Why Do People Still Live In East Germany?

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Abstract

In 1997 GDP per capita in East Germany was 57% of that of West Germany, wage rates were 75% of western levels, and the unemployment rate was at least double the western rate of 7.8%. One would expect that if capital flows and trade in goods failed to bring convergence, labor flows would respond, enhancing overall efficiency. Yet net emigration from East Germany has fallen from high levels in 1989-1990 to close to zero. Using state-level data for all of Germany, available from 1991-1996, I am able to explain the downward trend in east to west migration using wage and unemployment information. Convergence in hourly wages is the most important factor. Analysis of the eastern sample of the German Socio-Economic Panel for 1990-1997 suggests that commuting is unlikely to substitute substantially for emigration. The individual-level data further indicate that emigrants are disproportionately young and skilled, and that individuals suffering a layoff or non-employment spell are also much more likely to emigrate.

In 1997 GDP per capita in East Germany was 57% of that of West Germany, wage rates were 75% of western levels, and the unemployment rate, although hard to measure, was at least double the western rate of 7.8%. Convergence with the west had essentially come to a halt. Yet net emigration from East Germany had fallen from high levels to close to zero, an apparent puzzle.

Economists have various theories concerning mechanisms that could lead to convergence in living standards across regions or countries, thereby enhancing world efficiency, if the economies are linked through trade or factor mobility. Particularly within countries, one would expect that if flows of goods and capital were not sufficient to bring convergence, it would occur through flows of labor. There is evidence for the United States that such equalizing flows of labor are an important regional adjustment mechanism (Blanchard and Katz 1992), but in Europe this mechanism is much weaker (Decressin and Fatás 1995). A particularly striking example of persistent differences in regional development is the north-south difference within Italy.

The unification of Germany provides an opportunity to observe the adjustment process following the merging of two economies which previously had little exchange of goods or factors, and which had very different levels of development: wages in the east were initially less than half the wages in the west. The opportunity to move from east to west emerged in the late summer of 1989. From this time until the period following eastern elections in March 1990, the political future of East Germany was uncertain, and thus political considerations as well as the possibility that the emigration window might close contributed to the large initial flows from east to west. Figure 1 shows that in 1989 and 1990 400,000 individuals per year moved from east to west, or almost 2.5% of the eastern population per year. Once economic and political union were agreed upon, economic considerations remained as the main determinant of the migration

decision. A common language, similar education systems, a shared cultural history, and a shared political history prior to the second world war would be expected to facilitate migration. It is possible that some individuals, initially optimistic about the possibility of rapid convergence through capital flows and other mechanisms, might have preferred to delay emigration. Since convergence has now essentially halted and looks unlikely to resume, however, one might expect an increase in the emigration rate. Figure 1 shows, however, that emigration fell greatly in 1991-1993, and remained steady thereafter. Migration from west to east was meanwhile increasing, so that by 1994 net emigration from the east was small, and gross emigration equal to only about 1% of the 1988 population.

There are a few possible explanations for low emigration. The geography of Germany and the enclave of West Berlin mean daily commuting from east to west is more feasible than commuting between southern and northern Italy, and commuting may substitute for emigration. This would have been a particularly attractive option for individuals in the early years who expected convergence to be rapid and did not want to incur the fixed cost of moving. Another possibility is that the large early outflows, influenced by political considerations, have left behind individuals with large moving costs. A third consideration is that mutual suspicion or cultural differences between easterners and westerners reduce migration: westerners consider easterners to be lazy and resent the tax increases that have financed unification, while easterners resent westerners' influence and superior airs, and feel westerners do not share a common recent history. A final possibility, however, is that the low net east to west flows disguise gross flows which are in fact no lower than flows between western regions, which are themselves heterogeneous.

In this paper I investigate whether wage and unemployment levels in different regions and their evolution over time can explain the patterns of east to west migration observed. I use

state-level data for all of Germany for this purpose, as well as data for smaller regions, and use flows within West Germany as a comparison point. I also use individual-level data from the German Socio-Economic Panel (GSOEP) to examine the individual determinants of emigration from the east. I test whether the characteristics of emigrants conform to those predicted theoretically, assess how emigrants and commuters differ, and test whether commuting and emigration are substitutes.

Using the state-level data from 1991-1996, I am able to explain the downward trend in east to west migration, relative to the within-west trend, using wage and unemployment information. Wage convergence between east and west is the most important factor. I am also able to explain west-east and within-east trends. The 1991 level of east to west flows is lower than predicted by the covariates, but evidence at the level of smaller regions shows that this is due to aggregation. The continued presence of people in East Germany is thus no more puzzling than the presence of people in less prosperous regions of West Germany.

Using the GSOEP data from 1990-1997 I confirm the prediction of the Roy model, that due to lower wage inequality in the east, emigrants to the west are likely to be the better skilled, although the strongest predictor of emigration is youth. A common type of commuter or emigrant is a young person pursuing studies in the west, while another common type of emigrant is a young person who moves to the west on completion of tertiary education in the east. These results suggest that emigration, although not very high, may nevertheless be detrimental to the East German economy. The probability of emigrating is twice as high for individuals who are laid off or experiencing a non-employment spell. However, a laid-off individual is twice as likely to commute as to emigrate. Individuals living near the border with the west (other than Berlin) are much more likely to commute, and slightly less likely to emigrate. Individuals living near

West Berlin are much more likely to commute, and equally likely to emigrate. This suggests that commuting does substitute to some extent for emigration, although the transitory nature of commuting, the absence of substitution in the Berlin area, and the possibility of using commuting as a springboard for emigration suggest that emigration is unlikely to have been reduced greatly by commuting.

Background

In the late summer of 1989, it became possible to leave East Germany via Hungary, due to a change in Hungarian policy. Political concessions were made in East Germany in response to public discontent, and with the fall of the Berlin wall on 9 November 1989, direct migration from East to West Germany became possible. Elections held in March 1990 showed strong support for parties supporting speedy unification with the west, reducing the political motive for emigration from the east. Monetary, economic and social union occurred in July 1990, with the economically less important political union following in October.

The high east to west migration flows were considered an important issue at the time of monetary union, both by those whose concern was that western wages might thereby fall, and by those who feared that a brain-drain or youth-drain more generally would reduce the economic development prospects of the east. The concern about the link between migration and western wages almost certainly played a role in the wage bargaining that began in the east shortly after monetary union. The western labor unions moved quickly to set up a new collective bargaining system in the east in the image of the western system. This meant establishing industry-level unions that would normally bargain with the industry employers' federation. In the early phases of the transition firms had not yet been privatized, however, and negotiations took place between

the unions, whose key positions were filled by westerners, and firm managers, "advised" in some cases by western employers. The incentives to resist any union wage demands were low, and the unions' unofficial objectives are generally thought to have included a reduction of the incentives for easterners to move west.

The result was a very rapid rise in wages, and an accompanying fall in employment. Based on the GSOEP data, for the age group 18 to 54, consumer real wages rose by 83% from 1990 to 1996 (although due to a rise through the tax brackets, after-tax wages rose by only 47%), and product real wages by 112%. Wage convergence had almost ceased by 1994, when the firms had been privatized and employer resistance to wage increases had become strong (Turner 1998). Employment meanwhile fell by about one third from 1989 to 1992, where it stabilized, which meant that employment rates fell from 89% to 73%. Job-changing rates were high early in the transition, but by the later years were not so different from western rates (Hunt 1999). By the latter part of the 1990s, therefore, the transition process appeared to have run out of steam, although the picture differs considerably by region within the east. Wage inequality (as well as income inequality) rose in the east, but remained lower than in the west: the variance of log wages rose from 0.22 to 0.34 in the east, compared to a steady 0.52 in the west.[1]

The government intervened with active labor market policies. Almost all workers eligible to retire at 55 under the early retirement program in force through December 1992 did so (about 900,000 of the initial labor force of 9 million). In 1991 many workers were on "short-time", an involuntary reduction of work hours, but in later years hidden unemployment was mostly due to individuals in public training programs (230,000 in 1996), public works jobs (278,000 in 1996) and early retirement. By comparison, registered unemployment in 1996 was 1,169,000. (Sachverständigenrat 1997). Meanwhile, in the west, real wages continued to rise gradually.

Unemployment, on the other hand, declined to 4.3% in 1991 as a result of the unification boom, before beginning an upward rise over most of the rest of the decade.[2]

The housing market is also a relevant consideration in mobility decisions. Subsidies to rents in the east were removed in stages. Subsequently, rents (adjusted for apartment size but not quality) were still lower in the east, but have been converging to western levels. Limits on rent increases for incumbent tenants mean that the housing market acts as a brake on mobility in the west. However, this effect is much smaller in the east: due to the widespread necessity of renovating eastern apartments after the transition, it was possible to raise rents more, and the rent advantage of renters with long tenure is lower than in the west. (See Frick and Lahmann 1996.)

Theory

The basis of the theory of migration choice is a computation of the present discounted value of expected income (or utility) in the home country versus the destination country, taking a fixed cost of moving into account (or possibly also persistent non-pecuniary costs of living abroad). Expected wages will depend upon both the wage conditional on being employed and the probability of being employed in each period (unemployment rate). Borjas (1987) shows, based on the Roy model, that the relative inequalities of source and destination are important determinants of who in the source country will most want to emigrate. Conditional on mean wages, the highly skilled will want to leave low inequality locations for higher inequality locations, while the low skilled will prefer low inequality locations.

The utility of being in region s for individual i may be written

$$V_{is}=V_{is}[e_{is}(U_s,X_i),w_{is}(w_s,X_i,I_s)], \quad (1)$$

where e_{is} is a function indicating the employment probability of the individual, and depends upon

the region's unemployment rate U_s as well as the individual's characteristics X_i, and w_{is} indicates the wage of the individual in the region conditional on employment, which is in turn determined by average wages in the region w_s, individual characteristics X_i, and the inequality in the region I_s. Were an individual to move from region s to region d, a utility cost C_{isd} would be incurred:

$$C_{isd}=C(D_{sd}, X_i), \tag{2}$$

where D_{sd} is the distance between the two regions. An individual will migrate from s to d if the utility difference m_{isd} is positive:

$$m_{isd}=V_{id}-V_{is}-C_{isd}>0. \tag{3}$$

This static formulation could be enhanced by modelling expectations about future developments. The most obvious prediction of the dynamic formulation is that young people will be more likely to emigrate, as they have a longer period in which to benefit from better labor market conditions in a destination region. Burda (1995) and Bauer (1995) develop the idea of the option value of waiting: if the evolution of the key variables is uncertain, and new information is acquired in every period, it can be optimal be wait another period and reassess the situation.

Using the individual-level data for easterners, I will test to what extent younger individuals are more likely to emigrate, and whether, since wage inequality is lower in the east, highly skilled individuals are more likely to emigrate. I will also determine whether those whose current job market situation is poor are more likely to emigrate, and examine how commuters and emigrants differ. In order to test whether migration and commuting are substitutes, I will look to see whether individuals living near the border are more likely to commute and less likely to migrate. This part of the analysis will not attempt to impute expected gains from moving to the west, and hence will examine only push factors.

Analysis of the regional-level migration data (for all of Germany) will then provide better

evidence on the causes of trends in migration, the distinct effects of push and pull factors (especially unemployment and wages), and an assessment of whether east to west migration flows are lower than would be expected (relative to within-west flows). Individuals are expected to move to high wage and low unemployment regions. The effect of source wages and unemployment are ambiguous, since although low wages and high unemployment will increase the desire of an individual to leave, they may also cause the individual to be liquidity constrained. Also, the overall unemployment rate of the region may influence the stigma associated with unemployment, and hence the search intensity of the unemployed. Finally, unemployment duration may play a role, since the recently unemployed may search more than the employed, while the long term unemployed may search less, or less effectively, than the employed, and hence be less likely to find a job in another region.

Since commuting is also an option for westerners seeking to change work-place within the west, commuting can only explain relatively low east-west migration flows if easterners are more prepared to commute than westerners. Despite higher eastern unemployment rates, employment rates are much higher for eastern than western women. This means that joint location problems make migration costs higher for easterners, and could spur commuting. Conversely, in early years transport infrastructure was worse in the east, and through at least 1995 not fully integrated with the western network, which could deter east-west commuting. I will consider mean commuting times and distances for easterners and westerners to seek evidence of more commuting on the part of easterners.

Working hours are lower in the west than in the east, which reduces the attraction of east-west migration for an income maximizer (assuming search costs are associated with finding a second job), but has an ambiguous effect on a utility maximizer. I will compare the

explanatory power of hourly and weekly wages to assess the effect of this hours differential.

Previous Empirical Literature

There is a large literature on the determinants of migration, using a variety of data types for different countries. Daveri and Faini (1996) find that for migration within Italy, unemployment and wages are equally important, in the sense that what appears to matter is the expected wage (the wage multiplied by one minus the unemployment rate). However some studies for other countries do not find that the unemployment rate in the source region encourages emigration, while the wage differential has also been found to have the opposite of the expected sign.[3] Decressin (1994) uses migration flows between West German federal states in the 1980s to analyze migration determinants, and does find that individuals tend to move from high to low unemployment regions, as well as from low to high wage regions. Borjas (1987,1991) (for immigration from abroad to the United States) and Borjas, Bronars and Trejo (1992) (for immigration within the United States) find evidence to support the Roy model of selection of migrants.

A small set of papers has examined east-west migration using the individual-level data of the German Socio-Economic Panel (GSOEP). Burda (1993) and Burda et al. (1998) examine the determinants of the intention to emigrate, as self-reported in 1991. Burda (1993) finds negative effects of age, job tenure and civil servant status, and positive effects of household income, rent, subjective probability of job loss, and having family or friends in the west. Burda et al. (1998) find a U-shaped relation between household income and migration desire. Schwarze (1996) combines information on migration intentions in 1991 and actual migration from 1991 to 1994 for a sample of individuals working in 1991. The current wage is found to have a negative

impact on actual migration, while wage growth has a positive impact. The presence of relatives in the west and dissatisfaction with the environment have significant positive effects, while the remaining coefficients are insignificant. Hunt (1999) shows that workers taking a job in the west between 1990 and 1991 had median wage gains of 42 log points (52%), but movers in later years gained at most 8-9%. Some of the reduction was due to the increase in the share of individuals transferred to the west by their firm; these individuals experienced little wage gain.

Pischke, Staat and Vögele (1994) use the Arbeitsmarktmonitor (AMM) dataset to analyze commuting from East to West Germany, using longitudinal data for the period November 1990-November 1991. They observe that commuters are slightly younger and much more likely to be male than non-commuters. Based on subjective questions, the authors conclude that commuters intend to commute for a long period. They find that males, the university educated, and those living in East Berlin are significantly more likely to search for a job in the west.[4]

The proposition that commuting can be a precursor to or substitute for migration has received attention in the literature: for example, Kalter (1994) proposes that a long-term decline in mobility within western Germany is explained by a rise in commuting facilitated by falling transport costs and rendered more desirable by a rise in dual-earner families.

Data

I perform the principal regional-level analysis using data at the level of the federal state. East and West Berlin may be used as separate cross-section units or as a single state, and I emphasize the analysis using unified Berlin. The data are therefore for 16 states for the years 1991-1996.[5] Wages are for manufacturing, and are deflated separately for east and west (the price indices take rents into account). Purchasing power is made comparable based on Krause

(1994). I conduct additional analysis using 97 smaller regions (Raumordnungsregionen, or ROR regions), for 1991-1993. The ROR regions of Bremen, Hamburg and Berlin are defined to include the whole greater metropolitan region, unlike the federal states of Bremen, Hamburg and Berlin.

The individual-level analysis uses the eastern sample of the German Socio-Economic Panel (GSOEP) beginning with the first wave drawn in June 1990, just before monetary union, and continuing through 1997.[6] Individuals leaving the east for the west are followed in the survey, although these emigrants do have a higher than average attrition rate from the survey. Workers are also asked if they are commuting to the west (this need not mean every day, and includes some commuters who return home only at weekends).[7]

The number of east to west migrants is somewhat small if all observations with any missing values in all variables of interest are dropped, so two samples are used. A larger sample is used for analysis of the effects of basic variables. A smaller sample is used for examination of a larger array of covariates. Both samples include both the employed and the non-employed, and cover the age range 18-53, to avoid retirees who would definitely not commute. This upper age cut-off eliminates only a tiny number of commuters or emigrants. The larger sample otherwise excludes only those with missing commuting or migration status, or education. The smaller sample also excludes those with missing information on layoff status, spousal variables, labor force status, and monthly wage. More details on all data can be found in the Data Appendix.

Econometric Models

The simple theory of equations 1-3 suggests that for the regional-level analysis the

following panel model could be estimated (using all regions of Germany):

$$\begin{aligned}\log M_{sdt} = {} & \alpha_{sd} + \beta_0 \log P_{st} + \beta_1 \log P_{dt} + \beta_2 \log w_{st} + \beta_3 \log w_{dt} \\ & + \beta_4 \log U_{st} + \beta_5 \log U_{dt} + \beta_6 \log D_{sd} + \sum_{j=1}^{t-1} \gamma_j T_j \\ & + \beta_7 EW_{sd} + \beta_8 WE_{sd} + \beta_9 EE_{sd} \\ & + \beta_{10} EW_{sd} * t + \beta_{11} WE_{sd} * t + \beta_{12} EE_{sd} * t + \epsilon_{sdt}\end{aligned} \tag{4}$$

where M represents the number of individuals moving from s to d, P stands for population, w for wage, U for number of unemployed, D_{sd} for variables capturing the distance between regions, and T_j for year dummies. The specification includes dummies for east to west (EW_{sd}), west to east (WE_{sd}), and within-east flows (EE_{sd}), and their interactions with a trend. The coefficients on these dummies indicate how the level and change in the relevant flows compare with the omitted within-west category. α_{sd} represents a random or fixed effect (in the latter case β_6 - β_9 will not be identified). In the fixed effects specification it is not appropriate to retain the source and destination populations, even though these vary over time, since an important component of the variation over time will represent past immigration and emigration. In the results presented, Berlin is treated as a unified state in neither east nor west, and the dummies EB_{sd}, BE_{sd}, WB_{sd}, BW_{sd} and their interaction with a trend are also included, to capture flows between the east and west and Berlin.

Using the individual-level data, I estimate multinomial logits for the pooled pairs of years from 1990-1991 to 1996-1997, for a sample of easterners who live and work in the east in the initial year of the pair. I distinguish between individuals who live and work in the east in both years of the pair, individuals who move to the west, and individuals who begin commuting to the west between the pair of years. Most covariates refer to the initial year of the pair, and the standard errors are adjusted for the pooling of the years.

Descriptive Statistics from the GSOEP Data

Before focusing on the sample of easterners who were living and working in the east in the initial year of a pair, I show how easterners move between various statuses between years. Table 1 shows the year-to-year transitions for easterners aged 18-53 in the pooled years 1990-1997 between the statuses of neither emigrant nor commuter, commuter, emigrant, and reverse commuter. A non-emigrant non-commuter lives and works in the east in a particular year. An emigrant lives and works in the west, a commuter lives in the east and works in the west, and a reverse commuter lives in the west and works in the east. The first row shows that on average over the period, 2.2% of non-emigrant non-commuters begin commuting each year, while 0.8% emigrate. A very small number become reverse commuters. The second row shows that the vast majority of emigrants remain in the west, although about 3% return home each year on average. By contrast, the third row reveals that being a commuter is a much less stable state, with 28% of the commuters ceasing to work in the west each year. About 5% of commuters become emigrants, which means that former commuters represent 19% of the inflows into the state of emigration. Thus each year one third of commuters cease to commute. The fourth row shows that 70% of reverse commuters remain reverse commuters. These results suggest that commuting may not be an important substitute for emigration, since the state of commuting is much more transitory.[8]

The GSOEP data confirm the observation of Pischke et al. (1994) using the AMM, that the group of people who begin commuting between surveys but do not report a change of employer in that period is significant: these individuals shall be referred to as "transfer commuters". These transfer commuters represent 101 of the 376 individuals in Table 1 row 1 who moved from non-emigrant non-commuter to commuter, and they have higher transfer rates

back to the state of non-emigrant non-commuter than ordinary commuters, suggesting that they may have been sent to the west for training by a firm with a western parent. The year after beginning to commute, 60% of transfer commuters return to the status of non-emigrant non-commuter, while 32% of other commuters do so. Transfer commuters are analyzed separately from ordinary commuters below. Amongst emigrants there are also nineteen "transfer emigrants" who move from east to west without changing employer - seven of the eight individuals in Table 1 row 1 who move from being non-emigrant non-commuters to reverse commuters are in fact transfer emigrants, suggesting that reverse commuting is the result of short moves near the border that are based on housing rather than job considerations.

The rest of the analysis of the GSOEP data will focus on the decision to cease being a non-emigrant non-commuter (row 1); I will not attempt to analyze the decision to cease commuting or to migrate back to the east, nor transitions between other statuses, such as individuals who first commute, then migrate (row 3 column 2): I analyze their decision to become a commuter only. Hence, the sample initially analyzed (the larger sample) is the sample of the first row of Table 1, plus eleven individuals who emigrated, but whose commuting status is missing (and who for the purpose of Table 1 might be either emigrants or reverse commuters). I do not analyze the return to the west of westerners living in the east (who were not included in Table 1).

The category names for the multinomial logits refer to the status in the second year of the pair (the initial status is non-emigrant, non-commuter): stayers, commuters, transfer commuters, emigrants and transfer emigrants. The transfer emigrants are an awkward group - they appear somewhat different from the emigrants, and will be influenced by the high proportion of reverse commuters among them. However, they are too small a group to analyze separately. Therefore

all analysis has been performed either dropping them from the sample, or including them with the emigrants. Most covariates refer to the initial year of the pair. Information on layoffs refers to the possibility of a layoff being reported as occurring between the interviews of the two years. Information on residence (distance to the west, city size) refers to the 1990 residence, to minimize the possibility that individuals chose their location to allow commuting, for example.

The means of variables used in analysis of the larger sample are given in Table 2. They show that both types of commuter are less likely to be female than stayers, and that emigrants and commuters other than transfer commuters are younger than stayers. 43% of emigrants are aged 18-25.

Highest schooling attained is represented by four categories: tertiary education ("university"), an apprenticeship through the dual classroom/firm system, vocational training that is not in conjunction with a firm (this in some cases follows the apprenticeship, and individuals in this category are better paid), and none of these qualifications ("general schooling"). Anecdotal evidence suggests that one common type of commuter or emigrant is an individual who begins working in the west upon completion of education in the east. Since the interviews are conducted before the end of the academic year, using education in the initial of the pair of years would give a false picture of the education level of these emigrants and commuters at the point at which they begin working in the west. Therefore, the education level used is that attained in the second year of the pair. Table 2 shows commuters and emigrants nevertheless include disproportionate numbers of those without qualification, but this effect is much stronger if education in the initial year is used. The transfer emigrants include a relatively high proportion of individuals with tertiary education.

Both types of commuters and transfer emigrants were much more likely to live in 1990

in a "Kreis" (county) that had a border with West Berlin or the rest of West Germany, while differences across groups in the proportion living in a county some part of which is within 50km of West Berlin or the rest of West Germany are less striking. 7% of individuals did not have the requisite information on their county to allow this calculation, and these people are represented with the "distance missing" dummy rather than being dropped.

Table 3 provides means for these and additional variables, for the smaller sample. One third of those beginning to commute had experienced a layoff since the previous year. Information for 1990 could be missing if at that time the individual was too young to answer the individual questionnaire, or if the individual is in the panel in later years because he or she married into a panel family, and a dummy is included in the regressions to control for this. Transfer commuters and transfer emigrants have much higher initial monthly wages than any other group (partly due to the fact that by definition they all have non-zero wages).

Regression Results from GSOEP Data

The first multinomial regression results, for the larger sample without the transfer emigrants, are presented in Table 4. Standard errors are corrected for the pooling of the years, and exponentiated coefficients are presented (odds ratios), along with the t-statistics for the original coefficients. The reference group is stayers. The first regression, in columns 1-3, includes controls only for education and year. This reproduces the results of the table of means: commuters and emigrants, although not transfer commuters, are disproportionately unskilled. An individual with only general schooling is 82% more likely to be a commuter than a stayer, compared to someone in the omitted apprencticeship category, and is twice as likely to be an emigrant. The year dummies (which refer to the initial of the pair of years) indicate that inflows

into commuting after the initial omitted year of 1990-1991 were significantly lower. Migration levels in column 3 follow a similar time pattern to the aggregate data of Figure 1. The hypothesis that the coefficients for commuters and emigrants are the same cannot be rejected in this regression. However, in all subsequent regressions, the hypothesis that the coefficients of any pair of categories are equal can be rejected using a likelihood ratio test.

The interpretation of the results is not affected by considering absolute rather than relative probabilities. The average predicted probability of being in each category can be computed with all individuals assigned (the omitted) apprenticeship education, and with all assigned general schooling (leaving non-educational covariates at their actual values). For commuters the average predicted absolute probability rises from 1.5% to 2.6% when education is reduced in this way, while for emigrants it rises from 0.8% to 1.5%.

In the second regression, sex, age and distance dummies are added. This has a large effect on the education dummies: conditional on age, emigrants are disproportionately from the high-skilled university group, with no significant patterns for commuters and transfer commuters. An individual with a university degree is 83% more likely to be an emigrant than a stayer, compared to the omitted apprenticeship category. In terms of absolute probabilities, raising the education level from apprenticeship to university raises the average predicted probability from 0.8% to 1.4%. The change in the education coefficients suggests that a common emigrant or commuter type is a young person who commutes or migrates to the west to study further after their general schooling. Unreported results using education in the first year of the pair rather than the second show somewhat similar results for the regression of columns 1-3, but these education coefficients change little when age (and sex and distance) are added. This confirms the

hypothesis that another common emigrant type is a person who moves to the west after finishing university.[9]

Commuters and especially emigrants are much younger than stayers, but transfer commuters do not have a different age profile from stayers. The age effects are large: the probability that an individual is a commuter rather than a stayer is 5.2 times higher for an 18-21 year old (compared to someone age 46-53), and 9.3 times higher in the case of the probability of migration. For the emigrant category the predicted absolute probability is 2.3% for 18-21 year olds compared to 0.3% for 46-53 year olds.[10] The probability of being a commuter or transfer commuter compared to being a stayer is only about 40% for women of what it is for men, but there is no gender difference for emigrants.

The 1990 distance coefficients provide the unsurprising result that living in a county on the border raises the probability of commuting or transfer commuting 3-6 fold compared to those more than 50km from the border (the omitted category). However, being within 50km of (but not on) the border does not affect the commuting probability significantly. If commuting and emigration are substitutes, we would expect to see that areas with significantly higher commuting rates have lower emigration rates. For the region bordering West Berlin this is clearly not the case. However, residents on the border with the rest of West Germany are indeed less likely to migrate. This is also true for those residing within 50km of the rest of West Germany, despite the fact that these individuals are not significantly more likely to commute.

For commuting to explain low east-west migration relative to within-west migration, the focus of the regional analysis below, easterners must be more willing to undertake long trips to work than westerners. In 1993 and 1995 all workers in both east and west were asked how far they travel to work. Tabulation of these results for the age group 18-54 (using sample weights)

shows that while easterners travel shorter distances to work on average, the trip takes them longer. In 1995 20% of easterners spent at least 45 minutes going to work, while only 14% of westerners did so, however only 4.5% of easterners traveled at least 40 km, compared to 8% of westerners (1993 results are similar). These results probably reflect the inferior transport infrastructure in the east, and this infrastructure is likely also to impede easterners' ability to commute to the west.

The regressions of Table 5 probe gender differences further, by adding interactions between the female dummy and marital status, and adding a dummy for the presence of a child aged 0-11 and its interaction with gender. The exponential of the sums of interaction coefficients and the t-statistic for the sums are presented at the bottom of the table. The first three columns present results for a regression without the transfer emigrants, while column 3' presents the migration coefficients for a regression where the transfer emigrants are grouped with the emigrants (the coefficients for commuters and transfer commuters are scarcely affected). The results show that the negative coefficient for commuting on the female dummy in Table 4 was due to the fact that married women with children are less likely to commute, and the negative coefficient for transfer commuters was due to a lower likelihood of married women to become transfer commuters.

The coefficients of column 3' show that the addition of transfer emigrants strengthens the tendency of emigrants to be highly skilled. The result that emigrants are less likely to live on the border with the west is weakened by the addition of the transfer emigrants in column 3', but this is not surprising if many of the transfer emigrants are making short moves for reasons related to housing rather than their job. For ease of interpretation, subsequent regressions include neither the gender interactions nor the child variable.

In order to examine the effects of more covariates and to avoid the inclusion of many dummy variables for missing information on various variables, subsequent analysis is based on the smaller sample. Appendix Table 1 repeats the regressions of Table 4 columns 3-6 with the smaller sample. The change in sample affects the pattern of the year dummies and renders the distance coefficients for emigrants insignificant. Further covariates are added to this specification, and the coefficients on the additional covariates only are presented in Table 6.

The first additional covariate, other than the dummy for the presence of a spouse, is a dummy for whether or not the individual had been working in 1990 - most individuals old enough to work but not working in 1990 (with the exception of women on maternity leave) would have had only a weak attachment to the labor force, and hence would be expected to be less likely to ever become commuters of either type. For commuters of the ordinary type this prediction is correct (the coefficient is negative and significant in the second specification). Conditional on having worked in 1990, however, one would expect that someone not working in the initial year of the pair is likely to be involuntarily non-employed, and that such a person would be more likely to commute or emigrate. The results show indeed that such individuals are almost three times likely to commute and almost twice as likely to emigrate compared to those in work (by definition transfer commuters must have been working in the initial of the pair of years and the exponentiated coefficient is therefore constrained to one). Individuals whose hours have been involuntarily reduced (short time, which was very common in 1991 especially) are more than twice as likely to emigrate as those working full hours. The effect on commuting, while also large, is significant only at the 10% level.

The strongest predictor is the dummy for whether the individual reported being laid off between the pairs of years: laid-off individuals are more than four times as likely to begin

commuting and more than twice as likely to emigrate, again compared with those who were working in the initial year and were not laid off. In terms of absolute probabilities, if no-one were laid off, predicted commuting and emigration probabilities would be 1.3% and 0.6% respectively, while if all were laid off they would be 4.9% and 1.3% respectively. By definition no transfer commuters were laid off, so the exponentiated coefficient is again constrained to be one.

An individual with a non-employed spouse is more than twice as likely to become a transfer commuter as one with an employed spouse (unreported regressions indicate this effect is for males only). The other coefficients on the partner information are not significant at the 5% level, although at the 10% level an individual whose partner was laid off is more likely to emigrate than someone with a working spouse. Dummies for the size of an individual's city in 1990 are also included, and in some cases have significant coefficients.[11] None of the results (including the unreported coefficients) are changed much by adding dummies for the state of residence in 1990 to the covariates of the first regression in Table 6 (these results are not reported).

In columns 4-6 of Table 6 the responses to questions asked in 1990 about whether colleagues, relatives or friends had moved to the west in the previous year are added to the covariates of columns 1-3. These are expected to have a positive correlation with the migration probability and possibly the commuting probability, either because these individuals would provide a network reducing the cost and increasing the benefit of migration, or because these individuals are similar to the individual in the sample, and the variables could thus be correlated with unobserved heterogeneity in the error term. The coefficient on the dummy for a friend moving is significantly positive for the probability of commuting, but otherwise in the

coefficients on these variables are insignificant. Unreported results including information from 1990 about the presence of relatives in the west and whether they sent money and how much also showed weak effects. On the other hand, the variable indicating whether a member of the household had moved to the west in the previous year has a large positive effect on the probability of migration or transfer commuting.

A further regression is run where the education dummies of columns 1-3 in Table 6 are replaced by the individual's monthly wage in the initial of the pair of years (zero for those not working). The coefficients on the wage only are reported in the upper panel of Table 7. The results show that transfer commuters and emigrants have higher wages, but the result for emigrants is only significant when the transfer emigrants are included. Since the wages are in levels, the coefficient for transfer commuters implies that a DM 1000 increase in the wage increases the probability of being a transfer commuter by 26%. The results if the education coefficients are also included are shown in the lower panel: the coefficient for emigration becomes insignificant, while the negative coefficient for commuters is now significant at the 10% level. Coefficients are even less significant if hourly wages are used (the results of these regressions, which entail a reduction in sample size, are not reported).

Together the coefficients neither seem to support a Roy model interpretation (positive coefficients would be expected in the first row), nor an interpretation of the effects of being overpaid or underpaid conditional on one's characteristics (negative coefficients would be expected in the second row). The interpretation of the wage may be obscured by young people who begin working in the west after an initially low wage as an apprentice or on a part-time job (if this is not captured by the age dummies). It may be seen that these wage results at the individual level will not be useful in predicting how emigration will change as the aggregate

wage level in the east approaches that of the west: since where significant the effect of the wage is positive, this would appear to suggest that wage convergence will increase emigration. This question will now be addressed with the regional data, where the time-series component of wage changes will be relatively more important than in the individual-level data.

Results from Regional Data

The first column of Appendix Table 2 shows the means of the sample of federal state pairs. More informative, however, is Table 8, which shows some means across states for 1991 and 1996. The (gross) emigration per population rate for western states was steady from 1991 to 1996 at 1.7% per year, while the emigration rate from eastern states fell from 2.0% to 1.4% per year. Immigration to the west fell slightly over the period, while immigration to the east rose greatly from 0.8% to 1.4%. Berlin's pattern is distinctive, with a small rise in immigration and a large rise in emigration over the period.

In addition to using the distances between the biggest city in each state, I use dummies for whether the states are neighbors, and whether they are "superneighbors": that is, whether they are neighbors and one of them is a city-state (Bremen, Hamburg or Berlin). Other variables used are the hourly and weekly wage rates. The means reflect the convergence between east and west, as well as the smaller gap in weekly wages due to higher hours in the east. Unemployment rates rise in both east and west - the registered unemployed statistic underestimates unemployment in the east, however, where training programs and public works jobs occupy many people. Short-time work was very high in the east in 1991, while eastern vacancies were particularly low in 1991.

Table 9 presents the results of random effects regressions for the 1991-1996 period. The covariates include source and destination populations, whether source or destination was a city-state, and the state proximity variables (including a quadratic in distance), and year dummies, but their coefficients are not reported. Also included are the Berlin dummies and their interaction with a trend: these coefficients are also not reported. In column 1 a specification without wage or unemployment information is presented. The insignificant coefficient on the east-west dummy indicates that east to west flows in 1991 were only what would have been expected given geography and population. The coefficient on its interaction with a trend, defined to equal zero in 1991, shows that a significant downward trend of about 5.5% per year followed. West to east flows were 41% ($e^{-.89}$) of what would have been expected in 1991, but rose subsequently by slightly more than 12% per year. Within-east flows were initially 68% ($e^{-.39}$) of within-west flows, but then rose at about 6.4% per year.

In column 2 I include the destination and source hourly wages. The coefficients on each have the expected signs, and are approximately equal in absolute value. A 1% higher wage in the destination state increases flows by 1.6%.

In column 3 I add destination and source unemployment to the covariates. The coefficient on destination unemployment is significantly negative (indicating that a 1% rise in the number of destination unemployed would decrease flows by 0.3%). The coefficient on source unemployment is, however, small and insignificant. Given the individual-level results that the recently laid-off and the non-employed are more likely to emigrate, neither the consideration of liquidity constraints, nor of possible low search intensity of the long-term unemployed, nor of differential stigma effects seems a plausible explanation for a non-positive coefficient. In

unreported regressions for the west only or excluding the year 1991, the coefficient is indeed positive.[12]

In column 4 I add destination and source short-time workers, in column 5 I substitute the weekly wage for the hourly wage, while in column 6 I add destination and source vacancies. The signs on the short-time variable coefficients are as expected, and the magnitudes seem reasonable compared to the magnitude of the destination unemployment coefficient. Controlling for weekly rather than hourly wage weakens the short-time coefficients, since the reduced hours captured by the short-time variables are reflected in the weekly wage. The coefficient on destination vacancies is significantly negative, the opposite of the expected sign. This could be due to the high correlation between unemployment and vacancies (-0.7).

The wage and unemployment information together are sufficient to explain the downward trend in east to west migration, since the coefficient on the east to west trend turns from negative and significant in the first column, to positive in subsequent columns. These covariates do not explain the level of east to west migration compared to within-west migration, however, as the significantly negative coefficients in the first row show that the 1991 level of migration was lower than would have been expected, by at least 41% ($1-e^{-.52}$), given the values of all the covariates.

The low 1991 level of west to east and within-east migration (rows 3 and 5) is explained by the covariates as long as hourly and not weekly wages are included. Most of the rise in the west to east migration (row 4) is explained by the covariates: the remaining trend is significant if weekly wages are used, or if vacancies are included. Whether the significant rise in within-east flows observed in column 1 row 6 can be explained by the covariates is likewise sensitive to the specification.

Fixed effects may be employed to further investigate whether the covariates explain the trends in migration, but here of course the average levels cannot be investigated. Table 10 presents fixed effects results: all time-varying covariates from Table 9 are included, except source and destination population. The first column contains no controls for wages or unemployment conditions. The coefficient on the within-east trend term is smaller than that in the corresponding column in Table 9. The specifications of columns 2-6 also mirror those of Table 9, and the coefficients on the variables added in these columns are similar to those in Table 9.

In all the specifications including both hourly wage and unemployment information (columns 3,4 and 6), the trend coefficients are insignificant. Weekly wages, however, are not successful in explaining the within-east rise in migration, and over-explain the fall in east to west migration. The difference between the fixed and random effects results is that the fixed effects specification more successfully explains the west to east trend and the within-east trend. For the purposes of analyzing the trends, fixed effects is the preferred specification, so the results of Table 10 indicate that all trends can be satisfactorily explained by the covariates.

The analysis of Tables 9 and 10 has been repeated treating East and West Berlin as separate states, belonging to the east and west respectively (these results are not reported). Certain coefficients on the economic variables are sensitive to this change, in particular to not including the Berlin dummies. The conclusion that trends in migration may be explained (and that the 1991 level of east to west migration appears low) remains unchanged, however.

A possible concern about the state-level analysis is that the unemployment and wage variables represent yearly averages, and could thus be endogenous. The effect of the endogeneity is to bias the coefficients towards zero, and make the inclusion of these variables less likely to

explain regional differences in migration flows. The conclusion that trends in migration between east and west have been explained should therefore be unaffected.

The insignificant coefficient in row 1 column 1 in Table 9 seems implausible: this coefficient says that 1991 east to west flows were no different from those that would have been expected based on population and distance. This coefficient, and hence presumably the negative significant coefficients of the rest of the row, is the result of aggregation. Similar analysis with the data for the smaller ROR regions indicates that in 1991 east to west flows were 59% ($e^{.466}$) above what would have been expected based on population and distance (means of this data are presented in Appendix Table 2 column 2, while the regression results are presented in Appendix Table 3). When these regions are aggregated up to the state level (with enlarged city-states), they replicate the Table 9 column 1 result that flows are not higher than would have been expected, showing that this result is due to aggregation and is not related to large flows to and from city-states. (Neither is it due to the availability of more years of state data.) Unfortunately, the wage and unemployment information is incomplete for the ROR regions, so the analysis of the later columns of Table 9 cannot be replicated with these data.[13]

Conclusions

The GSOEP data have shown firstly that commuting from east to west is something individuals undertake on a more temporary basis than emigration to the west, and is often undertaken without a change of employer. About 20% of individuals who move to the west first commuted. A common type of commuter or emigrant is a young person who is pursuing his or her studies in the west. Another common type of emigrant is a young person who moves to the west after finishing tertiary education in the east. Emigrants are much younger than stayers, and

conditional on age are more skilled, as predicted by the Roy model of migration selection. Commuters are slightly older than emigrants, and conditional on age have skills less different from stayers, which suggests that moving costs deter the less-skilled from moving. This youth and brain-drain suggests that emigration from the east could be a legitimate concern for policy-makers anxious about the economic viability of the eastern region. Another common type of emigrant or commuter is someone who had experienced labor market difficulties in the east. One third of those beginning to commute had experienced a layoff.

Commuters not surprisingly are much more likely to live in regions bordering the west. Individuals living on the border with West Berlin are not less likely to emigrate, but individuals living on the border with the rest of the west are significantly less likely to emigrate. This indicates that there is some substitution between commuting and migration, although the temporary nature of commuting, the absence of substitution in the Berlin area, and the possibility of using commuting as a springboard for emigration suggest that emigration rates have not been greatly lowered by the possibility of commuting. Also, there is no evidence to support the hypothesis that easterners are more willing to commute than westerners.

Using the state-level data, available from 1991-1996, I am able to explain the downward trend in east to west migration, relative to the within-west trend, using hourly wage and unemployment information. Wage convergence is the most important factor. I am also able to explain west-east and within-east trends. Weekly wages are not as successful in explaining trends as hourly wages. Although the state-level analysis suggests that the level of east to west flows is lower than would be predicted by the covariates, the analysis of smaller regions shows that this is not the case. The continued inhabitation of East Germany is thus no more puzzling than the continued inhabitation of less prosperous regions of West Germany.

Data Appendix

The 100% sample of the GSOEP is used, along with county dummies which are available upon special agreement with the German Institute for Economic Research (DIW). I exploit information about changing jobs and the reported reason for the change to construct a dummy indicating if an individual was laid off (or fired or experienced a firm closure) between interviews. A laid-off individual need not necessarily have been working at the time of the first interview. For 1991-1995 I use the information in the labor force status question to determine short time status (in 1990 short-time had not yet been introduced). For 1996 and 1997, when short-time was no longer an option for the labor force status question, I set the dummy to zero, since already by 1995 the proportion of workers on short-time was very low. If an individual's education information was missing for the initial year of the pair of years considered, I drop the individual, but if education from the second year was missing, I assign the value from the first year, to avoid disproportionately losing emigrants. This affected only a small number of individuals, most of whom had degrees beyond general schooling. To construct the spousal variables I link the individual to the person identified as being "clearly or probably" the partner. To create the variable "household member emigrated in previous year" I combined the 1990 question asking if a household member had emigrated in the previous year with information constructed for later years by following movement of individuals in and out of households and the west.

The data on migration flows at the federal state level come from the Statistisches Bundesamt publication Fachserie 1 Reihe 1. All individuals in Germany must be registered with the police, and these data aggregate the local-level information from the old and new addresses provided by an individual on moving. The wage and unemployment variables come from the Statistisches Jahrbuch. The manufacturing wage variable is based on a firm survey and measures wages of workers outside the bargaining system as well as those within it. Wages for industry and services together were not used as this data is missing for East Berlin in 1991. Wages for Bremen in 1992 were not available. From 1997 data on East and West Berlin separately are no longer available. The source for distances between states' largest cities is the table in the Rand-McNally map of Germany, except for distances to Magdeburg and Potsdam, which were obtained from www.reiseroute.de/europ_de.htm. The city used for Nordrhein-Westfalen is Düsseldorf.

The data on migration flows, distances and population at the regional (Raumordnungsregion) level are unpublished data from the Bundesamt für Bauwesen und Raumordnung. They are available only for 1991-1993, due to a redefinition of regions.

The GDP figures in the introduction come from the Bundesbank web page www.bundesbank.de, while population and earnings ratio figures come from the Statistisches Bundesamt web page www.statistik-bund.de/presse/deutsch/pm/p7366042.htm.

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Endnotes

1. Numbers in this paragraph are computed from the GSOEP data, using weights in the case of West Germany where foreigners are oversampled.

2. Standardized unemployment rate computed by the Bureau of Labor Statistics in the United States.

3. For unemployment see Lundborg (1991) for Sweden, Pissarides and Wadsworth (1989) for Britain, and Bentivogli and Pagano (1999) for the Euro-zone. For wages see Jackman and Savouri (1992).

4. See also Wagner (1992) and Wagner (1998) for descriptive statistics and analysis of commuting and migration using the GSOEP.

5. Migration data for the fourth quarter of 1990 are available, although the collection method is not fully comparable to that of later years. Information on wage rates are not available for most states in the east in 1990, however, except from the GSOEP data, where the sample size by state is somewhat small.

6. See Wagner, Burkhauser and Behringer (1993) for a complete description of the data.

7. However, the weekly and daily commuters cannot be distinguished in every year. In the available years, 67% of commuters were daily commuters.

8. One reason that the emigration rate of 0.8% in row 1 is lower than in the aggregate statistics shown in Figure 1 is that it does not include these commuters who become emigrants. Their addition boosts the average emigration rate to 1% per year. Also, the aggregate statistics include some westerners returning home, as well as refugees and Aussiedler (ethnic German immigrants) initially located in the east by the government, who prefer to live in the west once they have a free choice.

9. Some university students may have gone to the west somewhat involuntarily if they did not obtain a place at a university close to home.

10. Individuals whose military service happened to be in the west are not recorded as commuters or emigrants.

11. The cities with more than 500,000 inhabitants are East Berlin, Dresden and Leipzig.

12. If the aggregate unemployment to population ratio by state is added to the covariates in the GSOEP analysis, its coefficients are insignificant, and for emigrants the sign is negative. The coefficients on the interaction of the state unemployment rate with layoff and non-employment indicators are also insignificant for emigrants. The non-employed in high unemployment states are significantly more likely to commute, however.

13. In Table 10 the covariates were able to explain a fall of in east to west flows of 7% per year, or 42%, slightly less than the ROR "surplus" migration of 59%. It therefore seems likely that conditioning on wages and unemployment in the ROR data would result in an insignificant coefficient on the east to west dummy.

Table 1: Matrix of changes in commuting and migration status, GSOEP data
(Number of observations in parentheses.)

Year 0 status	Year 1 status				
	Non−emigrant. non−commuter	Emigrant	Commuter	Reverse commuter	
Non−emigrant. non−commuter	96.9% (16359)	0.8% (138)	2.2% (376)	0.05% (8)	100% (16881)
Emigrant	2.7% (19)	96.6% (682)	0.3% (2)	0.4% (3)	100% (706)
Commuter	28.1% (193)	4.8% (33)	67.1% (461)	0% (0)	100% (687)
Reverse commuter	15.0% (3)	15.0% (3)	0% (0)	70.0% (14)	100% (20)
	90.6% (16574)	4.7% (856)	4.6% (839)	0.1% (25)	100% (18294)

Notes:
Data are for easterners age 18−53, for years 1990−1997.
A non−emigrant non−commuter lives and works in the east.
An emigrant lives and works in the west.
A commuter lives in the east and works in the west.
A reverse commuter lives in the west and commutes to the east.

Table 2: Means of Larger GSOEP Sample

	All	Stayers	Commuters	Transfer commuters	Emigrants	Transfer emigrants
Sex (female=1)	0.52	0.52	0.32	0.30	0.59	0.42
Spouse	0.69	0.69	0.59	0.64	0.49	0.42
Spouse*sex	0.37	0.37	0.17	0.13	0.28	0.16
Child 0−11	0.43	0.43	0.45	0.47	0.44	0.37
Child*sex	0.23	0.23	0.12	0.12	0.30	0.16
Age 18−21	0.09	0.09	0.21	0.11	0.23	0.21
Age 22−25	0.09	0.09	0.11	0.12	0.20	0.16
Age 26−35	0.31	0.31	0.31	0.34	0.33	0.32
Age 36−45	0.30	0.31	0.27	0.29	0.18	0.21
Age 46−53	0.20	0.20	0.11	0.15	0.07	0.11
General schooling	0.09	0.09	0.14	0.10	0.16	0.11
University	0.10	0.10	0.12	0.13	0.13	0.26
Vocational training	0.22	0.22	0.21	0.23	0.17	0.11
Apprenticeship	0.58	0.59	0.53	0.54	0.54	0.53
Border with West Berlin 1990	0.09	0.08	0.25	0.28	0.12	0.16
Border with rest of West Germany 1990	0.10	0.10	0.20	0.20	0.05	0.21
Within 50km of West Berlin 1990	0.04	0.04	0.04	0.06	0.02	0
Within 50km rest of West Germany 1990	0.22	0.22	0.15	0.13	0.17	0.11
Distance 1990 missing	0.07	0.07	0.04	0.05	0.04	0.16
Observations	16892	16359	275	101	138	19

Notes:

Sample is that of row 1 of Table 1, plus 11 individuals who were non−commuters, then emigrated but did not indicate their later commuter status. Education refers to the second year of the pair considered. Data are for 1990−1997.

Table 3: Means of Smaller GSOEP Sample

	All	Stayers	Commuters	Transfer commuters	Emigrants	Transfer emigrants
Sex (female=1)	0.52	0.53	0.30	0.31	0.60	0.41
Spouse	0.69	0.69	0.59	0.63	0.52	0.47
Spouse*sex	0.37	0.38	0.15	0.13	0.30	0.18
Child age 0−11	0.43	0.43	0.45	0.46	0.47	0.35
Child age 0−11*sex	0.23	0.24	0.11	0.12	0.32	0.12
Age 18−21	0.09	0.09	0.20	0.10	0.22	0.24
Age 22−25	0.09	0.09	0.11	0.12	0.18	0.12
Age 26−35	0.31	0.31	0.31	0.34	0.34	0.29
Age 36−45	0.31	0.31	0.26	0.27	0.22	0.24
Age 46−53	0.20	0.20	0.11	0.17	0.05	0.12
General schooling	0.09	0.09	0.14	0.09	0.17	0.06
University	0.10	0.10	0.13	0.12	0.15	0.29
Vocational training	0.22	0.22	0.21	0.21	0.19	0.12
Apprenticeship	0.59	0.59	0.52	0.57	0.50	0.53
Border West Berlin 1990	0.09	0.09	0.25	0.27	0.12	0.18
Border with rest of West Germany 1990	0.10	0.10	0.20	0.21	0.07	0.18
Within 50km West Berlin 1990	0.04	0.04	0.04	0.07	0.03	0
Within 50km rest West Germany	0.22	0.23	0.15	0.13	0.17	0.06
Location 1990 missing	0.05	0.05	0.03	0.02	0.05	0.18
Not working in 1990	0.09	0.10	0.09	0.06	0.14	0
1990 information missing	0.08	0.08	0.12	0.12	0.15	0.12
Not working	0.21	0.21	0.32	0	0.35	0
Laid off	0.10	0.09	0.33	0	0.23	0
On short time	0.03	0.03	0.05	0.01	0.09	0.06
Spouse not working	0.11	0.11	0.10	0.20	0.09	0.12
Spouse on short time	0.03	0.03	0.02	0.02	0.05	0
Spouse laid off	0.07	0.07	0.07	0.04	0.12	0
Colleague emigrated 1989−90	0.21	0.21	0.22	0.22	0.21	0.12
Relative emigrated 1989−90	0.18	0.18	0.18	0.16	0.21	0.18
Friend emigrated 1989−90	0.20	0.20	0.29	0.27	0.26	0.29
Household member emigrated in past year	0.01	0.01	0.01	0.04	0.05	0
City 100−500,000 1990	0.12	0.13	0.06	0.07	0.03	0.06
City over 500,000 1990	0.13	0.12	0.24	0.27	0.24	0.41
Wage /1000	1.84	1.84	1.35	2.97	1.31	2.91
Observations	15558	15092	259	89	101	17

Note: The wage is monthly in 1991 DM, adjusted for the different price level in the east.

Table 4: Larger GSOEP Sample − Effects of Education, Gender, Age and Distance
(Exponentiated coefficients; t−statistics in parentheses)

	Commuters (1)	Transfer commuters (2)	Emigrants (3)	Commuters (4)	Transfer commuters (5)	Emigrants (6)
Sex (female=1)	−−	−−	−−	**0.42 (−6.3)**	**0.38 (−4.1)**	1.32 (1.6)
Age 18−21	−−	−−	−−	**5.23 (6.0)**	1.88 (1.3)	**9.35 (5.4)**
Age 22−25	−−	−−	−−	**2.64 (3.4)**	2.05 (1.7)	**7.78 (5.2)**
Age 26−35	−−	−−	−−	**1.95 (2.9)**	1.54 (1.4)	**3.26 (3.2)**
Age 36−45	−−	−−	−−	**1.74 (2.4)**	1.27 (0.8)	1.89 (1.6)
General schooling	**1.82 (3.1)**	1.13 (0.4)	**2.04 (2.9)**	1.07 (0.3)	1.01 (0.0)	0.99 (−0.0)
University	1.36 (1.5)	1.39 (1.0)	1.43 (1.3)	1.42 (1.6)	1.28 (0.8)	**1.83 (2.1)**
Vocational training	1.06 (0.4)	1.10 (0.4)	0.80 (−1.0)	1.29 (1.5)	1.22 (0.7)	1.00 (0.0)
Border with West Berlin 1990	−−	−−	−−	**4.54 (8.5)**	**5.51 (6.2)**	1.14 (0.5)
Border with rest of west 1990	−−	−−	−−	**3.24 (6.4)**	**3.59 (4.1)**	**0.43 (−2.1)**
Within 50km West Berlin 1990	−−	−−	−−	1.53 (1.4)	2.43 (1.7)	0.41 (−1.5)
Within 50km rest of west 1990	−−	−−	−−	0.97 (−0.1)	0.95 (−0.1)	**0.62 (−2.0)**
1991	**0.52 (−3.6)**	**0.41 (−2.0)**	1.02 (0.1)	**0.54 (−3.3)**	0.43 (−1.9)	1.06 (0.2)
1992	**0.40 (−4.6)**	0.63 (−1.2)	0.64 (−1.6)	**0.41 (−4.3)**	0.65 (−1.1)	0.66 (−1.5)
1993	**0.30 (−5.4)**	0.84 (−0.5)	**0.49 (−2.3)**	**0.31 (−5.1)**	0.88 (−0.4)	**0.51 (−2.1)**
1994	**0.29 (−5.4)**	1.20 (0.6)	**0.36 (−2.9)**	**0.31 (−5.0)**	1.29 (0.8)	**0.38 (−2.8)**
1995	**0.23 (−5.6)**	0.48 (−1.7)	**0.38 (−2.8)**	**0.25 (−5.2)**	0.53 (−1.5)	**0.40 (−2.6)**
1996	**0.42 (−4.2)**	**1.91 (2.2)**	**0.35 (−3.0)**	**0.47 (−3.7)**	**2.14 (2.5)**	**0.38 (−2.7)**
Pseudo−R2		0.02			0.09	
Log likelihood		−2750			−2579	
Observations		16873			16873	

Notes: Estimation is by multinomial logit (reference group is stayers) with standard errors adjusted for repeated observations on individuals for 1990−1997. Transfer migrants are dropped.The omitted year is 1990, omitted education is apprenticeship, omitted age is 46−53. T−statistics presented are for the untransformed coefficients. Covariates also include dummies for missing distance information.

Table 5: Larger GSOEP Sample − Effects of Interactions of Gender
(Exponentiated coefficients; t−statistics in parentheses.)

	Commuters (1)	Transfer commuters (2)	Emigrants (3)	Emigrants and transfer emigrants (3')
Sex (female=1)	0.76 (−1.3)	1.04 (0.1)	1.52 (1.6)	1.40 (1.4)
Spouse	1.27 (1.0)	1.77 (1.4)	1.32 (0.7)	1.16 (0.4)
Spouse*sex	0.60 (−1.7)	**0.22 (−3.1)**	0.49 (−1.6)	0.53 (−1.6)
Child age 0−11	1.25 (1.1)	1.12 (0.4)	0.65 (−1.1)	0.70 (−1.0)
Child*sex	**0.52 (−2.1)**	0.79 (−0.5)	1.76 (1.3)	1.59 (1.2)
Age 18−21	**5.62 (5.5)**	1.98 (1.2)	**8.64 (4.6)**	**7.76 (4.6)**
Age 22−25	**3.00 (3.5)**	2.38 (1.9)	**7.68 (4.6)**	**6.50 (4.4)**
Age 26−35	**2.04 (2.8)**	1.64 (1.4)	**3.52 (3.0)**	**3.15 (2.9)**
Age 36−45	**1.72 (2.3)**	1.27 (0.7)	2.00 (1.7)	1.84 (1.7)
General schooling	1.07 (0.3)	1.05 (0.1)	0.99 (−0.0)	0.91 (−0.2)
University	1.38 (1.5)	1.20 (0.6)	**1.77 (2.0)**	**2.02 (2.8)**
Vocational training	1.30 (1.5)	1.21 (0.7)	1.00 (−0.0)	0.97 (−0.1)
Border with West Berlin	**4.63 (8.5)**	**5.67 (6.3)**	1.14 (0.5)	1.23 (0.8)
Border with rest west	**3.26 (6.4)**	**3.60 (4.1)**	**0.43 (−2.1)**	0.64 (−1.4)
Within 50km West Berlin	1.51 (1.3)	2.39 (1.7)	0.41 (−1.5)	0.38 (−1.6)
Within 50km rest west	0.98 (−0.1)	0.97 (−0.1)	**0.63 (−2.0)**	**0.63 (−2.1)**
Spouse+spouse*sex	0.76 (−1.0)	**0.39 (−2.3)**	0.64 (−1.6)	0.61 (−1.8)
Child+child*sex	0.65 (−1.6)	0.88 (−0.3)	1.15 (0.5)	1.12 (0.4)
Spouse+spouse*sex+ child+child*sex	**0.49 (−2.3)**	**0.34 (−2.0)**	0.74 (−1.0)	0.69 (−1.3)
Pseudo−R2		0.09		0.09
Log likelihood		−2564		−2654
Observations		16873		16892

Notes: The first three columns are the results of a multinomial logit (reference group is stayers) with standard errors adjusted for repeated observations on individuals, 1990−1997. Column 3' presents partial results of a second regression which includes transfer migrants. The omitted education is apprenticeship, the omitted age is 46−53. T−statistics presented are for the untransformed coefficients. Covariates also include a dummy for missing distance information and year dummies.

Table 6: Smaller GSOEP Sample − Effect of Additional Variables
(Exponentiated coefficients; t−statistics in parentheses)

	Commuters (1)	Transfer commuters (2)	Emigrants (3)	Commuters (4)	Transfer commuters (5)	Emigrants (6)
Spouse	1.13 (0.7)	0.71 (−1.0)	0.76 (−0.9)	1.19 (0.9)	0.78 (−0.7)	0.79 (−0.7)
Not working 1990	0.57 (−1.9)	0.62 (−1.0)	0.78 (−0.7)	**0.56 (−2.0)**	0.60 (−1.0)	0.79 (−0.7)
Not working	**2.67 (5.3)**	2.55 (1.6)	**1.88 (2.4)**	**2.67 (5.3)**	1	**1.88 (2.4)**
Short time	1.85 (1.9)	0.58 (−0.6)	**2.45 (2.3)**	1.86 (1.9)	0.61 (−0.5)	**2.47 (2.3)**
Laid off	**4.37 (9.8)**	1	**2.44 (3.4)**	**4.37 (9.8)**	1	**2.46 (3.4)**
Spouse not working	1.09 (0.4)	**2.60 (3.2)**	1.39 (0.9)	1.07 (0.3)	**2.55 (3.1)**	1.38 (0.9)
Spouse short time	1.03 (0.1)	2.91 (1.5)	1.65 (1.0)	1.00 (0.0)	2.89 (1.5)	1.66 (1.0)
Spouse laid off	0.89 (−0.4)	0.74 (−0.6)	1.83 (1.8)	0.91 (−0.3)	0.75 (−0.5)	1.87 (1.9)
City 50.000− 500.000	0.62 (−1.7)	0.79 (−0.5)	**0.25 (−2.4)**	0.62 (−1.7)	0.78 (−0.5)	**0.25 (−2.4)**
City >500.000	1.42 (1.7)	**1.98 (2.2)**	**1.98 (2.3)**	1.35 (1.5)	**1.98 (2.2)**	**2.01 (2.3)**
Colleague emigrated 1989−90	−−	−−	−−	0.89 (−0.6)	0.91 (−0.3)	1.06 (0.2)
Relative emigrated 1989−90	−−	−−	−−	1.17 (0.9)	0.94 (−0.2)	1.30 (1.0)
Friend emigrated 1989−90	−−	−−	−−	**1.59 (2.7)**	1.50 (1.5)	1.22 (0.8)
Household member moved prev year	−−	−−	−−	0.66 (−0.6)	**4.83 (2.9)**	**5.47 (3.4)**
Pseudo−R2		0.13			0.13	
Log likelihood		−2161			−2147	
Observations		15541			15541	

Notes: Estimation is by multinomial logit (reference group is stayers) with standard errors adjusted for repeated observations on individuals for 1990−1997. Transfer migrants are dropped. T−statistics presented are for the untransformed coefficients. Covariates also include those of Table 4 columns 4−6: sex, age dummies, education dummies, distance dummies, dummies for missing distance information and missing 1990 information, and year dummies. The coefficients on not working, and laid off are constrained to be zero for transfer commuters.

Table 7: Smaller GSOEP Sample − Effect of Wage
(Exponentiated coefficients; t−statistics in parentheses.)

	Commuters (1)	Transfer commuters (2)	Emigrants (3)	Emigrants and transfer emigrants (3')
Wage/1000 (no education dummies)	0.89 (−1.3)	**1.26** **(4.5)**	1.06 (0.7)	**1.13** **(2.2)**
Pseudo−R2		0.13		0.12
Log likelihood		−2155		−2239
Wage/1000 (with education dummies)	0.82 (−1.9)	**1.27** **(4.3)**	0.98 (−0.1)	1.08 (1.1)
Pseudo−R2		0.13		0.13
Log likelihood		−2147		−2229
Observations		15541		15558

Notes: The first three columns are the results of two multinomial logits (reference group is stayers) with standard errors adjusted for repeated observations on individuals for 1990−1997. Column 3' presents partial results of two further regressions which include transfer migrants. T−statistics presented are for the untransformed coefficients. Covariates also include all the covariates of Table 6 columns 1−3 (row 2), except the education dummies (row 1). The coefficients on not working and laid off are constrained to be zero for transfer commuters. The wage is monthly in 1991 DM, adjusted to reflect the different price level in the east.

Table 8: Means of Variables by State
(Standard Deviations in Parentheses)

	West		East		Berlin	
	1991	1996	1991	1996	1991	1996
Population (100s)	61568	64172	29504	28349	34337	34714
	(54026)	(56091)	(10727)	(10280)		
Emigration/	0.017	0.017	0.020	0.014	0.016	0.022
population	(0.008)	(0.009)	(0.002)	(0.003)		
Immigration/	0.019	0.017	0.008	0.014	0.016	0.017
population	(0.006)	(0.008)	(0.001)	(0.005)		
Distance (average km)	440		384		394	
	(79)		(51)			
States neighbors	0.23		0.21		0.07	
States superneighbors	0.04		0.01		0.07	
City state	0.20		0		1	
Hourly wage	21.8	23.4	13.6	18.2	18.6	22.8
	(1.1)	(1.0)	(0.5)	(0.7)		
Weekly wage	859	885	554	722	732	873
	(43)	(37)	(22)	(28)		
Unemployment/	0.029	0.044	0.057	0.077	0.053	0.068
population	(0.010)	(0.009)	(0.006)	(0.006)		
Short time/	0.002	0.004	0.104	0.005	0.021	0.002
population	(0.001)	(0.002)	(0.009)	(0.001)		
Vacancies/	0.005	0.004	0.002	0.004	0.003	0.002
population	(0.001)	(0.001)	(0.000)	(0.000)		
Observations	10		5		1	

Notes:

Population is measured at the beginning of the year, migration flows are totals for the year. Other time−varying variables are yearly averages. Wages are for workers in manufacturing. Unemployment refers to the number of registered unemployed. Two states are superneighbors if they are neighbors and one is a city−state. Distance is the distance between the biggest city in each of the states.

Table 9: State Level Random Effects Analysis of Migration 1991−1996
(Standard errors in parentheses)

	(1)	(2)	(3)	(4)	(5)	(6)
East −> West (EW)	0.03	**−0.79**	**−0.69**	**−0.53**	**−0.77**	**−0.52**
	(0.09)	**(0.14)**	**(0.16)**	**(0.16)**	**(0.15)**	**(0.16)**
EW*(Year−91)	**−0.055**	**0.027**	0.019	0.016	**0.033**	0.018
	(0.007)	**(0.013)**	(0.014)	(0.014)	**(0.013)**	(0.014)
West −> East (WE)	**−0.89**	−0.21	0.18	0.02	**−0.13**	0.06
	(0.09)	(0.14)	(0.16)	(0.16)	**(0.15)**	(0.16)
WE*(Year−91)	**0.119**	**0.051**	0.020	0.022	**0.036**	**0.029**
	(0.007)	**(0.013)**	(0.014)	(0.014)	**(0.013)**	**(0.014)**
East −> East (EE)	**−0.39**	**−0.54**	−0.05	−0.05	**−0.45**	0.00
	(0.13)	**(0.20)**	(0.23)	(0.23)	**(0.22)**	(0.23)
EE*(Year−91)	**0.064**	**0.078**	0.038	0.038	**0.069**	**0.047**
	(0.009)	**(0.018)**	(0.020)	(0.020)	**(0.019)**	**(0.020)**
Destination hourly wage (log)	−−	**1.61** **(0.26)**	**1.93** **(0.27)**	**1.19** **(0.31)**	−−	**1.34** **(0.31)**
Source hourly wage (log)	−−	**−1.96** **(0.26)**	**−1.87** **(0.27)**	**−1.17** **(0.31)**	−−	**−1.14** **(0.31)**
Destination weekly wage (log)	−−	−−	−−	−−	**1.01** **(0.36)**	−−
Source weekly wage (log)	−−	−−	−−	−−	**−2.20** **(0.36)**	−−
Destination unemployed (log)	−−	−−	**−0.30** **(0.06)**	**−0.33** **(0.06)**	**−0.34** **(0.06)**	**−0.41** **(0.06)**
Source unemployed (log)	−−	−−	−0.08 (0.06)	−0.06 (0.06)	0.00 (0.06)	−0.07 (0.06)
Destination short time (log)	−−	−−	−−	**−0.048** **(0.010)**	**−0.036** **(0.014)**	**−0.058** **(0.011)**
Source short time (log)	−−	−−	−−	**0.045** **(0.010)**	−0.005 (0.015)	**0.043** **(0.011)**
Destination vacancies (log)	−−	−−	−−	−−	−−	**−0.123** **(0.033)**
Source vacancies (log)	−−	−−	−−	−−	−−	−0.022 (0.033)
R2	0.91	0.90	0.90	0.91	0.91	0.91

Notes: Dependent variable is log of migration. Covariates include destination and source populations, quadratic in distance between states' biggest city, states neighbors, states superneighbors, destination is city state, source is city state, year dummies, dummies for East−>Berlin, Berlin−>East, West−>Berlin and Berlin−>West and their interaction with a trend. Wages for Bremen are not available for 1992. There are 1410 observations.

Table 10: State Level Fixed Effects Analysis of Migration 1991−1996
(Robust standard errors in parentheses)

	(1)	(2)	(3)	(4)	(5)	(6)
EW*(Year−91)	**−0.069**	0.024	0.022	0.018	**0.035**	0.018
	(0.008)	(0.015)	(0.017)	(0.017)	**(0.015)**	(0.017)
WE*(Year−91)	**0.105**	**0.034**	0.004	0.007	0.021	0.012
	(0.009)	**(0.016)**	(0.017)	(0.017)	(0.016)	(0.017)
EE*(Year−91)	**0.036**	**0.058**	0.026	0.024	**0.056**	0.029
	(0.010)	**(0.020)**	(0.024)	(0.024)	**(0.022)**	(0.024)
Destination hourly wage (log)	−−	**1.68**	**1.93**	**1.37**	−−	**1.53**
		(0.32)	**(0.32)**	**(0.36)**		**(0.37)**
Source hourly wage (log)	−−	**−2.20**	**−2.18**	**−1.32**	−−	**−1.33**
		(0.29)	**(0.29)**	**(0.33)**		**(0.32)**
Destination weekly wage (log)	−−	−−	−−	−−	**1.24**	−−
					(0.41)	
Source weekly wage (log)	−−	−−	−−	−−	**−2.42**	−−
					(0.38)	
Destination unemployed (log)	−−	−−	**−0.26**	**−0.28**	**−0.29**	**−0.34**
			(0.06)	**(0.06)**	**(0.06)**	**(0.06)**
Source unemployed (log)	−−	−−	−0.02	−0.00	0.06	0.00
			(0.06)	(0.06)	(0.06)	(0.06)
Destination short time (log)	−−	−−	−−	**−0.035**	−0.018	**−0.042**
				(0.010)	(0.015)	**(0.011)**
Source short time (log)	−−	−−	−−	**0.053**	−0.002	**0.053**
				(0.011)	(0.017)	**(0.011)**
Destination vacancies (log)	−−	−−	−−	−−	−−	**−0.113**
						(0.031)
Source vacancies (log)	−−	−−	−−	−−	−−	0.006
						(0.029)
R2	0.35	0.41	0.42	0.44	0.45	0.44

Notes: Dependent variable is log of migration. Covariates include year dummies and a trend interacted with dummies for East−>Berlin, Berlin−>East, West−>Berlin and Berlin−>West. Wages for Bremen are not available for 1992. There are 1410 observations.

Appendix Table 1: Smaller GSOEP Sample − Effects of Age, Education, Time and Distance
(Exponentiated coefficients, t−statistics in parentheses.)

	Commuters (1)	Transfer commuters (2)	Emigrants (3)	Emigrants and transfer emigrants (3')
Sex	**0.39 (−6.8)**	**0.41 (−3.6)**	1.37 (1.5)	1.22 (1.0)
Age 18−21	**4.76 (5.5)**	1.62 (0.9)	**11.22 (4.3)**	**10.66 (4.9)**
Age 22−25	**2.58 (3.3)**	1.92 (1.5)	**9.59 (4.4)**	**7.49 (4.5)**
Age 26−35	**1.86 (2.7)**	1.38 (1.0)	**4.46 (3.1)**	**3.56 (3.1)**
Age 36−45	**1.65 (2.2)**	1.05 (0.2)	**2.96 (2.2)**	**2.42 (2.1)**
General schooling	1.14 (0.5)	0.86 (−0.3)	1.20 (0.5)	0.97 (−0.1)
University	1.51 (1.9)	1.21 (0.5)	**2.19 (2.4)**	**2.53 (3.3)**
Vocational training	1.29 (1.4)	1.09 (0.3)	1.20 (0.6)	1.14 (0.5)
Border with West Berlin	**4.41 (8.1)**	**5.23 (5.7)**	1.24 (0.7)	1.31 (0.9)
Border with rest of west	**3.21 (6.1)**	**3.80 (4.1)**	0.62 (−1.2)	0.80 (−0.6)
Within 50km West Berlin	1.35 (0.9)	**2.78 (2.0)**	0.60 (−0.8)	0.54 (−1.0)
Within 50km rest of west	0.99 (−0.1)	0.99 (−0.0)	0.65 (−1.5)	0.61 (−1.8)
1991	**0.56 (−3.1)**	0.43 (−1.8)	1.46 (1.3)	1.61 (1.7)
1992	**0.44 (−3.9)**	0.77 (−0.7)	0.80 (−0.7)	0.76 (−0.8)
1993	**0.32 (−4.9)**	1.07 (0.2)	0.70 (−1.0)	0.84 (−0.5)
1994	**0.32 (−4.7)**	1.22 (0.5)	0.59 (−1.4)	0.96 (−0.1)
1995	**0.26 (−4.9)**	0.56 (−1.3)	0.61 (−1.2)	0.64 (−1.2)
1996	**0.47 (−3.5)**	**2.42 (2.7)**	0.45 (−1.8)	0.49 (−1.7)
Log likelihood		−2264		−2345
Pseudo−R2		0.08		0.08
Observations		15541		15558

Notes: The first three columns are the results of a multinomial logit (reference group is stayers) with standard errors adjusted for repeated observations on individuals, 1990−1997. Column 3' presents partial results of a second regression which includes transfer migrants. The omitted year is 1990, omitted education is apprenticeship, omitted age is 46−53. T−statistics presented are for the untransformed coefficients. Covariates also include a dummy for missing distance information.

Appendix Table 2: Means of State and Regional Samples
(Standard deviations in parentheses.)

	States	Regions
Migration flow (log)	7.61 (1.38)	4.13 (1.38)
East <−> West	0.21	0.17
East −> East	0.09	0.05
East <−> Berlin	0.02	0.002
West <−> Berlin	0.04	0.008
Distance (km)	421 (196)	320 (155)
Population (log)	15.1 (0.8)	13.4 (0.6)
States/regions neighbors	0.22	0.05
States superneighbors	0.03	0
City state	0.18	0
Hourly wage (log)	3.01 (0.17)	−−
Weekly wage (log)	6.67 (0.14)	−−
Unemployed (log of number)	12.0 (0.7)	−−
Short time workers (log of number)	9.9 (1.2)	−−
Vacancies (log of number)	9.4 (1.0)	−−
Observations	1410	27936

Notes for states:

There are 16 states. East and West Berlin are one state. Wage data for Bremen in 1992 are not available. Wages are in 1991 DM, adjusted in the east to take into account the price level difference. Two states are superneighbors if they are neighbors and one is a city−state. Distance is the distance between the largest cities in each state of the pair.

Notes for regions:

There are 97 regions. East and West Berlin are in the same region. The value of migration for the 102 observations where migration is zero is set to 0.5.

Appendix Table 3: Region Level Panel Analysis 1991−1993
(Standard Errors in Parentheses.)

	Random Effects	Fixed Effects
	(1)	(2)
East −> West (EW)	**0.466**	−−
	(0.019)	
EW*(Year−91)	**−0.140**	**−0.165**
	(0.008)	**(0.008)**
West −> East (WE)	**−0.741**	−−
	(0.019)	
WE*(Year−91)	**0.209**	**0.185**
	(0.008)	**(0.008)**
East −> East (EE)	**−0.064**	−−
	(0.032)	
EE*(Year−91)	0.018	**−0.031**
	(0.013)	**(0.013)**
East −> Berlin (EB)	0.069	−−
	(0.139)	
EB*(Year−91)	−0.041	−0.076
	(0.058)	(0.058)
Berlin −> East (BE)	**−0.458**	−−
	(0.139)	
BE*(Year−91)	0.131	0.097
	(0.058)	(0.058)
West −> Berlin (WB)	0.396	−−
	(0.078)	
WB*(Year−91)	0.014	0.005
	(0.032)	(0.032)
Berlin −> West (BW)	0.591	−−
	(0.078)	
BW*(Year−91)	−0.028	−0.038
	(0.032)	(0.032)
R2	0.77	0.08
Observations	27936	

Notes: Dependent variable is log of migration. Both regressions include year dummies. Column 1 also includes source and destination populations, a dummy for regions being neighbors, a quartic in the distance between regions, and a dummy for four source regions which host camps for ethnic German immigrants. The value of migration for the 102 observations where migration is zero is set to 0.5.

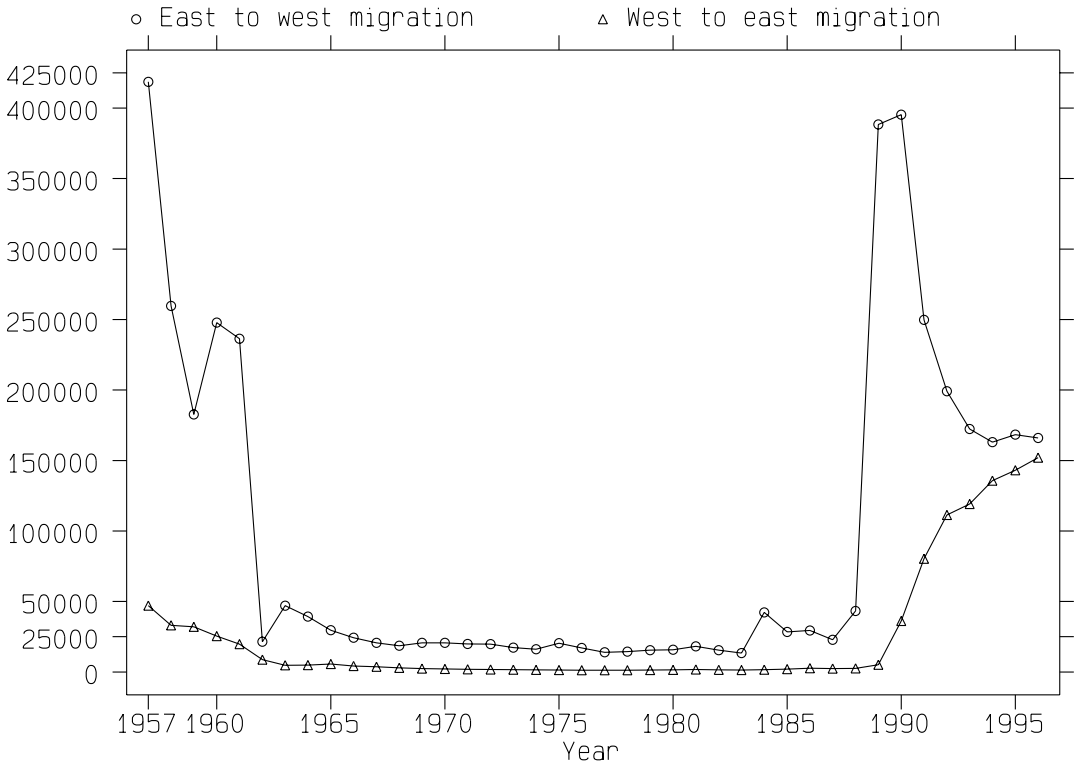

Figure 1: German East-West Migration 1957-1996