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Abstract

We analyse the convergence and heterogeneity of living standards between East and West Germany since unification. Based on data from the German Socio-Economic Panel (GSOEP), we compare total individual income of permanent adult residents, including retirees and the unemployed, of East and West Germany over the fifteen years for which data are available. Using a fixed effects vector decomposition method, we estimate the gross total income difference between East and West Germans taking unobserved heterogeneity into account. Our analysis demonstrates that the negative income gap has decreased from 33 per cent in 1992 to 22 per cent in 2002, rising again to 26 per cent in 2007. Hence some convergence took place in nominal terms since unification. Constructing income gaps by decennial cohorts, we discover that the most recent cohorts have the highest negative income gap. This probably reflects out-migration from East Germany by the young and highly skilled. On the basis of quantile regressions we find a positive income gap at the beginning of the 1990s for the lower income deciles (that is higher incomes in East Germany). This was due to retirees in the East with relative long employment histories receiving transfer payments by western standards. The income gap is insignificant when accounting for heterogeneity at the area level by including area level variables to our regression.

1. Introduction

This paper analyses gross income differences between East and West Germans since unification and studies their distribution using the most recent GSOEP data from the period from 1992 to 2007. In doing so, the paper contributes to our understanding of German unification by emphasising its long-term trends and the variation of experiences across the income distribution.

The process of German unification started in earnest twenty years ago with the fall of the Berlin Wall on November 9, 1989. West-Germany had been a wealthy market economy while East-Germany had been an economically less successful command economy before unification. Hence two contrary economic systems were forced together at unification. The terms of this merger implied that East-Germany imported political, legal, monetary, banking and industrial relation systems from West-Germany. Also the western social welfare system and active labour market programs were implemented in Eastern-Germany. Transfer payments from the West to the East were expected to further increase the speed of convergence of living standards.

Most companies in East-Germany could not survive in competition with Western companies with decades of global competition experience. Consequently, and in the absence of wage subsidies or productivity increases, almost all companies in East-Germany had to close down (Akerlof et al. 1991, Burda and Hunt 2001, Hunt 2006b, Brenke 2009). After unification wages in East-Germany should have fallen as with the parity currency conversion wages in the East were far above the market clearing level. A fall of real wages was resisted by trade unions in West-Germany because they feared pressure on wages of their members. Mainly they feared low-wage competition from East-Germany. Further they argued that if wages were to fall in East-Germany then mass migration from East- to West-Germany would result. In fact migration had been reduced by increased wages in East-Germany (Hunt 2006a). But a further increase of wages took place and worsened the unemployment risk of workers in East-Germany. This trend of rising wages was also supported by politicians keen to equalize living conditions quickly. This led to a strong increase in unemployment in the East, which in turn also reduced life satisfaction (Gerlach and Stephan 1996, Kassenboehmer and Haisken-De New 2008). However, the high unemployment led to a deterioration of the power of the trade unions and therefore wages became more flexible several years after unification. (Kohaut and Schnabel 1999).

There is a lively literature discussing the evolution of wages of full-time employed workers in East- and West-Germany after unification. In the first years after unification, wage convergence

took place but it slowed down in the mid 1990s. Wage dispersion rose in West-Germany at the top of the distribution in the 1980s and also in the lower part in the 1990s. Compared to West-Germany the wage distribution was relatively compressed in East-Germany in the 1990s. Since then wage dispersion increased more strongly in East-Germany and reached the level of West-Germany at the end of the 1990s (Franz and Steiner 2000; Gernandt and Pfeifer 2007; Dustman et al. 2009; Steiner and Wagner 1997).

Gernandt and Pfeiffer (2009) distinguish between movers from East- to West-Germany, commuters from East- to West-Germany and permanent residents in East-Germany for the period 1992-2005. For movers wages totally converged relative to West Germans. Commuters could not catch up to the West German wage level and no convergence took place for permanent residents of East-Germany.

In a recent paper Fuchs-Schündeln et al. (2009) compare inequality trends of wages, hours worked, earnings, consumption and wealth for Germany. They find a relatively stable wage and market income distribution before unification in West-Germany and an increase afterwards. Disposable income and consumption increase slightly. For East-Germany inequality increased more relative to West-Germany and some convergence took place. Reasons for lower wages in the East could be due to the characteristics of the labour force or due to characteristics of the jobs. Fuchs-Schündeln and Izem (2008) use a spatial structural model to analyze if low labour productivity in East-Germany after unification can be traced back to the depreciation of human capital or to unfavourable job characteristics. They find that skills are very similar but that job characteristics are very different between both parts of Germany.

It is not possible to consider the well being of the whole population when focusing on wages of the full-time employed. Especially the unemployed, early retirees, pensioners and people who are not working are not included in such an analysis. However, there may be systematic differences in regard to the population structures between East- and West-Germany. For example, the share of the non-working population is much higher in East-Germany compared to the West. Underemployment including short-time workers is 10 per cent in West-Germany and 20 per cent in East-Germany in the year 2008. The fraction of the population being older than 65 is 22 per cent in East Germany and 20 per cent in East Germany (data from German labour office). We therefore focus on a comparison of the whole adult population using individual gross total income as our indicator for economic well being. Total income is a broader concept than wages to measure well-being of the population. Another suitable variable for conducting well

being comparisons would be consumption. Unfortunately, there is no consumption data available in our data set, the German Socio-Economic Panel (GSOEP).

Studies for income comparisons could be performed at the household level or at the individual level. On the household level, Brenke (2005) finds that the income of East German households increased markedly in the period 1991-1996 and that the initial negative income gap declined. Since the mid 1990s the negative income gap has started to widen again. The analysis of Goebel et al. 2009 reveals disposable income convergence on the household level between East- and West-Germans until 1997, a constant gap in the period 1997 to 2002 and a widening since then. Further income inequality increased stronger in East-Germany compared to West-Germany. According to OECD (2008) the income distribution of Germany widens from the mid 1990s to the mid 2000s. On the individual level Bach et al. (2007) analyse the distribution and concentration of market income for the population with an age over 20 for the period 1992 to 2001. They find a modest increase of market income. Income inequality increased more strongly in East-Germany relative to West-Germany. Especially at the top deciles of the income distribution market incomes increased.

For income and wage comparisons the focus should be adjusted for the costs of living at a disaggregated level. Roos (2006) constructs a cost of living index on the German state level using data containing price levels for 50 cities of which 32 are located in West-Germany and 17 in the former GDR. Deflating wages by the cost of living index reduces the wage gap markedly. For disposable income taking cost of living into account reveals the same income level for East and West Germans in the year 2002. For 1993 the deflated income gap is 15 per cent and 2 per cent in the year 1996.

Our analysis contributes to the existing literature in four ways. First, our analysis extends the existing literature by updating the analysis of the income convergence up to the year 2007. Average incomes are lower for East Germans compared to West Germans since unification and the income convergence process has an inverse U-shape with a maximum at the beginning of the 2000s. This is in contrast to the finding of Brenke (2005) who finds strong income convergence at the household level until the mid 1990s. Our analysis reveals a longer convergence process until the beginning of the 2000s.

Second, we take heterogeneity into account using quantile regressions and by applying the decompositions of Juhn et al. (1992) and Melly (2006) to get further insights into the underlying

reasons of the income differences. Here we add further information on the conditional income differences and on the underlying reasons for income differences to the literature. In fact, the income gap increases across the income distribution. Interestingly East Germans have a higher income at the first decile relative to West Germans. Especially persons who receive benefits and retirees are disproportionate located there.

Third, differentiating between different cohorts yields the highest income for the retirees that belong to the oldest cohort. The younger the East Germans the lower is their income. This is surprising because the middle cohorts should be in the worst position because they received their formal education in the former German Democratic Republic and started their work biographies in the then German Democratic Republic. Thus the devaluation of their skills should be the highest. The worst position of the youngest cohorts suggests a significant role for the out migration of young and highly skilled East Germans.

Fourth, when controlling for costs of living differences at the area level, the mean income difference between permanent residents of East- and West-Germany turns insignificant, suggesting that real income convergence has indeed been achieved since unification.

The remainder of the paper is organized as follows. Section 2 describes the data and summary statistics. Section 3 presents the empirical methods used for our analysis. Thereafter we present the empirical results of our regressions in section 4. Section 5 concludes.

2. Data and Descriptive Statistics

We use the latest version of the GSOEP data set for the period 1984-2007.[1] Our main variable to measure living standards is gross total income at the individual level which includes a large set of income sources like labour income, capital income and social benefits. Since 1992 information about income has been available in East-Germany. A detailed list of all 44 income components can be found in Grabka (2008).

Gross total income is deflated by the consumer price index. The statistical office of Germany stops calculating the consumer price index separately for East- and West-Germany in the year 1999. Therefore we used different consumer price indices up to the year 1999 and the same afterwards. We further include several individual characteristics of each person in our data set. Finally we merge the GSOEP data with the "Indikatoren und Karten zur Raum- und

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[1] See Wagner et al. (2007) and Haisken-DeNew and Frick (2005) for a detailed description of the GSOEP.

Stadtentwicklung – INKAR" (indicators and maps for spatial and urban development) data set collected by "Bundesinstitut für Bau-, Stadt- und Raumforschung" (federal institute for construction, urban and regional research) with regional specific information from 435 districts ("Kreisebene"). This information is only available for the period 1995-2005.

We focus on the comparison of gross total income between people staying permanently in East- or West-Germany. These two groups are identified by their residence in the year 1989 and their residence in all subsequent years of the period of observation. We dropped all movers between the two parts of Germany as well residents of Berlin, which cannot be clearly assigned to either the East or the West. Additionally we dropped all people with zero income because we focus on an income comparison between the two parts of Germany on the individual level (though we relax the restrictions of "no migration" and "positive income" for robustness checks as explained below). Finally we focus on people who are not currently engaged in formal education.

Summary statistics of our panel data set are displayed in Table 1. East Germans catch up in the first years of transition relative to West Germans closing the negative income gap by 14 percentage points from 1992 to 2002 from a level of minus 40 per cent in the year 1992. Afterwards the income gap widens again by 4 percentage points.

(Table 1 about here)

The income gap differs markedly across the income distribution. At the first decile of the income distribution East Germans in 1992 have a 19 per cent higher income relative to West Germans. Especially retirees and the unemployed are located at the lower end of the income distribution. After unification old-age pension claims in the former German Democratic Republic were generously regulated in the unification treaty. East Germans on average have a higher duration of employment compared to West Germans, for example due to fewer interruptions as a result of unemployment or family leave (Brenke and Zimmermann 2009). The level of old-age pensions depends positively on the employment histories and the wage level. Retirees in East Germany were full time employed for 6 years more than retirees in West Germany who were full time employed for 26 years. Furthermore, East German women have a higher labour market participation rate compared to West German women.

Unemployment rates increased markedly from 10.2 per cent to 20.6 per cent in the period 1991-2005. Also the percentage difference between unemployment rates in both parts of Germany increased from 4 to 10 percent in this period. Unemployment decreased from 2005 to 2007 by 4

percent point in East Germany and the difference to West Germany was reduced by 1 percentage point because of the Hartz I-IV labour market reforms that had been implemented between 2003 and 2005. Causes of the closing wage gap are more flexible wages in the lower end of the wage distribution and an increased share of unemployment in East Germany.

Going up the income distribution turns the sign of the income gap at the 19th percentile in the year 1992, 18th in the year 1997, 15th in the year 2002 and 10th in the year 2007. At the median (9th decile) East Germans have a negative income gap of approximately 40 (50) per cent. The income gap reduced by the year 2002 to 13 (18) percentage points at the median (9th decile). Since 2002 it has widened again by 4 percentage points at the median and 7 percentage points at the 9th decile. For both the 5th and 9th deciles, the income gap has an inverse U-shape across time. Measured by the Gini coefficient, income inequality was stable during the period of observation in West-Germany. The interdecile range indicates a slight decline and the coefficient of variation a slight increase in income inequality. For East-Germany, income inequality increased over time but stayed at a lower level compared to West-Germany.

88 per cent of persons with zero income are women in our West-German sample compared to 62 per cent in East-Germany. Our descriptive findings are qualitatively the same when including these zero income persons to our sample.

3. Methods

We hypothesize that the East-West income gap can be explained by a variety of observable time-invariant and time-variant factors at the individual and area levels. We therefore conduct regression analysis to understand which variables in particular explain income convergence and heterogeneity. Specifically, we explain gross total individual income with a rich set of covariates in our empirical specification. The control variables also included in the regression are explained below.

Our main variable of interest is a dummy variable which takes the value one if people reside permanently in East-Germany and zero if people stay permanently in West-Germany. Since the decision to move to another location of residence is based on a cost-benefit analysis subject to information constraints an endogeneity problem arises when adding the location of residence as an exogenous variable to our regression model. Besides economic factors like the labour market situation many other factors influence the decision to move to another location of residence, for example family structure and attachment to the region. Our endogenous variable – gross income

– may also be a factor influencing the location decision. If the expected income in the target area is higher than in the area of origin this would influence the probability to migrate positively. Hence the expected income could be approximated by the income distribution in the target area, the income itself determines the location decision. However, analysing this location decision is beyond the scope of this paper. Furthermore, data on internal migration is only available for some of the years of the dataset. Thus we assume that the location decision to be exogenous.

Depending on the year of birth, people in East Germany may be affected differently by unification. Therefore we insert decennial cohort dummies in the regression. Additionally we interact the dummy variable of residence and a dummy variable of each year of the observation period to get insights into the income convergence across time.

We add rich individual-specific information as covariates to the regression to control for observed heterogeneity in endowments. The employment level, full-time and part-time work experience up to their second order polynomial as well as the duration of unemployment up to the second order polynomial, retiree dummy, dummy for length of time within a firm, working in occupation trained for, civil service dummy, dummy for gender, dummies for the size of the company, educational attainment dummies (ISCED-classification), dummies for marital status, number of adult persons and children in the household, dummies for the 1 Digit Industry Code and a dummy for disability status are our exogenous variables.

Furthermore regressions with and without regional specific variables are performed on the area level. Dummies for each area level are added to take account of time constant unobserved heterogeneity. We also add the unemployment rate, the industry fraction and the gross domestic product per head as time varying variables on the district level.[2] Each regression is estimated without and with area-specific variables.

Simple pooled OLS estimations are typically strongly biased because they do not take unobserved heterogeneity into account. We face the problem that our dummy variable indicating permanent residents in East-Germany is time invariant for each person. Consequently this dummy variable will be included in the unit effect of fixed effects estimation. Thus fixed effects estimation of the coefficient of time invariant variables is not possible.

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[2] When adding area level specific variables we cluster the standard errors according to Moulton 1990.

The Hausman-Taylor model or panel fixed effects model with vector decomposition of Plümper and Troeger (2007) can be used to estimate time invariant variables in panel data models with person specific fixed effects. Plümper and Troeger (2007) demonstrate with Monte-Carlo simulations that their vector decomposition procedure performs better than the Hausman-Taylor model. Thus we use the vector decomposition procedure that consists of three stages. In the first stage a fixed effects model is estimated without the time invariant variables. Regressions of the fixed effects vector on the time invariant variables of the original model are performed by OLS-estimation in the second stage. In the last stage we estimate a pooled OLS-model including all explanatory time variant variables, time invariant variables and the unexplained part of the fixed effects vector (Plümper and Troeger 2007).[3] Summing up, we can deal with potential biases in the time variable coefficients while decomposing the fixed effects into explainable components and unexplainable components. Thus we deal with potential biases of pooled-OLS estimation through the use of fixed effects. Estimation of time variant variables is not better compared to fixed effects estimation, but controlling for the unobserved portion of person-specific effects impacts the estimation of the time constant variables.

Since we are not only interested in the mean effect we also perform quantile regression to gain insights into the heterogeneity of our estimated coefficients (Koenker 2005). When we estimate quantile regressions we could not control for unobserved heterogeneity because adding dummies for each person of our data set would not allow us to estimate our time constant variables of interest.

Differences between East and West Germans could be due to a different distribution of characteristics, different estimated coefficients and a different distribution of the residuals. The residual component can be interpreted as within group heterogeneity. We perform the decomposition method of Juhn et al. (1993), which is based on simple OLS regression, to estimate all three components. We further perform the decomposition method of Melly (2006), which decomposes observable differences into a characteristic and coefficient effect based on quantile regressions.

One problem arises because the group of permanent East German residents declines across time mainly due to East-West migration, which was caused in part by high unemployment rates in the East and by higher wages in West-Germany. The first main phase of such migration lasted until 1991 and the second one started in 1997. Migrants who left East Germany typically were

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[3] We use a robust VC-matrix when estimating the third stage of the estimation procedure.

younger and better educated than the average East German. Therefore the East-West migrants were a positively selected group. The positive selection is even stronger in the second wave of migration (Brücker and Trübswetter 2007, Fuchs-Schündeln and Schündeln 2009, Heiland 2004). After controlling for age, the most recent cohort in East Germany has a lower educational attainment and is less well integrated into the labour market. East-West migration by the better educated East Germans therefore tends to increase the negative income gap. Our analysis is not affected by internal German migration by definition as we dropped internal German migrants from our sample.

Finally, we would like to note that we included only persons with positive incomes in our data set. Typically children and women who stay at home as housewives receive no income at all. Since only people who already finished their education are included in our sample there are no children in our data set.

4. Results

Our regression results for the fixed effects vector decomposition method are shown in Table 2. Permanent West German residents have incomes that are 26.4 per cent higher than those of East Germans with the same observable personal characteristics.

(Table 2 about here)

The devaluation of observable and unobservable skills directly after unification could be responsible for the observed income difference. People who were educated and worked a long time in the German Democratic Republic should therefore have the highest income gap relative to West Germans. We check this hypothesis by inspecting the decennial cohort dummies. Most East Germans who were born before 1939 are already retirees in our data set starting in the year 1992. They received their formal education and started their working life before the Berlin Wall was built. The oldest cohort receives a higher gross total income relative to the younger cohorts. For the next cohorts who worked for a long time and received their formal education in the former centrally planned economy the income gap turns negative. Surprisingly the income gap increases for the most recent cohorts. Many of these East Germans received their formal education and started their working life in the unified Germany. This group should not be affected as much as the cohorts before them by the devaluation of their skills. Responsible for the relative low incomes of the most recent East German cohorts could be the fact that this group is negatively selected because especially young and high-qualified East Germans moved

West (Brücker and Trübswetter 2007, Fuchs-Schündeln and Schündeln 2009). In fact, the most recent cohort is least integrated into the labour market and has a lower educational attainment compared to the older cohorts. Their number of average years of schooling is one year lower and their yearly working hours are about 200 hours less relative to the cohort before.

In our last two specifications we analyse if there has been a convergence process of incomes. East Germans have a lower income of around 33 per cent relative to West Germans in the year 1992. Until the beginning of the 2000s the negative income gap closes by approximately 11 percentage points. Following the lowest negative income gap in the year 2002 the income gap starts to widen again between East and West Germans.

Further area level variables are included in our regressions because no regionally disaggregated costs of living data across time are available for East- and West-Germany (Roos 2006). Using area level fixed effects in our regression we control for the unobserved heterogeneity at the area level, including time constant cost of living differences. Furthermore, we control for time varying local heterogeneity by including the unemployment rate, the industry fraction and the gross domestic product per head at the area level. Including the area level variables turn the income differences insignificant. Only the result for the oldest cohort is still significant at the 10 per cent significance level. This highlights the relatively comfortable position of retirees in East Germany. The negative income gap of the youngest cohort is still highly significant and negative. This supports the worrying position of this cohort identified above.

Note that adding fixed effects on the area level to our exogenous variables turn the income differences insignificant. Simply adding the time varying variables reduces the influence of the dummy variable capturing the location of residence but they remain significant. The results are, hence, between the estimation of the regressions without area level variables and the results with area level variables when using fixed effects variables at the federal state level.

Further regressions are estimated to check the robustness of our results. The robustness tests include: adding Berlin to our East German sample, dropping the upper and lower 1 % per cent of the income distribution, adding a dummy for internal migrants, using pooled OLS as well as random effect estimations and the Hausman-Taylor regression model, and splitting the sample in people who are under or above 25 years of age and estimating these separately. In all cases the results were qualitatively the same (results available on request). Furthermore, commuters from East to West Germany could have a significant higher income than permanent residents.

The identification of commuters from East to West Germany is only possible for some years of our observation period. Therefore the areas ("Kreise") were dropped on each side of the former inner German border. Here it is assume that commuting takes mainly place between the areas adjacent to the border. Again our results are qualitatively the same (results available on request).

So far, our analysis concerned the mean income differences between East and West Germans. Performing quantile regressions the income differences can be estimated at different points of the conditional wage distribution. Quantile regressions were estimated in a five year interval starting in the year 1992 using the same exogenous variables as in Table 2 for the income difference (results available on request). At the first decile, the income difference is insignificant at each five year time point. Going up the wage distribution worsens the relative position of East Germans. At the median, East Germans have a 44 per cent lower income compared to West Germans in the year 1992. The gap reduces to 25 per cent in the year 2002 and increases by 4 percentage point until the year 2007. At the 9th decile the negative income gap is 64 per cent in the year 1992 and closes to 37 per cent in the year 2002. In the year 2007 the income gap is 46 per cent. The quantile regression results hence confirm the results of the descriptive statistics.

To gain further insights into the income differences we applied the decomposition methods of Juhn et al. (1992) and Melly (2006). The results of the decomposition of the income difference using these approaches with the same covariates as in Table 2 are shown in Tables 3 and 4, respectively.

(Table 3 about here)

The method of Juhn et al. decomposes the income difference into the contribution of differences in observable quantities, observable prices and unobservable quantities and prices at the first, fifth and ninth decile. The negative price effect increases across the whole conditional income distribution. Because of the more heterogeneous groups at both ends of the income distribution the residual effect is higher at the first and ninth deciles. But the residual effect is positive at the first and negative at the ninth decile. The quantity effect is positive at the first decile and around zero at the fifth and ninth decile. These results indicate the different driving factors of the income differences across the distribution. The positive income difference at the first decile are due to a positive quantity and residual effect that are together higher than the negative price effect. At the

median and ninth decile the negative price effect is responsible for the negative income difference.

(Table 4 about here)

The method of Melly 2006 decomposes the income difference into a characteristics and coefficient effect for every five years starting in 1992. The coefficient effect is negative and increases across the income distribution. Conversely the characteristic effect is positive. At the first decile the characteristic effect is higher than the coefficient effect and at the fifth and ninth decile it is smaller. This confirms the findings of the decomposition of Juhn et al. for the contribution of differences in observable quantities and observable prices.

5. Conclusions

Our empirical analysis of income convergence and heterogeneity since unification in Germany revealed four interesting and even surprising insights.

First, average incomes deflated by the consumer price index have been lower for East Germans relative to West Germans since unification. The convergence process has an inverse U-shape with a maximum at the beginning of the 2000s. In recent years, the income gap has risen again.

Second, the real income gap increases across the income distribution. At the first decile the real income of East Germans is higher relative to that of West Germans. Especially persons who receive benefits and retirees are disproportionately located there.

Third, differentiating between different cohorts yields the highest income for the retirees that belong to the oldest cohort. The middle cohorts should be in the worst position because they received their formal education in the former German Democratic Republic and started their work biographies there. Thus the devaluation of their skills should be the highest. However, this is not the case. Instead, the most recent cohort has the highest negative real income gap, given that their formal educational attainment and their labour market integration are lower compared to the previous cohorts. This may reflect the outmigration of the skilled young East Germans.

Fourth, when controlling for costs of living differences at the area level, the mean income difference between permanent residents of East- and West-Germany turns insignificant. Only the oldest and youngest cohorts have still an income difference. The oldest cohort has a higher and the youngest a lower income.

In summary, the goal of equalising nominal incomes has not been achieved in the twenty years since unification, given the available data. However, living standards appear to have equalised when accounting the local costs of living as well. More interesting and perhaps worrying are the differences between East and West when considering different parts of the income distribution or different cohorts. These differences reflect in part deliberate policy choices of the past, such as the generous recognition of East German employment histories in pension calculations. Yet these outcomes also reflect choices by the residents of East and West and, hence, by their differing economic circumstances. Prospects in the East continue to appear sufficiently bleak that significant numbers of qualified young East Germans migrate to the West in search of employment. While such mobility of labour is to be welcomed and an expression of how the East and the West of Germany have become an integrated market since unification, such migration is also the expression of continued structural imbalances between East and West which twenty years of policy has not been able to overcome. This is a stark reminder of the massive challenges, and perhaps limitations, of state intervention in overcoming regional development imbalances at the sub-national level, especially when these are the consequence of decades of alternative development paths.

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Tables

Table 1 Descriptive Statistics

	1992		1997		2002		2007	
	West	East	West	East	West	East	West	East
Real Gross total income (in Euro)								
Mean	26408	15928	27631	19772	27659	20588	30165	21090
1st decile	5571	6640	6065	7110	6093	6825	7629	7629
5th decile	24213	15321	25511	19140	25255	19074	27066	19619
9th decile	47794	24821	51402	32258	48788	34133	54768	34768
East-West real gross total income gap (in Euro)								
Mean	-10480		-7859		-7071		-9074	
1st decile	1069		1045		732		0	
5th decile	-8891		-6371		-6181		-7448	
9th decile	-22973		-19144		-14655		-20000	
East-West real gross total income convergence (in per cent of West Germans income)								
Mean	-40		-28		-26		-30	
1st decile	19		17		12		0	
5th decile	-37		-25		-24		-28	
9th decile	-48		-37		-30		-37	
Inequality measures								
9th decile/1st decile	8.58	3.74	8.48	4.54	8.01	5.00	7.18	4.56
9th decile/5th decile	1.97	1.62	2.01	1.69	1.93	1.79	2.02	1.77
5th decile/1st decile	4.35	2.31	4.21	2.69	4.14	2.79	3.55	2.57
Coefficient of variation	0.74	0.51	0.73	0.62	0.76	0.61	0.79	0.58
Gini coefficient	0.37	0.27	0.37	0.30	0.37	0.31	0.37	0.30

Source: Own calculations with GSOEP data using cross section weights.

Table 2 Regression Results

	Permanent East		Cohorts			Interaction		
Permanent East	-0.264***	-0.128	< 1930	0.227***	0.409*	1992	-0.328***	-
	(-864.10)	(-0.55)		(487.68)	(1.76)		(-65.87)	
			1930-39	0.062***	0.210	1993	-0.270***	-
				(124.30)	(0.91)		(-183.11)	
			1940-49	-0.269***	-0.227	1994	-0.259***	-
				(-459.81)	(-0.98)		(-183.72)	
			1950-59	-0.359***	-0.256	1995	-0.243***	-0.139
				(-707.23)	(-1.11)		(-162.41)	(-0.60)
			1960-69	-0.322***	-0.195	1996	-0.229***	-0.116
				(-580.38)	(-0.84)		(-160.84)	(-0.50)
			1970-79	-0.516***	-0.244	1997	-0.232***	-0.120
				(-554.07)	(-1.05)		(-158.73)	(-0.52)
			>=1980	-1.067***	-0.833***	1998	-0.250***	-0.136
				(-553.95)	(-3.60)		(-189.77)	(-0.59)
						1999	-0.228***	-0.109
							(-174.55)	(-0.47)
						2000	-0.248***	-0.123
							(-224.00)	(-0.53)
						2001	-0.244***	-0.118
							(-242.06)	(-0.51)
						2002	-0.215***	-0.127
							(-212.28)	(-0.55)
						2003	-0.267***	-0.141
							(-257.28)	(-0.61)
						2004	-0.284***	-0.161
							(-263.89)	(-0.70)
						2005	-0.285***	-0.156
							(-261.70)	(-0.67)
						2006	-0.291***	-
							(-249.53)	
						2007	-0.294***	-
							(-241.15)	
Employment Level of Individual, part time	-0.392***	-0.370***		-0.392***	-0.370***		-0.392***	-0.370***
	(-189.59)	(-102.61)		(-189.56)	(-102.47)		(-189.96)	(-102.65)
Employment Level of Individual, not working	-0.716***	-0.742***		-0.716***	-0.742***		-0.715***	-0.741***
	(-161.02)	(-123.30)		(-161.00)	(-123.16)		(-160.00)	(-123.11)
Working experience full-time employment	0.042***	0.056***		0.042***	0.056***		0.042***	0.057***
	(19.46)	(162.47)		(19.45)	(149.52)		(19.43)	(156.84)
- ^2	-0.001***	-0.001***		-0.001***	-0.001***		-0.001***	-0.001***

	(1)	(2)	(3)	(4)	(5)	(6)
	(-50.37)	(-149.75)	(-50.36)	(-145.12)	(-50.37)	(-150.19)
Working experience, part-time employment	0.023***	0.037***	0.023***	0.037***	0.024***	0.038***
	(13.31)	(63.82)	(13.31)	(63.48)	(14.03)	(65.08)
- ^2	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(-19.24)	(-56.61)	(-19.24)	(-56.52)	(-18.67)	(-56.11)
Unemployment experience	-0.055***	-0.034***	-0.055***	-0.034***	-0.065***	-0.039***
	(-22.94)	(-28.65)	(-22.94)	(-28.35)	(-26.64)	(-32.19)
- ^2	-0.000	-0.001***	-0.000	-0.001***	0.000	-0.001***
	(-0.41)	(-12.84)	(-0.41)	(-12.80)	(1.41)	(-10.18)
retiree	0.355***	0.280***	0.355***	0.280***	0.354***	0.280***
	(109.43)	(60.06)	(109.43)	(58.24)	(109.61)	(60.01)
Length of time within firm	-0.006***	-0.006***	-0.006***	-0.006***	-0.006***	-0.006***
	(-47.85)	(-31.78)	(-47.84)	(-31.73)	(-47.97)	(-32.29)
Working in Occupation Trained for	0.138***	0.134***	0.138***	0.134***	0.138***	0.134***
	(123.17)	(42.87)	(123.14)	(42.83)	(124.52)	(42.77)
Civil service	-0.006***	0.003	-0.006***	0.003	-0.004***	0.003
	(-4.16)	(0.67)	(-4.16)	(0.67)	(-2.73)	(0.80)
_cons	9.991*** (37865.04)	9.703*** (140.70)	9.997*** (37827.16)	9.708*** (140.73)	10.047*** (38285.01)	9.732*** (139.10)
eta	1.000*** (2926.01)	1.000*** (416.10)	1.000*** (2804.03)	1.000*** (409.63)	1.000*** (2869.21)	1.000*** (416.08)
Regional Variables and Dummies on "Kreisebene"	no	yes	no	yes	no	yes
Dummy for Gender	yes	yes	yes	yes	yes	yes
Dummies for Size of the company	yes	yes	yes	yes	yes	yes
Educational attainment dummies (ISCED-Classification)	yes	yes	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes	yes	yes
Dummies for Marital Status of Individual	yes	yes	yes	yes	yes	yes
Personal and Household Characteristics	yes	yes	yes	yes	yes	yes
Dummies for 1 Digit Industry Code of Individual	yes	yes	yes	yes	yes	yes
Dummy for Disability Status of Individual	yes	yes	yes	yes	yes	yes
Time	1992-2007	1995-2005	1992-2007	1995-2005	1992-2007	1995-2005
r2	0.82	0.84	0.82	0.84	0.82	0.84
N	166889	121522	166889	121522	166889	121522

Notes: *** significant at 0.01 per cent, ** significant at 0.05 per cent, * significant at 0.10 per cent.
Source: Own calculations with GSOEP data.

Table 3 Decomposition of Juhn et al. (1992)

	Total income difference	Contribution of differences in observable quantities	Contribution of differences in observable prices	Contribution of differences in unobservable quantities and prices
d10	0.12	0.10	-0.12	0.13
d50	-0.32	0.02	-0.32	-0.03
d90	-0.46	0.03	-0.42	-0.07

Source: Own calculations with GSOEP data

Table 4 Decomposition of Melly (2006)

	1992		
	Raw difference	Characteristics	Coefficients
d10	0.08	0.28 ***	-0.20 ***
d50	-0.44 ***	0.15 ***	-0.59 ***
d90	-0.64 ***	0.18 ***	-0.82 ***
	1997		
d10	0.08	0.27 ***	-0.18 ***
d50	-0.26 ***	0.14 ***	-0.40 ***
d90	-0.43 ***	0.15 ***	-0.58 ***
	2002		
d10	0.03	0.14 ***	-0.11 ***
d50	-0.25 ***	0.06 ***	-0.31 ***
d90	-0.37 ***	0.09 ***	-0.46 ***
	2007		
d10	-0.07	0.03	-0.10
d50	-0.29 ***	0.02	-0.31 ***
d90	-0.46 ***	0.03	-0.49 ***

Source: Own calculations with GSOEP data