Who stays, who goes, who returns?

East–West migration within Germany since reunification[1]

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Abstract

We study the determinants of East–West migration within Germany during the period 1990–2006, using administrative data, the German Microcensus and the German Socio-Economic Panel. We find that in addition to income prospects and employment status, two well-known determinants of migration, psychological and social factors play an important role in determining the migration decision. Men and women move from East to West in proportionate numbers, but among individuals who lived in the East in 1989 women are more likely to migrate. The migrant body in the second wave of migration, starting in the late 1990s, is increasingly composed of young, educated people. By focusing on differences between temporary and permanent migrants, we find that older and single individuals are more likely to return East than stay permanently in the West, compared with younger and married individuals. Finally, the life satisfaction of permanent migrants increases significantly after a move, while that of temporary migrants remains essentially flat.

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1. Introduction

During the years 1991–2006, 2.45 million individuals migrated from the territory of the former German Democratic Republic (GDR) to the territory of the former Federal Republic of Germany, whereas 1.45 million individuals moved in the opposite direction.[2] Relative to the population at the end of 1990 in East and West (without Berlin), these flows amount to 16.6 per cent of the East population leaving the East, and 2.5 per cent of the West population leaving the West. These numbers include individuals who move back and forth between the two parts of Germany, so the true percentages of individuals living in the East in 1990 and in the West today, and of individuals living in the West in 1990 and in the East today are probably somewhat lower. Yet, it is clear that East–West migration is an important phenomenon of German history after reunification, and an important migration episode in general. Moreover, as we document in Section 3.1, the phenomenon of East–West migration does not only play out in the first years after reunification, but in fact migration picked up again in the late 1990s. In light of the staggering and persistent numbers of migrants, staunching East–West migration and avoiding the depopulation of certain areas in the East has been and continues to be an important policy issue in Germany since reunification.

Hunt (2006) offers the most comprehensive analysis of East–West migration to date, investigating the migration flows from 1990 to 1999.[3] She finds that wage increases in the East in the first years after reunification were effective in deterring even higher migration flows, despite the resulting high unemployment rates. The push effect of high local unemployment rates is relatively small, and mostly results from the increased propensity to migrate of the unemployed themselves. Moreover, young individuals, who make up the majority of the migrant body, react more to wage differentials than to the event of unemployment, possibly because their loss of specific human capital in the event of unemployment as well as the committed part of their consumption are relatively small.[4]

We add to the existing knowledge in at least three ways. First, we analyse whether the determinants of migration differ between the first and second waves of migration, which picked up again in the year 1998. Second, we focus on differences in characteristics between temporary and permanent migrants. Return migration plays an important role throughout the entire sample period, with 20 per cent of the East–West migrants in our sample returning to the East later. Last, in contrast to Hunt (2006), we do not focus on the different driving forces of migration by age,

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[2] These data from aggregate statistics exclude Berlin (see Section 3.1).

[3] Her state level data extend to 2000.

[4] Uhlig (2008) focuses on the age composition of migrants, and establishes different patterns of outmigration between rural and urban counties. He then builds a model of positive externalities in production and migration that can explain permanent differences between East and West Germany. Burda (1993) and Burda *et al.* (1998) investigate the declared intentions of East Germans to move West. Burda and Hunt (2001) offer a comprehensive analysis of East Germany's economy after reunification in addition to analysing migration flows.

but instead analyse gender differences in the propensities to migrate. This is in part motivated by the recent perception in the German press that women, and especially young women, leave the East in disproportionate numbers. This perception was reinforced by a recent report of the Berlin Institute for Population and Development (Berlin-Institut für Bevölkerung und Entwicklung, 2007), which shows that women are over-represented in the net East–West migration flows since reunification. We find that the gross numbers paint a different picture, and further analyse this issue with micro data.

In the analysis of the characteristics of East–West migrants, we incorporate standard demographic factors like marital status, age and education, labour market factors like income and employment status, as well as psychological factors like social ties to the origin region and general attitude towards the future. Combining different data sources allows us to analyse the motives of East–West migration extensively. Based on aggregate data, we document major stylized facts of East–West and West–East migration. Second, we use the German Microcensus, which provides us with a very large sample size of almost 500,000 observations over the period 1991–2003,[5] and therefore allows us to analyse changes in motives for East–West migration over time, as well as potential interactions between explanatory variables. Finally, using the German Socio-Economic Panel (GSOEP), we can follow movers over time, thereby identifying permanent and temporary migrants, and add a set of psychological and social measures that can potentially explain migration decisions. Moreover, the GSOEP allows us to study labour market variables at the county level as potential determinants of migration.[6] Most importantly, we can restrict the sample to individuals who lived in the East in 1989, and therefore exclude West Germans who migrated East and later returned to the West. The migration motives of this latter group of return migrants probably differ significantly from that of the individuals who lived in the East in 1989. A drawback of the GSOEP is that it contains considerably fewer observations than the Microcensus, with slightly below 60,000 observations over the years 1991–2006.

We confirm the strong age effects already detected by Hunt (2006), with younger individuals being significantly more likely to migrate. We also find that married individuals are less likely to migrate West than single, divorced or widowed individuals. According to the Microcensus, college-educated individuals are significantly more likely to migrate West than individuals with general schooling as their highest degree. An educational degree beyond secondary schooling raises the probability of migration for the young, but not for individuals older than 29 years, potentially indicating that the value of advanced degrees obtained in the East before 1990 depreciated at reunification. Based on the GSOEP, we find that social

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[5] As explained in Section 2, different coding of the educational variables prevents us from including observations from the years 1992 and 1994.

[6] Hunt (2006) uses wages and unemployment rates at the much coarser state level as potential explanatory variables for the migration decision.

ties and psychological factors are significant predictors of the migration decision, in line with the results by Rainer and Siedler (2009). Source income plays a larger role in explaining migration than the source unemployment rate, a result that confirms the findings of Hunt (2006) using the smaller regional units of counties instead of states. Overall, the empirical analyses of the determinants of East–West migration confirm the predictions of a simple utility model of migration.

We do not find a significant difference between men and women in the probability of migration from East to West neither in the Microcensus nor in the aggregate data. However, this changes when we focus on the sample of East Germans who lived in the East in 1989 by using GSOEP: among this group, women are indeed more likely to migrate than men. It might be that this effect does not show up in the aggregate and Microcensus data as West German men are more likely to migrate East and later to return West, thereby increasing the number of men in the East–West flows. Yet, it is also plausible that part of the public perception that women leave certain areas in the East in large numbers arises from within-East migration of women, an issue that we do not investigate further.

Focusing on the changes that occurred over time with respect to migration, we find that during the second wave of migration (after 1997/1998), differences across age groups are even more pronounced. Migrants also become more educated over time: individuals with a vocational training degree are significantly less likely to migrate than individuals with no degree beyond secondary schooling prior to 1997/1998, while a college degree is not a significant predictor of migration in the first wave of migration. After 1998, the effect of both education variables on the probability of migration is significantly different from the pre-1998 period. The net effect is that during the second wave of migration a college degree increases the probability of migration to the West, and the negative effect of a vocational training degree disappears in the second wave. As unemployment rates and East–West wage differentials, that is, the factors that Hunt (2006) concentrates on, did not change much over the last decade, it is likely that the increase in East–West migration is caused by declining expectations about further East–West convergence. This would also be in line with the analysis by Burda (1993), who showed that the option value of waiting depressed migration intentions of East Germans right after reunification. This option value might have decreased over time in light of a stagnant East–West gap in incomes and unemployment rates. Moreover, married individuals are a larger fraction of migrants in the second wave than in the first one. These individuals face higher costs of moving, and this again might point to decreased expectations about further East–West convergence over time. The fact that the surge in migration is mostly driven by the educated young certainly constitutes bad news for the East German economy.

Focusing on temporary vs. permanent migrants, we find that individuals who are 50–64 years old or single have a significantly higher probability of migrating temporarily rather than permanently, compared with younger or married individuals. Moreover, the life satisfactions of the groups of temporary and permanent migrants in the years around the move to the West exhibit very different patterns.

For permanent migrants, self-reported life satisfaction is significantly higher after the move than before, while for temporary migrants we cannot reject the null hypothesis that life satisfaction is unchanged after the move. Finally, we analyse the saving behaviour of temporary and permanent migrants after the move to the West to get some insights into whether temporary migrants plan to return East from the beginning, and find that saving rates are higher for temporary migrants than for permanent migrants, which is consistent with the hypothesis that temporary migrants anticipate their return migration.

The rest of the paper is structured as follows. In the next section, we present the three data sources that we use. Section 3 establishes basic facts of East–West migration patterns based on administrative data, focusing on age and gender composition. Section 4 provides a simple utility framework of migration that guides the rest of the analysis. Section 5 establishes the major determinants of migration using data from the Microcensus and GSOEP. Section 6 analyses differences between permanent and temporary migrants in the determinants of migration and saving behaviour, as well as differences in the association between migration and life satisfaction. The last section draws some conclusions.

2. Data

We use three different data sources for our analysis. First, we use administrative data from the German Statistical Office on migration flows by age and gender. These data are assembled from official residency registries, and are as such comprehensive. They exclude Berlin.

Second, we use the 1991, 1993 and 1995–2003 rounds of the German Microcensus. The German Microcensus is a 1 per cent random sample of the German population, and participation is mandatory by law. For scientific users, the Microcensus data are repeated cross-sections. The main question that we exploit to analyse migration is that which asks respondents in which state they lived in the previous year. This question only appears on the questionnaire of the 0.45 per cent 'EU-subsample' (the subsample that is used to construct variables that are analogous to those from the EU Labour Force Survey). This question is one of the few questions in the otherwise mandatory survey which a respondent can decline to answer.[7] For each survey round, we have approximately 38,000 observations of individuals of age 18–64 who lived in the East in the past year, and the pooled dataset that we use for our main regressions has almost 500,000 observations. We omit the survey rounds from 1992 and 1994 because of different coding of the educational variables which does not allow us to consistently identify the highest educational degree for an individual with an

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[7] We additionally drop all observations that do not state the highest educational degree, which is voluntarily provided by anyone 51 years or older.

educational degree from the former GDR.[8] As there is no additional time series dimension in the data that is available for scientific use, all explanatory variables for the migration decision have to refer to the year after a (potential) move. Therefore, we only include in the regressions explanatory variables that are not very likely to change immediately after the move, but are rather time-invariant.

Third, we use the 1990–2006 rounds of the GSOEP. The GSOEP is an annual representative household panel. There are three major advantages of GSOEP compared with the Microcensus. First, GSOEP offers a panel structure, which allows us to follow individuals over time. Second, GSOEP includes a more comprehensive set of variables that are useful for our analysis. Finally, in GSOEP we can identify East Germans based on where they lived before the fall of the Berlin Wall. When we analyse East–West migration in GSOEP, we drop data referring to West Germans who moved into the East and later return West and concentrate instead on the migration of East Germans who had lived in the East before 1989.[9] The major disadvantage of GSOEP lies in the fact that the sample size is considerably smaller than in the Microcensus, with on average slightly less than 5,000 observations on East Germans per survey round. For GSOEP, explanatory variables for the migration decision refer to the last year before a (potential) move. About 5.8 per cent of the migrants changed their highest educational attainment between the last interview before a move and the first interview after a move. As interviews are carried out in the spring, and graduation from many educational programmes occurs in the summer, it is likely that the higher educational degree was obtained before the move. Therefore, following Hunt (2006), we assign the highest educational degree from the following year to each *individual–year* observation.[10]

For both the analyses based on the Microcensus as well as on the GSOEP, the only sample selection criterion that we apply is that we only include individuals aged 18–64 who live in the East and either move West or stay in the East in the following year. Berlin is treated as part of the East throughout the analyses.[11] Table 1 shows the summary statistics of the variables of interest in both

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[8] Specifically, in the 1992 and 1994 survey rounds individuals with a master certificate and individuals with a degree from an East German *Fachschule*, which is regarded as an equivalent to a university degree, are grouped into one answer category, while they are identified separately in the other survey rounds.

[9] Sixteen per cent of the East–West migrants in our sample are originally from the West. We identify the residence before 1989 based on three criteria. First, in 2003 respondents are asked directly where they lived before 1989. Second, for those who do not reply to this question, we identify respondents who belong to the East sample, which was added in the spring of 1990, as East Germans, and those belonging to the original West German, foreigner, and immigrant samples as West Germans. Third, for respondents added in one of the refreshment samples and not responding to the question in 2003, we identify those with an educational degree from the East as East Germans.

[10] We use all subsamples from GSOEP, except the high-income sample added in 2003. For all the regressions, we use the cross-sectional individual weights provided by GSOEP. For the main analysis, we use the 95 per cent scientific user sample of GSOEP that is available to researchers outside of Germany. The analysis using county-level variables was carried out via *soepremote*.

[11] We checked that the treatment of Berlin does not significantly affect the results.

Table 1. Summary statistics from Microcensus, 1991–2003, and GSOEP, 1990–2006

	Microcensus	GSOEP
East West migration in the previous year	0.70	0.67
Male	50.0	50.0
Age 18–29	21.9	22.8
Age 30–49	46.2	45.2
Age 50–64	31.8	32.0
Married	61.5	58.1
Single	27.6	28.8
Divorced/widowed	10.9	13.1
College	18.2	28.2
Vocational training	67.4	64.6
At most secondary schooling degree	14.4	8.0
Working	–	66.8
Unemployed	–	12.1
Currently in school	–	3.2
Not in labour force	–	17.9
Laid off in last year	–	6.4

Note: All numbers are percentages.

Microcensus and GSOEP. The sample composition is quite similar in both surveys, with the only exception of the education variables. Our omitted education category in the regressions, 'at most secondary schooling degree', indicates individuals who have neither completed a college education nor an apprenticeship, that is, it includes individuals who have either completed high school but attained no further degree, are high-school dropouts, or are still in school. While the percentage of individuals with a vocational degree as highest educational degree is quite similar in Microcensus and GSOEP, the percentage of college-educated individuals is ten percentage points higher in GSOEP, while the percentage of individuals with at most a secondary schooling degree is six percentage points lower.[12]

3. Some basic facts about East–West migration

3.1 General evidence on migration flows from aggregate data

Figure 1 shows the gross migration flows between East and West Germany from 1991 to 2006, as well as the net East–West migration flows.[13] East–West migration

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[12] As in the regressions, we use sample weights to construct the summary statistics in GSOEP.

[13] In accordance with the national statistics, movements to and from Berlin are omitted here.

Figure 1. Migration flows within Germany, 1991–2006
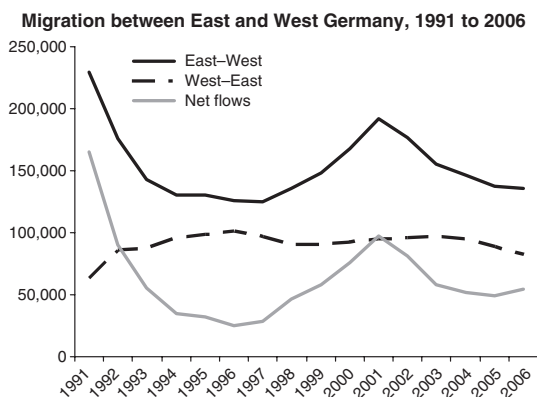
Migration between East and West Germany, 1991 to 2006

Source: Own calculations based on administrative data from the German Statistical Office.

was highest right after reunification, with 230,000 people emigrating in 1991.[14] These numbers fell to around 130,000 in the mid-1990s. However, a second wave of East–West migration started in the late 1990s, with a second local peak of 190,000 East–West migrants in 2001. Since then, the numbers have been declining, but by 2006 they are not yet back to the lowest numbers of the mid-1990s.

West–East migration flows increased in the early 1990s, but have been relatively stable at slightly below 100,000 migrants per year since the mid-1990s. In total over the time period from 1991 to 2006, 2.45 million people migrated from East to West, and 1 million from West to East, so that net East–West migration amounted to 1.45 million people.
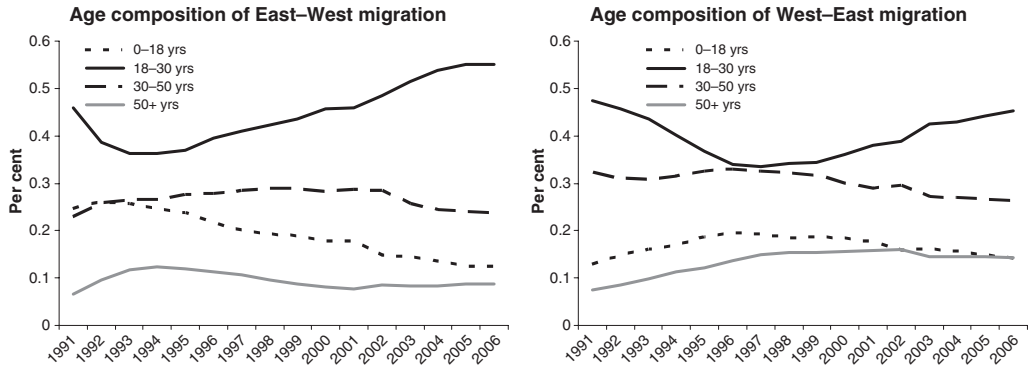
3.2 Age and gender composition

Figure 2 shows the age composition of the migrant body. Focusing on adults, we can infer from the figure that the propensity to migrate declines with age.[15] On average over all years, 42 per cent of all East–West migrants are 18–30 years old, and 29 per cent 30–50 years old, with only 11 per cent being older than 50. Of the West–East migrants, 40 per cent belong to the youngest adult age group, 31 per cent to the middle and 13 per cent to the older group. The relative percentage of young adults has been increasing since the mid-1990s in both migrant bodies, while the percentage of children has been decreasing especially in the East–West flows.

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[14] Note that East–West flows were even higher in 1989 and 1990 (Hunt, 2006).

[15] This is true because the age composition of the total population is ordered in the opposite way to the age composition of the migrants, that is, the 18–30 year olds have the largest number of movers, whereas they constitute the smallest age group. The opposite is true for the group of individuals aged 50 or older.
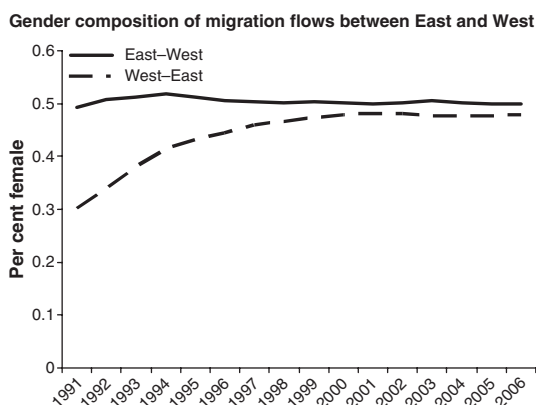
Figure 2. Age composition of East–West and West–East migrants, 1991–2006

Source: Own calculations based on administrative data from the German Statistical Office.

The gender composition of the migrant body has received special attention in Germany in recent years, with a widespread perception that young women are leaving certain regions in the East in large numbers. The Berlin Institute for Population and Development (Berlin-Institut für Bevölkerung und Entwicklung, 2007) reports in a well-publicized study that women dominate in the net East–West migration flows. However, the gross East–West migrant body is actually evenly composed of men and women (see Figure 3). This difference between the gender composition of net and gross flows is caused by the fact that men are more prevalent among the West–East migrants, which was especially true in the early 1990s. Note that the West–East migrants also comprise return migrants who originated in the East, and that the East–West migrants comprise return migrants who originated in the West. Thus, there exist two possibilities, both connected to the inclusion of return migrants in the aggregate statistics, that could reconcile the perception that East German women are more likely to move West than men and the aggregate data that show no gender differences in the pool of East–West migrants. First, it could be the case that men and women leave the East in equal numbers, but men are more likely to return East later, or second, it might be that East German women are more likely to migrate West than men, but that this does not show up in the official East–West migration numbers because they also include return migrants to the West, who might more likely be men. The analyses based on GSOEP in Sections 5.1.2 and 6 allow us to investigate these two possibilities further.

Looking further into the gender–age composition of the aggregate data provides more insights into the question of whether young women are under-represented in the East. As Figure 4 shows, the majority of the young adult East–West migrants is indeed female, although the difference is small, with on average 52.8 per cent of the

Figure 3. Gender composition of East–West and West–East migration flows, 1991–2006

Gender composition of migration flows between East and West

Figure 4. Age and gender composition of East–West and West–East migration flows, 1991–2006
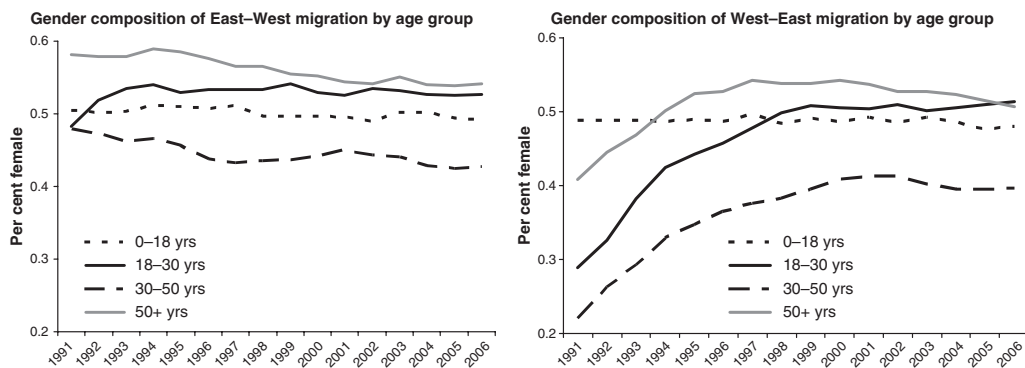
Gender composition of East–West migration by age group

Gender composition of West–East migration by age group

18–30-year-old migrants being women. The difference is more dramatic for the middle-aged group (but now with the opposite sign), where only 44.5 per cent are women. For West–East migrants, men are more numerous than women in all age groups except the oldest one in the early years after reunification, and the percentage of women is increasing for all adult age groups over time. Both migrant bodies reflect the pattern among adults that the percentage of women is highest among

migrants aged 50 or older,[16] followed by the group aged 18–30, and smallest in the group aged 30–50.

We conjecture that the under-representation of young women in certain regions of the East might be driven more by East–East migration flows, for example, from rural to urban regions, than by East–West migration flows. Moreover, young men have been more likely to migrate from the West into the East than young women, and probably settled particularly in certain areas, reinforcing this effect. Finally, it might still be true that from the original East German population in 1989, more young women migrated than men, or that men were more likely to return later, and that the public perception concentrates on the population originally from the East.

4. A simple utility framework of migration

As a guidance for our empirical analysis, we use a simple utility framework of the migration decision. An individual chooses to migrate from origin region O to destination region D if her expected future utility in D net of migration costs exceeds the expected future utility in O. The expected future utility in the origin region is a function of the wage and the employment probability in the origin region, and similarly for the destination region. Moreover, migration is associated with a fixed cost, which has to be subtracted from the expected future utility in the destination region to obtain the net expected future utility of migration.[17]

The primary focus of our analysis lies in the origin region, that is, on the so-called push factors of migration. An individual obtains low utility in the origin region if her income is low, or if the individual is unemployed. Moreover, as determinants of expected future utility in the origin region, we analyse regional incomes and unemployment rates. With regard to the destination region, to capture variation across individuals in the expected future utility of migrating to the West we include a variable that measures social networks, which have been shown to be very important in migration decisions. If an individual can resort to a social network in the destination region, this should improve her chances for favourable labour market outcomes in that region.

Moreover, we pay special attention to the fixed costs of migration. These fixed costs can potentially comprise many different factors. Besides the monetary costs of reallocation, which should, among other variables, depend on the marital status and family size, we focus on the potential psychological costs

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[16] Note that part of this simply reflects the differences in the overall gender composition of the older age group.

[17] See Schündeln (2008) for estimates of the (economically significant) fixed cost of migration within Germany.

of migration. These non-monetary costs should be higher when the social ties of an individual in the origin region are stronger, while social ties or the existence of networks in the destination region would lower these costs. As younger individuals enjoy future utility from labour market outcomes for a longer time period, they can amortize the fixed costs more easily than older individuals, which should increase their general willingness to migrate. Joined location problems can increase the costs of migration for married individuals. Physical distance of the origin region to the West requires special consideration. On the one hand, the monetary migration costs might increase with distance. On the other hand, individuals who live close to the former border may have the option to commute instead of migrating to take advantage of better labour market conditions in the West, lowering the probability of migration. As such, the role of physical distance to the former border as a correlate of East–West migration decisions is ambiguous.[18]

In addition to investigating the roles of these potential factors in the migration decision, we also analyse a direct measure of utility, namely self-reported life satisfaction. If current life satisfaction in the East is a good predictor of expected future life satisfaction in the absence of a move, one should expect that the life satisfaction of movers increases after a move. We therefore analyse the leads and lags of life satisfaction around the year of the move. Naturally, there is uncertainty about the utility after moving. Therefore, we also analyse whether the life satisfaction after a move to the West differs between movers who stay in the West and those who later return to the East.

5. The determinants of migration

We restrict our sample to individuals who live in the East in period t and estimate the following probit model:[19]

$$P(migrate = 1)_{i,o,t,t+1} = f(X_{i,t}, Z_{o,t}) + \varepsilon_{i,t},$$

where *migrate* is a dummy variable that takes on the value of 1 if an individual migrates from the East to the West between periods t and $t+1$, o is a subscript for the county of origin and i is the individual subscript. $X_{i,t}$ captures individual characteristics, and $Z_{o,t}$ captures county-level characteristics in period t.

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[18] Also, note that distance to the West is a somewhat different concept (because it is bounded at the border and does not consider how far West someone migrates) than the distance measure to the destination region that is typically used in analyses of internal migration.
[19] See, for example, Massey and Espinosa (1997).

In the Microcensus we only have explanatory variables from the first period after the (potential) move, $t + 1$, and no county-level variables, Z. With Microcensus data, we therefore estimate

$$P(migrate = 1)_{i,t,t+1} = f(X_{i,t+1}) + \varepsilon_{i,t}.$$

All tables show marginal coefficients evaluated at the mean of the other covariates.

5.1 General determinants of migration

5.1.1 Analysis based on Microcensus

We start by using data from the Microcensus and first look at the simple question of whether there are unconditional gender differences (see Table 2). The answer is: no, in the general population there is no statistically significantly higher propensity to leave the East for women than for men (the P-value is 0.58 in column (i)). In addition, the coefficient is small in absolute size, confirming our earlier observation that reports about a mismatch between men and women in the East because of large outmigration of women do not find unconditional empirical support, that is, when we are not controlling for any other characteristics.

Next, we include additional demographic control variables to our regression (column (ii)). All variables are highly significant (at the 1 per cent level), with the exception of the male indicator variable. The propensities to migrate do not differ significantly for men and women (the P-value on the coefficient is 0.12). Once again this confirms that there is no evidence of significant differences between men and women in their East–West migration behaviour. On the other hand, we see strong age effects. Older individuals are significantly less likely to leave the East than are individuals between 18 and 29 years old. The point estimates imply that, for example, a 50–64 year old is 0.8 percentage points less likely to migrate than an 18–29 year old, everything else being equal. We also find that married individuals (the omitted marital status category) are least likely to leave the East. These two results confirm the predictions from the utility framework of migration described in Section 4. Finally, college-educated individuals are significantly more likely to migrate West than individuals who have no educational degree beyond at most a secondary schooling degree (the omitted category), whereas individuals with vocational training are significantly less likely to leave the East than the reference group of individuals with no education beyond secondary schooling.

Age differences in migration patterns

In columns (iii)–(v), we investigate somewhat closer the differences across age groups. The gender composition shown in Figure 4 is qualitatively confirmed: men are less likely to migrate in the youngest age group, but more likely to migrate among individuals aged 30–49. Quantitatively, it is surprising that the negative

Table 2. Probit regression results of migration decision: Microcensus data

Dependent variable = 1 if individual moves from East to West					
	(i)	(ii)	By age		
			18–29	30–49	50–64
			(iii)	(iv)	(v)
Male	−0.0001	−0.0003	−0.0036***	0.0006**	0.0003
	(0.0002)	(0.0002)	(0.0008)	(0.0003)	(0.0002)
Age 30–49		−0.0052***			
		(0.0003)			
Age 50–64		−0.0081***			
		(0.0002)			
Single		0.0022***	0.0062***	0.0020***	−0.0003
		(0.0003)	(0.0009)	(0.0004)	(0.0005)
Divorced/widowed		0.0021***	0.0012	0.0024***	0.0009***
		(0.0004)	(0.0036)	(0.0006)	(0.0004)
College		0.0012***	0.0136***	−0.0015***	−0.0005
		(0.0004)	(0.0022)	(0.0005)	(0.0003)
Vocational training		−0.0009***	0.0004	−0.0041***	−0.0007**
		(0.0003)	(0.0008)	(0.0007)	(0.0004)
Year fixed effects	No	Yes	Yes	Yes	Yes
No. of observations	489,577	489,577	107,330	226,377	155,870
Log-likelihood	−20,360	−19,246	−9,058	−7,804	−2,305

Notes: Marginal coefficients are shown. Standard errors are in parentheses.*** indicates significance at the 1 per cent level, ** at the 5 per cent level, and * at the 10 per cent level. Omitted categories: age 18–29, married, and at most secondary schooling degree.
Data source: Microcensus 1991–2003.

effect of being male on the propensity to migrate for the younger age group is larger in absolute terms than the positive effect for the middle-aged group, in contrast to the aggregate numbers shown in Figure 4. The results further indicate that being single matters most for the younger age groups. There is no difference in the propensity to migrate between singles and married individuals in the age group of 50–64 year olds, whereas this difference is strongest in the youngest group of 18–29 year olds. On the contrary, being divorced or widowed increases the propensity to migrate most for the age group of 30–49 year olds, and not significantly for the youngest age group. These results concerning marital status might partly be driven by the fact that there are few singles among the oldest age group, and few divorced and widowed individuals among the youngest one.

The positive association between college education and the probability of migrating West is entirely driven by the youngest age group. In fact, for the middle-aged group the coefficient on college reverses signs: among the 30–49 year olds, a college degree significantly lowers the probability of migrating compared with having no educational degree beyond secondary schooling, although the effect is small. The observed negative relationship between vocational training and migration is mostly driven by the middle cohorts, namely the 30–49 year olds, and to some extent the oldest age group. These results might indicate that college or vocational degrees obtained before 1990 dramatically depreciated in value at reunification. Whereas among the youngest age group an educational degree beyond secondary schooling generally increases the propensity to migrate, the opposite is true for the middle-aged and oldest age groups, who are more likely to have obtained their education before 1990.

Gender differences in migration patterns

Next, we also investigate whether the importance of the demographic variables that we consider differs by gender, which we do by adding gender interactions to our baseline regression. Column (i) of Table 3 shows that the main difference between men and women lies in the role of education. The interaction term between men and college education is positive and highly significant, whereas the coefficient on college alone is insignificant. This indicates that the positive association between a college degree and the probability of migrating West is entirely driven by men. Concerning a vocational degree, women with a vocational degree are significantly less likely to migrate than those with no further education beyond secondary schooling, whereas this negative association is significantly smaller (in absolute size) for men. These results might indicate that women are more likely to migrate West either to take on low-skilled jobs, or to stay at home as housewives, or to obtain a higher educational degree after migration. The potential low-skilled jobs in the West taken by people from the East might be concentrated more heavily in parts of the service sector which traditionally employ more women than men. The possibility that women migrate to obtain a degree in the West is also consistent with the result that men are less likely to migrate than women among the youngest age group, which is most likely to invest further in education.

We also find that single males are significantly less likely to migrate than single females. While we showed earlier that in the total population the difference between men's and women's propensity to migrate is not significant, this suggests that indeed unmarried women are more likely to leave the East than unmarried men, keeping education and age constant.

The first vs. the second wave of migration

We now consider the question of whether the effect of demographic variables varies over the sample period. We previously observed that a second wave of migration started around 1997/1998. We therefore create a dummy variable, 'years 1998–2003', which is equal to one if the year is 1998 or later. The results, reported in column (ii),

Table 3. Probit regression results of migration decision with interaction terms

Dependent variable = 1 if individual moves from East to West			
Gender-specific results		Time period-specific results	
	(i)		**(ii)**
Male	−0.0012*	Male	−0.0003
	(0.0006)		(0.0003)
Age 30–49	−0.0055***	Age 30–49	−0.0046***
	(0.0004)		(0.0004)
Age 50–64	−0.0083***	Age 50–64	−0.0071***
	(0.0003)		(0.0004)
Single	0.0029***	Single	0.0027***
	(0.0004)		(0.0005)
Divorced/widowed	0.0026***	Divorced/widowed	0.0034***
	(0.0006)		(0.0007)
College	−0.0002	College	0.0005
	(0.0004)		(0.0005)
Vocational training	−0.0014***	Vocational training	−0.0016***
	(0.0004)		(0.0004)
		Years 1998–2003	0.0015**
			(0.0006)
		Years 1998–2003*male	0.0001
			(0.0004)
Male*age 30–49	0.0006	Years 1998–2003*age 30–49	−0.0014***
	(0.0005)		(0.0005)
Male*age 50–64	0.0005	Years 1998–2003*age 50–64	−0.0028***
	(0.0007)		(0.0005)
Male*single	−0.0011**	Years 1998–2003*single	−0.0011**
	(0.0004)		(0.0005)
Male*divorced/widowed	−0.0007	Years 1998–2003*divorced/widowed	−0.0016**
	(0.0006)		(0.0005)
Male*college	0.0036***	Years 1998–2003*college	0.0012*
	(0.0010)		(0.0008)
Male*vocational training	0.0011**	Years 1998–2003*vocational training	0.0014***
	(0.0005)		(0.0005)
Year fixed effects	Yes		No
No. of observations	489,577		489,577
Log likelihood	−19,221		−19,310

Notes: Marginal coefficients are shown. Standard errors are in parentheses. *** indicates significance at the 1 per cent level, ** at the 5 per cent level, and * at the 10 per cent level. Omitted categories: age 18–29, married and at most secondary schooling degree.
Data source: Microcensus 1991–2003.

show significant differences for age, marital status and education variables. More specifically, the absolute difference between young and old age groups in their propensity to migrate West, which is significant even before 1998, increases after 1998. In other words younger individuals make up a growing share of total migrants. Migrants also become more educated over time: individuals with a vocational training degree are significantly less likely to migrate than individuals with no degree beyond secondary schooling prior to 1997/1998, whereas a college degree is not a significant predictor of migration in the first wave of migration. After 1998, the effect of both education variables on the probability of migrating is significantly different from the pre-1998 period. The net effect is that during the second wave of migration a college degree increases the probability of migrating West, and the negative effect of a vocational training degree disappears in the second wave. Finally, the positive correlations between being single or widowed/divorced as compared with married and the propensity to migrate are significantly less strong in the second wave of migration.

Summarizing these results, the second wave of migration is driven more by educated and young individuals than the first one. This constitutes bad news for the East German economy, indicating that it loses one of its most productive groups of workers. Moreover, this result probably reflects low expectations for future economic convergence between the two parts of Germany, as future expectations matter more for younger individuals than for older ones, who face fewer remaining years in the labour market. The fact that married individuals constitute a rising share of migrants adds further evidence to this possible interpretation, as the moving costs and therefore the incentives to stay in the East are higher for married individuals. As a caveat, one should keep in mind that the number of West Germans returning West after having lived in the East could potentially increase over time, and that this group is disproportionately young and probably educated.

5.1.2 Analysis based on GSOEP

When using data from GSOEP, we have to work with a much smaller sample size than in the Microcensus. Our full sample consists of about 57,000 observations, and the subsample of East Germans moving West of 462 observations. Because we have a panel, we can follow the same individual over time. We pool individual observations, and all standard errors are adjusted for clustering at the personal level.

Column (i) of Table 4 addresses again the question of the gender composition of the migrant population. Surprisingly, it indicates that in our sample of individuals who lived in East Germany before reunification men are significantly less likely to migrate than women at the 7 per cent significance level. When we include all East–West migrants regardless of their residence before 1989 in results not shown, the coefficient on the male dummy loses significance. This suggests that indeed among residents of the former GDR, women are more likely to migrate West than men, but that in the aggregate statistics and in the Microcensus this pattern does not show up as East–West migrants include return migrants who are originally from the West. On the other hand, we want to caution that one has to keep in mind that the

Table 4. Probit regression results of migration decision: GSOEP data

Dependent variable = 1 if individual moves from East to West					
	(i)	**(ii)**	**(iii)**	**(iv)**	**(v)**
Male	−0.0015*	−0.0011**	−0.0012**	−0.0012**	−0.0013**
	(0.0008)	(0.0005)	(0.0005)	(0.0005)	(0.0005)
Age 30–49		−0.0057***	−0.0058***	−0.0058***	−0.0051***
		(0.0008)	(0.0008)	(0.0008)	(0.0009)
Age 50–64		−0.0086***	−0.0085***	−0.0084***	−0.0076***
		(0.0007)	(0.0007)	(0.0007)	(0.0008)
Single		0.0016**	0.0016**	0.0016**	0.0019**
		(0.0008)	(0.0008)	(0.0008)	(0.0009)
Widowed/divorced		0.0021**	0.0019*	0.0020**	0.0026**
		(0.0012)	(0.0012)	(0.0012)	(0.0013)
College		0.0021*	0.0021	0.0020	0.0020
		(0.0015)	(0.0015)	(0.0014)	(0.0015)
Vocational training		0.0018*	0.0015	0.0014	0.0015
		(0.0010)	(0.0011)	(0.0011)	(0.0011)
Working			0.0008	0.0009	0.0012
			(0.0009)	(0.0008)	(0.0009)
Unemployed			0.0028**	0.0020	0.0020
			(0.0017)	(0.0016)	(0.0016)
Currently in school			−0.00004	0.00008	−0.00051
			(0.0013)	(0.0013)	(0.0011)
Laid off in last year				0.0033**	0.0042***
				(0.0017)	(0.0019)
Individual labour earning (*10^7)					−0.312
					(0.263)
Equivalized disposable household income (*10^7)					0.270
					(0.491)
Year fixed effects	No	Yes	Yes	Yes	Yes
No. of observations	57,685	57,475	57,472	57,472	49,785
Log-likelihood	−2,333	−2,119	−2,115	−2,110	−1,733

Notes: Marginal coefficients are shown. Standard errors are in parentheses and are corrected for clustering at the personal level. *** indicates significance at the 1 per cent level, ** at the 5 per cent level, and * at the 10 per cent level. Omitted categories: age 18–29, married, highest degree schooling and not in labour force.
Data source: GSOEP, 1990–2006.

sample of migrants in the GSOEP is relatively small, and the gender difference is only significant at the 7 per cent significance level.

In column (ii), we replicate the main regression from the Microcensus. The coefficient on the male dummy stays negative and significant, and the age pattern observed before also shows up very significantly. As in the regressions based on the Microcensus data, single, widowed and divorced individuals are all significantly more likely to move than married ones. The coefficients on the education variables are borderline significant with a P-value of 0.10 for both in column (ii), but lose significance in the regressions that include more contol variables. The coefficient on the vocational training dummy is positive here as opposed to negative in the regressions based on Microcensus data. One reason for this might be that the data from GSOEP include observations up to the year 2006 and therefore, compared with the Microcensus, more observations from the second wave of migration. The regressions based on Microcensus data in Table 3 show that in the second wave of migration indeed the effect of a vocational training degree on the probability of moving was more positive than in the first wave of migration.

In contrast to the Microcensus, we can now add to the standard regressors potential push-factors from the last year of observation in the East that are likely to change during a move, namely the employment status of an individual, as well as individual and household income. Column (iii) of Table 4 adds the employment status of the individual in year t as an explanatory variable, with individuals neither in the labour force nor in education as the omitted group. Unemployed individuals are significantly more likely to move than individuals out of the labour force and working individuals.[20] Column (iv) adds an indicator variable indicating whether the individual has been laid off in the previous 12 months. The coefficient on this indicator variable is positive and significant, and its inclusion reduces the size and significance of the unemployed dummy, a result similar to Hunt (2006). Therefore, it seems that especially the short-term unemployed move to the West, as they might have better job prospects there, whereas the job prospects of the long-term unemployed might be similarly dreadful in East and West. In column (v), we add individual gross labour income, as well as equivalized disposable household income to the baseline regression.[21] As income variables are missing for some individuals, the number of observations drops by 14 per cent. The coefficients on both income variables are insignificant.[22] As for the migration decision the difference between the expected future income in origin and potential destination region is of importance, this could be an indication that there is no income

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[20] The P-value of a Wald test of equality of the coefficients on the unemployed and working dummies is 0.08.

[21] We use the Organization for Economic Cooperation and Development equivalence scale for the equivalization of household income. The first adult member of the household obtains a weight of 1, each additional adult a weight of 0.7 and each child a weight of 0.5.

[22] Similarly insignificant results are obtained if we include wage instead of individual labour earnings. Also, if both income measures are added independently, they remain insignificant. The correlation coefficient between both variables is 0.57.

group that would systematically benefit from moving to the West. In results not shown, we also include squared and cubic terms of both income variables, or logarithms of the income variables, but none of the income terms is ever significant.[23]

5.2 Regional determinants as measures of risk and expectations

Using the county identifiers in the Socio-Economic Panel, we can add variables at the county level that could capture the future income expectations of the individual, namely the unemployment rate and the average disposable household income in the county of residence. There are 113 counties in the former East Germany, with an average population of 119,000 individuals if Berlin is excluded. The county-level variables are only available from 1996 on, and therefore we have to restrict our sample to the years 1996–2006. During this period, we observe 306 migrants.

Column (i) in Table 5 shows the results, which confirm the theory. The higher is the disposable household income in a county, the lower is the probability of moving West. The high regional disposable household income might capture high future income expectations in the county of residence, therefore lowering the incentives to migrate. In contrast, living in a county with a high unemployment rate might capture low future income expectations because of a higher risk of unemployment in the county of residence, and accordingly a high unemployment rate increases the probability of moving to the West. While the coefficient on the unemployment rate carries the theoretically expected sign, it is not statistically significant (P-value is 0.23). We therefore confirm the result by Hunt (2006) that the restraining effect of a high income in the origin region on migration is stronger than the push effect of high unemployment. The German policy of increasing wages in the East after reunification has been effective in preventing further migration flows, despite the resulting high unemployment rates.

In column (ii), we include the driving time to the former border as an explanatory variable.[24] As discussed before, the role of distance to the border is ambiguous. Normally, distance is assumed to increase the monetary costs of migration. On the other hand, in the specific case of East–West migration, increases in driving time to the former border could positively influence the migration decision as individuals living close to the former border have the additional option to commute to the West rather than to move there (see Fuchs-Schündeln and Izem, 2008; Hunt, 2006). Indeed, on average over the years 1999–2004, 370,000 people commuted from the East to the West each year.[25] The results show that living further away from the former border increases the probability of moving to the West, but not significantly so.

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[23] This is in contrast to Burda et al. (1998) who establish a significant non-linear income effect on migration intentions (not decisions) for a sample of East Germans from the early 1990s.

[24] Driving time to the former border is a time-invariant measure of the driving time from the most populated Gemeinde within every county to the next border-crossing point, based on the street network from 2000 (see Fuchs-Schündeln and Izem, 2008).

[25] This information comes from county-to-county commuting data from the Institute of Employment Research IAB.

Table 5. Probit regression results with regional variables

Dependent variable = 1 if individual moves from East to West		
	(i)	(ii)
Male	−0.0011**	−0.0011**
	(0.0006)	(0.0006)
Age 30–49	−0.0049***	−0.0049***
	(0.0011)	(0.0011)
Age 50–64	−0.0076***	−0.0076***
	(0.0010)	(0.0010)
Single	0.0028***	0.0027***
	(0.0012)	(0.0012)
Widowed/divorced	0.0052***	0.0052***
	(0.0019)	(0.0019)
College	0.0027*	0.0028*
	(0.0018)	(0.0018)
Vocational training	0.0025**	0.0025**
	(0.0011)	(0.0011)
Laid off in last year	0.0045***	0.0046***
	(0.0022)	(0.0022)
Regional disposable household income (*10^6)	−0.915*	−1.050**
	(0.473)	(0.485)
Unemployment rate	0.00012	0.00006
	(0.00011)	(0.00013)
Driving time to border (*10^5)		0.977
		(0.795)
Year fixed effects	Yes	Yes
No. of observations	38,150	38,150
Log-likelihood	−1,334	−1,333

Notes: Marginal coefficients are shown. Standard errors are in parentheses and are corrected for clustering at the county-year level. *** indicates significance the 1 per cent level, ** at the 5 per cent level and * at the 10 per cent level. Omitted categories: age 18–29, married and at most secondary schooling degree.
Data source: SOEP 1996–2006.

One interesting detail from the results is that the estimates on the educational variables are larger and more significant than in the baseline results of Table 4, which covered data from 1990 to 2006. This again confirms the findings from the Microcensus that a higher educational degree is a stronger positive predictor of the migration decision in the second wave of migration than in the first one.

5.3 Social ties and psychological factors

Fixed costs of migration include psychological costs as well as monetary fixed costs, and should thus vary individually. That social ties to the home community play an important role in determining these fixed costs has been recognized in the migration literature.[26] Additionally, as moving entails more uncertainty, generally optimistic individuals might experience lower psychological fixed costs of moving than pessimistic individuals. Social ties in the destination region can have a positive effect on future earnings potential at the destination, and can also lower the psychological fixed costs of moving. In Table 6, we include several variables that capture these factors. In columns (i)–(iv), we interpret the answers to questions concerning social ties and psychological factors cardinally and include the full scale of the answers. In contrast, in column (v) we create dummy variables based on the answers of the respondents, as will be explained below.

In column (i), we analyse whether strong ties to the local community influence the decision to migrate. From 1991 to 1994, individuals were asked how strongly they feel tied to their local community; we code this variable on a scale from 1 (no ties at all) to 4 (very strong ties).[27] We assign the average value over these 4 years to an individual over all years. Individuals who enter the sample after 1994 have to be omitted from this analysis, which reduces the sample size by about 26 per cent. The variable enters highly significantly and with the expected sign: individuals who have strong ties to the local community are significantly less likely to migrate than individuals who do not feel tied to the local community.

The next column analyses social ties to the destination region, namely, the West. Specifically, East Germans were asked in 1991, 1992 and 1994 whether they had friends or relatives in the West, and if yes, how close they were to them. From these two questions, we create two variables that take on the value of 0 if an individual does not have friends or relatives, respectively, in the West, a value of 1 if she has only fleeting or no contact with them, up to a value of 4 if she has very close contact with them, thus a higher value indicates closer contact with friends or relatives in the West. Again, we assign the average value of the three survey years as a measure of social ties to the West to an individual. As the results in column (ii) show, having close ties to friends or relatives in the West is a very significant predictor of the probability of moving to the West. As mentioned earlier, having close ties to individuals living in the West might lower the psychological fixed costs of moving there, but might also be an indicator for future earnings potential because of the probability of finding a job in the West.

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[26] For a recent analysis, see Garip (2008).
[27] The original coding in GSOEP is the other way round, that is, 1 meaning very strong ties, and 4 no ties at all.

Table 6. Probit regression results with variables capturing social ties and psychological factors

	(i)	(ii)	(iii)	(iv)	(v)
Dependent variable = 1 if individual moves from East to West					
Male	−0.0003	−0.0001	−0.0011**	−0.0002	−0.0002
	(0.0005)	(0.0004)	(0.0005)	(0.0004)	(0.0004)
Age 30–49	−0.0041***	−0.0032***	−0.0047***	−0.0024***	−0.0025***
	(0.0007)	(0.0006)	(0.0008)	(0.0006)	(0.0006)
Age 50–64	−0.0065***	−0.0055***	−0.0071***	−0.0039***	−0.0044***
	(0.0007)	(0.0007)	(0.0007)	(0.0006)	(0.0006)
Single	0.0005	0.0007	0.0013*	0.0005	0.0005
	(0.0007)	(0.0006)	(0.0008)	(0.0005)	(0.0006)
Widowed/divorced	0.0016*	0.0015**	0.0013	0.0013*	0.0014*
	(0.0011)	(0.0010)	(0.0011)	(0.0009)	(0.0010)
College	0.0002	−0.0001	0.0025*	0.0005	0.0002
	(0.0012)	(0.0008)	(0.0016)	(0.0009)	(0.0010)
Vocational training	−0.0003	−0.0008	0.0018	0.0002	0.0001
	(0.0011)	(0.0009)	(0.0010)	(0.0008)	(0.0009)
Laid off in last year	0.0021*	0.0019**	0.0044***	0.0020**	0.0023**
	(0.0015)	(0.0013)	(0.0018)	(0.0013)	(0.0014)
Ties to local community	−0.0024***			−0.0015***	
	(0.0004)			(0.0003)	
Friends in West		0.0009***		0.0006***	
		(0.0002)		(0.0002)	
Relatives in West		0.0013***		0.0010***	
		(0.0002)		(0.0002)	
Pessimistic view of future			−0.0019***	−0.0015***	
			(0.0004)	(0.0003)	
Ties to local community					−0.0041***
(dummy)					(0.0008)
Friends in West					0.0021***
(dummy)					(0.0006)
Relatives in West					0.0026***
(dummy)					(0.0006)
Pessimistic view of future					−0.0015***
(dummy)					(0.0004)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
No. of observations	42,484	42,393	54,141	40,654	40,654
Log-likelihood	−1,276	−1,216	−1,896	−1,122	−1,136

Notes: Marginal coefficients are shown. Standard errors are in parentheses, and are corrected for clustering at the personal level. *** indicates significance at the 1 per cent level ** at the 5 per cent level and * at the 10 per cent level. Omitted categories: age 18–29, married and at most secondary schooling degree. In column (v), the last four variables are dummy variables.
Data source: GSOEP 1990–2006.

In column (iii), we analyse whether a generally optimistic or pessimistic view of the future influences the migration decision. To this end, we take the average answer of the years 1994, 1999 and 2005 to the question of how an individual feels when thinking about the future in general as a measure of the general optimism or pessimism of that individual. A value of 1 stands for an optimistic individual, while a value of 4 stands for an individual with a pessimistic view about the future.[28] The analysis shows that pessimistic individuals are significantly less likely to migrate than optimistic ones. We conjecture that the psychological costs of migration are smaller for optimistic individuals, which could explain this result. Finally, if we put in all qualitative indicators at the same time, as in column (iv), the number of observations drops to 40,700, but all four indicators have the same signs as before and are highly significant with a *P*-value of less than 1 per cent.

As a robustness check and to assess the magnitudes of the impact of the variables, we also create simple dummy variables for all four social ties and psychological variables. These dummies take on the value of 1 if the average answer of the individual is above the mean of the respective scale.[29] As column (v) shows, using dummies instead of the scales does not change the significance of the qualitative variables. Moreover, the coefficients are of the same order of magnitude as the coefficients on the age group dummies, the widowed/divorced dummy, and the laid off dummy.

Summarizing, the qualitative variables analysed in this section play an important role in predicting the migration decision. Not only are they statistically significant, but they also exert an effect of a similar magnitude on the migration decision as the objective variables like age and marital status. This confirms the importance of fixed costs of migration discussed in Section 4. We want to caution, though, that particularly the variables concerning the social network in the West might be endogenous, and should therefore be interpreted carefully.

6. Permanent migrants vs. temporary migrants

6.1 Who stays in the West and who returns to the East?

As GSOEP is a panel, we can also analyse which factors are associated with the decision to migrate West either permanently or only temporarily. Neither with aggregate data, nor with data from the Microcensus is this analysis possible. There are two distinctly different concepts of how to think about temporary migrants. It

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[28] Thirty-five per cent of the individuals always give the same answer to the question, and 50 per cent deviate by at most 1 step on the ordinary scale from 1 to 4. We take this as evidence that this question captures something of the general attitude towards life rather than any specific future views about the coming years.
[29] Specifically, the dummy for ties to the local community is 1 if the average answer of an individual across all available years is above 2.5, the dummies for friends and relatives in the West are 1 if the average answer is equal to or above 2 and the dummy for pessimistic view of the future is 1 if the average answer is above 2.

could be the case that these are individuals who plan from the beginning to migrate only temporarily into the West, or it could be that they are planning to migrate permanently, but later on decide to return to the East. The survey does not ask individuals whether they perceive a move as permanent or temporary.

We run multinomial logit regressions with the three outcomes: stay in East (omitted category), migrate to West and stay there ('migrate permanently'), and migrate to West and later return to the East ('migrate temporarily'). An individual is categorized into one of the three categories depending on whether she stayed in the East in the following year, moved to the West in the following year and stayed there throughout the sample period, or moved to the West in the following year and returned to the East later in the sample period. There are two caveats to this categorization. First, we can only observe the decision to migrate or return migrate during the sample period. Thus, we could categorize an individual as a permanent migrant, although she might return to the East after the end of our sample period. However, we are not too concerned about this bias. Of the temporary migrants in our sample, 49 per cent return to the East within 2 years after migrating to the West, and 76 per cent within 4 years.[30] Therefore, we restrict our analysis in Table 7 to the years 2003 and before, which makes it likely that we capture most return decisions. Still, our results are somewhat biased towards not finding differences between temporary and permanent migrants, given that we probably include some temporary migrants in the group of permanent migrants. The second caveat is that every move makes attrition more likely. This means that we probably underestimate the percentage of movers to the West, but even more so the percentage of temporary migrants. Of our sample of East–West migrants, 20 per cent return to the East.

Column (i) in Table 7 shows the results of the multinomial logit regression focusing on the gender of the respondent. We present odds ratios relative to stayers in the East, but also discuss the significance of differences between the decisions to migrate permanently or temporarily.[31] Note that the test of whether an individual of a certain characteristic is significantly more or less likely to, for example, migrate permanently than to stay in the East (the omitted category) than an individual without that characteristic, tests whether the odds ratio is significantly different from 1. Men are less likely to migrate either permanently or temporarily than women, but not significantly so. The loss of significance as compared with the results in Table 4 is because of the smaller sample of migrants caused by the split into two groups, as well as the exclusion of all migrants after 2003. The point estimates indicate that, compared with women, men are more likely to migrate permanently than temporarily. This runs counter to the fact that women seem to be missing in certain areas in the East, as they are more likely to return East than to stay in the West than men,

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[30] The respective percentages are 45 and 73 if we restrict our sample to migrants who move to the West before 2003.

[31] To analyse the significance of these differences, we repeat the regressions with permanent migration as the omitted category (instead of staying in the East).

Table 7. Results from multinomial logit regressions

	(i)		(ii)		(iii)	
	Migrate permanently	Migrate temporarily	Migrate permanently	Migrate temporarily	Migrate permanently	Migrate temporarily
Male	0.842	0.663	0.798	0.576*	0.898	0.772
	(0.120)	(0.194)	(0.120)	(0.170)	(0.184)	(0.283)
Age 30–49			0.264***	0.118***	0.401***	0.088***
			(0.051)	(0.070)	(0.105)	(0.049)
Age 50–64			0.033***	0.285***	0.062***	0.418**
			(0.014)	(0.118)	(0.032)	(0.184)
Single			1.032	3.789***	0.860	3.051***
			(0.196)	(1.244)	(0.226)	(0.966)
Widowed/ divorced			1.752**	0.728	1.640*	0.828
			(0.422)	(0.556)	(0.491)	(0.616)
College			1.188	1.606	1.653	0.676
			(0.388)	(0.900)	(0.871)	(0.404)
Vocational training			1.240	1.343	1.564	0.585
			(0.383)	(0.715)	(0.807)	(0.324)
Laid off in last year			1.350	2.601*	1.061	3.975**
			(0.390)	(1.488)	(0.354)	(2.330)
Ties to local community					0.498***	0.480***
					(0.073)	(0.097)
Friends in West					1.337***	1.223
					(0.124)	(0.223)
Relatives in West					1.533***	1.803***
					(0.135)	(0.416)
Pessimistic view of future					0.471***	0.611*
					(0.073)	(0.180)
Year fixed effects	No		Yes		Yes	
No. of observations	49,972		48,468		36,767	
Log-likelihood	−2,167		−1,890		−1,140	

Notes: Standard errors are in parentheses and are corrected for clustering at the personal level. *** indicates significance at the 1 per cent level, ** at the 5 per cent level and * at the 10 per cent level. Omitted categories: age 18–29, married and at most secondary schooling degree.
Data source: GSOEP 1990–2003.

conditional on migrating. However, these gender differences are not statistically significant.

Column (ii) includes the baseline regressors, as well as the indicator variable of whether an individual has been laid off in the previous 12 months. Older individuals are less likely to either migrate permanently or temporarily relative to staying than the omitted age group of the 18–29 year olds. This just confirms the results from Table 4. However, there are additional important differences among the age groups when it comes to the decision to either migrate permanently or temporarily, once one focuses on migrants. The middle-aged (30–49 years) are more likely to migrate permanently rather than temporarily compared with the younger individuals aged 18–29, although this difference is not statistically significant. In contrast, the older individuals are significantly more likely to migrate temporarily rather than permanently compared with the youngest group. Single individuals are almost four times as likely as married individuals to migrate temporarily rather than to stay, but exhibit the same propensity to migrate permanently. In contrast, widowed or divorced individuals are 75 per cent more likely than married individuals to migrate permanently rather than to stay, but less likely to migrate temporarily. With respect to education, the results do not show significant differences between temporary and permanent migrants, and therefore resemble the results of the probit regression in Section 5.1.2.[32] Finally, recently laid off individuals are 160 per cent more likely to migrate temporarily than to stay compared with individuals who have not been laid off, but exhibit a similar propensity to migrate permanently. This difference is not statistically significant, whereas the magnitude of the difference is large. We also further added the employment status, as well as individual labour earnings and equivalized disposable household income, but none of these variables turned out to be significant (results not shown).

Summarizing, there are three groups who are especially likely to migrate temporarily as opposed to permanently. Single individuals and recently laid off individuals are more likely to try their luck in the West, but are quite likely to return to the East later. Individuals aged 50–64 exhibit overall low migration rates; however they are more likely to migrate temporarily rather than permanently compared with the youngest age group. It might be that individuals in this age group return East after exiting the labour market.

In column (iii), we add the qualitative indicators from Section 5.3.[33] The social and psychological factors again play a very important role in explaining the migration decision. Having friends or relatives in the West significantly increases the probability of migrating to the West, whereas having close ties to the local community or viewing the future pessimistically decrease the probability of

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[32] Note that in general the results are more significant for permanent than for temporary migrants, which is partly owing to the fact that we observe fewer return migrants.
[33] Note that because of the smaller sample size we include year group dummies, namely for the years 1995–1999 and 2000–2003, instead of individual year fixed effects.

migrating. Yet, somewhat surprisingly these variables do not significantly predict a difference in the propensity to stay in the West or return to the East. This indicates that they might not play a role in determining the ultimate success of a move.

6.2 Life satisfaction as an indicator of migration success

In this section, we look at life satisfaction of both permanent and temporary migrants in the time period around a move to the West.[34] We analyse whether migration has a significant effect on life satisfaction, and whether this effect differs between permanent and temporary migrants. In a study of life satisfaction of East Germans, Frijters *et al.* (2004) find a positive effect of a move West, but do not decompose the effect over time or type of migrant. If one thinks of life satisfaction as a measure of utility, one would expect life satisfaction to increase after a move given the expected utility model outlined in Section 4. Life satisfaction is measured as the answer to the question 'On a scale from 0 (completely dissatisfied) to 10 (completely satisfied), how satisfied are you with your life, all things considered?' We focus on the 7-year period surrounding the move, that is, including 3 years before and 3 years after the move West. The regressions include individual fixed effects and therefore identify changes in an individual's life satisfaction around the event of the move. We run linear regressions despite the ordinality of the dependent variable for ease of interpretation. Ferrer-i-Carbonell and Frijters (2004) show that the implicit assumption of cardinality is an innocuous one in studies of life satisfaction using the GSOEP.

In this analysis, we only include individuals who respond to the survey, although not necessarily to all questions, in all of these 7 years.[35] Thus, individuals who do not provide all the necessary information in all the years are not in general excluded but just fall out for the respective year. Life satisfaction itself is the variable that is most often missing. On average, we have all the necessary information for the 137 permanent migrants who respond to the survey in all 7 years around the move for 5.3 years. Similarly, we observe 37 temporary migrants for 7 years around the initial move West, with an average 4.8 years for which we have all necessary information.

The average life satisfaction in the 3 years before the move is higher for temporary migrants, measured at 6.7 on the 0–10 scale, than for permanent migrants, for whom it is measured at 6.4. Thus, it seems that on average permanent migrants were slightly unhappier with their life before they took the decision to leave, although the difference is not statistically significant.[36]

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[34] See Clark *et al.* (2008) for a similar analysis of lags and leads in life satisfaction around important life events.

[35] We want to avoid the drops in the number of observations towards the extreme years, making it hard to compare the significance of results across years.

[36] The standard deviation of life satisfaction in the full sample is 1.78.

Table 8. Leads and lags of life satisfaction around the year of migration

	Dependent variable: life satisfaction					
	Permanent migrants			Temporary migrants		
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Year of move −2	−0.073	0.050	0.166	−0.293	−0.304	−0.328
	(0.179)	(0.205)	(0.210)	(0.335)	(0.400)	(0.448)
Year of move −1	−0.114	0.029	0.233	−0.150	−0.225	−0.093
	(0.200)	(0.245)	(0.264)	(0.292)	(0.454)	(0.495)
Year of move	0.707***	0.924***	1.135***	−0.545*	−0.592	−0.433
	(0.183)	(0.243)	(0.262)	(0.318)	(0.491)	(0.618)
Year of move +1	0.374**	0.425*	0.676***	0.232	0.016	0.229
	(0.183)	(0.237)	(0.260)	(0.420)	(0.575)	(0.645)
Year of move +2	0.477**	0.635**	0.828***	0.006	−0.104	−0.018
	(0.201)	(0.252)	(0.280)	(0.365)	(0.599)	(0.656)
Year of move +3	0.290	0.445	0.695**	−0.292	−0.580	−0.491
	(0.200)	(0.286)	(0.305)	(0.495)	(0.739)	(0.744)
Single		0.338	0.336		0.820	1.115
		(0.262)	(0.272)		(1.810)	(1.748)
Widowed/divorced		0.665*	0.593		−0.708	−0.182
		(0.401)	(0.434)		(0.998)	(0.819)
College		−0.307	−0.123		0.230	−0.138
		(0.504)	(0.483)		(0.625)	(0.679)
Working		0.322	0.283		0.138	0.254
		(0.237)	(0.240)		(0.556)	(0.478)
Unemployed		−1.134***	−1.159***		−0.759	−0.568
		(0.333)	(0.328)		(0.816)	(0.718)
Log individual labour earnings		−0.164	−0.146		0.002	0.110
		(0.107)	(0.108)		(0.157)	(0.170)
Log equivalized disposable		0.443*	0.464**		0.139	0.145
household income		(0.232)	(0.232)		(0.512)	(0.527)
Constant		3.341*	2.958		5.074	3.439
		(1.955)	(2.020)		(3.726)	(4.364)
Individual fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	No	No	Yes	No	No	Yes
No. of observations	915	729	729	220	177	177
No. of individuals	141	137	137	37	37	37
R^2	0.49	0.60	0.61	0.47	0.47	0.54

Notes: Ordinary least square regressions. Standard errors are in parentheses and are corrected for clustering at the personal level. *** indicates significance at the 1 per cent level, ** at the 5 per cent level and * at the 10 per cent level. Omitted categories: married, highest degree vocational training or less and not in labour force.
Data source: GSOEP 1990–2006.

Table 8 shows the results from regressions of life satisfaction on a set of dummy variables that indicate in which year relative to the year of the move West life satisfaction is measured, plus additional control variables. For example, 'year of move −1' means that the life satisfaction is measured 1 year before the move West. Note that the move always refers to the initial move West, for both permanent and temporary migrants. We omit the first year in which we observe the individual, that is, the year 3 years before the move. Columns (i) and (iv) show results without any controls apart from individual fixed effects. In columns (ii) and (v) we include a host of potential explanatory variables, and in columns (iii) and (vi) additional year dummies.[37]

A first result from these regressions is that life satisfaction is fairly constant in the three years before the move for both permanent and return migrants. Not only are the coefficients on the dummy variables for the last and second to last year before the move statistically insignificant, indicating that life satisfaction does not systematically change in these years relative to the third year before the move, but the point estimates are also quite small. Therefore, one can interpret the results for the year of the move and the following years relative to the three years prior to the move.

The most striking difference between permanent and temporary migrants arises in the year of the move. Permanent migrants experience a significant increase in life satisfaction through the move, with an increase of between 0.7 and 1.1 points on the scale from 0 to 10, whereas temporary migrants do not experience a boost in life satisfaction at all in the year of the move, but rather a decrease, which is borderline significant in the results without controls [column (iv)]. Life satisfaction for permanent migrants then falls in the subsequent years, but stays above the life satisfaction prior to the move. This indicates that permanent migrants might experience a permanent increase in life satisfaction, although data for more years after the move would be needed to determine this conclusively. The life satisfaction of temporary migrants oscillates somewhat after the move, but is never significantly higher than before the move. The inclusion of year dummies in columns (iii) and (vi) leads to an upward tilting of the coefficients on the event dummies, with life satisfaction generally increasing, relative to the specification without year dummies, over time after the move.[38] The control variables also include personal and household income, as well as employment status. Therefore, the differential association of the move with life satisfaction for permanent and temporary

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[37] Age cannot be included as a control, as together with personal fixed effects it is collinear to the year-of-move dummy variables. (Age groups could be included, but are difficult to identify with personal fixed effects.) We use coarser groups for employment status and education than in Section 5.1.2. owing to the smaller number of observations.

[38] That is, the positive difference of the coefficients in columns (iii) and (ii) or (vi) and (v) is larger for the dummies in later years in the event study.

Figure 5. Estimated dynamic effects of moving West on life satisfaction for permanent and temporary migrants (from regression without fixed effects)

Life satisfaction of migrants into West
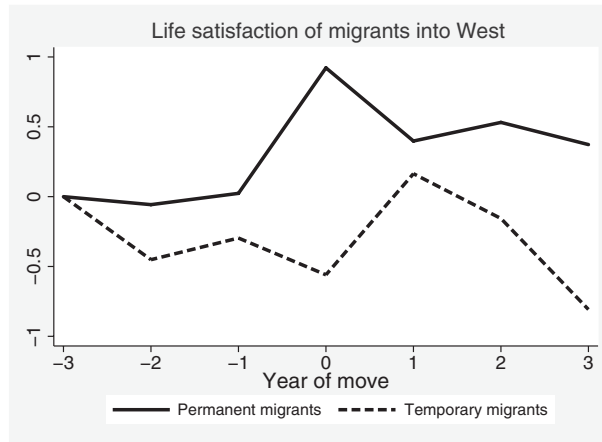
migrants cannot simply be explained by their initial labour market success in the West.

The higher standard errors for temporary migrants because of the small number of observations (only 37 individuals) are a drawback of our analysis. This is even more of an issue for the control variables as, owing to the inclusion of personal fixed effects, all variables are only identified through movements in and out of the categories.[39] In results not reported, we therefore also repeat the regression without personal and year fixed effects. The significance of the control variables now increases also for temporary migrants. Figure 5 shows the results of the coefficients on the event study dummies from the regression without fixed effects, where the life satisfaction of both permanent and temporary migrants is normalized to 0 in the initial year, that is, 3 years before the move. It confirms the results from Table 8: the life satisfaction of permanent migrants rises substantially in the year of the move, then falls again, but stays above the life satisfaction of the years prior to the move. In contrast, the life satisfaction of temporary migrants falls somewhat in the year of move, and overall does not show a clear pattern over time. The effect of the move on life satisfaction in the year of the move is significantly different for return and permanent migrants.[40]

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[39] For the event dummies, all 37 individuals contribute to their identification. Yet, the number of movements in and out of certain categories is smaller for the control dummies.

[40] The 95 per cent confidence band for permanent migrants ranges from 0.48 to 1.36 in the year of the move, whereas that for temporary migrants ranges from −1.48 to 0.36. As in Table 8, the confidence intervals of all the coefficients for return migrants remain relatively large.

Summarizing, we find that the initial change in life satisfaction after the move to the West clearly distinguishes permanent and temporary migrants. We can think of two possible explanations for this finding. The first is that a move is associated with significant uncertainty, and the first random draw of the distribution of possible outcomes right after the move determines the success of the migration. What is important to note is that the random draw does not refer to labour market outcomes like employment and income, which are covered in the control variables. Rather, it must be something else, and psychological factors, such as the feeling of 'fitting in', could be one explanation. The second possible explanation is that temporary migrants intend from the beginning to migrate to the West only temporarily. Therefore, the move does not affect their life satisfaction that much, and it stays fairly constant over time. In contrast, permanent migrants might be very sure that they prefer living in the West, and consequently their life satisfaction increases when the move is realized.

6.3 Saving behaviour of temporary and permanent migrants

To get an indication of whether temporary migrants intend a return East from the beginning, we analyse the saving behaviour of temporary and permanent migrants. If temporary migrants intend to return to the East even before migrating West, one reasonable hypothesis would be that they migrate West to temporarily achieve higher earnings, in which case one would expect their saving rate in the West to be higher than the saving rate of permanent migrants. Of course, if the life satisfaction results are caused by a bad draw of outcomes in the West for temporary migrants in the year of the move, they might decide right away after the move West to return East later on, leading to similar saving results.

We calculate the saving rate as average monthly financial saving (truncated at zero) on the household level divided by the net monthly household income, and regress it on several characteristics as well as a dummy for temporary migrants. In this regression, we restrict our sample to temporary and permanent migrants observed in the year of the move West plus the three following years, with the additional sample restriction that temporary migrants still reside in the West during these years. Only heads of households are included in the analysis, because the dependent variable is measured at the household level. As the dependent variable is left-censored at zero, we run tobit regressions in addition to ordinary least square (OLS) regressions.

Table 9 shows the results from the analysis. Without adding any controls, temporary migrants exhibit a significantly higher saving rate than permanent migrants in both the OLS and the tobit regressions. After controlling for age, gender, marital status, the presence of children in the household, education, employment status and disposable household income, the saving rate of temporary migrants is still higher, but the difference loses significance [the p-values on the coefficients of the temporary migrant dummy are 0.23 (OLS) and 0.14 (tobit)]. We therefore find some

Table 9. Analysis of saving rates of temporary and permanent migrants in years after move West

	Dependent variable: saving rate			
	OLS		Tobit	
	(i)	(ii)	(iii)	(iv)
Temporary migrant	0.026**	0.014	0.040**	0.026
	(0.013)	(0.012)	(0.019)	(0.018)
Male		0.007		0.003
		(0.009)		(0.014)
Age 30–49		−0.010		−0.003
		(0.010)		(0.015)
Age 50–64		0.019		0.040
		(0.017)		(0.028)
Single		0.008		0.018
		(0.012)		(0.019)
Widowed/divorced		−0.033***		−0.076***
		(0.011)		(0.024)
Children in household		−0.003		−0.002
		(0.007)		(0.011)
College		0.007		0.024
		(0.029)		(0.049)
Vocational training		−0.014		−0.004
		(0.028)		(0.048)
Working		0.017		0.029
		(0.013)		(0.022)
Unemployed		−0.018		−0.064*
		(0.018)		(0.035)
Currently in school		−0.022		−0.037
		(0.019)		(0.042)
Equivalized disposable household income (*10^5)		0.232***		0.419***
		(0.064)		(0.097)
Constant	0.082***	0.014	0.033	−0.029
	(0.005)	(0.012)	(0.009)	(0.056)
Year fixed effects	No	Yes	No	Yes
No. of observations	1,101	997	1,101	997
R^2/log-likelihood	0.01	0.14	−80.5	9.7

Notes: Standard errors are in parentheses and are corrected for clustering at the personal level. *** indicates significance at the 1 per cent level, ** at the 5 per cent level and * at the 10 per cent level. Omitted categories: age 18–29, married, highest degree schooling and not working.
Data source: GSOEP 1990–2006.

weak evidence that temporary migrants save more than permanent migrants, which suggests either that they plan to return East even before their move West, or that they decide almost immediately after the move West to return to the East later on.

7. Conclusion

We analyse the determinants of East–West migration within Germany from 1990 to 2006. Our analysis confirms the findings by Hunt (2006) on an earlier sample period, which correspond to predictions of the utility framework of migration. The propensity to migrate declines by age, and a high regional income in the origin county serves as a deterrent to migration, whereas a high regional unemployment rate does not have a significant effect on the decision to migrate. Recently laid off individuals however are more likely to move West. Moreover, unattached individuals are more likely to move West than married individuals.

We then focus our attention on the question of whether women are generally more likely to migrate to the West than men. The aggregate data as well as data from the Microcensus show that the East–West migrants are overall evenly composed of men and women. However, restricting our sample in GSOEP to individuals who lived in East Germany prior to reunification, we show that in this sample women are indeed more likely to move West than men. The discrepancy between this finding and the aggregate statistics can probably be explained by the fact that men are more likely to move from West to East than women, and return migrants from this group increase the number of men in the East–West migrant body. We also find that, after controlling for marital status and education, young women are more likely to move than young men, and that single women are more likely to move than single men after controlling for age and education.

We further find that the composition of the migration flows changes between the first and second waves of migration. The absolute differences in migration probabilities between young and old individuals increase over time. We also find that migrants become more educated over time. These differences between the first and second waves of migration constitute bad news for the East German economy. The increasing propensity of young adults to leave the East is consistent with decreasing expectations for future convergence between East and West. One has to keep in mind that the number of West Germans returning West after a sojourn in the East could be increasing over time, and that these return migrants could at least partly explain the larger number of educated young adults among migrants in the later years. Unfortunately, we cannot investigate this hypothesis in the Microcensus, and the sample size in GSOEP, which would allow us to identify the place of residence in 1989, is too small to further split the sample into two different time periods.

In the GSOEP data, measures of social ties and other psychological factors can predict the migration decision very well: individuals with strong ties to the local

community are less likely to migrate, whereas East Germans who have friends or relatives in the West are more likely to migrate there. The propensity to migrate is also higher for generally optimistic individuals. These findings point towards the importance of non-monetary fixed costs of migration in explaining migration decisions.

One novelty of our study is that we can analyse differences in characteristics between permanent and temporary migrants. We find that individuals who have recently been laid off as well as single individuals are more likely to move West, but also more likely to later return to the East. It thus seems that single and laid off individuals are more willing to try their luck in the West, but often return East later on. An event study of the evolution of life satisfaction in the years around the move West shows marked differences between permanent and temporary migrants. The life satisfaction of permanent migrants rises significantly in the year of the move and stays above life satisfaction before the move in the years to follow, whereas the life satisfaction of temporary migrants is essentially unaffected by the move West. This could be an indication that temporary migrants either decide in advance to migrate for only a short time period, or that the initial experience in the West right after the move is a very strong indicator for long-term migration success. Additional evidence for these hypotheses comes from the fact that temporary migrants have higher saving rates than permanent migrants while residing in the West.

Reducing East–West migration continues to be an important policy goal in Germany. Our analysis cautions that this might not be an easy task. The fact that the migrant body increasingly consists of young, educated people however makes the policy goal of reducing migration even more important.

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