ten years after unification, the cohort born after 1965, now 35 years and younger, earns almost 80 percent of wages in the same age group in West Germany while the cohort born between 1936-45 approaching retirement earn around 65 percent.¹⁴

A similar picture emerges when looking at relative wages across age groups within East Germany.¹⁵ Figure 5 plots median wages of 45-54 years-old and 55 and above relative to those

¹⁴The convergence rates could be affected by changes in the West German wage structure. After the collapse of communism in Eastern Europe, West (but not East) Germany experienced a wave of immigrants, especially from Russia and other states of the former Soviet Union. If the inflow of immigrants compressed wages in the West, wage convergence between East and West Germany is overstated. It is however not clear how this would affect wage convergence for different birth cohorts since there were large inflows of both young and older immigrants. Further, Prasad (2002) provides some evidence that there was little change in the West German wage structure over the 1990s.

¹⁵The analysis in this paper focuses on relative wages of all workers. Changes across age groups could evolve differently for those starting a new employment if the rigidity of Germany's labor market inhibits wage adjustments in existing employment contracts.

aged 25-34. Older men in East Germany earn only about 10 percent more than the younger agegroup in 1990, much less than in West Germany, where the age premium is 25 percent for 45-54 years-old and still 17 percent for those 55 and older. More direct evidence on relative wage losses for older workers with the regime change is obtained by comparing relative wages in 1989 with those shortly after unification in 1991¹⁶. Median wages for workers 45 or above fall by 10 percent relative to the 25-34 agegroup between 1989 and 1991¹⁷. The median wage of 45-54 years-old drops from the 65th percentile to the 57th percentile in the wage distribution of the under 35 years-old. Wages of the 45-54 age group also decline within the overall wage distribution: from the 56th percentile in 1989 to the 52th percentile in 1991.

Taken together, this suggests that older East Germans suffered substantial wage losses from the change in economic regimes. After the initial shock however, the age premium (see Figure 5) changes little for the oldest workers and only somewhat declines for the middle-aged, though both decline after 1997/98. Table 3 shows the age premium (wages of 45-54 years-old and 55 and older relative to those aged 25-34) by educational degree.¹⁸ In general, the age premium increases with education suggesting that high-skilled worker might have suffered less from the regime change. For 45-54 years-old men without a university degree, relative wages decline from the early period (1990-1992) to the later one (1998-2000), especially for those without a vocational degree, while they increase for university graduates. The opposite pattern holds for men aged 55 and older.

¹⁶Only relative wages are compared. In the absence of a comparable price deflator that accounts for subsidies and quantity constraints in the socialist economy, wage levels are not directly comparable between 1989 and 1991.

¹⁷Though the empirical analysis below focuses on mean and median wages, there is substantial heterogeneity across quantiles. Relative wage losses of older workers between 1989 and 1991 are larger at lower quantiles (over 20 percent at the 10th percentile) and smaller at the top of the distribution (only between 3 and 4 percent at the 90th percentile).

¹⁸The average wage premium for university graduates over those with vocational degree increased in East Germany for men from 1.36 in 1990 to 1.47 in 2000. In contrast, the wage premium of the vocational degree group over those without a vocational degree declines for men from 1.32 in 1990 to 1.06 in 2000. Both skill premia though starting from a higher level decrease in West Germany over the same period.

4 The Transferability of Labor Market Skills across Regimes

This section provides evidence that the low starting wages of older workers relative to young East Germans and West Germans in the same age group can be explained by skill depreciation after the regime change.

4.1 Depreciation of Socialist Work Experience

One piece of evidence for the obsolescence of socialist work experience comes from age-earnings profiles. Figure 6 shows smoothed cross-sectional age-earnings profiles for East German men pooled over all years using local linear regression. As in other transition economies, profiles for both men and women are very flat over the course of the life-cycle. Wages for East German men increase until about age 35 and then flatten and even decline in the case of women. Age-earnings profiles for East German men and women are flat.¹⁹

To estimate the returns to the labor market experience carried over from the socialist regime and contrast it with returns to new specific capital accumulated since unification (see also Mincer and Ofek, 1982 for an application to female labor force participation), the following pooled earnings equation is estimated

$$\ln w_{it} = \alpha_t + \beta' X_{it} + \gamma_1 OExp + \gamma_2 OExp^2 + \lambda_1 NExp_{it} + \lambda_2 NExp_{it}^2 + \varepsilon_{it}$$

¹⁹A similar picture emerges for different education groups. Earnings decline for those without vocational and those with vocational degree after age 50. The comparable profiles for West German men and women with vocational degree peak much later at age 50, while the peak for those without a vocational degree is between age 30 and 35. Wages of the highly skilled in the West increase throughout the working life until age 60. For high skilled women, the wage profile in the West is also much steeper early in the career.

where $OExp$ denotes old socialist work experience, $NExp$ work experience since unification and X other control variables like education and demographic characteristics.²⁰ Since employment rates for both men and women were high in the socialist economy and unemployment rates were below 2 percent, the empirical measure of old experience is essentially a dummy variable for people born in the same year and the same years of schooling. The new work experience variable is derived from calendar files that report the actual employment status for each month. Variation in new experience across individuals thus comes from unemployment and temporary nonemployment spells after 1990.

There are two channels in the specification above through which older workers might suffer wage losses relative to younger East Germans: first, low returns to old experience decrease their relative wages since they accumulated more labor market experience under the socialist regime. In addition, older workers might also earn lower returns to new experience, for example, if their productivity to acquire new skills is lower than for younger workers. To capture the latter, new experience and new experience squared are also interacted with age dummies.

The results for East German men and women are reported in Table 4. The estimates confirm that socialist labor market experience has lost its economic value in the post-unification labor market. Returns to 'socialist' work experience are not statistically significant from zero for men across all specifications. In contrast, returns to work experience accumulated after unification are very large for men. Column (2) and (5) add occupation and industry dummies. Conditional on occupation and sector, returns to new experience are somewhat lower. To test for age-specific returns to new experience, column (3) and (6) interacts the

²⁰Since the vast majority of individuals in the sample finished their formal education before 1989, the analysis does not distinguish between formal educational degrees from the socialist regime and new educational degrees acquired after unification.

new work experience variable with age dummies with the reference category being those under 25. For both men and women, returns to new work experience are not statistically different across age groups. An F-Test for joint significance reported in the last row of Table 4 is rejected at the 5 percent level.²¹

The high returns to new work experience could be driven by selection effects because variation in the new experience variable relies on unemployment and nonemployment spells. If selection into work is positive and covariances between new work experience and other control variables are ignored, this leads to an upward bias in (λ_1, λ_2) . In the multivariate case actually estimated, the direction of the bias depends on all covariances and can thus not be determined a-priori. Estimation of a fixed effect model that controls for time-invariant unobserved heterogeneity in levels however confirms this interpretation. Returns to new experience including fixed effects decline by more than 30 percent. With respect to age-specific returns to new experience (column (3) and (6)), selection effects work however against the expected finding of higher returns to new experience for younger workers. This is true as long as the larger employment decline among older workers reported in Section 2 translates into a more severe upward bias in the experience coefficients. Another potential explanation for the high returns to new experience is that the data only covers the first twelve years of the transition process. If wage profiles with respect to new experience are steep at the beginning of the post-1990 working career, the returns mainly reflect the steep portion of the wage profile similar to new labor market entrants. While data constraints prohibit a fully nonparametric approach, a spline function was used with the knot placed at four years of experience. The result confirm that returns decline with accumulated experience: while

²¹Very similar results were found if the sample is restricted to those working in East Germany. In contrast to what age-earnings profiles above suggested, interaction terms between old work experience and education were not significant. Thus, the depreciation of socialist skills appears to have affected all education levels.

the return to the first four years of experience after unification is 0.43, it falls to 0.07 for the years 5 to 11.

To calculate the relative loss from the decline in returns to labor market experience for older workers between 1989 and 1990, the following thought experiment was used. Suppose that the wall had fell and everything had happened as it did but returns to labor market experience had remained at their 1989 level. How much higher would wages of high-experience worker be? To calculate the counterfactual, wage regressions for 1989 and 1990 were estimated separately for men and women. Then, the wage distribution in 1990 was predicted conditional on experience and experience squared. The counterfactual log hourly wage for 1990 in the absence of skill depreciation was then calculated by adding labor market experience in 1990 evaluated at 1989 returns to the conditional wage. The results show that wage losses from skill depreciation for high-experience workers have been substantial. For men with 35 or more years of potential work experience, the wage loss amounts to almost 30 percent of the actual log wage in 1990.²²

4.2 Relative Wage Losses from Other Skills

Labor market experience is however only one measure of skill whose value adjusted after unification. If returns to formal education increased shortly after unification and older workers have on average lower educational levels, this would further compress relative wages across age groups. In addition, older workers might be employed more than proportionally in sectors and occupations with low wages or whose relative wages declined because they became obsolete after unification. In both cases, older workers are hurt because returns

²²An alternative interpretation of the relative decline of wages after unification is that labor market experience was overvalued in the socialist economy. The fact that returns to work experience in socialist East Germany in 1989 were actually smaller than in West Germany (Bird, Schwarze and Wagner, 1994) speaks however against this argument.

for labor market skills they possess in abundance decline during transition. Alternatively, relative wages also decrease if older workers earn lower returns than younger workers for the same observable skills. This could for example be the case if age acts as a observable proxy for adaptability to the new economic regime and employers value more adaptable workers conditional on other observable skills. Note that in the first case, all workers earn the same returns but the distribution of skills among age groups differs while in the second case older and younger workers earn different returns to their observable skills.

To compare starting positions at the eve of unification, Table 5a shows the distribution of labor market characteristics across age groups in 1990. Older East Germans are on average less educated; 16 percent of those 55 and older do not have a vocational degree. There is surprisingly little variation in the distribution of age groups across economic sectors. Agriculture still employed around 15 percent of the workforce with a somewhat higher rate for older workers. Manufacturing employed 40 percent of men under 25 but only around 28 percent of men 55 and older. Employment in the public administration or education and health sector is higher for older men but lower for older women. Older women in East Germany are concentrated in the other service sector and manufacturing, while younger women concentrate in the education and health as well as the trade and repair sector. The distribution among occupations is more dispersed: older men are much more likely to be employed as administrators or professional. At the same time however, the share of unskilled labor among the oldest cohort is more than double that of the young (16 percent compared to only 9 percent for men under 25). In contrast, around 50 percent of the two younger cohorts are employed as service workers compared to only 21 percent among the oldest.

To see how much these differences explain of the observed relative wage in 1990, the log wage differential between older and younger workers is decomposed into differences in

characteristics and differences in the returns to those characteristics²³. The results of the decomposition are reported in Table 5b (see notes at the end of the table for details on the underlying model estimated). For men, differences in educational attainment matter little in explaining the wage differential. The distribution across occupations leads to higher wages for older workers, mostly because older workers are more likely to work in high-wage occupations like administrators or professionals. The contribution of characteristics is however small compared to the differences in returns to those characteristics. Most importantly, returns to education are much lower for older workers in 1990. Returns to occupations are also lower for the age group 45-54, while for men 55 and older, returns to the sector of employment are a more important determinant of the wage differential. For women, a somewhat different picture emerges. First, younger women actually earn higher wages than older women. This is mostly driven by the fact that younger women are better educated and employed in better paying occupations and industries. Like for men, the contribution of differences in returns is much larger than differences in characteristics themselves. Returns to education and occupations are lower for older women in both age groups. Returns to sector of employment are however higher, which tends to decrease the wage differential.

Overall, the evidence in this and the last section shows that older workers experienced wage losses for two reasons: first, because labor market experience accumulated in the socialist economy fully depreciated with the regime change. Second, because they earn lower returns to the same educational degrees and occupational skills than younger worker. In

²³The formula of decomposing the log wage differential is:

$$\log W^{old} - \log W^{young} = (X^{old} - X^{young})\beta^{old} + X^{young}(\beta^{old} - \beta^{young})$$

contrast, differences in other observable labor market skills play only a minor role for their low relative wages after unification.

5 Government Subsidies and Union Wage Premia [Incomplete]

5.1 Evidence: Increasing Returns between 1990 and 2000

To see what is driving the relative wage gains of older workers within occupations and sectors, changes in relative wages between $t = 1990$ and $t + 1 = 2000$ are decomposed into four components (Heckman and Todd, 2000):

$$(\bar{X}_{t+1}^o \beta_{t+1}^o - \bar{X}_{t+1}^y \beta_{t+1}^y) - (\bar{X}_t^o \beta_t^o - \bar{X}_t^y \beta_t^y) = [(\bar{X}_{t+1}^o - \bar{X}_{t+1}^y) - (\bar{X}_t^o - \bar{X}_t^y)] \beta_t^y \quad (1a)$$

$$+ (\bar{X}_{t+1}^o - \bar{X}_t^o) (\beta_t^o - \beta_t^y) \quad (1b)$$

$$+ \bar{X}_{t+1}^o [(\beta_{t+1}^o - \beta_{t+1}^y) - (\beta_t^o - \beta_t^y)] \quad (2a)$$

$$+ (\bar{X}_{t+1}^o - \bar{X}_{t+1}^y) (\beta_{t+1}^y - \beta_t^y) \quad (2b)$$

\bar{X}_t^o and \bar{X}_t^y are the mean characteristics of older and younger workers while β_t^o and β_t^y denote their respective returns at time t . \bar{X}_{t+1}^o , \bar{X}_{t+1}^y and β_{t+1}^o and β_{t+1}^y are the corresponding characteristics and returns for period $t + 1$. The first two terms (1a and 1b) measure the effect of changes in the distribution of characteristics between young and older workers between 1990 and 2000 on age wage differentials. (1a) calculates the gain (or loss) from pure changes in characteristics of older vis-a-vis younger workers evaluated at common returns to those characteristics. (1b) adjusts for the fact that improvements in the labor market

characteristics of older workers have an overall smaller gain if older workers earn lower returns to those skills as the evidence for 1990 above suggests. The third and fourth term (2a and 2b) in contrast measure the contribution of changes in the age-specific returns between 1990 and 2000. (2a) measures the pure relative change in returns between t and $t + 1$ evaluated at the common characteristics of older workers while (2b) adjusts for the fact that older workers have less of characteristics (like education) for which returns increase.

The results of the decomposition are reported in Table 6 for educational degrees and employment rates in seven occupations and economic sectors. For the sake of brevity, only the results for the 45-54 years-old are shown. To account for composition changes in the workforce, a decomposition based on selection-corrected wages for 2000 is reported as well. Relative increases in the returns to educational degrees play by far the most important role in changing relative wages of older workers. The decomposition based on corrected wages shows that improvements in the returns to sector of employment also mattered though the changes are much smaller. Changes in returns to occupational skills were uniformly negative for older men. This findings suggests that improvements in relative wages is mostly driven by rising returns to educational skills of older workers and once positive selection out of the labor market is accounted for.

To get a more complete picture of the evolution of returns to education during transition, Figure 7a and 7b plot the returns for vocational and university degree respectively relative to the group under 25²⁴. Two findings are noteworthy: first, all age groups start off with a substantially lower returns to educational degrees than the reference group under 25. The wage penalty is largest for the two oldest groups, and larger for the meium-skilled than high-

²⁴The estimates are from a wage equation that also included experience, experience squared, state dummies, occupational and sectoral dummies as well as marital status and gender. Here, men and women are pooled together. Since men increase their relative returns to education, it is likely that Figure 11 understates the catchup of older men and overstates the catchup of older women.

skilled university graduates. Second, all age groups increase their returns relative to the reference group over the 1990s. For the medium-skilled, the two oldest age groups improve the most though the overall wage difference across age groups in 2000 is of the same size than in 1990. For university graduates, differences in return across age groups were negligible in 1990 but increase over the transition period. And like for the medium-skilled, the two oldest age groups have the largest gains in returns²⁵.

5.2 Wage Premium in the State-Owned Sector

An alternative explanation could be that labor market institutions like collective bargaining agreements or employment in privatized versus state-owned firms shift the return to education of age groups in different ways. These effects could be rationalized by selective sorting of workers with different educational skills into the union or private sector. Alternatively, it could also be explained by an economic model, in which skill groups are imperfect substitutes and private sector employment or unions affect the marginal product of different skill groups²⁶. Estimates of wage equations where returns to education are not only age-specific but also varied across union, privatized and newly founded firms suggest that educational returns in unionized firms are lower for younger workers but higher for older workers. Also, older workers with university degree get lower returns in privatized firms while the agegroup 25-34 years is paid lower returns in firms that were newly founded after unification²⁷.

Table 7a and 7b: distribution of various age and education groups in state owned firms.

²⁵Using selection corrected wages did not affect the result that older workers experienced the largest catchup in returns. It did however increase the age differences in returns, especially in the latter half of the 1990s. The results are available upon request.

²⁶See Heckman, Layne-Farrar and Todd, 1996; Willis, 1986 for a framework where demand side variables like labor market institutions affect the level or returns of wages within a Mincerian framework.

²⁷A further exploration is left for future work. An analysis of demand shifts using industry-level data on capital investment, labor productivity and technological change matched to the GSOEP data did yield only very noisy results.

6 Alternative Explanations

6.1 Selective Withdrawal and Relative Wages

While employment has declined for all age groups early in the transition process, the decline has been most pronounced for older East Germans. The fraction of men 55 and older out of the labor force increased sharply after unification with the peak in 1994 and decline afterwards. In contrast, nonemployment rates of 45-54 years-old men rise by the same level as younger groups until 1993 but stay at a higher level after that.²⁸

If those dropping out of the labor market come from the bottom of the wage distribution, relative wages of older cohorts from a sample of workers are upward biased.²⁹ This would understate the relative wage losses of older cohorts early in the transition and overstate their 'keeping up' over the course of the 1990s.³⁰ Suppose however that all nonworkers in East and West Germany are from the lower half of the wage distribution and the fraction

²⁸Results based on months worked in the past year yielded the same results (not reported). To see whether transitions between employment and nonemployment are permanent or transitory, entry and exit rates into nonemployment were calculated relative to the average entry and exit rate over the sample period (see Juhn, 1992 for details on the procedure). Entry rates are overall higher for men and slightly increasing over the 1990s (from 1.17 in 1992 to 1.45 in 2001) while they are initially declining (0.82 in 1991 to 0.57 in 1994) and then also increasing (0.736 in 2001) for women. Exit rates in contrast are very high in 1991 and 1992 (2.42 for men and 1.6 for women in 1991), decline sharply to 1 (men) and 0.71 (women) in 1993 and remain roughly constant after that. Throughout the 1990s, exit rates are higher for men than for women. The results imply that for both men and women, nonemployment duration increased sharply after the initial two years.

²⁹Employment changes in this paper are only of interest insofar they affect relative wages. For an analysis of the determinants of non- and unemployment durations in East Germany, see Hunt (1999). Another way for employment to affect wages not explored in this paper is through earnings losses from job displacement (Topel, 1991; Jacobson et al, 1993). In West Germany, earnings losses of reemployed workers are however small (Bender et al, 2002). There is no evidence for East Germany, but the fact that specific skills depreciated after unification suggests that earnings losses from job displacement might also be small.

³⁰Similarly, migration of younger East Germans to West Germany lead to a downward bias in relative wage losses of older workers since migrants have more than proportionate attrition rates and earn higher wages than the average worker in East Germany. It is currently explored whether reweighting the data to adjust for higher attrition affects the results.

of nonworkers in the sample does not exceed fifty percent. Under this assumption, the median of the full wage distribution can be recovered from the observed wages by adjusting the median of workers for the fraction of censored observations from nonworkers (Neal and Johnson, 1996)³¹. Figure 8a shows median relative wages between East and West including nonworkers under this assumption. The corrected plot still exhibits substantial wage growth for all cohorts during the 1990s, but younger cohorts now experience more rapid wage growth than older cohorts. As a result, the wage profiles of different birth cohorts fan out over the 1990s and the convergence gap between the oldest (born 1936-45) and youngest cohort (born after 1965) more than doubles between 1990 and 2000. Similarly, Figure 8b shows the age premium for men under the median assumption. The age premium for men is now flat throughout the transition but first declining and then increasing for men 55 and older.

If the larger declines in employment documented above translate into stronger selection bias in mean wages of workers, the wage growth of older workers during the 1990s are biased upward. To get a sense of the nature of the selection bias in terms of observable skills, Table 8 reports employment rates separately by educational groups. Conditional on age, employment increase with education. For example, 63.4 percent of men aged 25-34 without vocational degree are employed while employment among those with university degree in the same agegroup reaches 96.3 percent over the whole period. For women in the same age group, employment rates are 55.7 percent for the low-skilled and 78.6 percent for the high-skilled. The employment gap between high- and low-skilled conditional on age is higher for older workers and more importantly is decreasing for younger workers over time, but

³¹The assumption that all nonworkers earn wages below the median for workers is not innocuous. If some nonworkers are in fact high-wage workers, the corrected plot understates the wage gains of East Germans relative to West Germans in the labor market. More importantly, relative wages in East Germany are misleading if young and old labor market dropouts come from different parts of the wage distribution. For example, if young nonworkers are high-wage earners and older nonworkers low-wage earners, the fanning out documented in Figure 6 would still understate the true relative wage gains of younger workers.

constant or increasing for older men. This suggests that the average education level among older workers increases relative to the average education in his agegroup.

If education is taken as an indicator of the skill level of labor market dropouts, Table 8 suggest that the decline in employment among the low-skilled would overstate aggregate wage increases and thus wage convergence between East and West. As an alternative measure of labor market skill, Figure 9 compares the wages of those dropping out of the labor market in the next year relative to those continuously employed conditional on both groups being employed in the current year. Note that this comparison excludes long-term labor market dropouts, which overstates wages of nonworkers if the long-term nonemployed and unemployed are low-wage workers. Two features are noteworthy: first, the ratio of hourly wages is always below one with the exception of 1994. This implies that those dropping out of the labor market are on average from the lower part of the wage distribution. Second, the wage ratio is trending downward over the course of the transition. This suggests that later labor market dropouts are getting worse relative to the sample of workers. Whether this would actually increase the selection bias in aggregate wages over time depends however crucially on the relative number of labor market dropouts across years.

To quantify the effect of selective withdrawal on relative wages more formally, a selection model is estimated where a fourth-order polynomial of the labor force participation probability is included as a control function. The marginal effects for the participation equation are shown in Table A1 in the Appendix. Variables for the demographic structure of the household and several measures for nonlabor income of the household are included in the first stage but excluded from the wage equation (see notes to Table A1 for details). Men aged 45-54 years are between 8.5 and 9.8 percent less likely to work than the reference group under 25. Overall, only 20 percent of the variation in labor force participation can be explained by

the model. Selection effects turn out to be important in the wage equation. The F-test of joint significance of the fourth-order polynomial in the participation probability reported at the bottom of the table is significant at the 1 percent level.

Based on the estimates, wages are predicted for each of the five age groups. Figure 10 plots the age premium in East Germany accounting for selective withdrawal. The most striking result is that for both age groups (45-54 years and 55 and older), the corrected age premium is completely flat throughout the 1990s (see the dashed line). Accounting for selective withdrawal from the labor market thus eliminates any relative wage gains of older women during the transition process. Comparing mean wages of workers to selection-corrected wages shows that, the corrected age premium lies uniformly below the average wage of workers. This supports the evidence above that male labor market dropouts are mostly from the lower part of the wage distribution. Comparing the results across the two age groups confirms that selection bias is stronger for those 55 and older where employment rates have declined the most. How does the selection model compare to wages predicted based on the median assumption in Section 3? For the group of 45-54 years-old, the results of both methods are surprisingly similar. For men 55 and older, the large decline in employment until 1993 leads to a much sharper decline in relative wages under the median assumption. The selection-corrected mean wage however shows that the assumption that all workers leaving the labor market into early retirement in the first years after unification are low-wage workers is too strong.³²

The evidence from the selection model confirms that selection effects into employment are positive over the whole period for men. Accounting for selection has important effects

³²Note however that the results are not fully comparable since the selection correction is done for means while the procedure in Section 3 constructs median wages.

on wages during East Germany's transition.³³

6.2 Government Employment

One reason for the relatively good performance of older workers in East Germany could be high employment rates in the government sector. Wage setting in the public sector is strongly determined by seniority like age or tenure in the public sector for both civil servants and regular employees or workers. If a large fraction of older workers is employed in the government sector, changes in aggregate wages across age groups could mask relative wage losses in the private sector. While government jobs can be found in all sectors of the economy, they are most concentrated in the public administration and education and health sector. Over the whole period, overall government employment declines from 34.5 percent in 1990 to 30.5 in 2000 while employment in the public administration actually increased from 22.6 percent in 1990 to 27.9 percent in 2000. Table 9a shows that older men are almost twice as often employed in the government sector (30 percent of men aged 55 and older compared to only 15 percent among those under 25). Government employment declines for younger men in the second half of the 1990s, while it increases for 45-54 years-old but decreases for men 55 and older.

The impact of government employment on relative wages depends on two factors: wage differentials across age groups within the government sector as well as wage levels between the government and other sectors. For example, if the government pays on average lower wages than the private sector but wage differentials across age groups in government jobs are smaller, the effect on relative wages between age groups is ambiguous. The bottom

³³The analysis here implicitly assumes that changes in reservation wage are the driving the changes in relative employment. Alternatively, labor market opportunities could have declined relatively more for older workers (see for example Juhn, 1992 for a framework to distinguish between the two in the United States).

part of Table 9a compares wages between government and non-government sector during the 1990s. Wages are always higher in the government sector for women and for men except for those under 35 early in the transition. For men above 45, the wage premium in the government sector is almost 40 percent in the 1996-2000 period. Also, the wage differential between government and other sectors of the economy increases over time for most age groups, but especially for older men. Together with higher government employment, this should increase the wages of older men relative to younger ones. To evaluate the total effect of government employment on wage differentials across age groups, Table 9b shows the result of a wage simulation in which older workers are given the government employment rates and educational levels of younger workers but get paid the returns of their respective age group (see Heckman and Todd, 2000). To compute the counterfactual wage of older workers, the wage distribution of older workers is first calculated conditional on government employment and education. In a second step, returns of the older workers and mean characteristics of 25-34 years-old of the same gender are added (see notes of Table 9b for details of the underlying regression model). While shortly after unification (1990/91), government employment has no impact of wages for all groups, there is a small positive effect later in the transition period (1999/2000) for 55 and older men. Overall, the effect of high employment in the government sector on wages remains small.

6.3 Sectoral Shifts and East-West Migration

Migration to West Germany has been an important phenomenon in East Germany, especially for younger workers. Overall, almost ten percent of East Germany's population moved West between 1990 and 2000. Another seven to eight percent commute to West Germany for work. Among under 35 years-old, 13 percent work in the West, while less than 5 percent of those

45 and older migrated or commute to the West for work³⁴. Similarly, if younger workers have lower mobility costs and are more likely to take advantage of new job opportunities in the emerging private sector, this might increase their relative wages. The effect of job and geographic mobility on relative wages depends crucially on the type and extent of movements and its distribution among age groups.

Table 10a shows the percentage change in the employment rate across seven occupations and seven industries between 1990 and 2000. The first thing to note is that movements between occupations and industries have been substantial among all age groups.³⁵ Older men were as likely to switch occupations or industries than younger East Germans. Overall, there were substantial flows out of agriculture, manufacturing and the related occupation of agricultural or production workers for all age groups. On the other hand, the construction industry and the private service sector (trade and repair as well as other services) have increased their employment share after unification. There is also substantial heterogeneity of movements across age groups.

To see how these differences affected relative wages, the wage gains between 1990 and 2000 are decomposed into a component due to East-West migration (including commuters with a job in West Germany), wages effects of occupational and sectoral shifts and wage changes within occupations and sectors respectively (see Donohue and Heckman, 1991 for

³⁴Migrants and commuters to West Germany earn on average 23 German Marks per hour or a 28 percent premium over those working in East Germany. They are somewhat better educated with on average 12.6 years of education relative to 12 years for those remaining in East Germany and less likely to be women.

³⁵Job changing rates (job-to-job transitions) that also include movements within occupations and sectors were however much higher among younger workers. For example, 21 (21.5) percent of 25-34 years-old men (women) changed jobs each year while only 13.5 (11.7) percent of men (women) 55 and above. See Hunt (2001) for an analysis of job mobility and individual wage growth.

details of the procedure). Writing average hourly wages of group a as

$$E_a = P_a^W E_a^W + P_a^E \left(\sum_{j=1}^J P_a^j E_a^j \right)$$

where P_{at}^W and E_{at}^W are the fraction and associated wages of group a working in West Germany. P_{at}^E denotes the fraction of the workforce working in East Germany and P_{at}^j the employment rate in occupation (or sector) j with associated wage E_{at}^j . Percentage wage gains of group a can then be decomposed into three components:

$$\begin{aligned} d \ln E_a = & \left[\left(\frac{P_a^W E^W}{E} \right) d \ln P^W + \left(\frac{P_a^E}{E} \right) \sum_{j=1}^J P_a^j E_a^j d \ln P_a^E \right] + \\ & + \left(\frac{P_a^E}{E} \right) \sum_{j=1}^J P_a^j E_a^j d \ln P_a^j + \left(\frac{P_a^E}{E} \right) \sum_{j=1}^J P_a^j E_a^j d \ln E_a^j \end{aligned} \quad (6.1)$$

The first term measures the percentage change in wages from movements of workers between East and West Germany. The second term represents the contribution of occupational or sectoral shifts in the East German workforce while the last term measures the contribution of wage changes within occupations or sectors for group a . Changes in relative wages between two age groups can then be computed by subtracting relative wage growth of the older from the younger group using (6.1).

The results of this decomposition, done separately for occupations and economic sectors, are reported in Table 10b. The top part of the table shows that wage gains over the 1990s have been predominantly driven by wage gains within occupations or sectors. East-West migration has also played some role while shifts between occupations or sectors have been unimportant in explaining absolute wage gains. The bottom part shows the contribution of each mechanism to relative wage gains of older workers. Here, the results are quite

different from the overall gains. Migration has increased the wages of young relative to older East Germans. The loss in relative wages of older workers is compensated entirely by higher relative wage gains within occupations or sectors. The role of employment shifts between occupations or sectors in contrast is small. In sum, reallocation across industries and occupations in East Germany has only had a minor impact on wage differentials across age groups. Though older workers lose because they are less likely to work in West Germany with its higher wage level, this is fully compensated by higher wage gains within these occupational and sectoral categories.

6.4 Updating Skills through Retraining [Incomplete]

An alternative explanation for the rising relative returns on education during the transition might be the restoration of previously lost human capital, for example through additional investment in on-the-job training. This would increase unobservable quality of the educational skill supplied, which would however be positively correlated with observable age³⁶.

- private training measures: Table 11

7 Conclusion

This paper analyzed changes in relative wages across age groups during East Germany's transition. With respect to wages, older workers are found to start out with low wages both relative to younger East Germans and to their cohort counterpart in West Germany. Evidence is provided that the bad starting position of older workers is driven by skill depreciation. Returns to socialist work experience dropped to zero for men after unification. In

³⁶Mincer and Ofek (1982) argue along this line for women reentering the labor market. See also Chiswick (1978) for a similar argument in the context of international migration.

addition, older worker also earn lower returns to their educational and occupational skills accumulated in the socialist economy. All age groups experience however substantial wage gains over the first decade of the transition. It is shown that the wage gains for older workers are overstated because of selection effects, in particular among those 55 and above. While older workers lose because of lower geographic mobility to West Germany, this is compensated by wage gains within occupations and sector of employment. Further analysis shows that returns to labor market skills and in particular returns to education increase for older relative to younger East Germans over the 1990s. In contrast, sectoral reallocation and high government employment rates of workers 45 and above account for only a small fraction of relative wage gains.

.. to be completed ...

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A German-Socio Economic Panel

The results in this paper are based on the annual German Socio-Economic Panel from 1990 to 2001. The West German and immigrant samples (Sample A and B) contain individuals living in West Germany in 1984, in which the household head is a German citizen (Sample A) or citizen of Turkey, Italy, Spain, Greek or Yugoslavia respectively (Sample B). To be sampled in the East German sample (Sample C), the household head had to be a citizen of the former German Democratic Republic in 1990. This avoided sampling West Germans who had moved to East Germany between the fall of the wall in November of 1989 and June 1990. It also excluded the roughly 3 percent foreigners living in the former GDR. To construct an appropriate comparison group, only individuals with German citizenship are included in the West German sample from either the original West German or immigrant sample. The resulting dataset is an unbalanced panel for each region.

The survey follows individuals moving from East to West and vice versa. Internal migrants are however kept in their original sample. Thus, the East German sample contains both people who migrated to West Germany after 1990 and those who stayed in East Germany. The survey does not follow individuals moving abroad. Aggregate statistics from the Federal Statistical Office however show that outmigration of East and West Germans was negligible over the sample period. The samples are restricted to those born between 1931 and 1973. In addition, the self employed, individuals in the military or engaged in full-time education and those with missing observations on key variables such as education, age or earnings are excluded.

The logarithm of gross hourly wage is used as measure of wage income. Since short-term work was frequently used by firms early in the transition process and East Germans work longer hours than West Germans, hourly wages are a better measure for labor market outcomes than monthly wages. Hourly wages are calculated from gross earnings in the month prior to the interview plus 1/12 of bonus payments such as holiday benefit, Christmas bonus, bad weather compensation and additional monthly salaries. These additional compensations account for around 8-10 percent of annual earnings in Germany. Total monthly gross earnings are then divided by total monthly hours worked derived from the actually worked hours per week times 4.2.

All wage and income measures are deflated by the consumer price index available from the Federal Statistical Office with 1995 as the base year. Because socialist subsidies for basic goods, especially transport, utilities and housing, were only gradually abolished after unification, price levels initially differed substantially between East and West Germany. To adjust for these differences, a power purchase parity measure calculated by the SOEP-team is used to translate a German mark earned in the East to the corresponding amount in the West. This measure is available from 1991 until 2001. The information is supplemented for

the year 1990 from a study conducted by Krause (1994). It should however be kept in mind that the PPP for 1990 is not as reliable than the later indices, mainly because the basket of goods was slightly adjusted after 1992.

The unemployed, nonemployed or employed categories are derived from monthly calendar data on individual employment states. An individual is considered employed if it reports part-time or full-time employment for nine or more months in the previous year. The non-employment state consists of individuals who retired, are on maternity leave or work in the home sector. Unemployed are those registered with the local labor office. If this procedure does not assign an employment status, the main activity in a given year is assigned as employment status. Finally, to adjust for differences in educational systems between East and West Germany (see Krueger and Pischke, 1995 for a detailed discussion), a recoding of East German into West German educational degrees was used, which is provided by the German Institute of Economic Research.

Table 1: Summary Statistics of the East and West German Samples, 1990-2001

		East Germany		West Germany		T Statistic
		Mean	Std. Error	Mean	Std. Error	Difference
Demographics	Age	41.2	10.586	40.6	10.782	8.0
	Under 25	0.048	0.214	0.049	0.216	-0.2
	25-34 Years	0.268	0.443	0.308	0.462	-29.8
	35-44 Years	0.305	0.461	0.294	0.456	11.2
	45-54 Years	0.244	0.430	0.227	0.419	9.4
	55 and Older	0.134	0.341	0.122	0.327	16.9
	Married	0.762	0.426	0.738	0.440	8.0
Children in Household	0.713	0.452	0.650	0.477	19.5	
Labor Market Skills	Education	12.1	2.182	11.5	2.346	37.5
	No Vocational Degree	0.054	0.225	0.185	0.388	-54.9
	Vocational Degree	0.833	0.373	0.704	0.456	43.2
	University Degree	0.114	0.317	0.110	0.313	1.5
	Experience	23.1	10.896	23.0	11.100	1.8
Hours Worked per Week	42.7	9.665	38.3	11.707	49.1	
Employment	Employed	0.776	0.417	0.672	0.469	33.4
	Unemployed	0.126	0.332	0.037	0.189	54.7
	Nonemployed	0.098	0.297	0.291	0.454	-67.9
	Agriculture	0.052	0.223	0.009	0.093	37.9
	Manufacturing	0.370	0.483	0.419	0.493	-12.4
	Services	0.285	0.452	0.291	0.454	-1.7
	Public Sector	0.264	0.441	0.248	0.432	4.5
	Small Firm	0.429	0.495	0.441	0.497	-3.6
	Medium Firm	0.396	0.489	0.337	0.473	18.2
	Large Firm	0.175	0.380	0.222	0.416	-17.0
Mobility	East-West Migrant	0.048	0.214	0.003	0.056	43.4
	Migrant or Commuter	0.119	0.324	0.005	0.070	64.9
	Job Mobility	0.164	0.370	0.109	0.311	19.1
	Occupation	0.352	0.478	0.237	0.425	38.2
	Industry	0.293	0.455	0.176	0.381	42.6
	Both	0.251	0.434	0.147	0.355	40.2
Earnings	Gross Earnings	2701	1510.21	4037	2324.55	-77.5
	Net Earnings	1858	945.43	2663	1526.47	-72.0
	Net Household Income	3378	1613.53	4145	2306.86	-52.0
	Observations	29,914		76,280		

Notes: The summary statistics describe the characteristics of German nationals in East and West Germany for 1990-2001. Migrants between East and West are retained in their original sample. A person without vocational degree has not finished any vocational training but could have finished minimum schooling (9 years of schooling) or an intermediate schooling degree (10 years of schooling). An individual is in the vocational degree category if she completed vocational training or has a high school degree but no tertiary education. Finally, individuals with university education have completed a degree in any type of university including Fachhochschulen. The definition of employment status is derived from monthly calendar data on the main economic activity. Firm sizes are defined as follows: small firms have less than 20 employees, medium-sized firms employ between 20 and 2000 and large firms 2000 or more people. Occupation changers are individuals that change between one-digit ISIC codes. Industry switchers change their NACE code (which corresponds to ISIC rev. 3) across subsequent jobs. Earnings and income variables are monthly values and deflated to 1995 German Marks.

Table 3: Age Premium by Education for East German Men

	Mean		Median		Median (incl. Nonworker)	
	Age 45-54	55 and Older	Age 45-54	55 and Older	Age 45-54	55 and Older
1990-2000						
No Vocational Degree	0.92	0.72	0.85	0.84	1.42	0.00
Vocational Degree	1.03	1.05	1.00	1.02	1.00	0.73
University Degree	1.08	1.05	1.03	1.02	0.91	0.78
1990-1992						
No Vocational Degree	1.48	0.96	1.59	0.87	2.19	0.00
Vocational Degree	1.09	0.98	1.06	1.01	1.06	0.79
University Degree	1.06	0.98	1.07	1.12	1.09	0.89
1998-2000						
No Vocational Degree	0.98	0.86	1.10	0.98	1.12	0.46
Vocational Degree	0.96	0.96	0.99	0.92	0.94	0.84
University Degree	1.14	1.07	1.11	0.99	1.12	0.99

Notes: The table reports wages of the age group specified relative to those aged 25-34 years.

Table 4: Depreciation of Socialist Work Experience, 1990-2001

	(1)	(2)	(3)
Old Work Experience	0.002 (0.0017)	0.0016 (0.0017)	-0.0009 (0.0027)
Old Work Experience Squared	0 0.0000	-0.0001 0.0000	-0.0001 (0.0001)
New Experience	0.5847 (0.1874)**	0.5384 (0.1996)**	0.5486 (0.2087)**
New Experience Squared	-0.0351 (0.0123)**	-0.0336 (0.0129)**	-0.0386 (0.0158)*
New Experience*(25-34 yrs)			-0.0005 (0.0558)
New Experience*(25-34 yrs) Squared			0.0052 (0.0091)
New Experience*(35-44 yrs)			-0.0111 (0.0561)
New Experience*(35-44 yrs) Squared			0.0057 (0.0092)
New Experience*(45-54 yrs)			-0.0024 (0.0565)
New Experience*(45-54 yrs) Squared			0.0043 (0.0092)
New Experience*(55 and older)			-0.0039 (0.0587)
New Experience*(55 and older) Squared			0.0032 (0.0093)
Vocational Training	0.1403 (0.0339)**	0.0885 (0.0338)**	0.075 (0.0347)*
University Degree	0.4658 (0.0356)**	0.2416 (0.0375)**	0.221 (0.0383)**
Migrant or Commuter to West	0.1703 (0.0173)**	0.2032 (0.0174)**	0.2034 (0.0175)**
Year Dummies	Yes	Yes	Yes
State Dummies	Yes	Yes	Yes
Age Dummies	No	No	Yes
Other Controls	Yes	Yes	Yes
Industry Dummies	No	Yes	Yes
Occupation Dummies	No	Yes	Yes
R-Squared	0.39	0.47	0.47
Observations	7001	6733	6733
F-Test Age-Specific Returns			2.35
Prob > F			0.0159

Notes: The results are based on a pooled regression of log hourly wages on the variables specified. Robust standard errors are reported in parentheses. Coefficients with * are significant at the 5 percent level, those with ** at the 1 percent level. The reference educational group is no vocational degree and the reference age group are those under 25. Other controls are whether the person is married and firm tenure (the latter added in column (2)-(3) and (5)-(6) only). The occupation and industry dummies in column (2) and (5) control for 7 occupational and 12 industry categories.

Table 5a: Starting Position of East Germans in 1990

	Under 25	Age 25-34	Age 35-44	Age 45-54	55 and Older
Men					
Education (in Years)	11.4	11.9	12.6	12.0	11.6
No Vocational Training	2.2	2.7	2.0	3.0	6.9
Vocational Training	97.8	91.2	80.7	85.6	82.2
University Degree		6.1	17.4	11.4	10.9
Sector of Employment					
Agriculture	14.9	17.9	17.3	17.1	17.2
Manufacturing/Energy	41.2	33.1	34.0	37.6	28.1
Construction	13.2	13.7	14.3	10.1	10.2
Trade/Repair	7.0	4.7	3.8	4.6	5.5
Other Services	18.4	18.2	16.4	17.3	21.9
Public Administration	4.4	7.5	7.3	3.2	7.8
Education/Health	0.9	5.0	7.0	10.1	9.4
Occupation					
Adminstrator/Professional	0.0	10.2	23.6	27.0	20.3
Technician	4.1	5.8	8.3	10.2	11.5
Clerk	1.7	2.1	2.5	4.2	8.1
Sales Worker	5.0	3.2	2.5	1.0	0.7
Production/Agricultural Worker	22.3	26.8	23.6	19.2	21.6
Service Worker	57.9	45.7	34.8	30.2	21.6
Unskilled Labor	9.1	6.2	4.8	8.1	16.2
Women					
Education (in Years)	11.7	12.3	12.2	11.1	10.8
No Vocational Training	3.3	1.3	5.3	13.0	25.8
Vocational Training	96.1	88.9	84.5	81.1	68.4
University Degree	0.7	9.8	10.2	6.0	5.8
Sector of Employment					
Agriculture	11.1	8.4	8.7	8.5	12.0
Manufacturing/Energy	24.1	22.9	25.1	26.4	29.0
Construction	1.9	2.3	3.7	3.6	6.0
Trade/Repair	15.7	13.6	10.8	17.3	7.0
Other Services	19.4	15.9	15.8	16.7	27.0
Public Administration	4.6	7.2	9.0	4.9	4.0
Education/Health	23.1	29.7	26.9	22.5	15.0
Occupation					
Adminstrator/Professional	7.9	16.9	23.0	14.2	16.8
Technician	28.9	30.6	31.9	26.8	21.5
Clerk	12.3	15.5	13.5	19.9	15.0
Sales Worker	18.4	14.2	13.7	15.4	14.0
Production/Agricultural Worker	14.9	7.2	6.4	6.6	12.1
Service Worker	11.4	8.6	4.7	6.8	8.4
Unskilled Labor	6.1	7.0	6.9	10.3	12.1

Table 5b: Decomposition of Wage Differential Across Age Groups in 1990

	<i>Men</i>			
	Characteristics Effect	Percentage Contribution	Coefficient Effect	Percentage Contribution
<i>Age 45-54 Relative to 25-34</i>				
Log Wage Differential	0.054			
Education	0.01	16.6	-0.16	-294.0
Occupations	0.045	83.2	0.030	55.4
Industries	0.005	10.1	-0.067	-124.9
<i>Age 55 and Older Relative to 25-34</i>				
Log Wage Differential	0.030			
Education	0.004	13.2	-0.202	-684.2
Occupations	0.031	105.4	-0.070	-235.5
Industries	-0.009	-30.1	0.023	77.5

Notes: The table reports the coefficients from a Oaxaca decomposition of the log hourly wage differential in 1990 between the age groups indicated into characteristics and coefficient effect. The coefficients are from a log wage equation that also included the following variables: experience, experience squared, marital status, state of residence and whether the person lives or works in West Germany. Seven occupational categories (technician, clerk, sales worker, agricultural or production worker, service worker, unskilled worker and the reference group professionals and administrators) and seven industry categories (manufacturing, construction, trade/repair, other service, public administration, health/education with the reference category agriculture) are included to calculate the decomposition.

Table 6: Contribution of Returns and Distribution of Labor Market Skills on Relative Wages (1990-2000)

Men 45-54 Relative to 25-34	Voc Degree	Uni Degree	Technician	Clerk	Sales	Agri/Prod	Service	Unskilled	Manufact	Construction	Trade/Repair	Other Services	Public Admin	Educ/Health
Uncorrected														
Main	-0.04	0.04	0.00	0.01	-0.01	-0.02	-0.02	0.00	-0.01	0.00	-0.01	-0.01	0.03	-0.01
Age	0.04	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	0.00
Year	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	0.00
Age-Group	0.06	-0.03	-0.01	-0.01	-0.01	0.00	0.02	0.00	-0.04	0.01	0.02	0.00	0.03	-0.01
Total	0.09	0.02	0.00	0.00	-0.01	-0.03	0.00	0.00	-0.05	-0.01	0.00	-0.01	0.05	-0.02
Total Change in Wage Gap	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Contribution of Skill (%)	-1189.52	-227.24	59.72	36.28	174.08	326.55	-15.80	17.46	639.58	66.78	9.14	189.70	-634.78	222.66
Corrected														
Main	-0.04	0.04	0.00	0.01	-0.01	-0.02	-0.02	0.00	-0.01	0.00	-0.01	-0.01	0.03	-0.01
Age	0.04	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	0.00
Year	0.09	0.00	0.00	-0.01	0.01	0.01	-0.02	0.01	0.00	0.01	0.00	0.00	-0.02	0.00
Age-Group	0.45	0.13	-0.03	-0.03	-0.02	-0.03	-0.06	-0.03	0.06	0.08	0.04	0.08	0.08	0.02
Total	0.55	0.16	-0.02	-0.03	-0.02	-0.05	-0.10	-0.02	0.06	0.07	0.03	0.07	0.07	0.02
Total Change in Wage Gap	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Contribution of Skill (%)	-7052.91	-2105.59	267.24	383.42	275.45	623.35	1272.72	262.08	-732.02	-958.97	-412.21	-958.20	-946.15	-194.72

Notes: The table reports the results of decomposing relative wage gains of 45-54 years-old relative to 25-34 years-old between 1990 and 2000. See Section 4.2 for further details of the procedure. The wage equation also included the following variables: experience, experience squared, marital status, state of residence and whether the person lives or works in West Germany. The "corrected" decomposition controls for self-selection into employment using a fourth-order polynomial in the employment probability estimated by a probit. The labor force participation model includes marital status, educational degree, age, age squared, state of residence, and whether the person lives in West Germany. The following variables are included as exclusion restrictions: demographic structure of household, indicator for home ownership, whether the household owns stocks, firm capital, has life insurance, savings account, special savings plan for home construction and the estimated asset income of the household.

Table 7a: Distribution of Birth Cohorts among State-Owned and Private Firms

	Overall	1931-40	1941-50	1951-60	1961-70	After 1970
Employed in State Owned Firms	0.451	0.510	0.450	0.449	0.441	0.292
Employed in a Private Firm	0.549	0.490	0.550	0.551	0.559	0.708
Employed in a Newly Founded Firm	0.346	0.195	0.306	0.345	0.425	0.580
Compensation in State Owned Firms						
_Hourly Wages	12.495	10.866	13.025	13.171	12.052	12.160
_Wage Growth	0.177	0.226	0.219	0.189	0.173	0.122
Compensation in Privatized Firms						
_Hourly Wages	13.680	12.611	13.966	14.121	13.475	12.425
_Wage Growth	0.151	0.275	0.178	0.165	0.149	0.158
Compensation in Newly Founded Firms						
_Hourly Wages	15.617	15.934	15.558	16.392	15.115	13.807
_Wage Growth	0.056	0.122	0.077	0.090	0.097	0.135

Notes: Being employed in a newly founded firm is conditional on working in a private firm. The indicator for the type of firm was constructed from two questions. In 1990 and 1991, East Germans reported whether there was a change in the legal form of their current employer. In 1992, 1994, 1995, 1996, 1997, East Germans were asked whether the company they are currently employed had already been in existence in June 1990.

Table 7b: Returns to Working in Private Sector

	(1)	(2)	(3)	(4)	(5)
Employed in Private Firm	-0.008 (0.007)	0.004 (0.018)	0.028 (0.019)	0.021 (0.022)	0.039 (0.018)*
Cohort Born 1941-50	-0.06 (0.016)**	-0.058 (0.019)**	-0.059 (0.018)**		-0.034 (0.026)
Cohort Born 1951-60	-0.061 (0.025)*	-0.043 (0.026)	-0.044 (0.026)		-0.036 (0.038)
Cohort Born 1961-70	-0.09 (0.032)**	-0.092 (0.034)**	-0.098 (0.033)**		-0.079 (0.052)
Cohort Born After 1970	-0.233 (0.046)**	-0.228 (0.059)**	-0.244 (0.059)**		-0.269 (0.072)**
Born 1941-50 * Private		-0.003 (0.022)	0.008 (0.023)	-0.009 (0.026)	-0.015 (0.022)
Born 1951-60 * Private		-0.034 (0.021)	-0.035 (0.022)	-0.022 (0.025)	-0.039 (0.021)
Born 1961-70 * Private		0.003 (0.022)	0.000 (0.024)	-0.013 (0.027)	-0.021 (0.023)
Born After 1970 * Private		-0.009 (0.056)	-0.17 (0.074)*	-0.041 (0.075)	-0.151 (0.053)**
Employed in Newly Founded Firm			-0.122 (0.037)**	-0.091 (0.035)**	-0.112 (0.031)**
Born 1941-50 * New Firm			0.002 (0.042)	0.028 (0.040)	0.028 (0.035)
Born 1951-60 * New Firm			0.053 (0.040)	0.031 (0.039)	0.045 (0.034)
Born 1961-70 * New Firm			0.071 (0.041)	0.04 (0.041)	0.06 (0.035)
Born After 1970 * New Firm			0.352 (0.074)**	0.331 (0.074)**	0.361 (0.056)**
Education	0.049 (0.002)**	0.049 (0.002)**	0.049 (0.002)**	0.405 (0.146)**	0.054 (0.003)**
Work Experience	0.014 (0.002)**	0.014 (0.002)**	0.013 (0.002)**	0.235 (0.149)	0.012 (0.003)**
Work Experience Squared	0 (0.000)**	0 (0.000)**	0 (0.000)**	0 (0.000)**	0 (0.000)**
Female	-0.097 (0.007)**	-0.097 (0.007)**	-0.098 (0.007)**		-0.109 (0.010)**
Married	0.028 (0.009)**	0.029 (0.009)**	0.028 (0.009)**	0.03 (0.020)	0.033 (0.011)**
Constant	2.484 (0.253)**	2.475 (0.250)**	2.51 (0.254)**	-7.396 (4.548)	
Observations	10376	10376	10376	10376	10376
R-squared	0.66	0.66	0.67	0.73	

Notes: The first column contains indicator for private sector and cohort dummies. Column (2) adds interaction terms between cohort membership and private sector employment. In column (3), we distinguish between privatized and newly founded firms. Column (

Table 8: Employment Rates by Age and Education

	Under 25	25-34	35-44	45-54	55 and Older
Overall					
No Vocational Degree	0.72	0.75	0.63	0.68	0.29
Vocational Degree	0.90	0.92	0.90	0.87	0.61
University Degree	1.00	0.96	0.96	0.93	0.71
1990-1992					
No Vocational Degree	0.65	0.61	0.57	0.74	0.47
Vocational Degree	0.92	0.93	0.92	0.93	0.75
University Degree	1.00	0.94	0.96	0.94	0.81
1998-2000					
No Vocational Degree		0.83	0.70	0.73	0.24
Vocational Degree		0.91	0.89	0.81	0.61
University Degree		0.98	0.95	0.94	0.66

Notes: Employment rates are calculated from monthly calendar data. A person is employed if employment was the main activity over the year.

Table 9a: Accounting for Employment in the Government Sector

	Under 25	25-34	35-44	45-54	55 and Older
Employment (%)					
1990	19.8	25.1	25.7	23.2	32.6
1990-1995	15.2	23.5	24.0	24.6	30.3
1996-2000	28.6	18.0	19.1	26.4	27.6
Hourly Wages					
1990-1995					
Government	9.70	12.58	14.26	14.45	13.89
Other	12.08	13.49	13.86	13.91	13.63
1996-2000					
Government	16.98	21.93	23.06	25.38	25.58
Other	13.76	20.19	20.18	21.06	19.66

Notes: The table reports employment rates in the government sector (*Oeffentlicher Dienst*). Government employment comprises most of the public administration and educational and health sector but government employees can also be found in any other sector of the economy (for example, agriculture). No distinction is made between civil servants (*Beamte*), which cannot be fired, and other employees which can (*Arbeiter and Angestellte*).

Table 9b: Wages of Older Workers Adjusted for Government Employment

	1990/91	1994/95	1999/2000
<i>45-54 Years-old Males</i>			
Actual Log Hourly Wage 25-34 Males	2.11	2.82	2.97
Actual Log Hourly Wage	2.04	2.84	3.01
Adjusted for Government Employment	2.04	2.83	3.00
Adjusted for Education and Government	2.03	2.83	2.97
Adjusted for Education, Migration and Government Employment	2.03	2.84	2.99
<i>55 and Older Males</i>			
Actual Log Hourly Wage 25-34 Males	2.11	2.82	2.97
Actual Log Hourly Wage	2.06	2.82	3.01
Adjusted for Government Employment	2.05	2.82	2.99
Adjusted for Education and Government	2.07	2.82	2.98
Adjusted for Education, Migration and Government Employment	2.07	2.82	2.99

Notes: The table reports predicted mean log hourly wages after adjusting the distribution of government employment, education and West migration to the group of 25-34 years-old of the same gender. The underlying wage equation was estimated without correcting for selection into employment and included the following additional variables: education, experience and experience squared, marital status, whether the individual worked in West Germany as well as dummy variables for seven occupations and seven economic sectors (see Table 9a for a complete list).

Table 10a: Sectoral and Occupational Reallocation, 1990-2000

	Men			
	Age 25-34	Age 35-44	Age 45-54	55 and Older
Sector of Employment				
Agriculture	-16.9	-13.7	-12.1	-11.6
Manufacturing/Energy	-5.9	-4.2	-10.2	-2.0
Construction	10.1	5.6	9.8	2.9
Trade/Repair	6.2	8.3	2.8	2.9
Other Services	7.6	3.4	5.0	3.4
Public Administration	-3.0	-0.9	8.3	-4.1
Education/Health	2.0	1.5	-3.6	8.4
Occupation				
Administrator/Professional	6.9	-6.8	-8.5	8.7
Technician	5.4	2.2	2.4	0.7
Clerk	3.3	-0.1	0.2	-6.2
Sales Worker	0.7	1.7	3.8	4.9
Production/Agricultural Worker	-11.2	-7.2	-1.6	-2.9
Service Worker	-5.7	7.0	2.0	-1.1
Unskilled Labor	0.6	3.3	1.6	-4.1

Notes: The table reports changes in unweighted employment shares by age group and gender in East Germany between 1990 and 2000. Since only individuals born in or before 1973 are included in the sample, the group under 25 is excluded.

Table 10b: Wage Growth and Relative Gains from Reallocation

Men	Log Hourly Wage Change	East-West Migration	Between Shift East	Wage Changes Within
Average Wage Growth	1.180			
Occupations		0.083	0.011	1.085
Industries		0.067	0.046	1.067
Relative Wage Gains				
(45-54)-(25-34)	-0.008			
Occupations		-0.221	-0.019	0.233
Industries		-0.211	0.011	0.193
(55+)-(25-34)	-0.054			
Occupations		-0.510	0.030	0.427
Industries		-0.246	-0.022	0.214

Notes: The table decomposes aggregate wage gains (top part) and relative wage gains (bottom part) among workers into wage changes from East-West migration, occupational/industrial shifts and wage changes within occupations/industries. The analysis was done separately for occupations and sectors as well as for men and women. The occupations and industries are those shown in Table 9a. The decomposition method is outlined in more detail in the main text.

Table 11: Private-Sector Training in East and West Germany, 1993 and 2000

		Overall	1931-40	1941-50	1951-60	1961-70	After 1970
<i>East Germany</i>	Received Private Sector Training	0.307	0.181	0.293	0.340	0.333	0.322
	_1993	0.314	0.193	0.341	0.357	0.330	0.279
	_2000	0.297	0.077	0.230	0.317	0.336	0.358
	Number of Training Courses	2.8	2.2	2.8	2.9	2.6	3.6
	_1993	2.5	2.2	2.7	2.8	2.2	2.1
	_2000	3.2	2.0	3.0	2.9	3.2	4.6
<i>West Germany</i>	Received Private Sector Training	0.249	0.091	0.190	0.296	0.302	0.260
	_1993	0.219	0.091	0.184	0.278	0.280	0.176
	_2000	0.286	0.090	0.198	0.319	0.323	0.310
	Number of Training Courses	3.6	3.0	3.7	3.5	3.7	3.4
	_1993	3.9	3.1	3.7	3.4	3.1	3.2
	_2000	3.3	3.0	3.8	3.7	4.2	3.4

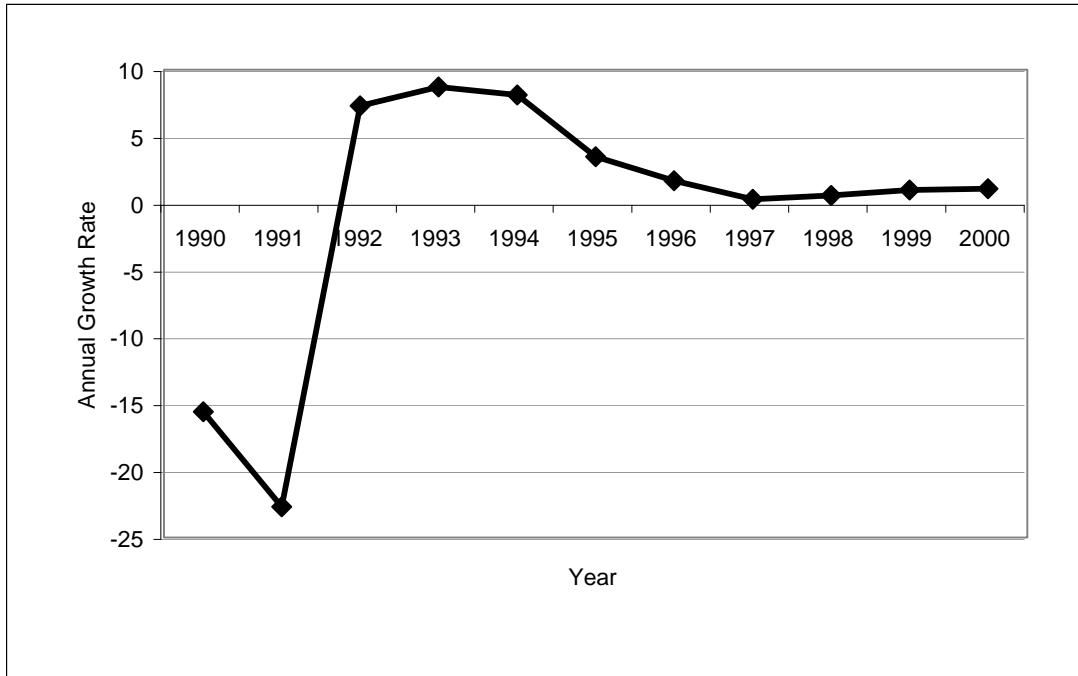
Notes: Numbers are from special module survey on private sector training conducted in 1993 and 2000. Number of training courses refer to the three years prior to the survey and are conditional on receiving training.

Table A1: Labor Force Probit for East German Men

	(1)	(2)
Vocational Degree	0.2177 (0.0252)**	0.1778 (0.0245)**
University Degree	0.1342 (0.0066)**	0.1088 (0.0074)**
Agegroup 25-34	-0.0007 (0.0170)	0.0009 (0.0162)
Agegroup 35-44	-0.059 (0.0202)**	-0.0491 (0.0193)*
Agegroup 45-54	-0.098 (0.0225)**	-0.0855 (0.0217)**
Agegroup 55 and older	-0.4215 (0.0329)**	-0.407 (0.0340)**
Married	0.1136 (0.0118)**	0.0675 (0.0108)**
Living in West Germany	0.0424 (0.2628)	0.0523 (0.1340)
Months Unemployed Last Year		-0.0178 (0.0009)**
Children under 16 in HH?	0.0301 (0.0094)**	0.0184 (0.0091)*
Number of Children Aged 0-1	-0.0423 (0.0205)*	-0.0128 -0.0203
Number of Children Aged 2-4	-0.017 -0.0127	-0.0024 -0.0124
Number of Children Aged 5-7	-0.0276 (0.0112)*	-0.02 -0.0108
Number of Adults (19 years and above)	0.0043 (0.0044)	-0.0055 (0.0042)
Home Ownership (Yes = 1)	0.027 (0.0070)**	0.0062 (0.0070)
Savings Account (Yes = 1)		0.0481 (0.0122)**
Home Construction Savings Plan (Yes = 1)		0.0397 (0.0067)**
Own Stocks or Bonds (Yes = 1)		0.0125 (0.0084)
Own Life Insurance Policy (Yes = 1)		0.0484 (0.0078)**
Own Firm Capital (Yes = 1)		0.0075 (0.0178)
Year Dummies	Yes	Yes
State Dummies	Yes	Yes
Observations	10628	10628
Pseudo R-Squared	0.147	0.213
Log-Likelihood	-3914.32	-3609.62
F-Test for Joint Significance of Truncated Polynomial in Selection Probability in Wage Equation	F(4,7473) = 4.91 (0.0006)	F(4,7473) = 20.75 (0.0000)

Notes: The table reports marginal effects from a poled probit where the dependent variable is one if the respondent reports employment as the main activity in the preceding year. Robust standard errors are in parentheses. Coefficients with * are significant at the 5 percent, those with ** at the 1 percent level. The reference category for education is no vocational degree, the reference age group those under 25. Column (2) adds months unemployed last year and estimated value of household assets (5 categories).

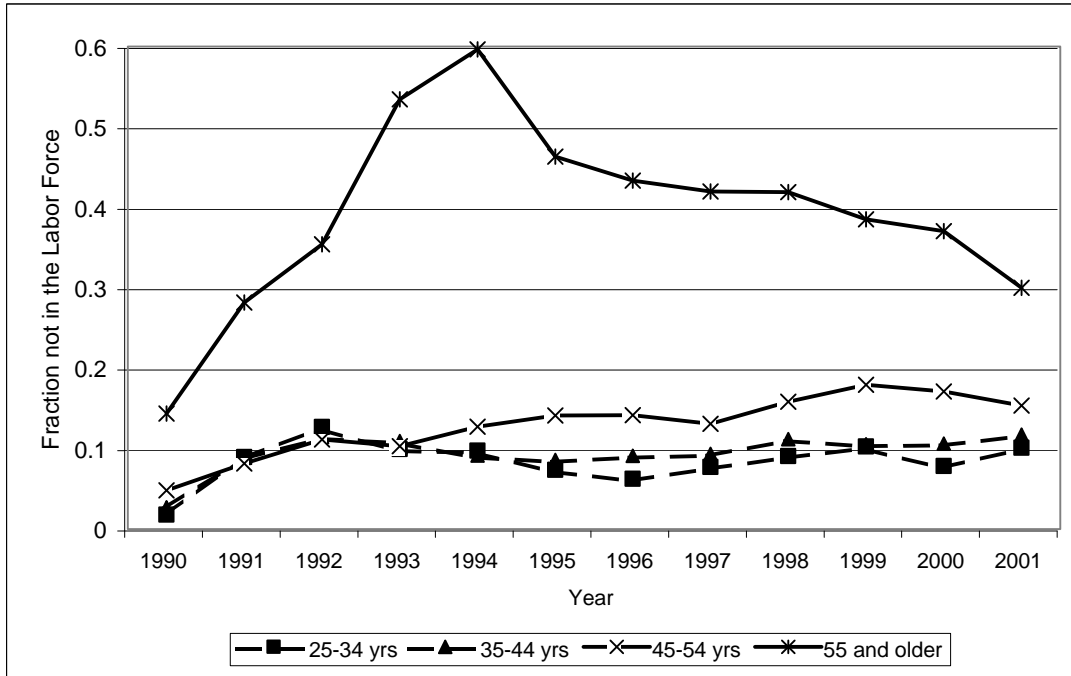
Figure 1: Growth Rates of Gross Domestic Product in East Germany



Source: Burda and Hunt (2001)

Notes: Berlin is included as part of East Germany. Growth rates are based on 1995 constant Gross Domestic Product evaluated at market prices including subsidies and net interest.

Figure 2: Fraction Not in Labor Force, East German Men by Age



Source: German Socio-Economic Panel

Figure 3: Evolution of Wage Inequality in East Germany

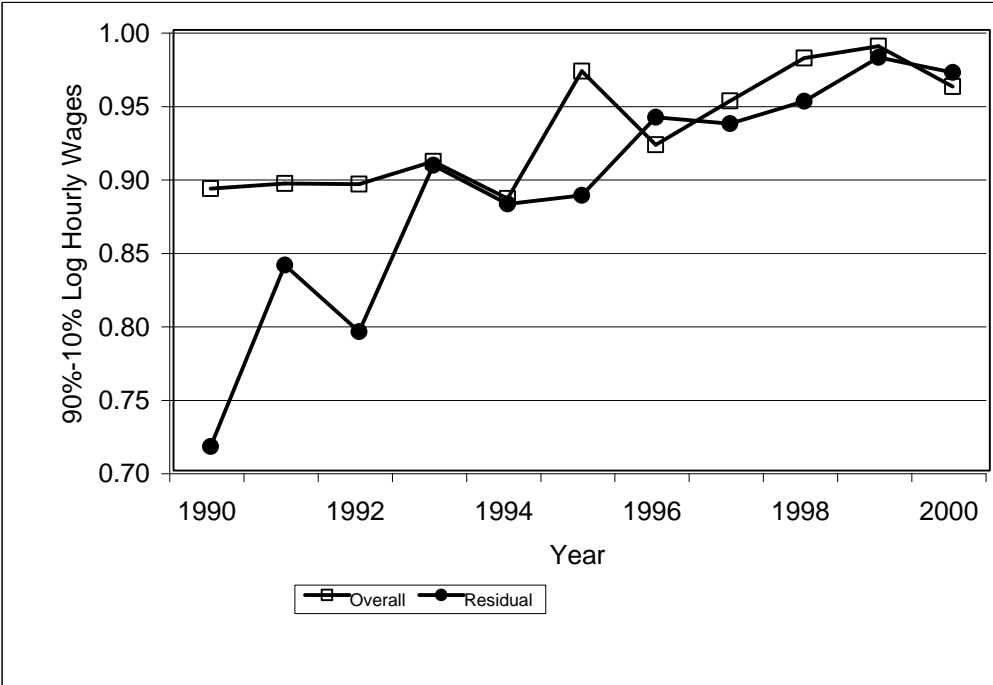


Figure 4: East-West Wage Ratio by Birth Cohort

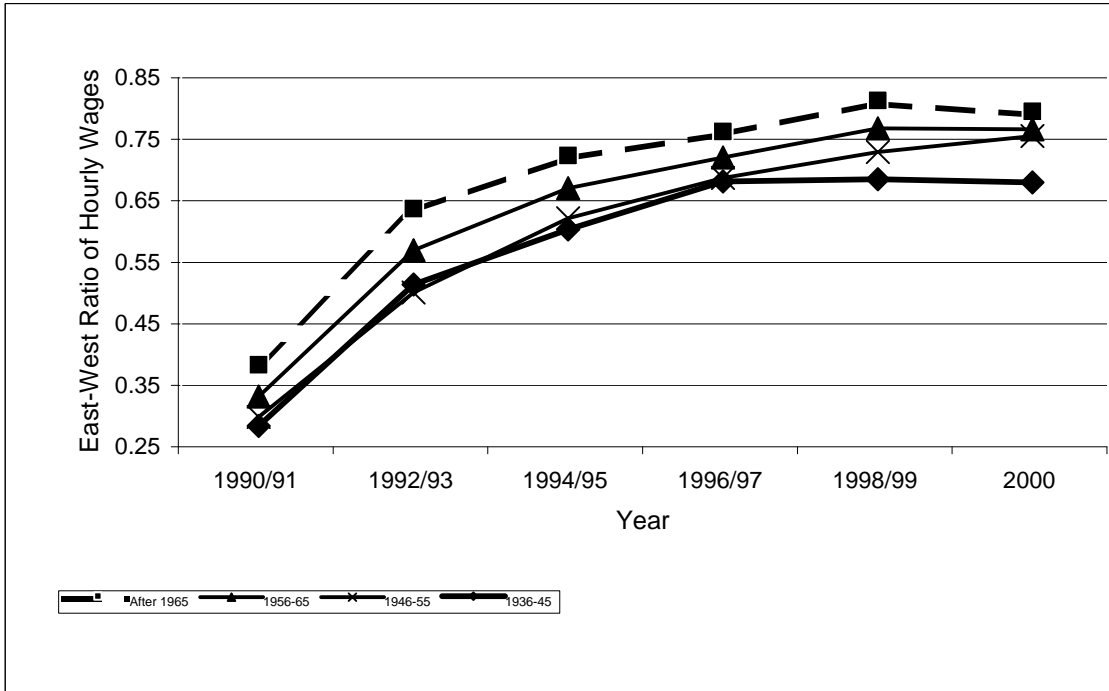


Figure 5: Age Premium in East Germany over Time

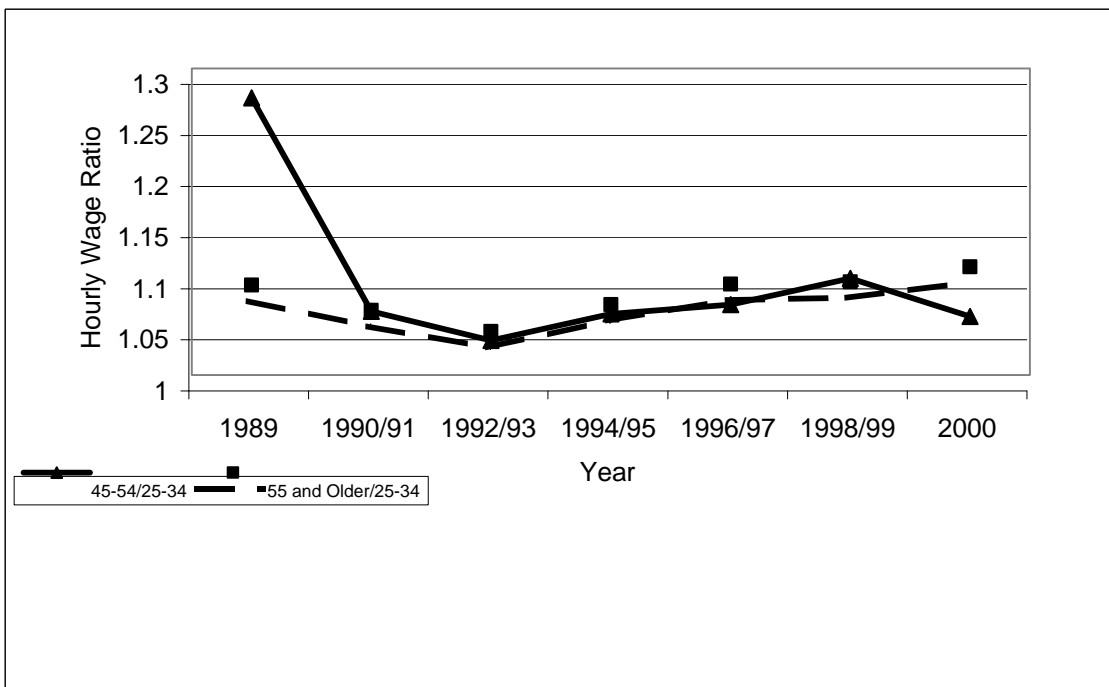


Figure 6: Pooled Age-Earnings Profiles for East Germany

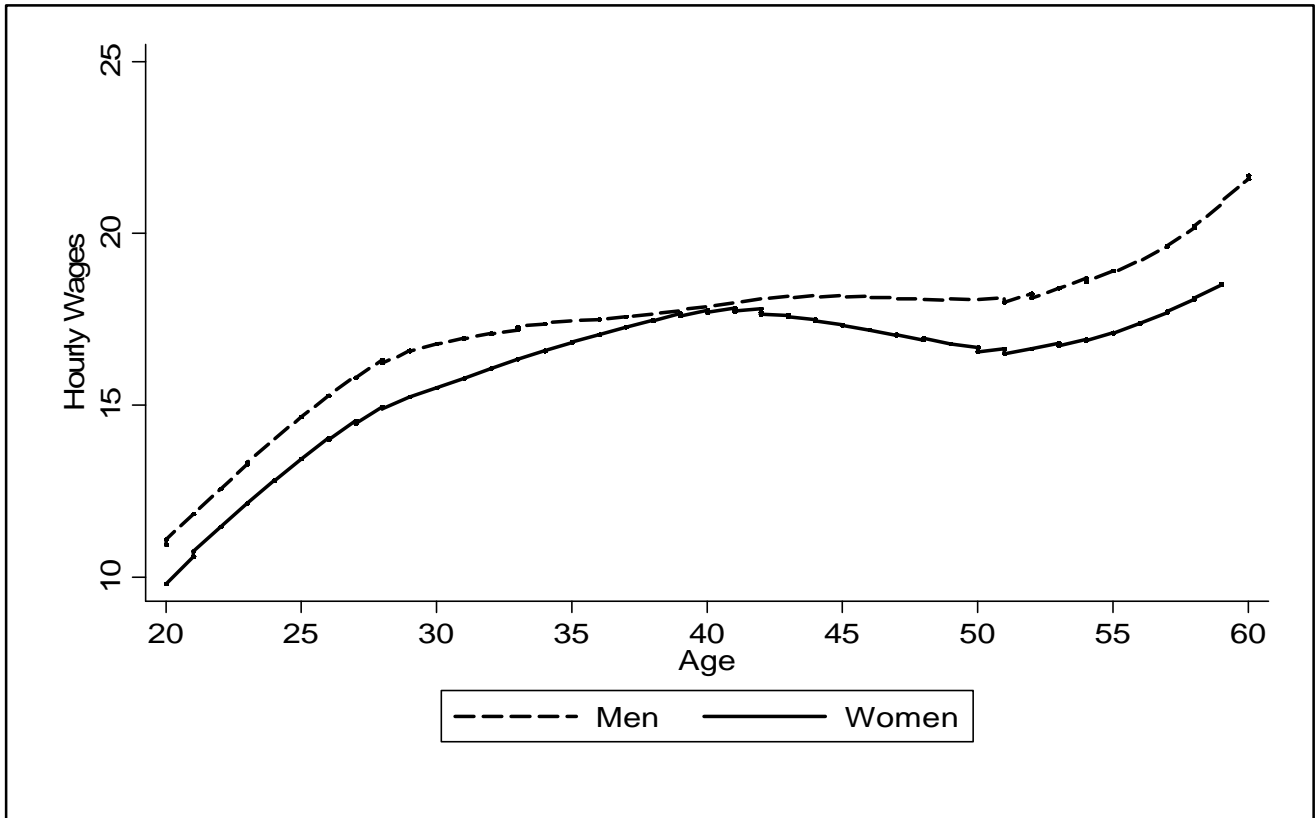


Figure 7a: Time Series of Returns to Vocational Degree (Uncorrected)

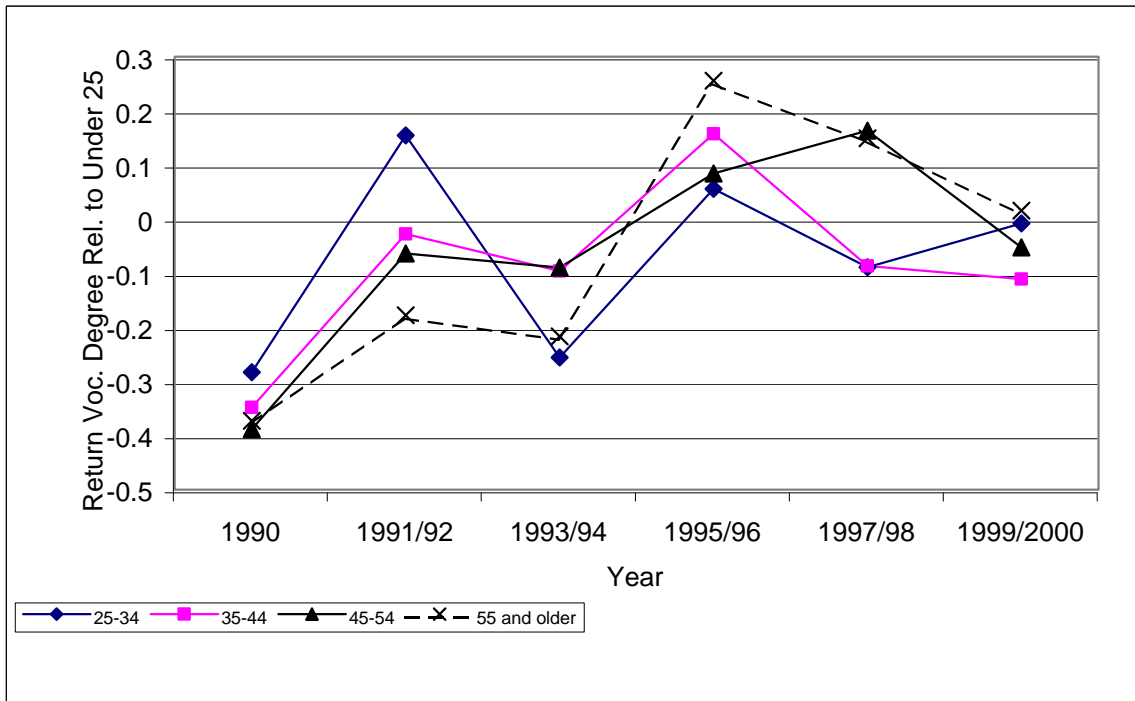


Figure 7b: Time Series of Returns to University Degree (Uncorrected)

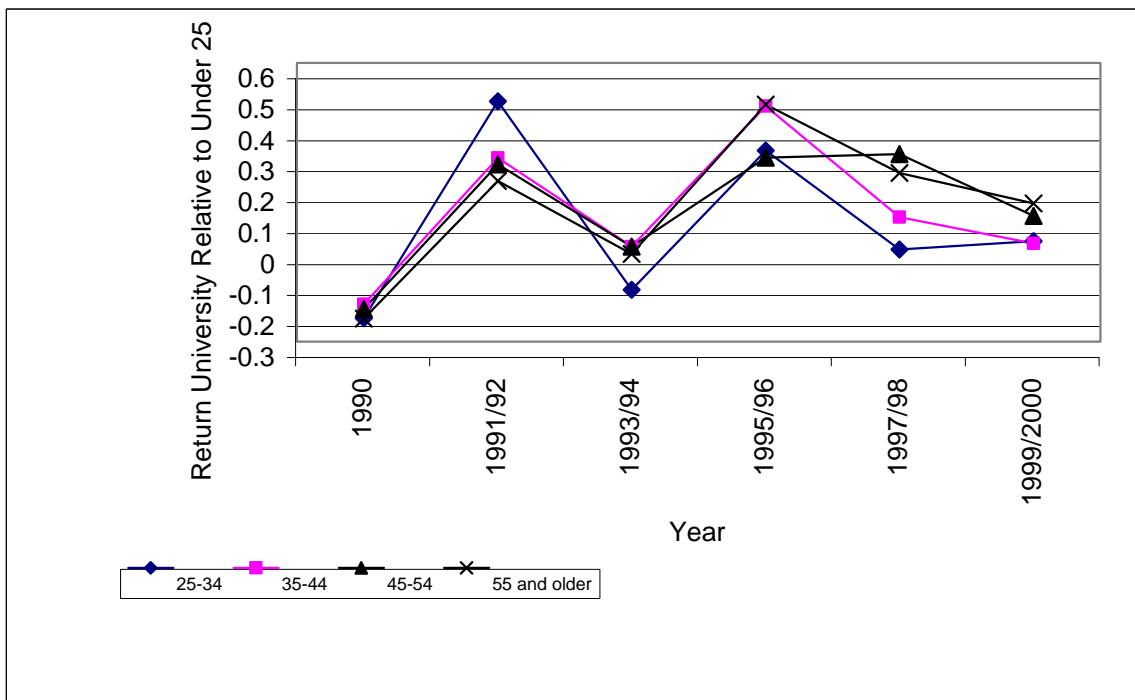


Figure 8a: East-West Wage Ratio incl. Nonworkers (Median Assumption)

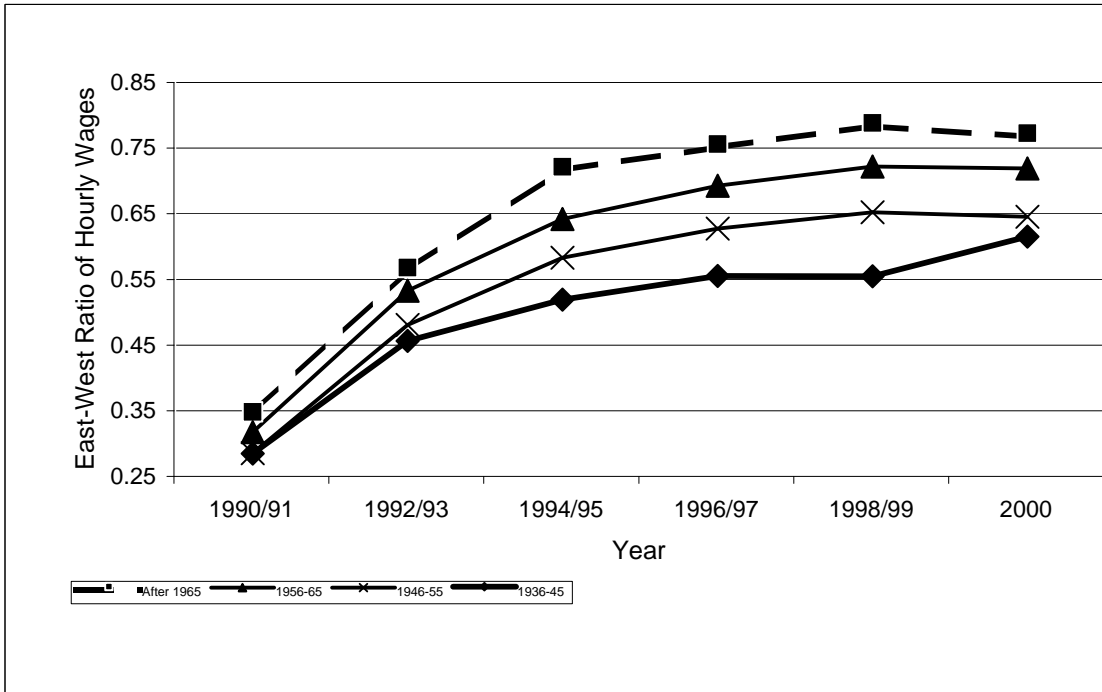


Figure 8b: Age Premium Incl. Nonworkers in East Germany

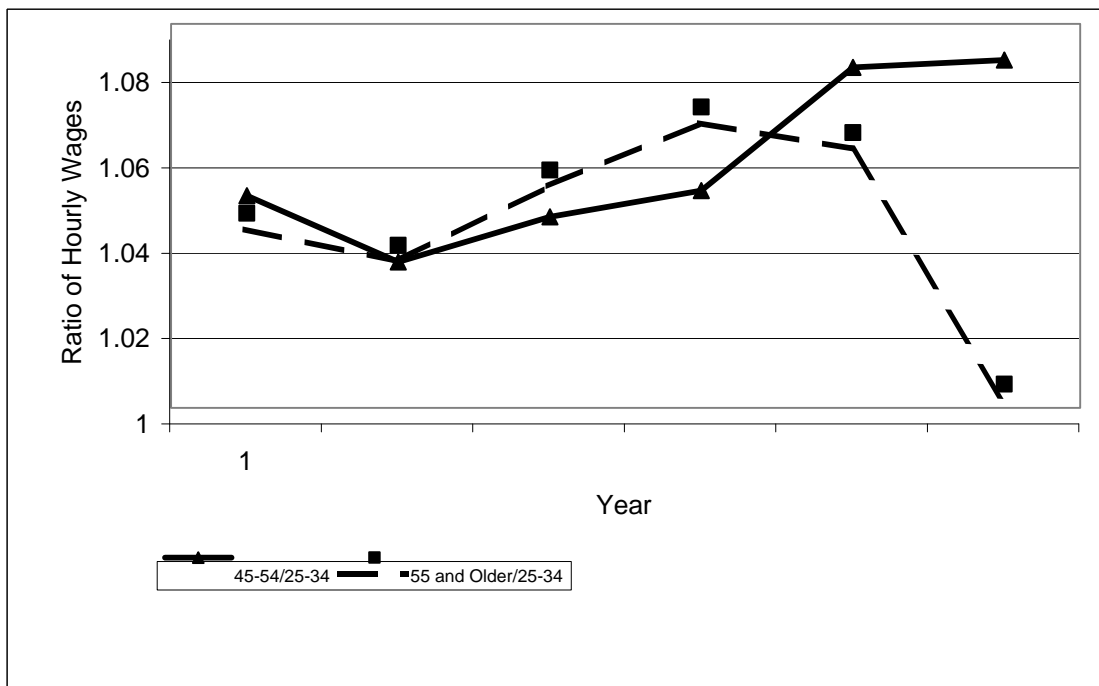
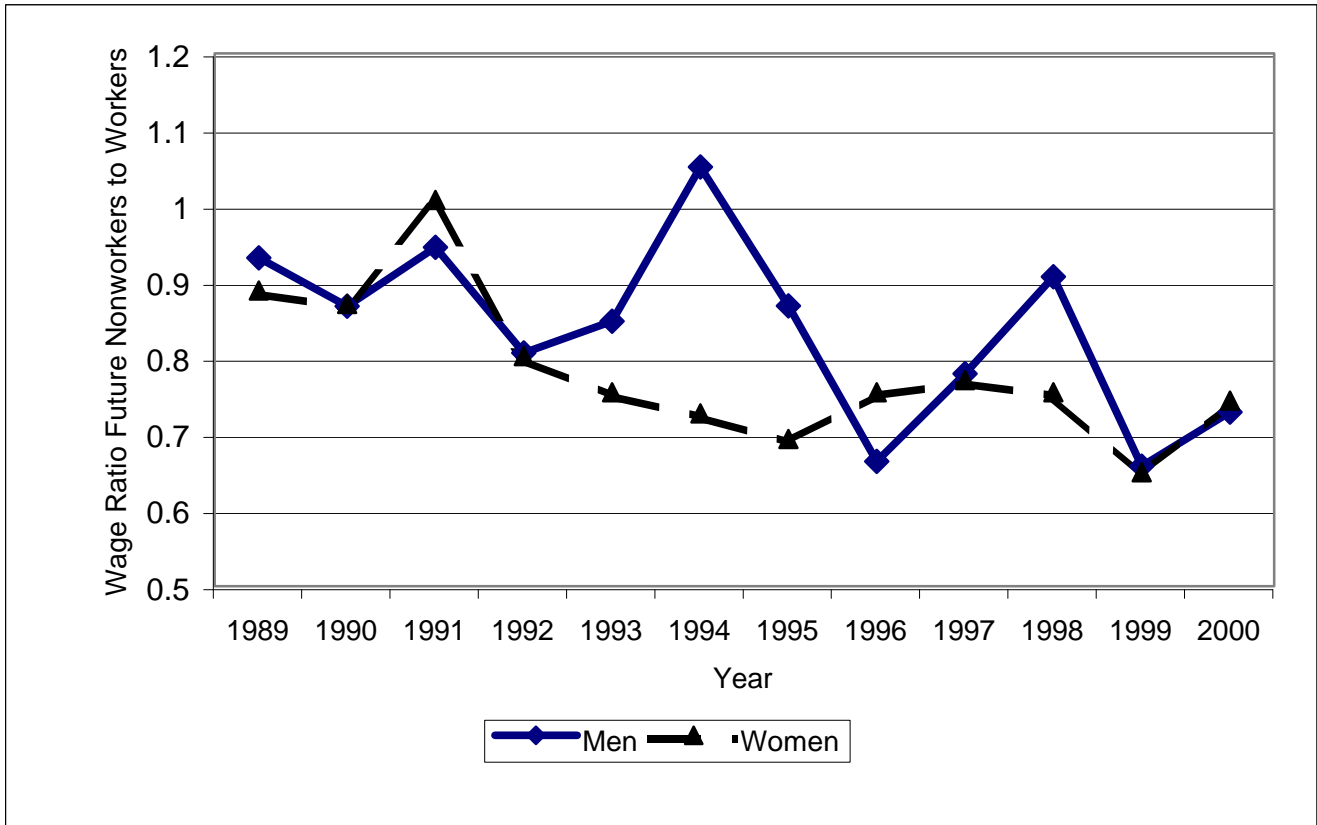
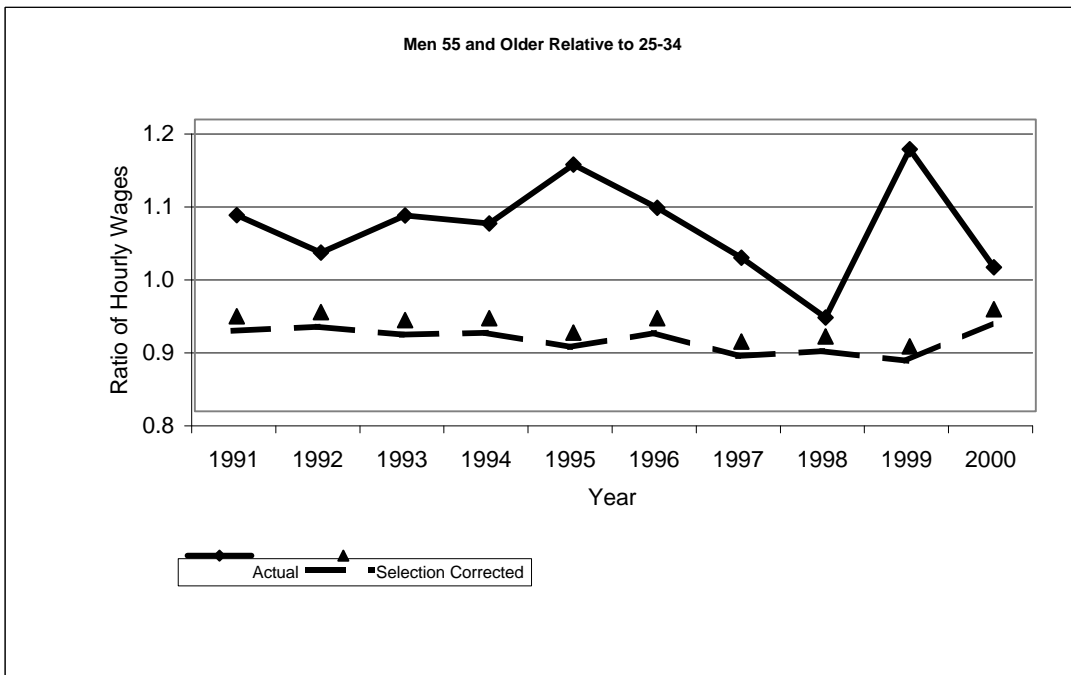
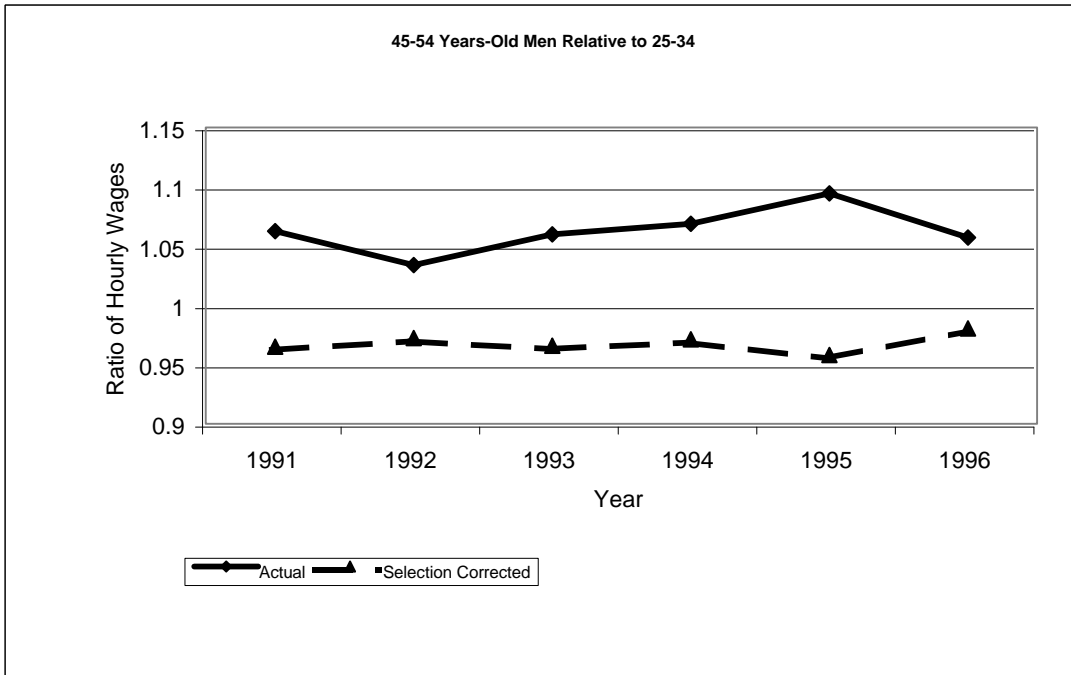


Figure 9: Comparison of Wages for Workers and Future Nonworkers



Notes: The figure shows wages of those working in the current year but leaving employment in the following year relative to those remaining employed in both years.

Figure 10: Age Premium Accounting for Selective Withdrawal



Notes: The figures report relative wages across the two age groups. Calculations are based on log hourly wages (actual) and predicted hourly wages from a selected corrected wage equation, whose first stage is reported in Table A1 in the appendix (column (2)). The second-stage wage equation contains controls for education, age, state and year dummies, marital status, months unemployed last year, whether the person is living in West Germany as well as a truncated polynomial of the selection probability from the first stage.