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Author(s): Jennifer Hunt

Source: *Journal of the European Economic Association*, Vol. 4, No. 5 (Sep., 2006), pp. 1014-1037

Published by: Oxford University Press

Stable URL: <https://www.jstor.org/stable/40004963>

Accessed: 31-10-2019 19:48 UTC

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STAUNCHING EMIGRATION FROM EAST GERMANY: AGE AND THE DETERMINANTS OF MIGRATION

Jennifer Hunt

McGill University and NBER

Abstract

Following the unification of Germany in 1990, eastern wages and unemployment both rose rapidly. I demonstrate that rising wages reduced eastern emigration greatly, while rising unemployment had little effect. This reflects the behavior of the young, who are very sensitive to source region wages, and relatively insensitive to source unemployment. I show that most of the effect of source unemployment comes from the contemporaneous effect on those laid-off, who are more likely to be older. I find that, compared to stayers, young emigrants are much more skilled, older emigrants are slightly more skilled, and commuters are not more skilled, as measured by education and pre-move wages. My conclusions are based on a comparison of results from aggregate inter-state migration data and individual data from the eastern sample of the German Socio-Economic Panel for 1990–2000. (JEL: J61, P23)

1. Introduction

At the time of the unification of East and West Germany in 1990, labor unions negotiated a series of eastern wage increases designed to bring parity with the west by 1994. Although parity was not achieved, real wages rose enormously in the east in the period to 1994. The labor unions justified their policy in part on the grounds that wage increases would keep skilled workers in the east, which would be beneficial for the eastern economy.¹ Economists suggested instead that

Acknowledgments: Earlier versions of this paper were entitled “Why Do People Still Live in East Germany?” I am very grateful to Regina Riphahn, Ann Huff Stevens, Michael Burda, and Barry McCormick for comments and discussions. I also thank Dan Hamermesh, Andrea Ichino, Wolfgang Keller, and participants in numerous seminars. I thank Annette Bergemann, Barbara Dietz, Kurt Geppert, Steffen Maretzke and Hans-Jörg Bucher (and the Bundesamt für Bauwesen und Raumordnung), Helmut Seitz, Joachim Wolff, and the state statistical agencies of Mecklenburg-Vorpommern and Sachsen for providing data. I thank Michael Burda for giving me the data from the state statistical agencies and Jürgen Schupp for help using the GSOEP data. The first version of this paper was written while I was a visiting professor at the Deutsches Institut für Wirtschaftsforschung (DIW), Berlin. I am also affiliated with the CEPR and the IZA.

E-mail address: jennifer.hunt@mcgill.ca

1. Akerlof et al. (1991, p. 62) cite labor union statements in the *Frankfurter Allgemeine Zeitung*, 16 November 1990, p. 19, and 7 February 1991, p. 15, in the *Süddeutsche Zeitung* 7 February 1991, p. 23, and in a private conversation with George Akerlof.

Journal of the European Economic Association September 2006 4(5):1014–1037

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the large wage rises would provoke high unemployment, which in turn would encourage emigration.²

In this paper I focus on the period following monetary union, when emigration was primarily determined by economic factors, and assess whether the rising wage (a pull factor) or rising unemployment (a push factor) was more influential. I conclude that rising wages worked strongly to reduce emigration, and rising unemployment did little to increase it. Emigration combined with a reduced birth rate led to a 9% decline in the eastern population between 1989 and 1999. Had unions not raised wages as they did, the population decline would have been much higher. Greater emigration would have enhanced overall German welfare, but could have left the east poorer, through the loss of the best of the young and a reduction in economies of scale.

To explain east-west migration patterns, I begin by studying push and pull factors using pair-wise gross migration flows between states for 1991–2000. To confirm and extend the results, I turn to the eastern sample of the German Socio-Economic Panel for 1990–1999. Although less useful for studying trends, the individual-level data allow me to model the possibility of commuting to the west rather than emigrating, to distinguish between the importance of the overall source unemployment rate and being unemployed or laid off oneself, to assess the attributes of east-west immigrants, and to distinguish initial migration from return migration.

The combination of the two types of data and analysis by age group allow me to resolve a puzzle in the internal migration literature. The effect on emigration of unemployment in the source region is theoretically ambiguous. However, in individual-level analysis, being unemployed is a sufficiently strong spur to emigration³ that it has been viewed as a puzzle that in regional-level studies source unemployment is often insignificant or wrongly signed.⁴ When I pool all age groups, I replicate this empirical pattern in my own data. Analysis by age reveals that the insignificance of source unemployment at the state level is due to an insignificant effect for the young dominating the significantly positive effect for the less mobile old. The individual data are consistent with this, showing the young respond less to their own layoff than do the old, and also showing that the young (who are often students) are less likely to be laid off. It is likely that the young respond less because they can weather an unemployment spell living with their parents, whereas older people are under more pressure to maintain a high

2. Akerlof et al. (1991) notably took this view.

3. Gregg, Machin, and Manning (2004); Goss and Schoening (1984).

4. Bentivogli and Pagano (1999); Bentolila (1997); Faini et al. (1997); Goss and Schoening (1984); Gregg, Machin, and Manning (2004); Hughes and McCormick (1981); Lundborg (1991); McCormick (1997); and Pissarides and Wadsworth (1989) discuss the puzzle. See also DaVanzo (1978); Daveri and Faini (1999); and Jackman and Savouri (1992).

income. Also, unemployment may be less scarring for a young person⁵ and hence less of a spur for a revised labor market strategy.

The magnitude of the state-level effect for the old is consistent with its being simply an aggregation of the own-layoff effects in the individual data, indicating that unemployment has its principal effect contemporaneously through layoffs, rather than through expectations of future income. If true also for the young, the implied coefficient on source unemployment would be too small to identify easily in state-level regressions, explaining why it is often insignificant in the literature.

I find that the young are more sensitive to wage differentials than older people, presumably as they have longer to benefit from higher wages elsewhere, and have less location-specific capital. As the mobile young have most influence on the overall coefficients, source wages have a larger impact on emigration than source unemployment.

The lesson that source region wages affect migration more than source unemployment, as well as the results on differing behavior by age, is likely to apply to migration in other contexts. The most obvious policy implication is for Italy, where migration from the poorer south to the north is low, despite much higher unemployment in the south. My results suggest that if labor unions did not keep wages similar in the two regions, youth migration would be much higher. The results also suggest that migration from central Europe to western Europe will be determined more by the evolution of central European wages than unemployment.

Finally, the results from individual data enhance our understanding of the type of people who move. The Roy model predicts that movers from a low-inequality to a high-inequality region (such as from eastern to western Germany) will be more skilled than their counterparts who stay behind.⁶ I find that young emigrants, who move to improve their wages, are much more skilled than stayers as measured by education and pre-move wage. Older emigrants, who are pushed to move by layoffs, are only slightly more skilled than stayers, whereas commuters, influenced by layoffs and low moving costs, are not more skilled than stayers.

2. Background to East German Emigration

In August 1989, it became possible for East Germans to reach West Germany when Hungary opened its border with Austria. With the fall of the Berlin Wall on 9 November 1989, direct migration from East to West Germany became possible. Elections held in the east in March 1990 showed strong support for parties supporting speedy unification with the west, reducing the political motive for

5. Gregory and Jukes (2001) show this for British men.

6. Borjas (1987, 1991) and Borjas, Bronars, and Trejo (1992) find empirical support for the Roy model.

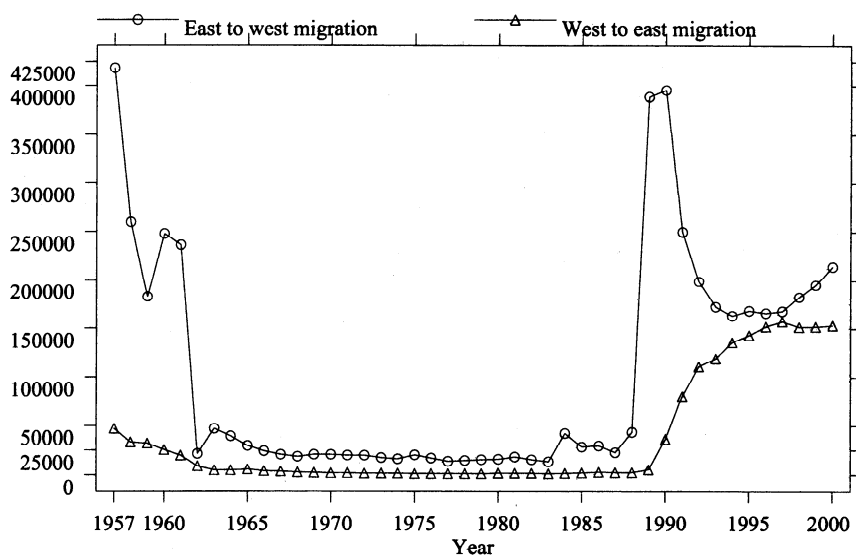


FIGURE 1. German East–West Migration, 1957–2000.

emigration from the east. Monetary, economic, and social union occurred in July 1990, with the economically less important political union following in October.

Figure 1 shows the east-west migration flows from 1957 to 2000. The east-west flows in 1989 and 1990 were of the same magnitude as the outflows in the 1950s that led first to a ban on emigration and then to the construction of a wall in 1961. The 1989 and 1990 flows each represented 2.5% of the East German population (higher than the shares in the 1950s, because the eastern population declined steadily from 1950 to 1987). From 1991 to 1994 emigration from the east declined sharply and then began rising rapidly again in 1997. Migration from west to east rose before reaching a plateau in 1997. These patterns are reflected in the first two rows of Table 1, based on the data used for the state-level regressions herein (the table does not include Berlin).

The western labor unions moved quickly to set up a new collective bargaining system in the east. In the early phases of the transition, firms had not yet been privatized, 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’ objectives are generally thought to have included a reduction of the incentives for easterners to move west. Although it is possible that unions merely acted as a veil for market forces raising wages, most economists do not appear to think this was the case.

The result was a very rapid rise in wages from 1990 to 1994. The third row of Table 1 shows real wage data from the statistical agency’s survey confirming the

TABLE 1. Descriptive statistics for states.

	West			East		
	1991	1995	2000	1991	1995	2000
Emigration/population	0.017 (0.008)	0.017 (0.009)	0.017 (0.009)	0.020 (0.002)	0.014 (0.002)	0.018 (0.003)
Immigration/population	0.019 (0.006)	0.017 (0.008)	0.018 (0.008)	0.008 (0.001)	0.013 (0.004)	0.014 (0.006)
Hourly wage	21.8 (1.1)	23.1 (1.1)	24.1 (1.2)	13.6 (0.5)	17.9 (0.7)	18.0 (0.5)
Unemployment/ population	0.029 (0.010)	0.041 (0.009)	0.042 (0.009)	0.057 (0.006)	0.069 (0.005)	0.089 (0.009)
Short time/population	0.002 (0.001)	0.002 (0.001)	0.001 (0.000)	0.104 (0.009)	0.005 (0.002)	0.002 (0.000)
Observations	10	10	10	5	5	5

Notes: Standard deviations in parentheses. Statistics for (unified) Berlin, included in neither east nor west, are not shown. Migration flows are the total for the year, population is measured at the start of the year, and the other variables are yearly averages. Wages are for workers in manufacturing. Unemployment refers to the number of registered unemployed, short time refers to the numbers of workers on reduced hours. 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.

rapid rise, then stagnation, of eastern wages, and the gradual rise of western wages. Employment rates fell sharply from 1990 to 1992 and the government intervened with active labor market policies, especially early retirement, public works jobs, and public training programs. Registered unemployment rose steadily in the east, although after a unification-induced boom in 1991, western unemployment also rose (fourth row of Table 1). The fifth row shows that the short-time rate was abnormally large in the east in 1991, when special provisions for its use were in place. Eastern wage inequality grew steadily, reaching western levels by 1999: The 90–10 wage differential rose from 0.65 to 0.96 from 1990 to 1999.⁷

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.⁸ Conversely, rent control in western cities could affect housing availability for potential emigrants, thereby deterring migration.

3. Theory

The basis of the theory of migration choice is a computation of the present discounted value of expected income (or utility) in the source region versus the

7. See Burda and Hunt (2001) for inequality and other statistics, and also for the reasons for the lack of convergence between east and west.

8. Frick and Lahmann (1996). Limits on rent increases for incumbent tenants mean that the housing market acts as a brake on mobility in the west. This effect, however, is much smaller in the east due to turnover caused by widespread renovation of eastern apartments.

destination region, taking a fixed cost of moving into account. Expected wages will depend upon both the wage conditional on being employed and the probability of being employed in each period. Individuals are expected to move to high wage and low unemployment regions. The effect of source wages and unemployment are ambiguous, because although low wages and high unemployment increase the desire of an individual to leave, they may cause him or her to be liquidity constrained. Also, if a region has high unemployment, the stigma of being unemployed and thus the search intensity of the unemployed may be low. For internal migration within rich countries the liquidity constraint effect is expected to be low, so it is likely that low-wage, high-unemployment regions should experience emigration.

Borjas (1987) shows that 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.⁹ This Roy model should apply to the commuting decision too, although if the cost of commuting is lower than the cost of emigrating, the selection effect will not be so strong: If the mean wage gap between home and abroad is large, all skill types want to emigrate, and the selection effect is small; if the mean wage gap is small, or effectively small due to a high moving cost, the selection effect is large. Because inequality has been lower in eastern than western Germany, we expect east-to-west emigrants, and, to a lesser extent, commuters, to be more skilled than eastern stayers.

If individuals who lose their job in the source region search more intensively than the employed abroad as well as at home, and the laid-off are less skilled or less able than others, this could weaken or reverse the prediction, however. These relatively unskilled people, if they find a job in the west, will be added to a group of relatively skilled people who moved despite being employed.

Owing to the longer time horizon of the young, they not only have longer to recoup the (possibly smaller) cost of moving, but they have longer to benefit from good economic conditions elsewhere. They also have less firm-specific and location-specific human capital than older people.¹⁰ These differences based on age are unlikely to result simply in a shift in the probability of moving but are likely to lead to different levels of responsiveness to regional labor market differentials.

The same reasoning would imply that the young would be more sensitive to the unemployment differential. Whether this is so depends upon the degree to which unemployment is important through its effect on future expected wages, or through the fact that those currently unemployed search more intensively than

9. Chiswick (2000) points out that assumptions about the nature of the moving cost are important, and that under reasonable assumptions all movers are positively selected, but to varying degrees determined by relative inequality.

10. Young people are also less likely to qualify for unemployment benefits, and in Germany, unemployment insurance becomes more generous with age.

the currently employed. Whereas the former effect should be more important for the young, the latter effect should be more important for the old. Furthermore, the young may weather unemployment by living with their parents, whereas older people have acquired financial obligations and more expensive consumption habits. It is thus ambiguous which age group should respond more to the overall source unemployment rate (this will also be affected by how the overall unemployment rate translates to unemployment by age group), but the prime-aged and old should respond more to their own layoff or unemployment.

If the evolution of key variables is uncertain, and new information is acquired in every period, it can be optimal to wait another period and reassess the situation.¹¹ The rise in emigration beginning in 1997 may reflect the departure of individuals who finally decided that quick convergence was no longer likely, but I do not model expectations explicitly.

4. Previous Studies of German Migration

A small set of papers has examined east-west German migration using the individual-level data of the German Socio-Economic Panel. Burda (1993) and Burda et al. (1998) examine the determinants of the intention to emigrate, as self-reported in 1991. Schwarze (1996) finds the current wage has a negative impact on actual migration, and wage growth has a positive impact. Hunt (2001) shows that workers taking a job in the west between 1990 and 1991 had median wage gains of 52%, but movers in later years only gained 8–9%. Some of the reduction was owing to the increase in the share of individuals apparently transferred to the west by their firm: These individuals already earned western-level wages before moving, and experienced little gain. I refer to these individuals below as *transfer commuters* and *transfer emigrants*.¹²

Pischke, Staat, and Vögele (1994) analyze east-west commuting in 1990–1991 using the individual-level Arbeitsmarktmontitor data set. They observe that commuters are disproportionately young and male. Men, the university-educated, and those living in East Berlin were significantly more likely to search for a job in the west. Kalter (1994) analyzes substitution between commuting and migration for West Germany.

Decressin (1994) uses regional-level data to study internal migration in pre-unification West Germany, and Alecke and Untiedt (1999) use net or gross migration flows for all German states for 1991–1997 (but not pairwise).

11. Burda (1995) and Bauer (1995).

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

5. Data

I perform regional-level analysis using data at the level of the 16 federal states for 1991–2000. 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 also use migration data by age group, although the data for 1995, 1996, and 2000 are incomplete.¹³ Furthermore, the 1991–1993 data by age define the city-states of Berlin, Bremen, and Hamburg to include their surrounding areas. To make the age-based data comparable across years, I aggregate Berlin/Brandenburg and Bremen/Hamburg/Schleswig-Holstein/Niedersachsen for all years. I refer to this sample as the *age-group sample*. An alternative would be to drop observations involving the city-states for 1991–1993: The results based on this sample are qualitatively similar and most are not reported.

The individual-level analysis uses the eastern sample of the German Socio-Economic Panel (GSOEP) for 1990–1999. The first eastern wave was drawn in June 1990, just before monetary union.¹⁴ Individuals leaving the east for the west are followed in the survey. Workers are also asked whether they are commuting to the west (this need not mean every day, and includes some commuters who return home only at weekends).¹⁵ Because I focus on easterners, I exclude return migration of westerners from the east, which is included in the aggregate flows.

The number of east to west migrants is somewhat small if all observations with any missing values in all variables of interest are dropped. A larger sample is therefore used for the basic analysis, and a smaller sample is used when the covariates are expanded. Both samples include both the employed and the non-employed, and cover the age range 18–54 years, to avoid retirees who would not commute. More details on all the data can be found in the Data Appendix.

6. Econometric Approach

For the state-level analysis I estimate a fixed effects model, where each fixed effect α_{sd} represents a pair-wise flow in a particular direction:

$$\begin{aligned} \log M_{sdt} = & \alpha_{sd} + \beta_0 \log W_{st} + \beta_1 \log W_{dt} + \beta_2 \log U_{st} + \beta_3 \log U_{dt} \\ & + \beta_4 \log S_{st} + \beta_5 \log S_{dt} + \beta_6 EW_{sd} \times t + \beta_7 EW_{sd} \times t^2 \\ & + \beta_8 WE_{sd} \times t + \beta_9 EE_{sd} \times t + \sum_j \gamma_j T_j + \varepsilon_{sdt}, \end{aligned} \quad (1)$$

13. Data on wages, unemployment and short time by age are not published, so I use the overall levels in all analysis.

14. See SOEP Group (2001) for a complete description of the data.

15. However, the weekly and daily commuters cannot be distinguished in every year. In the available years, two-thirds of commuters were daily commuters.

where M represents the number of individuals moving from s to d , W the wage, U the number of registered unemployed, S the number of workers on short time, and T_j year dummies. EW is a dummy indicating a flow from an eastern to a western state, while WE and EW are dummies for west to east and within-cast flows respectively, and t is a linear trend. This specification means that I allow for a common flexible evolution of migration through the year dummies, and allow for linear deviations from this pattern for west to east and within-east flows, and a quadratic deviation for east to west flows (inspired by the U-shape in Figure 1). The year dummies thus capture the evolution of within-west flows. The strategy is to see whether raw trends in flows between and within regions remain after controlling for economic variables.

I treat unified Berlin as a third region in neither east nor west, because separate data for East and West Berlin are not available after 1996. I therefore include in the estimation trends for flows between east and west and Berlin ($EB \times t$, $BE \times t$, $WB \times t$, $BW \times t$), but for clarity these are suppressed from equation (1), and their coefficients are not reported subsequently.¹⁶ I compute Newey-West standard errors allowing arbitrary correlation across years between state pairs.¹⁷

A concern about the state-level analysis is that the unemployment and wage variables could be endogenous. For example, a rise in emigration could increase source wages through the reduction in labor supply, whereas if source wages are exogenous a negative relation would be expected. Conversely, if high-wage individuals emigrate, this could reduce source wages through a composition effect and make the source wage coefficient too negative. Some readers may therefore prefer to view the estimation of (1) as descriptive rather than causal.¹⁸

With the individual-level data, I estimate multinomial logits for the pooled pairs of years from 1990–1991 to 1998–1999, for a sample of easterners who live and work in the east in the initial year of the pair. I study the probability that the individual emigrates or begins commuting (with a change in employer) or transfer commuting (no change in employer) between pairs of years. Most covariates refer to the initial year of the pair. In particular, the wage is measured in the initial year when all people in the sample were living and working in the east. Because not all sample members were working at this time, the wage is interacted with a dummy for working, and this dummy (or rather, a dummy for not working) is included uninteracted. The standard errors are adjusted to account for the same individuals’

16. In an earlier version using data through 1996, the results were not sensitive to whether unified Berlin was treated as a special case, or whether East Berlin was assigned to the east and West Berlin to the west.

17. For this purpose I used the software written for Stata by David Roodman, most easily accessed by typing “findit newey” in Stata.

18. I cannot use lagged wages and unemployment to reduce endogeneity, as 1990 wages are not available for the east. This would in any case not be desirable, given that initially easterners would rather have been trying to look forward to predict a rapidly evolving situation.

being observed in multiple years. I drop the small number of transfer emigrants from the regressions.

7. Results from State Data

The regressions with state-level data parallel those of Burda and Hunt (2001), but with more complete data and covariates, and discussion of flows other than east to west. Table 2 shows the results for all ages and the full sample of all states in all years. Not all coefficients are reported. The bottom two rows of the table evaluate the slope of the east-west quadratic at its 1992 and 1998 values respectively, to allow an assessment of how well the initial decline and subsequent rise in these flows can be explained. Column 1 contains no economic covariates, but merely establishes the trends (relative to within-west flows) to be explained: the U-shape for east-west flows, and the upward trends of 3.4% and 2.6% per year, respectively,

TABLE 2. Determinants of migration 1991–2000: state-level data.

	(1)	(2)	(3)	(4)
EW × (Year-1991)	−0.187 (0.016)	−0.091 (0.025)	−0.084 (0.025)	−0.073 (0.025)
EW × (Year-1991) ²	0.020 (0.002)	0.011 (0.002)	0.010 (0.002)	0.009 (0.002)
WE × (Year-1991)	0.034 (0.008)	0.003 (0.009)	0.004 (0.009)	0.003 (0.009)
EE × (Year-1991)	0.026 (0.008)	0.009 (0.008)	0.011 (0.008)	0.012 (0.008)
Destination hourly wage (log)	–	1.794 (0.209)	1.570 (0.222)	1.378 (0.261)
Source hourly wage (log)	–	−0.846 (0.284)	−0.935 (0.297)	−0.327 (0.354)
Destination unemployment (log)	–	–	−0.190 (0.065)	−0.196 (0.065)
Source unemployment (log)	–	–	−0.026 (0.061)	−0.014 (0.060)
Destination short time (log)	–	–	–	−0.017 (0.011)
Source short time (log)	–	–	–	0.051 (0.012)
Observations			2250	
R ²	0.21	0.25	0.26	0.27
1992 slope of EW quadratic	−0.147 (0.013)	−0.069 (0.021)	−0.063 (0.021)	−0.054 (0.020)
1998 slope of EW quadratic	0.096 (0.009)	0.063 (0.010)	0.061 (0.010)	0.059 (0.010)

Notes: Newey-West standard errors, computed by state pair cluster with a maximum lag of 9, are in parentheses. Estimation of the log of the migration flow is by fixed effects. EW = east-west flow. Covariates include year dummies and a trend interacted with dummies for East → Berlin, Berlin → East, West → Berlin, and Berlin → West.

for west-east flows and within-east flows. East-west flows were falling at 14.7 log points per year in 1992, and rising at a rate of 9.6 log points per year in 1998.

In column 2, I add the source and destination hourly wages to the covariates. Both are significant with the expected signs: An increase of 1% in the destination wage raises flows by 1.8%. The pattern of wages is sufficient to explain all of the rise in west-east flows (the unexplained increase falls to 0.3% per year), and two-thirds of the rise in within-east flows (the unexplained increase falls to 0.9% per year). Wages explain about half the initial fall in east-west flows (the unexplained decline is now only 6.9% per year), and one-third of the recent increase in east-west flows (the unexplained increase is now 6.3% per year).

In column 3, I add source and destination unemployment. The coefficient on destination unemployment implies that a 1% rise in the number unemployed in the destination reduces flows by 0.2%. However, the coefficient on source unemployment is insignificant. The addition of the unemployment variables leaves the coefficients on all trends essentially unchanged. In column 4 I add source and destination short time, which similarly affects the coefficients on the trends little. The short time coefficients have the expected signs, and seem appropriately smaller in absolute value than the coefficient on destination unemployment. The coefficient on destination short time is insignificant. The addition of short time reduces the coefficient on source wage considerably: The outlier value of short time in the east in 1991 may be responsible for this. In unreported regressions I add source and destination (log) vacancies: Their coefficients have the opposite of the expected signs, but vacancies are highly correlated with unemployment, and explain no part of the trends.

In the first column of Table 3, I use the specification of Table 2 column 4 for the age-group sample. The main difference is that standard errors are larger for the (smaller) age-group sample. In columns 2–7 I use the specifications of columns 1 and 4 in Table 2 and run the regressions for three age groups: 18–24, 25–49, and 50–64. In column 3, for the young, the coefficients on wages, unemployment, and short time are similar to the coefficients for all ages together. The one exception is the relatively large coefficient of 0.138 on short time for the young, which implies that when the number of people on short time rises 1% in the source, outflows rise 0.138%: This seems large compared with the coefficient on destination unemployment. The additional covariates of column 3 more than explain the early decline in east-west flows of 17.4 log points per year in column 2, and explain 60% of the recent 14.6 log points per year increase in these flows. Unreported results show that wages alone explain 85% of the initial east-west decline, while for the recent upturn short time developments also play an important role.

In columns 4 and 5, I repeat this pair of regressions for the prime-age group of 25–49. The coefficient on source unemployment is positive and significant, its

TABLE 3. Determinants of migration by age: state-level data.

	All	Age 18–24		Age 25–49		Age 50–64	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
EW × (Year-1991)	−0.053 (0.030)	−0.227 (0.026)	0.029 (0.034)	−0.258 (0.021)	−0.074 (0.029)	−0.152 (0.025)	−0.051 (0.040)
EW × (Year-1991) ²	0.007 (0.003)	0.027 (0.003)	0.002 (0.003)	0.029 (0.003)	0.010 (0.003)	0.012 (0.003)	0.001 (0.004)
WE × (Year-1991)	−0.022 (0.013)	0.009 (0.011)	−0.033 (0.014)	0.007 (0.010)	−0.033 (0.012)	0.060 (0.012)	0.019 (0.014)
EE × (Year-1991)	0.011 (0.013)	0.032 (0.013)	0.041 (0.015)	0.025 (0.012)	0.017 (0.014)	0.046 (0.009)	0.017 (0.015)
Destination hourly wage (log)	1.558 (0.272)	–	1.431 (0.339)	–	1.061 (0.286)	–	1.889 (0.406)
Source hourly wage (log)	−0.909 (0.489)	–	−0.803 (0.505)	–	−0.750 (0.480)	–	−0.102 (0.632)
Destination unemployment (log)	−0.174 (0.072)	–	−0.131 (0.093)	–	−0.259 (0.072)	–	−0.097 (0.116)
Source unemployment (log)	0.090 (0.080)	–	−0.057 (0.096)	–	0.151 (0.076)	–	0.279 (0.115)
Destination short time (log)	−0.027 (0.013)	–	−0.028 (0.012)	–	−0.032 (0.012)	–	0.011 (0.021)
Source short time (log)	0.061 (0.018)	–	0.138 (0.018)	–	0.051 (0.018)	–	0.005 (0.026)
Observations				962			
R ²	0.44	0.44	0.55	0.31	0.40	0.33	0.36
1992 slope of EW quadratic	−0.039 (0.025)	−0.174 (0.020)	0.033 (0.028)	−0.201 (0.017)	−0.054 (0.024)	−0.128 (0.020)	−0.049 (0.033)
1998 slope of EW quadratic	0.043 (0.014)	0.146 (0.018)	0.058 (0.017)	0.143 (0.014)	0.070 (0.014)	0.018 (0.019)	−0.036 (0.019)

Notes: Newey-West standard errors, computed by state pair cluster with a maximum lag of 9, are in parentheses. Estimation of the log of the migration flow for the relevant age group is by fixed effects. EW = east-west flow. Covariates include year dummies and a trend interacted with dummies for East → Berlin, Berlin → East, West → Berlin, and Berlin → West.

magnitude implying that a 1% increase in the number of unemployed increases the migration flows by 0.15%. The additional covariates of column 5 explain three quarters of the initial decline in east–west flows of 20 log points per year in column 4, and half of the recent rise of 14 log points per year. Despite the positive coefficient on source unemployment, evolutions in unemployment tended to reduce emigration from the east in the early period (this is based on unreported regressions where the covariates are added one by one). However, for both the decline and the rise, wages are the most important factor, although to a much lesser extent than for the young.

Columns 6 and 7 deal with the 50–64 age group. The coefficient of 0.279 on source unemployment is significant in column 7, and larger than for the 25–49 age group. Two-thirds of the 12.8 log points per year initial decrease in east-west migration of column 6 is explained by the covariates added in column 7, and the small recent rise of 1.8% per year is more than explained. The evolution of

unemployment again contributes to a decline in emigration in the initial period, as evidenced by unreported regressions, whereas for both periods the wage is the most important factor (again to a lesser extent than for the young).

Sensitivity to source unemployment thus increases with age, and this result is robust to dropping the region-specific time-trend variables (these results are not reported). The point estimates suggest older individuals are less sensitive to the source wage, though there is no difference here between the young and the prime-aged, and the standard errors are large.¹⁹ There is no clear pattern across the destination wage. More puzzling is the greater sensitivity to short time as age declines, because one could consider short time to be partial unemployment, and would expect the patterns across age to be similar to those for unemployment.

8. Descriptive Statistics from the GSOEP

The GSOEP data, in which West Berlin is considered part of the west, and East Berlin part of the east, may be used to assess the permanence of the migration decision. The number of easterners observed returning from the west is 20% of the number of easterners observed emigrating to the west. This is probably an underestimate of the return rate, because each move increases the probability of being lost by the survey, and because the most recent emigrants have not had time to return. Almost all the returns occur after 1992. This implies considerably more than 20% of the post-1992 west-east flows are easterners returning, something which must be ignored in the state-level analysis.²⁰

By contrast with the long-term nature of the decision to emigrate, the data show that commuting is a short-term affair. Each year, on average, 30% of commuters cease commuting, while the supply of commuters is replenished by the 2% of the population per year which begins commuting. Commuting is used by some as a springboard for emigration: Although most former commuters simply stay in the east, commuters who emigrate nonetheless represent 20% of the inflows to emigration. However, I do not attempt to model transitions from commuting to emigration.

Table 4 shows the means of the larger sample used for the multinomial logit emigration and commuting regressions. Women are less likely to commute than men, and emigrants are very young (46% are aged 18–25). Highest schooling

19. For the sample where 1991–1993 are dropped for city-states the coefficients (and standard errors) on the source wage across the columns are -1.89 (0.59), -1.26 (0.61), 0.19 (0.63). The same pattern is not seen when the region-specific time-trend terms are dropped, however.

20. The 1% per year average emigration rate in the GSOEP is lower than in the aggregate data. This is doubtless due in part to attrition of emigrants, but is also due to its non-inclusion of westerners returning to the west, and refugees and “Aussiedler” (ethnic German immigrants) moving to the west. The government initially locates some refugees and Aussiedler in the east, but they then vote with their feet and move west.

TABLE 4. Means of larger GSOEP sample, 1990–1999.

	Stayers	Commuters	Transfer commuters	Emigrants	Transfer emigrants
Sex (female = 1)	0.53	0.32	0.29	0.57	0.40
Age 18–21	0.09	0.21	0.11	0.26	0.20
Age 22–25	0.09	0.12	0.11	0.20	0.15
Age 26–29	0.11	0.12	0.11	0.17	0.10
Age 30–35	0.20	0.19	0.19	0.14	0.20
Age 36–45	0.31	0.27	0.31	0.16	0.20
Age 46–53	0.20	0.10	0.17	0.07	0.15
General schooling	0.09	0.15	0.11	0.18	0.10
University	0.10	0.11	0.12	0.13	0.25
Vocational training	0.22	0.20	0.21	0.17	0.10
Apprenticeship	0.58	0.54	0.56	0.52	0.55
Increase in education	0.02	0.08	0.04	0.07	0
West Berlin border 1990	0.08	0.25	0.25	0.12	0.15
Rest of west border 1990	0.09	0.21	0.19	0.07	0.20
Location missing 1990	0.08	0.06	0.05	0.08	0.15
Observations	20,127	312	131	164	20

Notes: Education is taken from the interview after migration, other variables refer to the interview before migration unless indicated. A transfer commuter reports beginning to commute without a change in employer. A transfer migrant reports migrating without a change in employer.

attained is represented by 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 workers in this category are better paid), and none of these qualifications (“general schooling”). Anecdotal evidence suggests that one type of commuter or emigrant is an individual who begins working in the west upon completion of education in the east. Because the interviews are conducted before the end of the academic year, using education in the initial (pre-move) year of the pairs 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. The anecdotes are supported by the variable “increase in education,” which shows that commuters and emigrants were disproportionately likely to have increased their education between the pairs of years. Commuters of both types are more likely to have lived in 1990 in a Kreis (county) that had a border with West Berlin or the rest of West Germany.

Table 5 shows the means of the supplementary variables for the smaller sample. Thirty percent of those beginning to commute and 22% of emigrants had experienced a layoff since the previous year. I also control in the regressions for whether the individual was on short time or was not working, both disproportionately high for emigrants and commuters, while being sure to control for whether the individual had been working at unification in 1990. An adult who was not working at that time was not closely connected to the labor force. For other adults, later non-employment would most likely be involuntary. However,

TABLE 5. Means of supplementary variables in smaller GSOEP sample, 1990–1999.

	Stayers	Commuters	Transfer commuters	Emigrants	Transfer emigrants
Laid off	0.09	0.30	0	0.22	0
Short time	0.03	0.04	0.01	0.08	0.06
Not working	0.22	0.38	0	0.37	0
Not working 1990	0.09	0.09	0.04	0.12	0
1990 info missing	0.11	0.16	0.14	0.22	0.11
City 50,000–500,000 1990	0.13	0.07	0.07	0.03	0.06
City >500,000 1990	0.12	0.23	0.27	0.23	0.39
Partner	0.68	0.56	0.61	0.48	0.50
Partner × partner laid off	0.06	0.07	0.04	0.10	0
Partner × partner short time	0.02	0.02	0.02	0.04	0
Partner × partner not working	0.11	0.09	0.20	0.08	0.17
Wage/1000 × working	1.90	1.24	3.02	1.27	2.94
Observations	18,535	294	113	115	18

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

for young people this information is missing as they were too young to answer the survey, so I include a dummy for having missing 1990 information.

Table 6 shows the means of the smaller sample for the young age group 18–25, and the older age group 26–53. I do not report the means for transfer commuters. The large proportion of young with general schooling indicates many have not yet finished their first qualification. The young are much more likely to have increased their education, and this is particularly marked for young commuters and emigrants. The young are less likely to have been laid off or to be on short time. They are much more likely not to be working, due to the students among them (students in Germany work much less than American students), which explains why their layoff rate, calculated over people, not workers, is lower than for the prime-aged.

9. Results from Individual Data

The first multinomial regression results, for the larger sample, are presented in Table 7. 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, increase in education, and year. Commuters and emigrants, although not transfer commuters, are disproportionately unskilled. An individual with only general schooling is twice as likely to be a commuter as a stayer, compared to someone in the omitted apprenticeship category, and is 2.5 times as likely to be an emigrant. An individual increasing his or her education (obtaining a qualification) is five times as likely to commute as to stay and four times as likely to emigrate as to stay, compared to someone with no education change. The hypothesis that the

TABLE 6. Means of smaller GSOEP sample by age, 1990–1999.

	Ages 18–25			Age 26–53		
	Stayers	Commuters	Emigrants	Stayers	Commuters	Emigrants
Sex (female = 1)	0.51	0.29	0.68	0.53	0.31	0.56
Age 18–21	0.51	0.63	0.57	–	–	–
Age 22–25	0.49	0.37	0.43	–	–	–
Age 26–29	–	–	–	0.13	0.17	0.31
Age 30–35	–	–	–	0.24	0.28	0.24
Age 36–45	–	–	–	0.38	0.39	0.35
Age 46–53	–	–	–	0.25	0.16	0.10
General schooling	0.38	0.36	0.32	0.03	0.05	0.06
University	0.02	0.02	0.09	0.12	0.17	0.19
Vocational training	0.09	0.10	0.15	0.25	0.24	0.24
Apprenticeship	0.51	0.51	0.45	0.60	0.55	0.51
Increase in education	0.08	0.21	0.16	0.01	0.01	0.06
Border with West Berlin 1990	0.06	0.21	0.06	0.09	0.27	0.16
Border with rest of West 1990	0.10	0.18	0.09	0.10	0.22	0.07
Location 1990 missing	0.09	0.04	0.19	0.06	0.05	0.07
Laid off	0.07	0.16	0.15	0.09	0.37	0.26
Short time	0.02	0	0.04	0.03	0.07	0.10
Not working	0.39	0.52	0.45	0.19	0.31	0.32
Not working 1990	0.18	0.17	0.15	0.04	0.05	0.10
1990 info missing	0.41	0.41	0.40	0.04	0.04	0.09
City 50,000–500,000 1990	0.11	0.07	0.04	0.13	0.07	0.03
City >500,000 1990	0.10	0.14	0.09	0.13	0.27	0.32
Wage/1000 * working	0.92	0.58	0.87	2.10	1.56	1.54
Observations	3,205	96	47	15,330	198	68

Note: The wage is monthly in 1991 DM, adjusted for the price level in the east for eastern residents. Means for transfer commuters are not reported.

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.

In the second regression, sex, age, and 1990 location dummies are added. This has a large effect on the education dummies: Conditional on age, emigrants are disproportionately from the high-skilled university group. A person with a tertiary degree is 83% more likely to be an emigrant than a stayer, compared to the omitted apprenticeship category. The coefficient on general schooling is still significant at the 10% level in the commuting column. The change in the education coefficients suggests that a common emigrant or commuter type is a young person who goes to the west to study further after their general schooling.²¹

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

TABLE 7. Larger GSOEP sample—effects of education, gender, age, and distance.

	Transfer			Transfer		
	Commuters	commuters	Emigrants	Commuters	commuters	Emigrants
	(1)	(2)	(3)	(4)	(5)	(6)
Sex (female = 1)	–	–	–	0.43 (–6.6)	0.37 (–4.7)	1.20 (1.1)
Age 18–21	–	–	–	3.60 (4.8)	1.40 (0.9)	8.29 (5.5)
Age 22–25	–	–	–	2.68 (3.7)	1.70 (1.5)	6.56 (5.4)
Age 26–29	–	–	–	2.01 (2.7)	1.27 (0.7)	4.29 (4.2)
Age 30–35	–	–	–	1.93 (2.8)	1.21 (0.6)	1.96 (1.9)
Age 36–45	–	–	–	1.84 (2.8)	1.18 (0.6)	1.49 (1.1)
General schooling	2.05 (4.0)	1.27 (0.8)	2.50 (4.2)	1.52 (1.8)	1.23 (0.6)	1.14 (0.5)
University	1.14 (0.7)	1.22 (0.6)	1.36 (1.3)	1.17 (0.8)	1.11 (0.3)	1.83 (2.3)
Vocational training	0.96 (–0.2)	0.97 (–0.1)	0.84 (–0.8)	1.15 (0.8)	1.07 (0.3)	1.09 (0.4)
Increase in education	4.99 (1.07)	1.83 (1.3)	4.11 (4.4)	3.29 (4.8)	1.62 (1.1)	1.54 (1.2)
West Berlin border 1990	–	–	–	4.79 (10.0)	4.59 (6.6)	1.52 (1.7)
Rest of west border 1990	–	–	–	3.34 (7.3)	3.02 (4.0)	0.71 (–1.1)
Pseudo- R^2		0.03			0.09	
Log likelihood		–3,255			–3,073	
Observations			20,734			

Notes: Columns 1–3 and 4–6 present the results of two multinomial logits (the reference group is stayers). Exponentiated coefficients are presented. *t*-statistics for the untransformed coefficients, adjusted for repeated observations on individuals, are reported in parentheses. Transfer emigrants are dropped. The omitted year is 1990, omitted education is apprenticeship, omitted age is 46–53. Covariates also include a dummy for missing information on 1990 location.

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 3.6 times higher for an 18–21 year old (compared to someone age 46–53), and 8.3 times higher in the case of the probability of emigration. 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.²² The 1990 location coefficients provide the unsurprising result that living in a county on the border raises the probability of commuting or transfer commuting 3- to 5-fold compared to those in other counties.

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

TABLE 8. Smaller GSOEP sample—effect of additional variables.

	Transfer			Transfer		
	Commuters	commuters	Emigrants	Commuters	commuters	Emigrants
	(1)	(2)	(3)	(4)	(5)	(6)
Laid off	4.10 (9.7)	1	2.56 (3.6)	4.03 (9.5)	1	2.57 (3.7)
Short time	2.17 (2.3)	0.57 (−0.6)	2.56 (2.4)	2.05 (2.2)	0.60 (−0.5)	2.59 (2.4)
Not working	3.49 (7.7)	1	2.11 (3.2)	2.56 (3.7)	1	2.24 (2.5)
Not working 1990	0.50 (−2.6)	0.47 (−1.6)	0.66 (−1.3)	0.52 (−2.4)	0.60 (−1.0)	0.66 (−1.3)
City 50,000–500,000 1990	0.74 (−1.3)	0.75 (−0.8)	0.29 (−2.4)	0.74 (−1.3)	0.73 (−0.8)	0.29 (−2.4)
City >500,000 1990	1.30 (1.4)	1.98 (2.6)	1.97 (2.5)	1.32 (1.5)	1.67 (1.9)	1.96 (2.5)
Partner	1.11 (0.6)	0.69 (−1.2)	0.73 (−1.1)	1.12 (0.6)	0.61 (−1.6)	0.73 (−1.1)
Partner × partner laid off	1.09 (0.3)	0.66 (−0.8)	1.88 (1.9)	1.07 (0.3)	0.70 (−0.7)	1.88 (1.9)
Partner × partner on short time	0.89 (−0.2)	2.86 (1.5)	1.67 (1.1)	0.88 (−0.3)	3.02 (1.6)	1.67 (1.1)
Partner × partner not working	1.00 (−0.0)	2.53 (3.4)	1.28 (0.7)	1.00 (−0.0)	2.68 (3.5)	1.28 (2.4)
Wage/1000 × working	—	—	—	0.87 (−1.5)	1.28 (4.7)	1.03 (0.3)
Pseudo- <i>R</i> ²		0.13			0.14	
Log likelihood		−2,526			−2,510	
Observations			19,057			

Notes: Columns 1–3 and 4–6 present the results of two multinomial logits (the reference group is stayers). Exponentiated coefficients are presented. *t*-statistics for the untransformed coefficients, adjusted for repeated observations on individuals, are reported in parentheses. Transfer emigrants are dropped. The omitted year is 1990, omitted education is apprenticeship, omitted age is 46–53. Covariates also include the covariates of Table 7: sex, age dummies, education dummies, location dummies, dummies for missing 1990 information on work status and location, and year dummies. The coefficients on not working and laid off are constrained to be zero for transfer commuters.

In order to examine the effects of more covariates, subsequent analysis is based on the smaller sample. Repeating the regressions of Table 7 columns 3–6 on the smaller sample yields similar results. Further covariates are added to this specification, and the coefficients on the additional covariates only are presented in Table 8. The strongest predictor is the dummy for whether the person reported being laid off between the pairs of years: Laid-off individuals are more than four times as likely to begin commuting, and 2.5 times as likely to emigrate. The reference group is those who were working in the initial year of the pair as well as in 1990, and were not laid off. By definition no transfer commuters were laid off, so the exponentiated coefficient is constrained to equal one.²³

23. Controlling for layoff status makes commuters appear less negatively selected and emigrants appear more positively selected, as would be expected if the laid off are negatively selected. The effect is not large, however (these results are not reported).

Individuals on short time in the initial year were more than twice as likely to commute or emigrate, whereas those who had not been working in the initial year (but had worked in 1990) were 3.5 times as likely to begin commuting and more than twice as likely to emigrate. Those who had not worked in 1990, and were hence only loosely attached to the labor force, were only half as likely to begin commuting. The city size dummies in the next two rows have some significant coefficients. The coefficients associated with information on the respondent's partner, in the following four rows, are generally insignificant.

The specification of columns 4–6 adds the interaction of a dummy for working in the initial year of the pair with the monthly wage earned in that year. Because I am not controlling for destination wages, the coefficient on this variable should not be interpreted as the effect of the source wage, but rather as the net effect of source and potential destination wages. From the Roy model, we expect this net effect to yield a positive coefficient: The most skilled will have most to gain by moving to the west. We see that the highly paid are likely to become transfer commuters, but for ordinary commuters and emigrants there is no evidence to support the Roy model.

In Table 9, I break the sample into a young age group (18–25, columns 1–3) and an older age group (26–53 in the initial year, columns 4–6). I use only two age groups and a reduced set of covariates due to the small samples. The first row shows that women of both age groups are less likely to commute than their male counterparts, but shows that young women are 89% more likely to emigrate than younger men, whereas there is no migration gap by gender for older people.

As expected, the coefficient on the layoff dummy is larger for the older age group, especially for commuting. The difference is not quite significant for emigration. These results confirm that the young are less responsive to their own layoff than older people. In unreported regressions coefficients on the state unemployment rate and the interaction of the unemployment rate with the layoff dummy have insignificant coefficients.

The coefficient on the wage is positive and significant for young people for emigration, as predicted by the Roy model, while it is insignificant for the older sample. The coefficient implies that if the wage rises by DM 1000, the probability of emigration rises by 19%, a small effect. The positive effect of university education is very large for the young (a factor of almost 5), although the effect is much smaller and insignificant for older people. The skill advantage of migrants over stayers thus appears to be much higher for the young. The insignificance of the wage coefficient for commuting, coupled with the insignificant education coefficients, indicates that commuters enjoy no such skill advantage.

The coefficient on being laid off for older people implies that if there were no layoffs, the probability of emigration would be 0.36% at the means of the covariates, whereas if all were laid off, the probability would be 0.94%. The actual layoff rate for older people is 9.6%. If this implies that 9.6% of older people

TABLE 9. Smaller GSOEP sample—determinants of emigration by age.

	Ages 18–25			Ages 26–53		
	Transfer		Emigrants	Transfer		Emigrants
	Commuters	commuters		Commuters	commuters	
	(1)	(2)	(3)	(4)	(5)	(6)
Sex (female = 1)	0.37 (–4.3)	–	1.89 (2.0)	0.34 (–6.8)	0.29 (–4.2)	0.99 (–0.0)
Age 18–21	1.40 (1.2)	–	1.38 (0.9)	–	–	–
Age 26–29	–	–	–	2.06 (2.6)	1.53 (1.1)	5.16 (3.6)
Age 30–35	–	–	–	1.96 (2.8)	1.09 (0.3)	2.38 (1.9)
Age 36–45	–	–	–	1.85 (2.7)	1.02 (0.1)	2.43 (2.0)
General schooling	1.07 (0.2)	–	0.94 (–0.1)	1.86 (1.6)	0.64 (–0.4)	1.91 (1.2)
University	0.53 (–0.8)	–	4.76 (2.1)	1.46 (1.5)	0.73 (–0.9)	1.78 (1.5)
Vocational training	1.49 (1.1)	–	1.93 (1.4)	1.24 (1.1)	0.83 (–0.6)	1.27 (0.8)
Increase in education	4.75 (4.5)	–	1.28 (0.5)	2.84 (2.1)	1.33 (0.3)	4.50 (2.8)
West Berlin	4.28	–	1.12	4.09	4.71	0.93
border 1990	(4.3)		(0.2)	(6.7)	(6.1)	(–0.2)
Rest of west	2.01	–	0.63	4.11	3.32	0.91
border 1990	(2.2)		(–0.9)	(6.7)	(3.3)	(–0.2)
Laid off	2.83 (3.4)		2.27 (1.7)	4.27 (8.3)	1	2.76 (3.3)
Short time	–	–	–	2.23 (2.3)	1	2.94 (2.3)
Not working	2.34 (2.1)	–	2.1 (2.0)	2.99 (3.0)	1	1.85 (1.2)
Not working 1990	0.72 (–0.9)	–	0.50 (–1.3)	0.42 (–2.2)	1.23 (0.4)	0.71 (–0.8)
City 50,000–500,000 1990	0.59 (–1.3)	–	0.33 (–1.5)	0.85 (–0.6)	0.88 (–0.3)	0.28 (–1.7)
City >500,000 1990	0.80 (–0.6)	–	0.70 (–0.8)	1.67 (2.3)	1.08 (0.3)	3.37 (3.4)
Wage/1000 × working	0.83 (–0.8)	–	1.19 (2.7)	0.91 (–0.9)	1.31 (6.1)	0.88 (–0.8)
Pseudo- <i>R</i> ²		0.11			0.15	
Log likelihood		–606			–1,743	
Observations		3,348			15,684	

Notes: Columns 1–3 and 4–6 present the results of two multinomial logits (the reference group is stayers). For the age group 18–25, transfer commuters are dropped. For further notes, see Table 8.

have a 0.94% probability of emigrating, and the rest have a 0.36% probability of emigrating, the overall probability of emigrating is 0.4162%. We could imagine increasing the stock of unemployed by 1% by increasing the proportion laid off to 9.696%. This would imply an overall probability of emigrating of 0.4167%, and hence a rise in the emigration flows of $0.4162/0.4167$, or 0.125%. From the state-level regression in Table 3 column 5, an increase in source unemployment of 1% increases migration flows by 0.15% for the prime-aged, the age category corresponding the most closely. The closeness of these magnitudes suggests that the effect of source unemployment acts mainly through its direct and contemporaneous effect on laid-off workers, and not through future expected employment probabilities for the currently employed.

The same transformation of the coefficient on being laid off for the young in Table 9 can be performed, and it implies that a 1% increase in unemployment would increase migration flows by only 0.07%. This is smaller than the standard error on source unemployment in Table 3 column 3, indicating that a coefficient of this magnitude could not be estimated reliably with the state-level data. If the individual's own unemployment status is indeed what matters most for the young as well as the non-young, the use of the unemployment rate for all ages in this and other papers compounds the problem.²⁴

10. Conclusions

Young potential emigrants are more sensitive to wages than older people, whereas older people are more sensitive to unemployment in the source region and to their own layoff. A comparison of German individual and state-level results suggests that the direct, contemporaneous effect of layoffs accounts for most of the effect of source unemployment, and that employed individuals do not use current unemployment as an indicator of future employment probabilities.

The results explain why in my paper, as in many in the literature, the coefficient on source unemployment is insignificant in state-level regressions for all ages. The coefficients are strongly influenced by the behavior of the mobile young, for whom the coefficient on source unemployment is genuinely small. Source wages have a larger effect on total emigration than source unemployment does.

The importance of these results for east to west German migration is that the net effect of the huge wage increase in the east in 1990–1994 was to reduce emigration, despite rising unemployment. Changes in wages explain half the steep fall in migration from 1991 to 1994, and 85% of the fall for the young. The recent stagnation in eastern wages while western wages continue to rise has increased

24. The result that an individual's own layoff is most important may not generalize to the United States, where inflows to unemployment are higher than in Europe (though US outflows are higher).

emigration flows. The covariates explain this rise less well than the initial fall, however: Part of the unexplained rise is probably due to a downward adjustment of expectations about eastern progress.

I also find that young east to west migrants, who are more influenced by wages than layoffs, have a larger skill advantage over stayers, as measured by education and initial wage, than do older emigrants. Commuters, influenced by layoffs and the low cost of acquiring a job in a neighboring region, enjoy no such skill advantage. Young college graduates are five times as likely to emigrate as other young people, although many young people also commute or emigrate to the west to complete their studies.

Data Appendix

The 100% sample of the GSOEP is used, along with county dummies available upon special agreement with the German Institute for Economic Research (DIW-Berlin). I exploit information about changing jobs and the reported reason for the change to construct a dummy indicating whether 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 subsequent years, when short time was no longer an option for the labor force status question, I set the dummy to zero, because already by 1995 the proportion of workers on short time was very low. Individuals in public works jobs are recorded as employed in the data. If an individual's education information was missing for the initial year of the pair of years considered, I drop the information, 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 partner variables I link the individual to the person identified as being "clearly or probably" the partner.

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 local police, and these data aggregate the local-level information from the old and new addresses provided by an individual on moving. The wage, unemployment, and short time variables come from the Statistisches Jahrbuch. The unemployed are those registered as such, and do not include those in public works jobs. The manufacturing wage variable is based on a firm survey and measures wages of workers outside the collective 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

are not available. The data on migration by age are unpublished data from the Bundesamt für Bauwesen und Raumordnung. I have not been able to obtain the data on migration by age for 1995, 1996, and 2000, except for flows to and from the eastern states of Mecklenburg-Vorpommern (1995, 1996) and Sachsen (1995, 1996, 2000). The covariates for the aggregated states are obtained by weighting or summing those of the component states, as appropriate.

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 is not available for most states in the east in 1990, however, except from the GSOEP data, where the sample size by state is small.

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