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The duration of new job matches in east and west Germany*

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Abstract

This study compares the duration of new job matches in the east and west German labour market that formed between the start of the German Economic, Monetary and Social Union in July 1990 and December 2000. The study relies on job duration data drawn from the German Socio-economic Panel. It shows with non-parametric duration methods that job matches are less stable in east than in west Germany. However, this is not the case in the first years of the transition process, in which most likely the more profitable jobs were created and the best job matches were formed. Results form the non-parametric analysis but also from a proportional hazards model that controls for important covariates imply that the transition rates into alternative jobs and into unemployment vary with tenure in a way, which is in line with predictions of theories of job mobility such as the job specific capital hypothesis and matching theories.

JEL classification: C41, J63 and P52
Keywords: Job duration, job changes, hazard rate, theories of job mobility, economies in transition

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1 Introduction

Labour markets after the transition shock were subject to a large reallocation of labour. Old job matches disappeared very quickly in economies in transition, while many new job matches were created.[1] But are these new job matches as stable as in comparable non-transition countries?

This paper analysis the duration of new job matches in east and west Germany. The observation period starts in July 1990, at the start of the German Economic, Monetary and Social Union. This event introduced the west German economic framework in east Germany. I investigate whether in east Germany new job matches end up more or less rapidly by a job change or by unemployment rather than in west Germany. The job duration data is drawn from the German Socio-economic Panel (GSOEP) over the period from July 1990 to December 2000. The econometric analysis applies both non-parametric duration methods as well as a discrete-time proportional hazards model with gamma-distributed unobserved heterogeneity. The latter model quantifies the impact of important covariates on variation of the hazards into other jobs and into unemployment.

There are general hypotheses on job duration that I investigate. Farber (1999) discussed these hypotheses: Job specific capital has a value only on the job but loses its value after a job change (see Jovanovic, 1979a). The cost of searching for a new job and replacing a worker who leaves the firm, skills that are only useful on the specific job and information about the quality of the employer-worker match are regarded as such job specific capital. The more such capital has been accumulated the lower the separation rates, thus they are declining in tenure. As far as match quality is concerned the prediction is somewhat but not entirely different (e.g., see Jovanovic, 1979b). Initially the match quality is uncertain. With more and more tenure, and thus additional information about the match, the worker and the employer update their beliefs about the match quality. Separation rates first rise, as some job matches turn out to be of relatively low quality. There is a sorting effect though: The longer tenure, the higher the share of high quality job matches and the lower the empirical separation rates.

A decline in the empirical separation rates with tenure could be purely a result of heterogeneity: Some workers are characterised by high job mobility, others by a low one. This is the mover-stayer hypothesis of Blumen, Kogen, and McCarthy (1955). If it is true, we have a spurious negative duration dependence of the hazards, which is hence no evidence for the hypotheses of the theories of job mobility. I will use models that account for unobserved heterogeneity and control for a worker's recent job mobility, to avoid such a spurious dependence of separation rates on tenure.

For east Germany as a transition economy a number of additional hypotheses are of interest. First, given the rapid restructuring of the economy, new job matches may be quite unstable for various reasons. One of them is that old and new firms operate in a new environment. In contrast to a non-transition country, there is a higher uncertainty about whether their activities and hence job matches will be profitable. A larger share of the new job matches in east in contrast to west Germany could turn out to be unprofitable. Another reason to observe relatively unstable jobs in a transition country is the creation of many jobs in public work programs. Such jobs are directed to unemployed people and are time limited, so that high separation rates are a likely outcome.

[1] E.g., see Wolff and Trübswetter (2003) for the east German labour market and Jurajdy and Terrell (2002) for the labour markets in the Czech Republic and Estonia.

An additional hypothesis is that at the start of the transition process the most productive new firms and jobs were set up and matched to the most productive workers. I.e., new job matches were of very high quality in the first few years of the transition process but of lower quality later on. Thus, job matches that started early in the transition process are the most stable ones.

Initially, east German wages adjusted rapidly towards west German levels.[2] In turn, to achieve gains in labour productivity, firms had to substitute capital and skilled labour for unskilled labour. Thus new jobs of unskilled workers were presumably much less stable than those of skilled workers.

A study on east German job mobility of Solga, Diewald, and Goedicke (2000) showed that in a first phase of the transition process, from January 1990 to June 1992, there were high monthly rates of job-change both between firms and within firms. These transition rates were only about half as high in a second phase from July 1992 to March 1996. Their analysis relied on a life course study for east Germany, that collected data on the birth cohorts from 1939-41, 1951-53 and 1959-61. It was restricted to people who were employed in December 1989. Their unit of observation was any job match that was in course over their observation period. Thus, they did not focus on the duration of new jobs in the east German labour market or a comparison to the west German job duration. In this paper I will focus on such issues.

Section 2 discusses the data from the GSOEP. It emphasizes advantages and disadvantages of these data compared with alternative data sets. It also provides an order of magnitude of the importance of employer and within-firm changes in the east and west German economy over the observation period. Section 3 discusses the econometric methods. Section 4 presents descriptive statistics on the job spell sample. It highlights the main hypotheses on job duration. It then discusses whether results from a non-parametric analysis of the data are in line with these hypotheses. The main estimation results of the discrete-time proportional hazards model are discussed in Section 5. The exit states I consider are both job change and unemployment. Section 6 concludes.

2 Data

2.1 The German Socio-economic Panel and other data

There are various data sources for studying job duration in Germany.[3] One source of data are the "Regional Files" of the Institute for Employment Research, which stem from social security records.[4] Individuals were sampled with a probability of one percent, so that a large number of observations are available. But these data are only available until 1997. Moreover, for east Germany, they are only available from 1992 onwards. Therefore, with these data one cannot study job duration at the start of the transition process and by the end of the 1990s.

Another data source is an east German life history study that was conducted by the Max-Planck Institute for Human Development (Berlin). Solga, Diewald, and Goedicke

[2] Hunt (2001) estimated with data from the GSOEP that the median wage of east German workers aged 18 to 54 rose by 83 % in the first six years after the introduction of the German Economic, Monetary and Social Union.

[3] Except for the GSOEP, public use files of the other data sources mentioned in this section are available at the "Central Archive for Empirical Social Research", University of Cologne.

[4] For a detailed description of these data see Haas (2001).

(2000) used these data in their study on east German labour market dynamics. They contain information on the labour force status and events like job changes of a number of birth cohorts from the start of 1990 until the start of 1996. But this information was retrospectively collected. The respondents had to recall job events over this time horizon at their interviews in 1996 or 1997. Severe recall errors with respect to events at the start of the transition process may be the consequence. Finally, the data provide little information on the second half of the 1990s. This also applies to a further possible data source, the Labor Force Monitor, which was a labour survey carried out in east Germany from November 1990 to November 1994.

The GSOEP, in contrast, provides information on job duration in east and west Germany from July 1990 until the start of the year 2002.[5] In east Germany, this panel study was first carried out in June 1990, when 2,200 households responded. In west Germany it already started in 1984, carrying out successful interviews in more than 5,900 households. The panel study was expanded by refresher samples: In the wave of 1998 more than 1,000 households were added. More than 6,000 additional households were interviewed in the wave of the year 2000. The GSOEP provides information on a large number of individual and household characteristics.

2.2 Information on job duration

Several questions of the GSOEP allow to construct the duration of jobs measured in months. Employed respondents state whether and in which month their job started since the beginning of the last calendar year. The interviews usually take place in late winter or early spring, so that information on job events in the first months of the year are available. The respondents also choose between several job events: First job, new employer, self-employment, change within the firm, company takeover or return to work. Until 1993 only people who already responded at least once to the GSOEP had to answer these questions. Thereafter, it was relevant to all respondents. In a separate question, before 1994, all people who responded to the GSOEP for the first time were asked the calendar year and calendar month of the job start at their current employer. But they did not have to state the exact event that led to the job start. For these individuals the answer to this question defines the relevant job start.

Another important piece of information is the calendar end of the job. In each wave respondents state in which calendar month of the last year or of the current year a job was terminated. They also report for how many years and how many months this job lasted. To construct job spells, I combine the information on job starts of jobs held currently with the information on the job end that is provided in subsequent waves. But this job start information is only available if at the interview a respondent still works in the job. Thus, we get a stock sample that overrepresents long job spells.

For a random sample of job duration, jobs that start and end between two subsequent interviews are needed. These jobs are observable due to the information provided on the end and duration of the last job. Of course if a respondent starts and terminates more than one job spell between the interviews of two subsequent waves, one can only observe the most recent spell. Note that for these spells, job attributes like firm size and sector are not available. They are only collected for jobs that are in course at the

[5]The estimation was carried out before the release of the most recent wave of the GSOEP. So only information until the wave of 2001 is used in the analysis.

respondent's interview. This is major disadvantage of these data.

By what type of exit the job matches are completed is determined in various ways. If a job spell of an individual immediately starts after the end of a previous job spell, it will be coded as a job change. Whether a job terminates by an exit into unemployment or non-participation, can be determined by the information from the monthly labour status calendarium of the GSOEP.[6]

A number of job spells in the sample can be followed from their start until some calendar month but not until they terminate. Such right-censored spells exist for several reasons: Respondents temporarily or permanently drop out of the panel study, before their job ends. Moreover, some respondents claim in one wave to still hold their job but that they are jobless in the subsequent wave without reporting a job end. Such job spells are right-censored at the length that they reached at the previous wave's interview. Job spells are also right-censored if they reach the end of the observation period (December 2000).[7] Finally, I treat job spells as right-censored at 48 months if they last for longer.

For the analysis, I will use information of the waves from 1990 to 2001 of the GSOEP, including observations from the refresher samples. The analysis excludes foreigners as the GSOEP-East only collected information on households with German household heads. Further I will restrict the samples to men who are not older than 65 years and women who are not older than 60 years.

2.3 Employment, employer changes and within-firm job changes

I first provide some descriptive statistics of the east Germany labour market in transition. I focus on employment and job changes. Figure 1 shows the development of real gross domestic product (GDP), employment and GDP per worker from the year 1989 until the year 1998; thereafter GDP figures for west and east Germany are no longer available, separately. The important facts are however captured by the time series presented in the figure.

Figure 1 displays the initial decline of GDP. It fell more rapidly than employment and reached its trough in 1991 at about 65 % its 1989 level. In the following four years GDP grew strongly by about 8 to 10 %. Between 1995 and 1998 though, its annual growth rate was less than three percent. Thereafter, the it became even lower. The GDP of the east German federal states excluding Berlin rose by about -0.1 to 2 % from 1999 to 2002 (see German Institute for Economic Research, 2002, Table 3.2).

The east German employment stock declined immensely between 1989 and 1992. The average employment stock in the latter year was about 65 % of that in 1989. From 1992 to 1998 employment decreased to 63 % the employment stock in 1989. Since then, it is relatively constant (see German Institute for Economic Research, 2002, Table 3.9).

The adjustment of the employment stock tells us very little about the extent at which new job matches formed. Therefore, I turn to another set of statistics, the share of

[6]Sometimes such a job change is recorded but the monthly labour force status information shows that the person is not employed after the job end. Such cases are not treated as a job change but as right-censored at the observed end for analysing the job change hazard. They are treated as an exit in the non-parametric analysis of the survival probability, as for this analysis any type of exit is relevant.

[7]The last available wave when the sample was drawn was the wave of 2001. Retrospective information on unemployment or non-participation as exit states was only available until December 2000. So the observation period ends in this month.

jobs in the employment stock that are due to job starts at a new employer or within-firm job changes. These statistics are computed from information of the GSOEP. In the computation, I used appropriate sampling weights provided by the GSOEP. I will consider a sub-sample of individuals which is aged 16 to 65 years for men and 16 to 60 years for women.[8] Note, that I include only people who also responded in the wave prior to the one for which the following statistics are computed. The reason is that before 1994 the question on new employer worker matches and within-firm job changes was only addressed to people who were already interviewed in the past.

FIGURE 1
EMPLOYMENT, GROSS DOMESTIC PRODUCT (GDP) AND GDP PER WORKER DURING THE EAST GERMAN TRANSITION PROCESS (1989 = 100)

Source: National Accounts, German Institute for Economic Research

Figure 2 presents the number of men who started a job at a new employer since the previous wave's interview relative to the male employment stock at the current wave's interview.[9] The interviews usually take place between February and April so that nearly all statistics displayed in these figures are roughly on an annual basis. Only for the wave of 1991 the shares are computed for jobs that started after June 1990 as the main transition shock began with the start of the German Economic, Monetary and Social Union in July 1990. I excluded from the employment stock people who reported marginal employment or vocational training as their labour force status. Finally the statistics are displayed for residents in east or west Germany. That is east German respondents who had migrated to the west and vice versa are excluded from the analysis.[10]

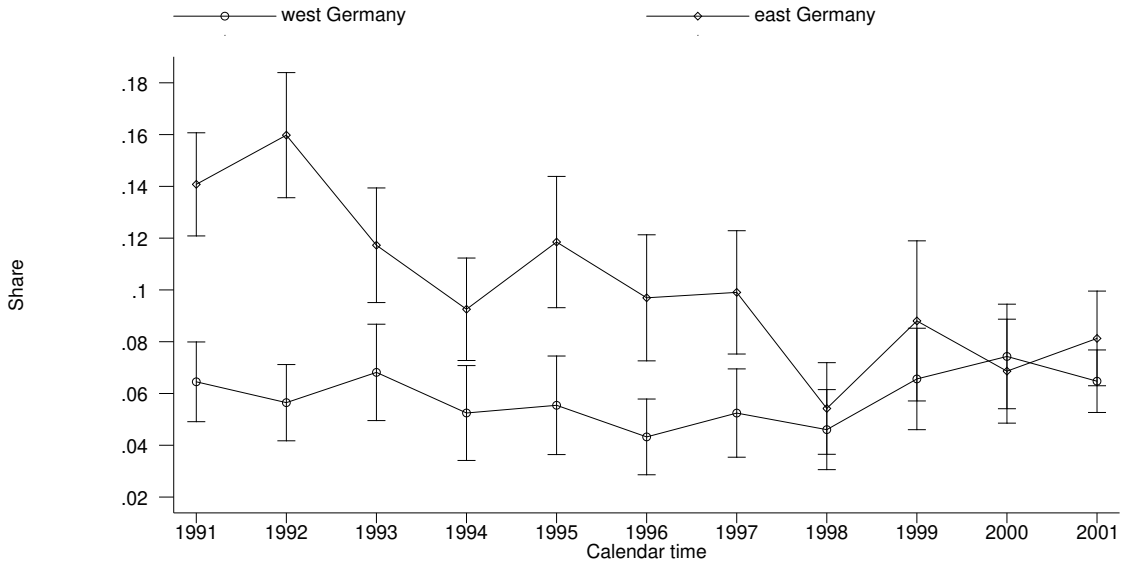
[8]The number of observations available for this calculation are presented in Table A1 of the Appendix.

[9]This analysis includes no job starts that are due to workers returning to their employer, first jobs or self-employment. The reason is that I want to show to what extent new job matches formed between an employer and a worker who previously worked for a different employer.

[10]Of the sample under consideration, employed people, less than one percent of the respondents to the GSOEP-East lived in west Germany in 1991. But this percentage increased considerably. In 1992 it was already 2.5 % and in 1994 more than four percent. In the years that follow this percentage rose

FIGURE 2

JOBS AT A NEW EMPLOYER AS A SHARE OF THE EMPLOYMENT STOCK - MEN[a]



[a]Men aged 16 to 65 years

Figure 2 suggests three stylized facts. There is a first period of rapid labour reallocation from July 1990 to spring 1992 in east Germany. In 1991 and 1992 the share of new employer-worker matches in the employment stock was more than 14 % in the east but only 6.5 and 5.6 % in the west. Then follows a second period from 1992 until 1997 where the labour reallocation in the east is still somewhat and significantly higher than in the west: The share of new jobs in the east German employment stock ranges from 9.2 to 11.8 %, while for west Germany it is roughly five percentage points lower. Since 1998 the east and west German shares of new employer-worker matches are very similar.

Figure 3 displays the same statistics for women and demonstrates three stylized facts. First, the share of jobs at new employers in west Germany is quite stable ranging from 5.5 to 8.4 %. Second, in the east from 1991 until 1995 the shares are often significantly higher than in the west and the difference ranges from 2.1 to 6.1 percentage points. Third, already from 1996 onwards, the shares of new employer-worker matches of the two regions are similar. The exception is the year 1999, where the west German share is about twice the east German one. So for women, the rapid reallocation of labour during the transition process ended earlier than for men.

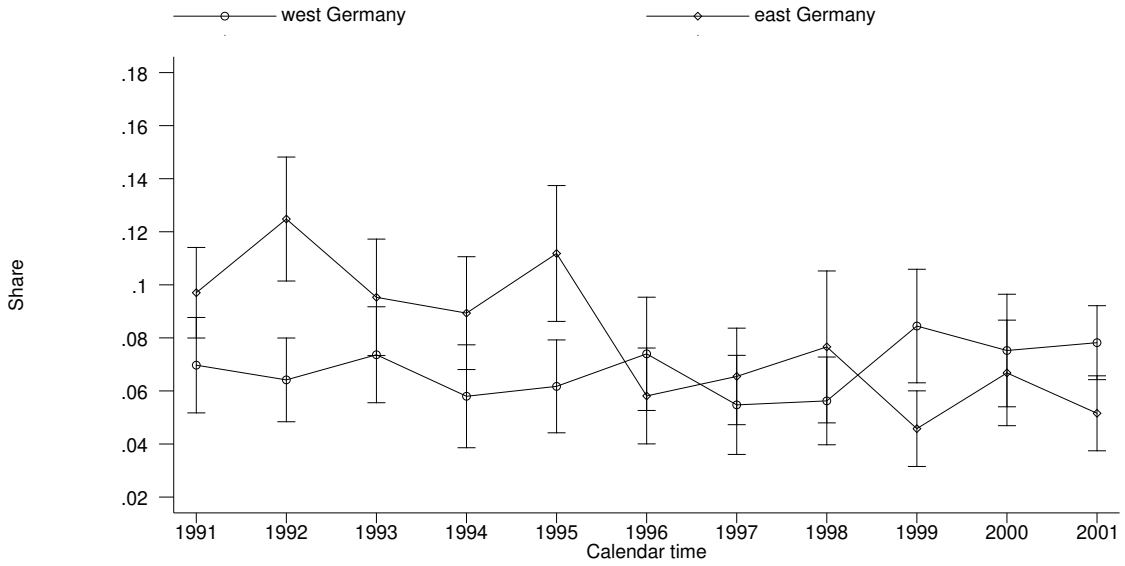
The share of within-firm job changes in the current employment stock is displayed in Figure 4 for men and Figure 5 for women. Only in the very first years of the transition process the share of within-firm job changes is higher in east than in west Germany.[11] In east Germany the share is about five percent for men and 5.7 % for women in 1991, which covers within-firm job change for from July 1990 to March/April 1991. The

more slowly and reached about 10.5 % by 2001. For respondents to the GSOEP-West, the percentage of people who live in east Germany is below one percent.

[11]The sample of east German women in the year 1993 excludes one respondent who experienced a within-firm job change, but is characterised by an extremely high sample weight that is more than 14 times the average weight of this sample.

FIGURE 3

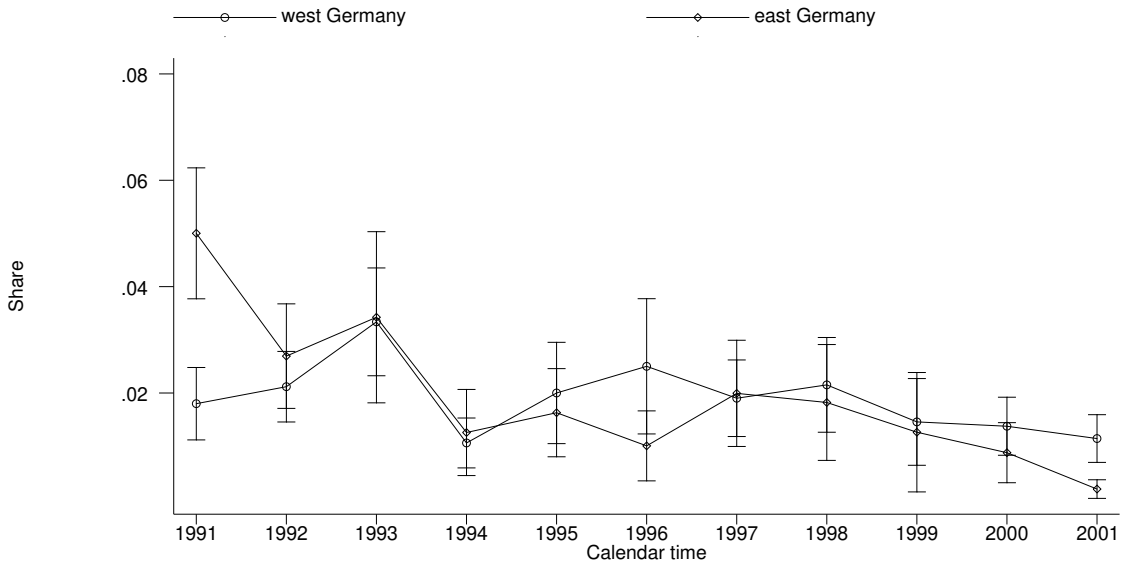
JOBS AT A NEW EMPLOYER AS A SHARE OF THE EMPLOYMENT STOCK - WOMEN[a]



[a]Women aged 16 to 60 years

FIGURE 4

WITHIN-FIRM JOB CHANGES AS A SHARE OF THE EMPLOYMENT STOCK - MEN[a]

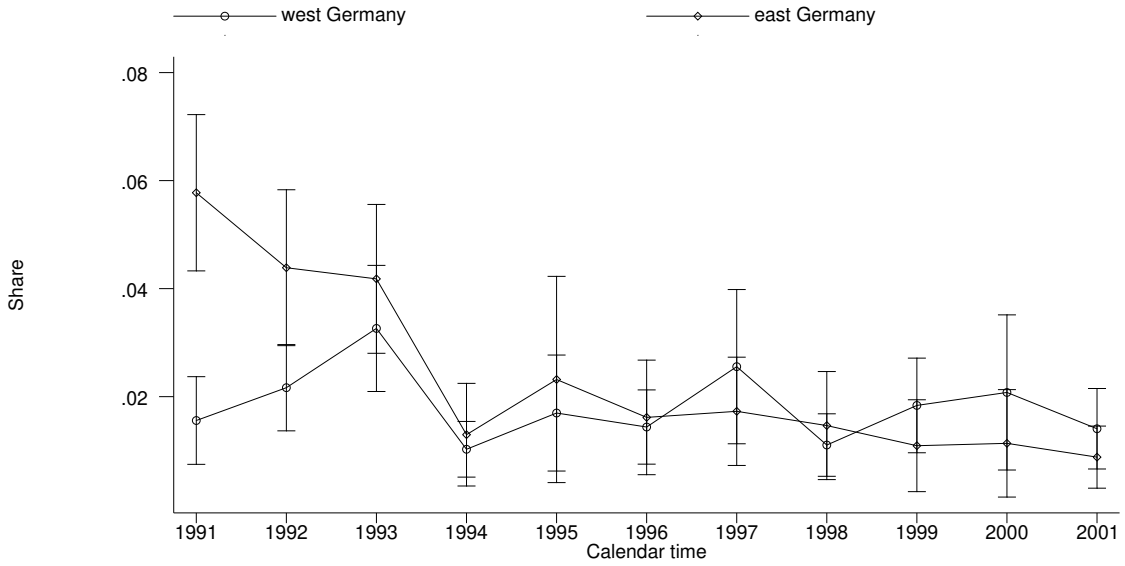


[a]Men aged 16 to 60 years

corresponding numbers for the west are below two percent. In spring 1992 the east German shares still exceed the west German ones. But the differences are no longer significant according to the 95 % confidence bands. In most of the years that follow, the two regions differ little in their share of within-firm job changes.

Hence, for the reallocation of labour in east Germany, within-firm job changes played

FIGURE 5
WITHIN-FIRM JOB CHANGES AS A SHARE OF THE EMPLOYMENT STOCK - WOMEN[a]



[a]Women aged 16 to 60 years

a considerable role only very early in the transition process. There are two important reasons for this. First, when the transition process started the old firms tried to improve their efficiency as quickly as possible by reallocating labour within the firm. Second, at the start of the transition process, many firms were subject to agreements between unions and employer federations on temporary protection against dismissal.[12] Therefore they were also constrained to use within-firm job changes to fill open positions.

3 Econometric methods - the discrete-time proportional hazards model

Let T be the random variable *duration of a job match* (tenure) and J be the *destination state* like new/alternative job. The transition rate from the job into another destination for a small duration interval $[t, t + \Delta t[$ is defined as

$$\theta_j(t|\boldsymbol{x}(t)) \quad = \quad \lim_{\Delta t \to 0} \frac{P(t \leq T < t + \Delta t | T \geq t, J = j, \boldsymbol{x}(t)),}{\Delta t}, \; j = 1, ..., M \qquad (1)$$

where $\boldsymbol{x}(t)$ represents a vector of covariates that may vary over the spell length and there are M different destination states.[13] In the Cox Proportional Hazards model (see Cox, 1972) it is specified as

$$\theta_j(t|\boldsymbol{x}(t)) = \theta_{j0}(t) \cdot \exp(\boldsymbol{x}(t)'\boldsymbol{\beta_j}), \qquad (2)$$

where $\theta_{j0}(t)$, the baseline hazard, represents variation of the transition rate with the spell length and hence the duration dependence pattern. $\boldsymbol{\beta_j}$ represents the destination

[12]The most important agreement was the one of the metal industry and electrical engineering. It affected more than a quarter of the total employment stock and was in force until the end of June 1991.

[13]Provided that exit to such destination states is independent, the sum over all destination state specific hazards gives the hazard from the job into any destination state.

specific parameter vector of the covariates. This specification of the hazard is adequate when the spell length is measured in continuous time, e.g., when duration is measured in days. In this study duration is measured in months, so the unit of measurement is rather discrete. Prentice and Gloeckler (1978) present the discrete-time formulation of the proportional hazard rate model; the resulting discrete-time hazard is

$$\begin{aligned} h_j(t|\boldsymbol{x}(t)) &= 1 - \exp[-\exp(\gamma_{jt} + \boldsymbol{x}(t)'\boldsymbol{\beta}_j)], \\ \text{where } \gamma_{jt} &= \int_t^{t+1} \theta_{j0}(\tau) d\tau. \end{aligned} \tag{3}$$

This hazard is the probability that the exit occurs during month t, provided that the job match lasted until the start of that month. So it is a conditional probability. The probability of survival, i.e., of remaining on the job up to the start of the monthly interval t is then

$$S(t|\boldsymbol{x}(t-1), ..., \boldsymbol{x}(0)) = \prod_{\tau=0}^{t-1} \big[1 - \sum_{j=1}^{M} h_j(\tau|\boldsymbol{x}(\tau)\big]. \tag{4}$$

This specification assumes that covariates do not change their value during a monthly interval, but they may change from month to month. The resulting parameters of the baseline hazard, γ_{jt}, may either be specified by a parametric function of duration or non-parametrically, e.g., as distinct parameters for each monthly interval of spell length that is available in the data.[14] Spells that end with an exit contribute to the likelihood function with their hazard times the probability of survival. Spells that are right-censored, i.e., where by the observed end of a spell no exit did occur, contribute to the likelihood function only by their survival probability.

The formulation of the transition rate above does not consider unobserved heterogeneity which determines the hazard rates, but at the same time is independent of the covariates. Neglecting such heterogeneity tends to bias duration dependence towards a negative duration dependence pattern. Moreover, for the case of gamma-distributed unobserved heterogeneity the response of the hazard to a covariate will become lower than its true value (see Lancaster, 1990, p.67). In the following specification unobserved heterogeneity, v, is assumed to be multiplicative

$$h_j(t|\boldsymbol{x}(t), v) = 1 - \exp[-\exp[\gamma_{jt} + \boldsymbol{x}(t)'\boldsymbol{\beta}_j + ln(v)]]. \tag{5}$$

Following Meyer (1990) the unobserved heterogeneity is assumed to be gamma-distributed with expectation, $E(v) = 1$, and a constant variance, $V(v) = \sigma_v^2$. The likelihood function for this case may be found in Meyer (1990) or Hujer and Schneider (1995).[15] If there is more than one potential exit state (competing-risks), provided that the risks are independent, the parameters of a transition rate to a specific exit state may be estimated by maximizing the likelihood of a single-risk model. In this case spells that end by an exit to another state are treated as right-censored and contribute to the likelihood function by the probability of survival at the observed spell length.

[14] Models with such a piece-wise constant baseline hazards are referred to as semi-parametric duration models.

[15] Maximum likelihood estimation of the parameters of the discrete-time proportional hazards model with gamma-distributed unobserved heterogeneity can be carried out in STATA using the "pgmhaz" procedure written by Stephen Jenkins (see Jenkins, 1997).

4 New jobs matches and their duration: Non-parametric analysis

4.1 The spell sample

This section presents a first descriptive analysis of the duration of new job matches or tenure. When I refer to observations as a job spell, I intend the duration of a job match. Of course the job may still exist once a worker leaves it. I use an inflow sample into such new jobs matches for east and west Germany over the period from July 1990 to December 2000. The job spell information was computed as described in Section 2.

Table 1 presents descriptive statistics on these job spells for east and west Germany and by gender. There are about 8,700 new jobs in the west German sample and nearly 6,550 in the east German one. Job starts of men make up for 50 % of the west German sample and about 55 % of the east German one. The second row shows the share of right-censored spells in the samples, which is about 0.65 for the west and at 0.57 somewhat lower for the east.

Table 1
Share of exit, completed and right-censored spells

	west Germany			east Germany		
	Total	Men	Women	Total	Men	Women
Number of spells	8,684	4,350	4,334	6,542	3,596	2,946
Right-censored spells	0.654	0.653	0.655	0.574	0.570	0.577
Completed spells	0.346	0.347	0.345	0.426	0.430	0.423
Exit into:						
Other job (job change)	0.164	0.179	0.149	0.134	0.154	0.110
Unemployment	0.088	0.097	0.078	0.232	0.224	0.241
Other	0.094	0.071	0.118	0.061	0.051	0.072
Median duration (months)	38	41	35	32	32	32
Survival prob. (12 months or more)	0.772	0.771	0.773	0.725	0.718	0.733

Table 1 also shows the share of spells that end by a job change, unemployment or any other labour force state (non-participation).[16] The destination new job are exits where by the end of a job another job start is recorded and includes within-firm job changes. For the west roughly 18 % of male and 15 % of female job matches end by a job change. These shares are somewhat lower for the east at 15.4 and 11 % respectively. Of the west German sample 9.7 % of men and 7.8 % of women exit into unemployment. The east German numbers are much higher at 22.4 % for men and 24.1 % for women. Except for west German women, other labour force states are the least important type of exit.[17]

[16]The bulk of these job spells are completed due to a reported job end. However, there are some exceptions, where no job end was reported. One reason is that I define a job spell as completed if there is a within-firm job change. This is though provided by a question on the job starts and determines the end of about five percent of the completed job spells. When the job end is not reported, the job length can be observed only until some wave's interview. Yet in some of these cases, retrospective labour force status of the subsequent wave on the start of non-employment spells suggest that such a job indeed ended at that point in time. This is the case for little more than six percent of the completed spells. Similarly eight percent of the completed job ends are determined by job start information of the subsequent wave that suggests, that a new job started just in the month were a job spell was originally right-censored as no job termination was reported.

[17]The exit category "other" aggregates a number of very heterogeneous destination states. For men in west Germany the most important destination state is school or university at about 32 % of these exits. The categories "other labour force state" makes up for another 14 %, vocational training for

The final two rows of the Table 1 show life-table estimates of the median duration and the probability of staying in the job for at least 12 months.[18] They provide a first impression of how stable jobs are. For the west German sample the median duration is 38 months, while for the east German one it is somewhat lower at 32 months. 77 % of the jobs in west Germany last for at least one year, as opposed to only about 72 % in east Germany. While in the east the median job duration of both gender is the same, in the west at 41 months for men it is six months higher than for women.

In how far are the job separations quits or dismissals? Respondents to the GSOEP provide a reason for a job end. The question on this topic changed in the wave of 1999. Respondents got the additional option whether the job separation is due to a mutual agreement between employer and employee. According to the wave of 1999 more than ten percent of job terminations were due to this reason. Before they would most likely been reported as either a quit or a dismissal. Additionally, in contrast to the previous waves, in 1999 and 2000, the option "company closed down" was not available. Hence, I will discuss the reason for a job end for the waves prior to 1999. Given the retrospective character of the corresponding question, only job ends prior to 1998 are regarded.

Table 2 shows the number of job ends in this subsample and shares of different reasons for the job end. For each region there are more than 1,900 job terminations. For roughly 24 % of these in the west and about 20 % in the east no reason for the job end could be determined.[19] I distinguish between seven reasons for the end of a job: Company closed down, a temporary contract ends, dismissal, quits, change within the company, on leave, and any other reason. Quits are the modal reason for the west German sample at 26 %. The next two important reasons are end of a temporary contract and dismissal, at 13.1 and 12.6 % respectively. Naturally, that a company closed down is similar to a dismissal. For this reason 4.5 % of the west German jobs end.

The numbers for east Germany differ somewhat from the west German ones. The percentage of terminations of a temporary contract is at more than 20 % much higher than in west Germany. Moreover, dismissal at about 22 % is the modal reason for a job end and 9.5 % of the jobs ended because a company closed down. In the depressed labour market of a transition economy, quits at 16.5 % are less important than dismissals.

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roughly 13 % and military or community service for about 12 % of the exits labelled as other. In east Germany about 19 % of the male exits are into military or community service. Another 17.5 % are directed into retirement, about 17 % into vocational training, 13 % into "other labour force state" and 10.5 % into school or university. For women the dominant exit states within the category "other" differ from those of men. Among the female respondents with the destination labelled as "other", in west Germany more than 32 % become housewives, 26 % are on maternity leave, while ten percent go to school or university, nine percent responded "other labour force state" and 8.5 % vocational training. In east Germany about 24 % are on maternity leave, more than 16 % in vocational training, 14 % reported housewife, ten percent go to school or university and another nine percent reported "other labour force state".

[18] For the life-table estimator see Blossfeld, Hamerle, and Mayer (1989).

[19] There are various reasons why the job end information is not available: A non-response is the reason in about 11 % of the cases. In 26 % of these missing cases a within-firm job change was provided by the job start information and indicated a job change, but no job end was reported. For another 23 % of the missing values no job end was reported and these were right-censored job spells at the interview of the wave, were the job was observed for the last time. But the retrospective labour force status information of the subsequent wave suggested that these censored job spells were immediately followed by a non-employment spell. Therefore they were coded as completed. Similarly another 40 % of these missing cases were originally right-censored job spells, but job start information of the subsequent waves suggested that they ended in a new job just after the month in which they were right-censored.

Table 2
Reason for job end: Shares (only for completed spells that end before 1998)

	west Germany			east Germany		
	Total	Men	Women	Total	Men	Women
Number of spells	1,927	977	950	1,972	1,103	869
Reason for job end:						
Company closed down	0.045	0.041	0.048	0.095	0.092	0.099
End of temporary contract	0.131	0.148	0.114	0.203	0.171	0.243
Dismissal	0.126	0.138	0.114	0.218	0.244	0.184
Quit	0.266	0.253	0.280	0.165	0.182	0.144
Change within company	0.025	0.025	0.026	0.015	0.018	0.010
On leave	0.061	0.017	0.106	0.018	0.012	0.026
Other[a]	0.107	0.113	0.102	0.096	0.100	0.091
Missing	0.238	0.265	0.209	0.191	0.181	0.203

[a]Including (early) retirement, end of training, end of self-employment and other reasons.

4.2 The speed at which job matches terminate

4.2.1 Hypotheses

Before analyzing the speed at which job matches terminate, first recall the main hypotheses. Some are concerned with the east German transition process and some are general hypotheses. The first hypothesis on the transition process, *TR1*, is:

New job matches are at a higher risk of being terminated in the east rather than the west German economy.

The reasons for this are manyfold. Old east German firms with a high need to restructure are at a much higher risk than west German ones that the entire firm or some of its activities will turn out to become or remain unprofitable. On average, also new firms in the east are at a higher risk of failing to remain or become profitable than established firms in the west. Therefore, the rate of job change and exit into unemployment should be high in the east relative to the west. Moreover, firms in the east in contrast to the west are more likely to create temporary jobs.

The extent of public work programs are another reason why temporary jobs were more frequent in the east than the west German labour market. Jobs in such programs usually last for one year and were very important for the east but not the west German economy.[20] In east Germany in the year 1992 an average of 388 thousand people were on such job creation schemes (see Council of Economic Advisors, 2000, Table 24). This is about 4.7 % of the labour force.[21] From the year 1991 to 2000, this percentage was always above three percent in east Germany, while in west Germany it was below 0.3 %.

Let me turn to the second hypothesis on the transition process, *TR2*:

New job matches in the east Germany become less stable over time.

[20]For a detailed discussion of public work programs in east Germany see Kraus, Puhani, and Steiner (1998). Such jobs may sometimes last up to 36 months.

[21]To compute these figures I used labour force data from the Microcensus of the German Federal Statistical Office.

The reason for it is the following: At the start in contrast to later stages of the transition process, the most profitable jobs were created and were matched to the most able workers. These job matches have the highest probability of survival.

There are general hypotheses for both German regions: The first is the job-specific capital hypothesis, which I label as *G1*:

As job-specific capital is accumulated with tenure the separation rates decline with tenure (see Farber, 1999).

The firm and the worker, who share the benefits from such capital, have more to lose from a separation the higher the stock of job-specific capital.

The second general hypothesis stems from the job matching theory, assuming that the quality of a job match is ex-ante unknown to the employer and employee and has to be learnt on the job (see Jovanovic, 1979b). Initially when uncertainty about the match quality is high, transition rates from a new job match into any other exit state are low. Even if bad signals about the match arrive, it could still turn out to be a very good match, therefore the reservation match quality is initially low. Yet with every month of tenure new information about the match quality arrives. As the uncertainty about the match quality declines, the reservation match quality and thus the separation rate rises. At some point these separation rates should start to decrease and then become relatively low and stable, since only the best job matches survive and little new information arrives that changes the beliefs about the match quality. This line of argument can be applied to both the worker and the employer and hence to the exit rates into other jobs and unemployment. I label this second general hypothesis as *G2*.

Employers cannot freely choose whether or not to dismiss a worker. Protection against dismissal becomes important when the job lasts for longer than six months (the probation period).[22,23] According to the § 1 of the Protection Against Dismissal Act workers can be dismissed either if they do not perform their tasks sufficiently well, e.g., due to illness, misconduct, or a worsening productivity of the worker. Other valid reasons for a dismissal are related to the situation of the company like a low level of orders or changes in production techniques. For such company related justifications for dismissals, the employer has to take into account in particular three social criteria when choosing who to dismiss: tenure, age and whether workers are obliged to pay maintenance.[24,25]

If there is no valid justification for a dismissal the work council can oppose the dismissal or the worker can take his case to the court. If the court declares the dismissal to be unjustified, the employer has to pay severance pay. The amount of the fine is related to tenure and age.[26] Additionally, the period of notice increases with tenure. Naturally,

[22]Lampert (1998), pp. 172-174, provides a detailed description of the Protection Against Dismissal Act (Kündigungsschutzgesetz) in Germany.

[23]Until 1998 the law applied to firms with ten or more workers. Since 1999 it applies to firms with five or more workers.

[24]Franz (2003), p. 251, emphasizes that such criteria were rather developed in the courts. They were not the original intention of the Protection Against Dismissal Act.

[25]On the specific set of criteria that guide such a choice a general agreement between employer and work council should be reached, see § 95, Industrial Relations Law (Betriebsverfassungsgesetz).

[26]Severance pay may be up to 12 monthly wages. This upper cap is even 15 monthly wages for workers who are at least 50 years old with a tenure of more than 14 years. It increases to 18 monthly wages for workers aged 55 years or more with a tenure of 20 years or more, provided that they have not reached the retirement age, see § 10, Protection Against Dismissal Act.

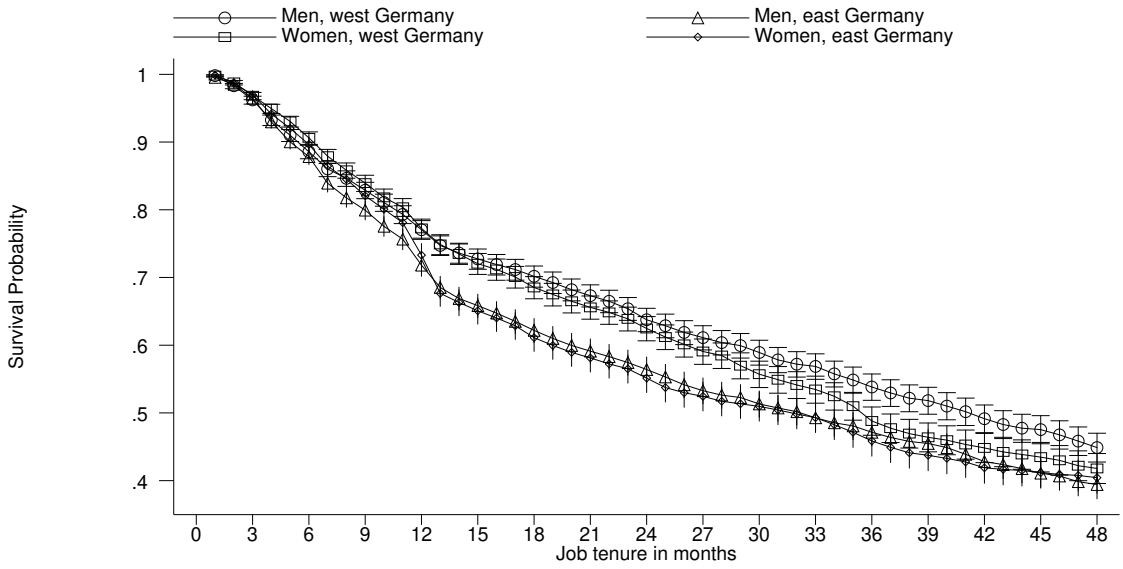
there are exemptions from these rules, as temporary contracts are allowed.[27]

Hence the more people a worker has to maintain, the older the worker and the higher tenure the stricter should be protection against dismissal and the lower the exit rates from a job into unemployment. At around the end of the probation period at six months of tenure, the transition rates from a job into unemployment should hence be quite high and then start to decline. This prediction would be in line with hypotheses G1 and G2.[28] It is not any evidence against these two hypotheses. The end of the probation period is a constraint on the employer's choice. It forces the employer to take decisions before this point in time, that may otherwise have taken place later.

4.2.2 Probability of survival

Now turn to the speed of leaving the job. Figure 6 presents life-table estimates of the survival probability of the job matches in the two German regions by gender. Firstly, it shows that this probability declines more rapidly in the first 12 to 13 months than later on. 77 % of the job matches of west German men and women survive the first year; the east German numbers are four to five percentage points lower. By the end of the second year the survival probabilities reach 64 % for men and about 62 % for women in the west. The corresponding numbers for the east are 56 % and 55 %, respectively. After four years, the west-east gap is lower: 45 % of men and 42 % of women kept their job in the west and about 39 % of men and 40 % of women in the east.

FIGURE 6
SURVIVAL PROBABILITY OF THE JOB MATCH



[27] Over the period under review, the Employment Promotion Act of 1985 and its amendment of the year 1986 regulated temporary contracts. They were principally allowed. Fixed-term contracts could be prolonged up to three times. The total duration of such contracts was limited to 24 months, see Lampert (1998), p. 202., and Franz (2003), p. 219.

[28] As the reported job duration may be subject to response error, it is not necessarily just before and at six months of tenure but also in the months that immediately follow, where the empirical separation rates could be quite high.

Secondly, Figure 6 shows that a large west-east gap evolves in the 12th and 13th month. At 11 months of tenure the gap between the west and east German survival probabilities is about 3.7 percentage points for men and 2.3 percentage points for women. Two months later the corresponding numbers are 6.2 and 7.2 percentage points, respectively. This is mainly due to sudden drop in the east German survival probabilities. It reflects, that among the job matches the share of fixed-term contracts with a time limit of about one year is higher in east than west Germany. The west-east gap in the survival probabilities remains high during the second year and the beginning of the third year.

Table 3
Survival probabilities according to year of job start by region and gender

Tenure (months)	Jobs starting from 1990 to 1992			Jobs starting from 1993 to 1997			Jobs starting from 1998 to 2000		
	Surv. prob.	95 % conf. band lower	upper	Surv. prob.	95 % conf. band lower	upper	Surv. prob.	95 % conf. band lower	upper
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
					Men				
					west Germany				
6	0.856	0.833	0.877	0.887	0.871	0.902	0.903	0.886	0.918
12	0.754	0.726	0.781	0.771	0.749	0.792	0.778	0.752	0.801
24	0.616	0.583	0.648	0.646	0.620	0.671	0.636	0.597	0.672
36	0.524	0.489	0.557	0.539	0.511	0.567	0.599	0.554	0.640
					east Germany				
6	0.898	0.879	0.915	0.866	0.846	0.883	0.872	0.847	0.893
12	0.755	0.728	0.779	0.705	0.679	0.729	0.684	0.647	0.718
24	0.586	0.554	0.616	0.559	0.530	0.587	0.539	0.493	0.583
36	0.505	0.472	0.537	0.457	0.427	0.486	0.436	0.361	0.508
					west-east gap[a]				
6	-0.042	*	.	0.022		.	0.032		.
12	0.000		.	0.066	*	.	0.094	*	.
24	0.031		.	0.087	*	.	0.096	*	.
36	0.019		.	0.083	*	.	0.163	*	.
					Women				
					west Germany				
6	0.904	0.882	0.921	0.907	0.891	0.920	0.907	0.891	0.921
12	0.757	0.727	0.785	0.770	0.748	0.792	0.786	0.762	0.809
24	0.598	0.563	0.632	0.627	0.600	0.653	0.642	0.603	0.678
36	0.468	0.430	0.504	0.489	0.461	0.518	0.522	0.445	0.593
					east Germany				
6	0.911	0.890	0.928	0.890	0.870	0.907	0.888	0.861	0.910
12	0.782	0.752	0.808	0.723	0.694	0.749	0.675	0.633	0.713
24	0.626	0.592	0.659	0.542	0.510	0.573	0.515	0.465	0.563
36	0.515	0.479	0.551	0.433	0.400	0.465	0.428	0.346	0.508
					west-east gap[a]				
6	-0.007		.	0.017		.	0.019		.
12	-0.024		.	0.048		.	0.111	*	.
24	-0.028		.	0.085	*	.	0.127	*	.
36	-0.048		.	0.056		.	0.094		.

[a] *: 95 % confidence bands of east and west Germany do not overlap.

Hypothesis TR1, new job matches in the east are less stable than in the west, is con-

firmed. There is a higher incidence of temporary jobs in east Germany, so that its labour market is to a larger extent a dual labour market. But job matches that survive a tenure of 13 months are not much less stable in the east as opposed to the west.

Did job matches also become less stable of over time as suggested by hypothesis TR2? Table 3 presents life-table estimates of the survival probabilities for jobs starting from July 1990 to 1992, 1993 to 1997, and 1998 to 2000. They are presented for tenures of six, 12, 24 and 36 months. The upper panel shows the results for men in the west and east German labour market as well as the gap between the western and eastern survival probabilities. According to the first eight rows new jobs in west Germany became more stable over the three time periods, while the opposite is true for east Germany.

Row nine to 12 of Table 3 show the west-east gap of the survival probabilities for men. It is never higher than 3.1 percentage points for jobs that started before 1993 (first column). For jobs starting from 1993 to 1997, the fourth column shows a far larger west-east gap in the survival probabilities: Already for a tenure of 12 months it is 6.6 percentage points and at 24 and 36 months it is even above eight percentage points. The asterisk next to the gap indicates that the confidence bands of the east and the west German survival probabilities have no value in common. This is the case for all but the first gap in this period. In the final period of 1998 to 2000 the west-east gap is even higher and at 16.3 percentage points particularly high for a tenure of 36 months.

The second part of Table 3 presents the statistics for women. As for men the stability of job matches tends to rise over time in the west, but falls in the east. The west-east gap in the first period is always negative. So, job matches that started early in the east German transition process were more stable than the western ones. This changes for the period 1993 to 1997. The west-east gap is always positive and even above eight percentage points for a tenure of 24 months. It is even higher during the last period.

Hypothesis TR2 is hence confirmed. The stability of east German job matches declined over time. Only job matches that started between July 1990 and December 1992 in the east are as stable as those in the west. Thus, job matches that formed early in the transition process were of a higher quality than those that started later. Now we turn also to the hypotheses G1 and G2 regarding the job change and unemployment hazards.

4.2.3 Job change rates and exit rates into unemployment

Figure 7 plots life-table estimates of hazard rates into other jobs for men together with their 95 % confidence bands against tenure.[29] It shows three facts. Firstly, there is no immense and according to the confidence bands no significant difference between the exit rates in the east and the west. Secondly, as predicted by the matching theory, the hazards are very low at the job start but rise rapidly from less than 0.2 % in the first month to a level between 0.75 and 1.25 % at tenures of five up to ten months. In west Germany a peak is reached during the 11th and 12th month at about 1.6 % and in east Germany at roughly 1.4 % in the 13th and 14th month. Thirdly, after 14 months the job change rates range from 0.65 to 0.96 % in the west and 0.46 to 0.77 % in the east. They tend to be somewhat lower than between four and 14 months of tenure.

[29]The transition rates in this subsection were estimated using one monthly intervals for the first four months, intervals of two months length from month five to 16, intervals of a length of four months for month 17 to 36 and intervals of a length of six months for month 37 to 48. But they always represent monthly exit probabilities during the chosen interval!

Figure 7
Transition rates into other jobs - Men

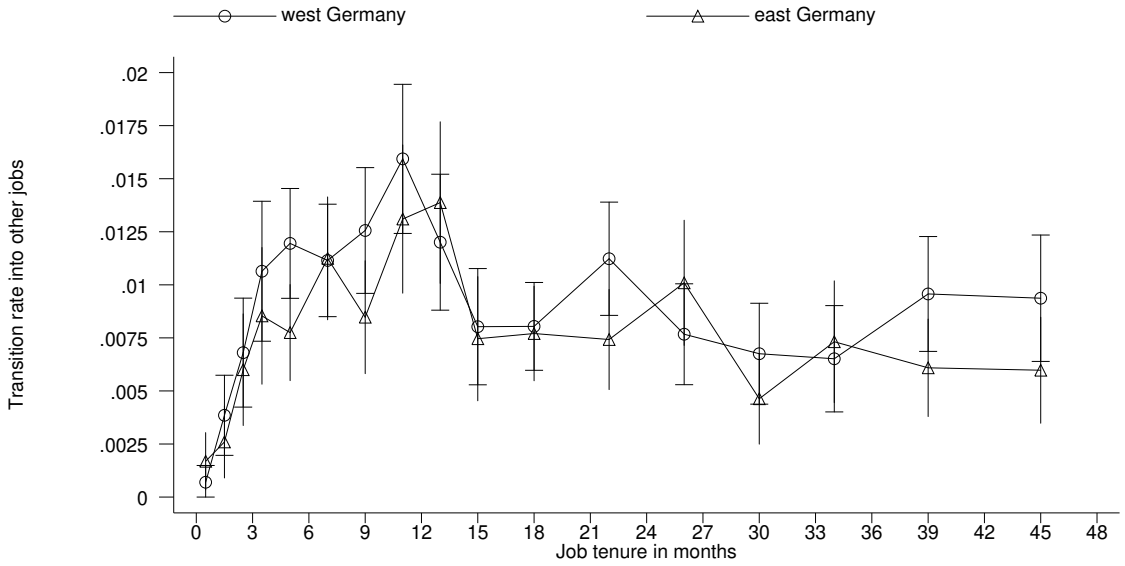
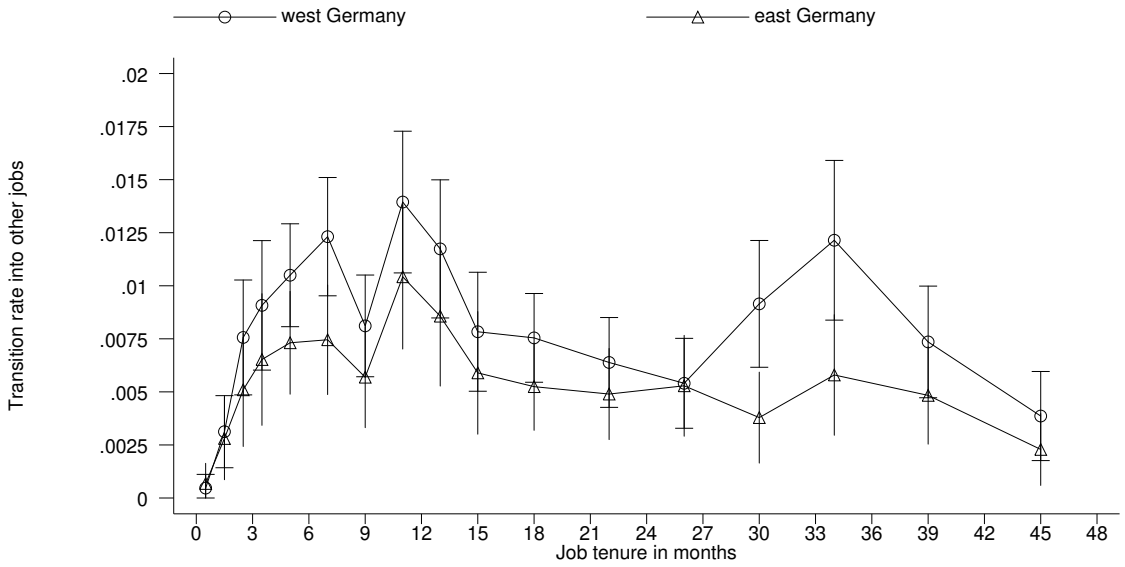


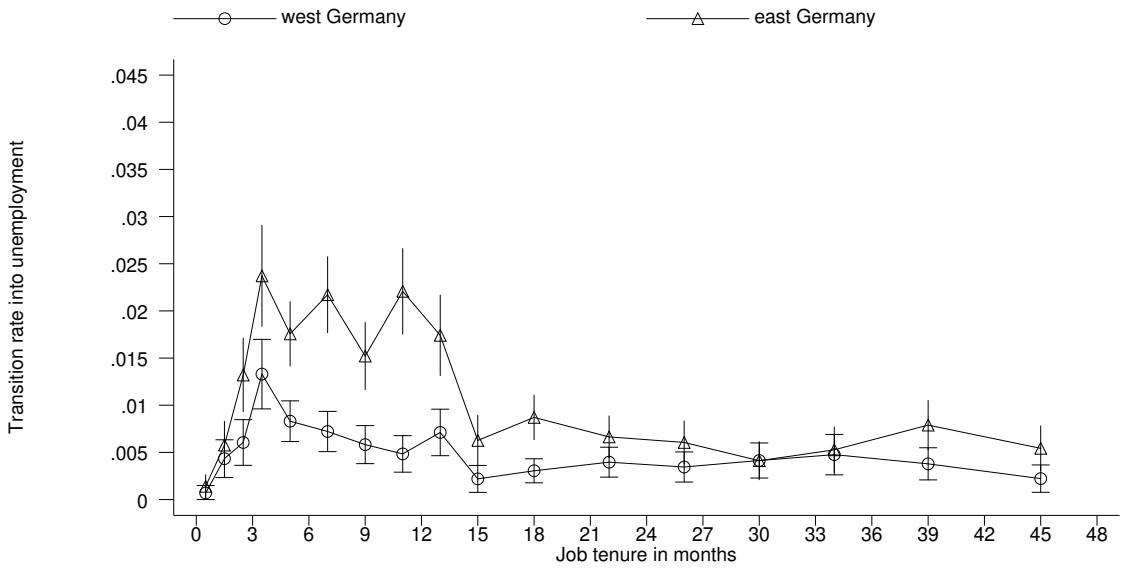
Figure 8
Transition rates into other jobs - Women



The results for women are shown in Figure 8. The west German hazard is usually above the east German one, but the difference is never significant. Overall the slope of the hazard is similar to that of men in Figure 7: It first rises with tenure and the rise becomes less strong after four months. The hazard starts to decline to relatively low levels after the 12th month of tenure. Yet the female hazards in particular in the east are somewhat lower than the male ones. In contrast to men there is a relatively high job change rate of west German women in the interval of 31 to 36 months.

Now turn to the destination unemployment. A large difference between the east and west German labour market emerges. Figure 9 plots life-table estimates of the unemployment hazard for men in west and east Germany against tenure. The speed at which job matches end by unemployment is far higher in the east compared with the west. The exit rate is close to zero in the first month of the job match and rises very rapidly to its peak in the 4th month at 1.3 % in west Germany and 2.4 % in east Germany. From five to 12 months the west German hazard falls to about 0.5 %, while the east German one remains quite high and is more than one percentage point above the west German hazard. The east German exit rate decreases immensely after a tenure of 14 months. Thereafter the unemployment hazard is relatively low and stable in both regions. It ranges for the west from 0.22 to 0.48 percent and for the east from 0.4 to 0.9 %.

FIGURE 9
TRANSITION RATES INTO UNEMPLOYMENT - MEN

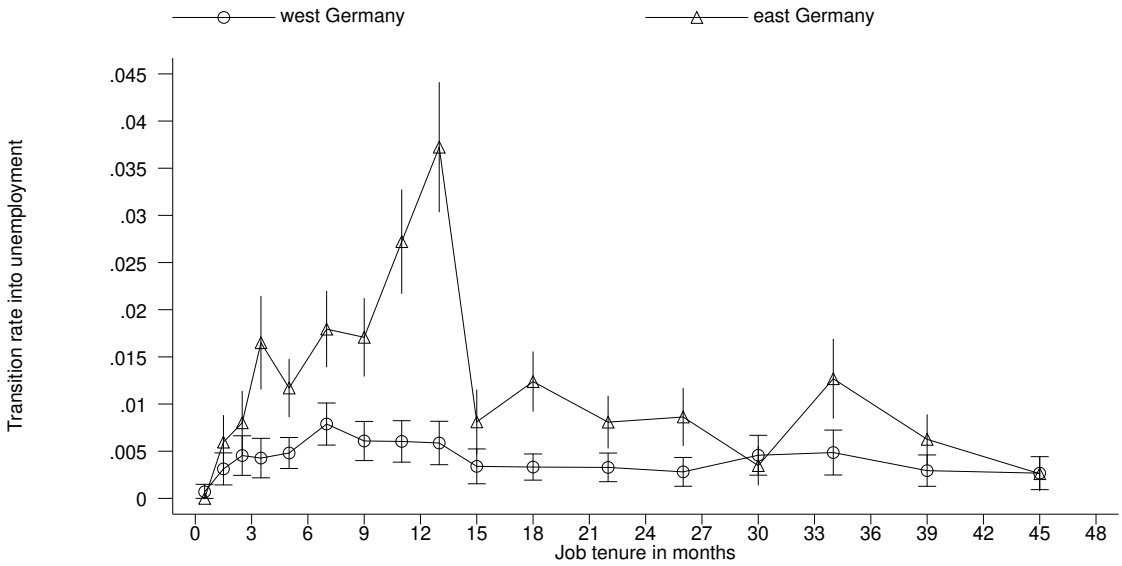


The female unemployment hazard is displayed in Figure 10. It rises from nearly zero in the first month to a peak of 0.8 % in the sixth to eighth month of tenure in west Germany. During the next eight months it falls by more than 50 %. Finally, from the 15th to the 48th month it ranges from 0.27 and 0.49 %. The east German exit rate is much less stable and generally higher than the west German one. Already by the fourth month it reaches 1.6 %. Thereafter, the hazard still tends to rise and peaks at 3.7 % in the interval of 13 to 14 months, where it is about three percentage points above the western hazard. A very sharp decline to less than one percent follows in the next interval of 15 to 16 months. The east German hazard then remains relatively stable ranging from 0.26 to 1.27 % and usually somewhat higher than in the west.

Overall the analysis showed the following. There is no evidence that east German job matches end more rapidly by a job change than west German ones. Rather the opposite is true for both gender.[30] Even though many new jobs are created in the east German

[30]Though the single transition rates of east and west Germany were not significantly different, a log-rank test as well as a likelihood ratio test suggested that the west and east German hazards differ significantly for both gender. These test results are available on request. For the log-rank test statistic

FIGURE 10
TRANSITION RATES INTO UNEMPLOYMENT - WOMEN



economy, a higher competition for vacancies due to the high joblessness makes workers change their jobs less rapidly than in west Germany. Hypothesis TR1 is hence not confirmed with respect to the job change rate.

However, the analysis demonstrated that new jobs in the transition economy end far more rapidly by unemployment than in the developed non-transition country. In a high unemployment environment, employers more frequently dismiss workers as they can easily find a replacement. Due to a greater uncertainty about the performance of the firms that create jobs, jobs matches more often are unprofitable. The immense positive east-west gap of the unemployment hazard between four and 13 months of tenure is evidence for this. It also reflects a higher incidence of temporary contracts, partly in public work programs, in the east as opposed to the west. The east-west gap is positive even for more than one year of tenure. I.e., the uncertainty about the match quality is higher than in the west and stays high for longer. Hypothesis TR1 is clearly confirmed.

Is the evidence in line with hypotheses G1 and G2? For the slope of the hazards for west Germany the answer is "yes": After an initial rise, the hazard starts to decline with tenure and then becomes quite stable. This holds for both exit states. But for the east German unemployment hazard, the answer is rather "no": The reason is the large drop of the unemployment hazard after a tenure of 14 months. A reduction in the uncertainty over the match quality or the accumulation of job specific capital are relatively smooth processes. Once the remaining job matches are more and more the higher quality ones, the exit rates should not fall dramatically but smoothly with tenure.

Are the large initial differences between the east and west German unemployment hazard and the substantial decline of the east German unemployment hazard due to a different share of temporary jobs in the two regions? Are they an outcome of a higher

Kalbfleisch and Prentice (1980), pp. 17-18, and for the likelihood ratio test statistic see Lawless (1982), p. 113.

incidence of jobs in public work programs in the east? With the GSOEP one cannot precisely determine whether a job spell is due to a public work program: It collects such information only for respondents who are employed in the interview month and it is sometimes restricted to particular years and to east Germany only.

Figure 11
Transition rates into unemployment which is not due to the end of a temporary job - Men

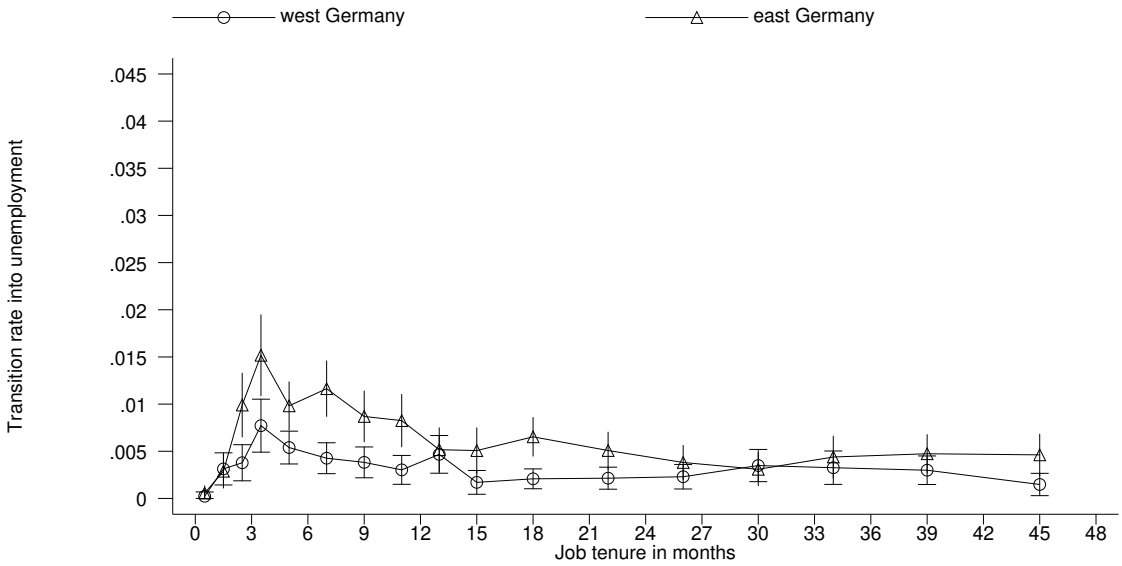
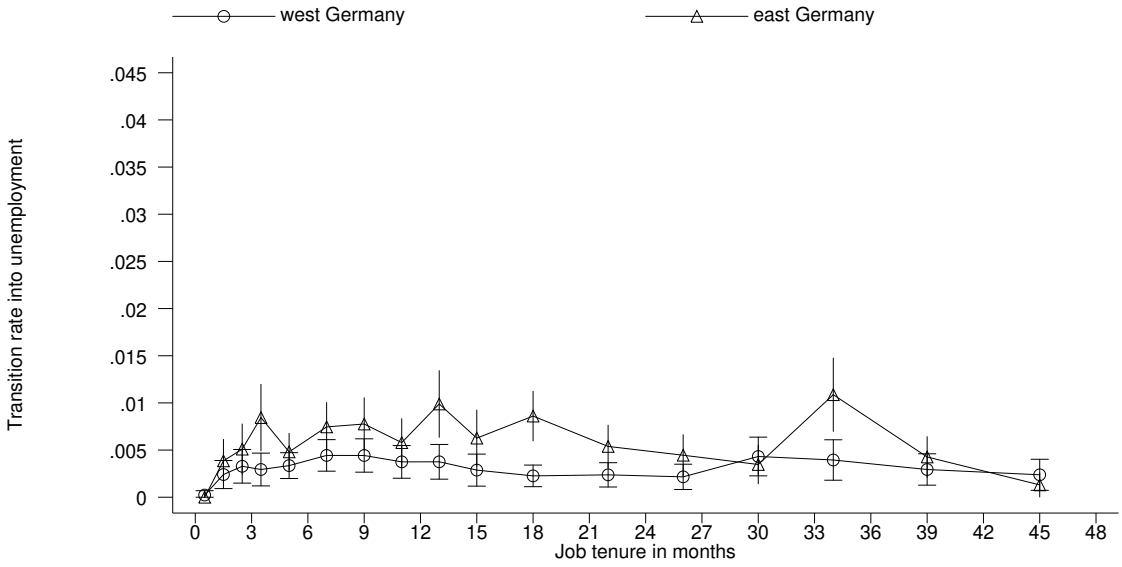


Figure 12
Transition rates into unemployment which is not due to the end of a temporary job - Women



Yet one can determine whether jobs ended due to the termination of a temporary

contract in all waves.[31] So I define a new destination state: "unemployment that is not due to the termination of a temporary job". The resulting unemployment hazards are shown in Figure 11 for men and Figure 12 for women using the same scale of the axis as for the previous two figures. As the exit state is limited to subset of the unemployment exits, the hazards are naturally lower than those of the previous two figures.

For men and women in west Germany the slope of the unemployment hazards differs little from that in the previous two figures. The striking difference emerges for the east German hazards. In sharp contrast to the previous figures, the male hazard tends to decrease relatively smoothly over the interval from five to 14 months. This is in line with hypotheses G1 and G2. For women the hazard is quite stable in this interval and there is no immense spike in the 13th to 14th month. Hence, the extremely high exit rates into unemployment in east Germany for a tenure of five to 14 months as displayed by Figures 9 and 10 reflect to a large extent the end of temporary contracts.

5 New job matches and their duration: Semi-parametric analysis

5.1 The sample for the semi-parametric analysis and covariates

This section discusses the effects of covariates, which stem from maximising the likelihood of a discrete-time proportional hazards model. Apart from showing which people exit relatively rapidly from their job match into another or into unemployment, this analysis is important for a second reason. It shows whether the non-parametric results were biased towards negative duration dependence due to sorting effects as the mover-stayer hypothesis of Blumen, Kogen, and McCarthy (1955) suggests.

I control for a limited set of covariates. These are duration intervals, age, marital status, the location of the childhood (urban or rural area), number of children, whether an individual lives in a dwelling that is owned by the household and the relationship to the household head. Additional controls are qualification, as well as labour force status before the job start (entry state) and the number of job starts in the two years prior to the start of the current job. The analysis also controls for seasonal effects by dummies for quarters and for the year of the job start to show whether the job matches become less stable over time. Regional controls are binary variables for the federal state and the logarithm of the regional vacancy-unemployment ratio. The latter covariate varies over federal states and for each calendar month in the period under review.[32] Descriptive statistics on the covariates are displayed in Tables A2 and A3 of the Appendix.

Many job and firm characteristics are not available for job spells that start and end between two subsequent interviews of the respondent. I only control for industry. If it is not observable for a job spell, I use the respondent's last observed industry prior to this job. For cases where the industry is not determined this way, I use the most recent industry observation after the job start. To avoid a large number of misclassifications, I defined only three very broad industry categories.

The number of job starts in the two years prior to the current job start should help to distinguish between movers and stayers. To compute this covariate, the sample has to be limited to certain observations: First of all, it is limited to job spells were information

[31] In all waves of the GSOEP this was an option of the question on the reason for the termination of a past job.

[32] The other time-varying covariates are tenure intervals, marital status, number of children, relationship to the household head, whether the household owns the dwelling and seasonal dummies.

on the wave prior to the year of their current job start is available. Moreover, only since 1991, east German respondents provide information on job starts that are due to the first job, a return to an employer, a start of a new employer, within-firm job changes or due to self-employment. Due to using this covariate and due to missing values of other covariates more than 40 % of the job spells used in the non-parametric analysis were discarded.[33] This leaves 2,320 west German job spells and 2,089 east German ones for men. For women the corresponding numbers are 2,376 and 1,766. As before, job matches that last for longer than 48 months are treated as right-censored.

5.2 Speed of job change

I start the discussion with exits into alternative jobs. The corresponding estimation results of the proportional hazards model are displayed in Tables 4 and 5 for men and Table 6 for women. The estimation was carried out separately for jobs in west and east Germany. I found the variance of the unobserved heterogeneity term to differ significantly from zero for east German men only. Nevertheless, the Bayesian Information Criterion (BIC) suggested to prefer the model without such gamma-distributed unobserved heterogeneity.[34] So I present results that stem from maximising the likelihood of a proportional hazards model which does not control for such unobserved heterogeneity.

The discussion focuses on effects of specific covariates. My main interest is in the baseline hazard (tenure intervals), age, marital status and children, qualification, previous labour force status, number of jobs as well as the year dummies. Nearly all of them are related to the main hypotheses. Other covariates are just viewed as controls; their hazard ratios are displayed in the Appendix in Table A4 for men and A5 for women.[35]

5.2.1 Estimation results for men

Table 4 displays results for men. Its first two rows present the constant term and its antilog, which is the monthly hazard of the reference individual during the first three months of tenure. The following rows display hazard ratios, i.e., the transition rate of a specific person relative to that of the reference person. They are shown together with their t-values, where the null-hypothesis is that the hazard ratio is one, and 95 % confidence bands. The final rows show the sample size not in terms of spells but in terms of observed months of the job matches, the pseudo-R^2 and the log of the likelihood.

The reference individual's hazard is 0.11 % for west and 0.43 % for east Germany. The first set of hazard ratios refer to tenure intervals of the baseline hazard. Most of these hazard ratios are highly statistically significant. There is clearly an initial rise of the hazards for men in west Germany. The hazard in the sixth and seventh month of tenure, when the probation period ends, is four times as high as during the first three months.

[33] One may argue that past job mobility should not only be measured by the number of job starts in the last two years. Yet by choosing a three year period, I would have to eliminate all east German job spells that start at the beginning of the transition process. So, it would be impossible to infer whether the job matches that formed early in the transition process are the most stable ones.

[34] For east German men the BIC was 3795.4 for the unobserved heterogeneity model and 3792.6 for the model without such heterogeneity. The test statistics for the other models are available on request.

[35] These are ownership of the dwelling, relationship to the household head, industry, seasonal and federal states dummies as well as the logarithm of the vacancy-unemployment ratio. The final set of control variables that was used for a specification may be smaller, provided that some potential control variables were not found to be statistically significant according to likelihood ratio tests.

TABLE 4
ESTIMATED HAZARD RATIOS FOR EXIT INTO ANOTHER JOB - MEN (1)[a]

Covariates	west Germany hazard ratio (1)	|t| (2)	95 % conf. band lower (3)	95 % conf. band upper (4)	east Germany hazard ratio (5)	|t| (6)	95 % conf. band lower (7)	95 % conf. band upper (8)
Constant term (coeff.)	-6.78	14.7 ***	-7.68	-5.87	-5.44	11.5 ***	-6.37	-4.51
Hazard of the reference individual	0.0011	.	.	.	0.0043	.	.	.
Baseline hazard (tenure intervals, months)	Ref. group: ≤ 3							
4 to 5	2.52	3.7 ***	1.55	4.11	2.67	3.3 ***	1.48	4.84
6 to 7	4.01	5.9 ***	2.54	6.35	2.87	3.5 ***	1.58	5.22
8 to 9	2.85	4.1 ***	1.73	4.70	1.92	1.9 *	0.98	3.78
10 to 11	3.25	4.7 ***	1.98	5.33	2.79	3.2 ***	1.49	5.25
12 to 13	4.72	6.5 ***	2.96	7.53	6.17	6.5 ***	3.55	10.73
14 to 18	1.70	2.1 **	1.04	2.77	2.68	3.4 ***	1.53	4.72
19 to 24	2.30	3.5 ***	1.44	3.67	2.44	3.0 ***	1.37	4.35
25 to 30	1.86	2.4 **	1.12	3.10	2.20	2.5 **	1.19	4.08
31 to 36	2.10	2.8 ***	1.25	3.54	2.34	2.6 ***	1.24	4.41
≥ 37	2.46	3.7 ***	1.53	3.96	1.65	1.6	0.88	3.07
Age	Ref. group: ≤ 20							
21 to 25	3.38	3.3 ***	1.62	7.03	1.34	0.8	0.65	2.78
26 to 30	3.32	3.2 ***	1.59	6.94	0.98	0.1	0.46	2.10
31 to 35	3.04	2.9 ***	1.41	6.52	1.11	0.3	0.51	2.42
36 to 40	2.74	2.5 **	1.24	6.06	0.94	0.2	0.42	2.10
41 to 45	2.41	2.1 **	1.05	5.54	0.95	0.1	0.42	2.13
46 to 50	2.50	2.1 **	1.05	5.95	0.64	1.0	0.27	1.52
> 50	1.17	0.3	0.46	2.99	0.43	1.9 *	0.18	1.01
Marital status	Ref. group: Not married							
Married	0.89	0.9	0.69	1.14	1.40	1.9 *	0.98	1.98
Children								
# of children	0.87	1.4	0.72	1.06	0.75	2.5 **	0.60	0.94
Children aged 0 to 5	1.16	0.9	0.83	1.61	1.35	1.6	0.92	1.99
Children aged 6 to 10	1.16	0.8	0.80	1.68	1.64	2.6 ***	1.13	2.37
Observations	50,299				40,960			
McFadden's Pseudo-R^2	0.0323				0.0421			
Log. of the likelihood	-2,519.2				-1,652.0			

[a] * 10 % significance level, ** 5 % significance level, *** 1 % significance level.

In the next four months the hazard ratio is close to three and then peaks at a tenure of 12 to 13 months at more than 4.7. For higher tenures it ranges from 1.7 to 2.5. and is often considerably lower than for four up to 13 months of tenure. This is in support of hypotheses G1 and G2. Thus, it is not purely a mover-stayer model that explains the decline of the empirical hazard, that resulted from the non-parametric analysis.

The results for east German men differ with regard to the slope of the baseline hazard from those of west German men. Its initial rise is less strong. At four to seven months of tenure the hazard is about 2.7 to 2.9 times as high as in the first three months. At 12 to 13 months of tenure, the hazard ratio is 6.2 and implies a spike. After a tenure

of 13 months it is often above two and not generally or substantially lower than for a tenure between six and 11 months. Only from month 37 onwards this is the case.

I interpret these result as follows: Compared to the west German labour market in the east German one, at high tenures there is still a relatively high uncertainty about the match quality. Workers in the transition economy are the ones that have generally less precise knowledge about outside opportunities and the value of their current job. The east German results are only weak evidence for the hypotheses G1 and G2.

Controlling for qualifications, age at the job start represents labour market experience. It reduces the speed of exit into new jobs according to models of on-the-job search (e.g., see Burdett, 1978; Jovanovic, 1979a). If match quality is (at least partly) known ex-ante, more experienced workers due to their past job search have already moved into high quality job matches. So they are less mobile than young workers. Therefore, the second set of covariates represent age intervals: The reference age is younger than 21. I chose intervals of five years length for people aged 21 to 50 years. As there are few job spells of people close to retirement age, one interval ranges from 51 to 65 years.

The results for west and east German males differ considerably. In the west all hazard ratios except for that of the oldest workers are significant. Workers aged 21 to 25 change most rapidly their job. Their hazard is 3.4 times as high as for workers who are younger than 21. Until the interval 41 to 50 years the hazard ratio falls slowly to about 2.5. It is substantially lower at roughly 1.2 for workers who are older than 50. By and large western job-to-job mobility decreases with age. The very low hazards of the youngest workers reflects that they often receive formal and informal training. Before the training is completed, they have little incentive to change jobs.

Most of the east German hazard ratios differ little from one. The exception are workers aged 51 at a hazard that is 0.4 times that of the youngest reference workers. In a transition country age not necessarily measures to what extent people already have moved to high quality job matches. Many workers gained experience under socialism and had already moved to high quality job matches. Due to the transition process their match quality became again uncertain. So, they are more similar to labour market entrants, who collect new information on alternative job opportunities.

Let me turn to the family context. Being married, the number of children, whether at least one child is younger than six and at least one child is six to ten years old does not significantly alter the hazard of west German men. The same is true for being married in the east, but not for children. I expect the job mobility to decline with the presence and/or the number of children.[36] The results of Table 4 imply that an additional child decreases the hazard by 25 %. If at least one child is aged six to ten years, the hazard ratio is 1.6 and highly significant. So holding the number of children constant, fathers of children at primary school change jobs far more quickly than fathers whose children are already at secondary school.

Table 5 presents the estimated hazard ratios for a second set of covariates.[37] I distinguish between four qualification categories. The reference individual is an apprentice or

[36]There are a number of reason for this. E.g., children make it more costly for the household to move, so that job offers in other regions are less attractive. A large number of children may reflect a high preference of parents to stay in a location or that they already work in high quality job matches. Thus, they are less likely to leave the job than childless people.

[37]They stem from the same estimation results as the hazard ratios of Table 4.

already holds an apprenticeship. Relative to them, in west Germany, workers with no qualification at all or a degree from a special vocational school exit at about the same rate into an alternative job. Only a university degree implies a significantly higher job change rate at a hazard ratio is 1.25. Similarly, in the east only the hazard ratio of workers with a university at 1.35 degree differs significantly from one.

TABLE 5
ESTIMATED HAZARD RATIOS FOR EXIT INTO ANOTHER JOB - MEN (2)[a]

	west Germany				east Germany			
			95 % conf. band				95 % conf. band	
Covariates	hazard ratio (1)	$\|t\|$ (2)	lower (3)	upper (4)	hazard ratio (5)	$\|t\|$ (6)	lower (7)	upper (8)
Occupational qualification	Ref. group: Apprenticeship or apprentice							
No qualification	0.98	0.1	0.70	1.38	0.59	1.3	0.26	1.34
Special voc. School or other training	1.12	0.8	0.86	1.45	1.12	0.7	0.83	1.51
University	1.25	1.7 *	0.97	1.61	1.35	1.7 *	0.95	1.91
Entry state	Ref. group: Employment, voc. training							
Unemployment	0.92	0.6	0.71	1.20	0.86	1.1	0.66	1.12
Non-participation	0.91	0.6	0.67	1.23	0.44	2.3 **	0.22	0.88
# of job starts in the two years prior to the current start	Ref. group: none							
1	1.33	2.6 ***	1.07	1.65	1.38	2.5 **	1.08	1.78
2 to 3	2.01	3.6 ***	1.37	2.96	0.94	0.2	0.51	1.73
Job start in year	Ref. group: Before 1993							
1993 to 1995	1.16	1.0	0.87	1.54	0.70	2.4 **	0.52	0.94
1996 to 1997	1.02	0.1	0.74	1.39	0.72	1.8 *	0.51	1.03
After 1997	1.12	0.7	0.81	1.55	0.62	2.3 **	0.42	0.93

[a] * 10 % significance level, ** 5 % significance level, *** 1 % significance level.

The entry state does not lead to any significant variation of the job hazards of men in west but in east Germany. The reference entry state is employed or on vocational training prior to their current job. The hazard of previously unemployed people does not differ significantly from that of the reference group. But for previous non-participants this difference is substantial. Their hazard is 56 % lower than for the reference group.

Finally Table 5 shows hazard ratios with respect to the number of job starts in the two years prior to the current job start. The reference group are characterised by no such job start. Compared with them, west German workers with one previous job start exit at a rate that is 33 % higher. The corresponding number for east German workers is 38 %. Two or more job starts imply at a hazard ratio of two an even higher mobility in the west. But in east Germany it is below one. Presumably high past job mobility in east Germany is to a larger extent than in west Germany an outcome of involuntary job loss. It does not imply that workers are voluntary movers in the east.

Is there a decrease over time in job mobility in the east? The final set of hazard ratios in Table 5 are concerned with different time periods of the start of the job match. The reference period is the year 1992. The other periods are 1993 to 1995, 1996 to 1997 and 1998 to 2000. There is little and no significant variation of the west German job

change rates over time. For east Germany instead, compared with the hazard of 1992, those of job matches that started in the three later periods are about 28 to 38 % and significantly lower. At the start of the transition process the knowledge about outside opportunities and the quality of the job match was less precise than after 1992.

5.2.2 Estimation results for women

The estimation results for the female job hazard are displayed in Table 6. It has the same structure as the tables for men, but the set of covariates differs.[38] According to likelihood ratio tests the controls for location of childhood, children, owner of the dwelling, number of previous job starts, year of the job start, regional vacancy-unemployment ratio and federal states are insignificant. So I did not include them in the final model.

The second row of Table 6 shows that the hazard of the reference woman during the first three months of tenure is 1.2 % in the west and 0.53 % in the east. The following rows display that in both regions the hazard varies significantly with tenure. It rises considerably until a tenure of six to seven months, where in the west (east) the hazard ratio is 2.6 (3.6). The ratio then declines to about 1.5 over the next two tenure intervals. A spike emerges at a tenure of 12 to 13 months: The hazard is 4.4 times its initial value in the west and 3.8 times in the east. For higher tenures the ratio is lower and quite stable ranging from 1.3 (1.4) to 1.9 (1.8) in the west (east). Thus hypotheses G1 and G2 explain the variation of the job change rate with tenure.

The next rows display the age variation of the hazard, which is significant only in west Germany. As expected by the on-the-job search models the transition rates tend to decrease with age. The results for the west imply the highest job change rate for women younger than 21. The hazard ratio of women aged 21 to 30 years is close to 0.7. It is already below 0.6 for women aged 31 to 40. Over the next three age intervals it declines even more rapidly to a level of only 0.12 for women aged 51 to 60. Thus more experienced workers already moved into high quality job matches, and hence are less likely than less experienced ones to change their job.

Table 6 shows that married women in the west exit at 0.73 times and in the east at 0.67 the rate of women who are not married. This result is plausible. Married women take into account their husband's choices, which may restrict their job mobility. Qualification is an insignificant determinant of the job hazard in the west, but a significant one in the east. The hazard ratio of women with a university degree is remarkably high. Their speed of job change is 2.7 times that of the reference group "apprenticeship or apprentice". There is no substantial variation of the job hazard with the entry state.

[38] In contrast to men a large share of the female job spells are part-time jobs. This is the case for about 39 % of job spells of women in the west and less than 19 % in the east. In the results that I present, I did not control whether a women works part-time. One reason for this is that the probability of working part-time is highly related to the combination of work and family life. Hence the coefficient of a covariate part-time work could capture partly the effect of children on job duration. I estimated additionally models including a binary covariate for part-time work. The results suggest for that the speed of exit of part-time employed women is about 25 % lower for both exit states in west Germany and also for exit into unemployment in east Germany. Only for the exit rates into new jobs in east Germany, it has a much lower effect that is not significant. These estimation results are available on request.

TABLE 6
ESTIMATED HAZARD RATIOS FOR EXIT INTO ANOTHER JOB - WOMEN[a]

Covariates	west Germany hazard ratio (1)	$\|t\|$ (2)	95 % conf. band lower (3)	95 % conf. band upper (4)	east Germany hazard ratio (5)	$\|t\|$ (6)	95 % conf. band lower (7)	95 % conf. band upper (8)
Constant term (coeff.)	-4.43	14.7 ***	-5.01	-3.84	-5.25	10.7 ***	-6.21	-4.29
Hazard of the reference individual	0.0120	.	.	.	0.0053	.	.	.
Baseline hazard (tenure intervals, months)	Ref. group: ≤ 3							
4 to 5	1.94	2.7 ***	1.20	3.15	2.17	2.2 **	1.08	4.37
6 to 7	2.63	4.1 ***	1.66	4.16	3.59	3.9 ***	1.88	6.85
8 to 9	2.46	3.7 ***	1.52	3.97	2.40	2.4 **	1.17	4.92
10 to 11	1.53	1.5	0.87	2.69	1.47	0.9	0.64	3.41
12 to 13	4.43	6.6 ***	2.85	6.90	3.82	3.9 ***	1.94	7.52
14 to 18	1.89	2.8 ***	1.20	2.98	1.80	1.7 *	0.91	3.56
19 to 24	1.49	1.6	0.92	2.41	1.42	1.0	0.69	2.96
25 to 30	1.50	1.5	0.89	2.51	1.16	0.4	0.51	2.62
31 to 36	1.63	1.8 *	0.95	2.80	1.53	1.1	0.69	3.38
≥ 37	1.30	1.0	0.78	2.19	1.41	0.9	0.68	2.93
Age	Ref. group: ≤ 20							
21 to 25	0.68	1.8 *	0.44	1.03	1.43	1.0	0.71	2.89
26 to 30	0.69	1.6	0.44	1.08	0.89	0.3	0.40	2.00
31 to 35	0.58	2.2 **	0.35	0.93	0.65	1.0	0.27	1.55
36 to 40	0.56	2.2 **	0.34	0.93	1.04	0.1	0.46	2.39
41 to 45	0.48	2.6 ***	0.27	0.83	0.75	0.6	0.31	1.82
46 to 50	0.36	2.9 ***	0.18	0.71	1.02	0.0	0.42	2.49
> 50	0.12	3.4 ***	0.04	0.40	0.60	1.0	0.22	1.65
Marital status	Ref. group: Not married							
Married	0.73	2.3 **	0.56	0.96	0.67	2.0 **	0.46	0.98
Occupational qualification	Ref. group: Apprenticeship or apprentice							
No qualification	1.22	1.3	0.91	1.64	0.91	0.2	0.36	2.26
Special voc. School or other training	1.08	0.6	0.83	1.42	1.04	0.2	0.70	1.54
University	1.29	1.6	0.94	1.77	2.68	4.9 ***	1.81	3.97
Entry state	Ref. group: Employment, voc. training							
Unemployment	0.78	1.5	0.57	1.07	0.80	1.3	0.57	1.12
Non-participation	0.81	1.8 *	0.63	1.03	1.34	1.3	0.85	2.12
Observations	48,241				35,805			
McFadden's Pseudo-R^2	0.0329				0.0510			
Log. of the likelihood	-2,146.2				-1,054.4			

[a] * 10 % significance level, ** 5 % significance level, *** 1 % significance level.

5.3 Speed of exit into unemployment

5.3.1 Estimation results for men

Now turn to estimation results for the exit state unemployment for men. For both regions the hypothesis that the variance of gamma-distributed unobserved heterogeneity is zero could not be rejected according to a t-test and the BIC criterion favours models without such heterogeneity. So I present results from maximising the likelihood of a

discrete-time proportional hazards model.[39]

Table 7 presents a first set of results for men.[40] Row two shows the reference individual's monthly hazard rate. During the first three months on the job it is 0.2 % in west and 0.13 % in east Germany. The hazards vary considerably with tenure. In the fourth and fifth month, just prior to the end of the probation period, the hazard ratio peaks at 3.2 in west Germany. It then tends to become lower and ranges from 1.7 to two for tenures of eight to 13 months. For a higher tenure it is always below 1.1 but never lower than 0.65. The evidence is clearly in line with both hypotheses G1 and G2.

TABLE 7
ESTIMATED HAZARD RATIOS FOR EXIT INTO UNEMPLOYMENT - MEN (1)[a]

	west Germany				east Germany			
			95 % conf. band				95 % conf. band	
Covariates	hazard ratio (1)	$\|t\|$ (2)	lower (3)	upper (4)	hazard ratio (5)	$\|t\|$ (6)	lower (7)	upper (8)
Constant term (coeff.)	-6.23	7.7 ***	-7.83	-4.64	-6.61	10.6 ***	-7.84	-5.38
Hazard of the reference individual	0.0020	.	.	.	0.0013	.	.	.
Baseline hazard (tenure intervals, months)	Ref. group: ≤ 3							
4 to 5	3.18	5.0 ***	2.01	5.03	3.41	7.1 ***	2.43	4.78
6 to 7	2.00	2.6 ***	1.20	3.36	2.90	5.9 ***	2.03	4.14
8 to 9	1.76	2.0 **	1.02	3.04	2.32	4.3 ***	1.58	3.42
10 to 11	1.95	2.4 **	1.13	3.37	2.71	5.1 ***	1.84	4.00
12 to 13	1.70	1.7 *	0.94	3.07	4.90	8.7 ***	3.43	7.02
14 to 18	0.82	0.7	0.46	1.48	1.33	1.3	0.88	2.00
19 to 24	0.95	0.2	0.54	1.67	1.44	1.8 *	0.96	2.17
25 to 30	1.07	0.2	0.60	1.93	0.95	0.2	0.57	1.60
31 to 36	0.90	0.3	0.46	1.75	1.07	0.2	0.63	1.83
≥ 37	0.65	1.3	0.33	1.27	0.97	0.1	0.60	1.59
Age	Ref. group: ≤ 20							
21 to 25	0.56	2.1 **	0.33	0.96	0.79	1.1	0.51	1.22
26 to 30	0.57	2.0 **	0.33	0.98	0.77	1.1	0.49	1.22
31 to 35	0.43	2.7 ***	0.24	0.80	0.81	0.9	0.51	1.29
36 to 40	0.67	1.3	0.37	1.23	0.84	0.7	0.52	1.36
41 to 45	0.65	1.3	0.33	1.26	1.05	0.2	0.65	1.70
46 to 50	0.89	0.3	0.44	1.81	1.16	0.6	0.71	1.91
> 50	1.06	0.2	0.56	2.01	1.40	1.4	0.88	2.24
Marital status	Ref. group: Not married							
Married	0.78	1.7 *	0.58	1.04	0.75	2.6 ***	0.61	0.93
Observations	50,299				40,960			
McFadden's Pseudo-R^2	0.0759				0.0914			
Log. of the likelihood	-1,519.3				-2,700.9			

[a] * 10 % significance level, ** 5 % significance level, *** 1 % significance level.

Also for east Germany the hazard increases rapidly after the start of the job match.

[39] In both regions, according to likelihood ratio tests, some covariates have no significant impact on this transition rate. These were all controls for children and the relationship to the household head. They were excluded from the final estimation.

[40] Table A6 of the Appendix presents the estimated hazard ratios of additional control variables.

The hazard ratio is 3.4 in the fourth and fifth month. In the next six months this ratio ranges from 2.3 to 2.9. Due to a larger share of temporary jobs in the east as opposed to the west, in the interval of 12 to 13 months, there is a spike at a hazard ratio of 4.9. At higher tenures the ratio is far lower and quite stable ranging from about one to 1.4. Apart from the spike the results are in support of hypotheses G1 and G2.

Only for west Germany the unemployment hazard is significantly related to age and its variation with age is substantial. At 0.43 to 0.57 the hazard ratios of workers aged 21 to 35 years imply much less mobility than for younger workers. The hazard ratios tend to rise over the higher age intervals and do not imply that due to protection against dismissal the job security of workers generally rises in age. Married workers exit significantly less rapidly into unemployment than others. Their hazard ratio is 0.78 (0.75) in the west (east). One explanation for this is that married people are more likely than others to maintain other people, so that for them protection against dismissal is stricter.[41]

Table 8 presents the estimated hazard ratios for an additional set of covariates. Its first four rows show that in both regions low skilled workers tend to exit into unemployment more rapidly than highly skilled workers. In the west workers with no qualification become unemployed at about 1.4 times the speed of apprentices or workers with an apprenticeship. There is nearly no difference between the hazard of this latter group and that of more skilled workers. Not so in east Germany: Workers who went through special vocational schools exit at only 0.74 times the speed of the apprentices/apprenticeship group. A university degree implies a hazard ratio that is even lower at 0.43. So high skills are associated with relatively more job stability than in west Germany.

There is immense variation of the unemployment hazard with the entry state. Employment or vocational training represent the reference entry state. Unemployment as an entry state implies a much higher hazard. The hazard ratio is three (two) in the west (east). Likely reasons for this are that more frequently than others previously unemployed people are seasonal workers. Additionally, in east Germany they could also be more often on a temporary job. In the east previous non-participants exit into unemployment at less than 0.6 times the rate of the reference group.

Table 8 shows that only in west Germany the hazard is positively and significantly related to the number of previous job starts. For those with one job start in the two years prior to the current job start, it is 30 % above that of workers with no such previous job start. It is even more than 85 % higher for workers with two or more previous job starts.

Let me finally emphasize the effect of the years in which the job started. For the west German labour market only the hazard ratio of jobs that started between 1996 and 1997 is statistically significant. It implies exit rates that are 43 % lower than for jobs starting in 1992, when west Germany was in recession. East German jobs starting after 1992 were far less stable than those starting in 1992: The hazard ratio ranges from 1.74 to 2.15 for the three later periods. Thus, job matches that started early in the east German transition process are of a higher quality than those that started later.

[41] It is surprising though that in the analysis the number children turned out to be no significant negative determinant of the unemployment hazard.

TABLE 8
ESTIMATED HAZARD RATIOS FOR EXIT INTO UNEMPLOYMENT - MEN (2)[a]

Covariates	west Germany hazard ratio (1)	|t| (2)	95 % conf. band lower (3)	95 % conf. band upper (4)	east Germany hazard ratio (5)	|t| (6)	95 % conf. band lower (7)	95 % conf. band upper (8)
Occupational qualification	Ref. group: Apprenticeship or apprentice							
No qualification	1.38	1.8 *	0.97	1.97	1.15	0.8	0.81	1.63
Special voc. School or other training	1.05	0.3	0.74	1.48	0.74	2.7 ***	0.60	0.92
University	0.97	0.2	0.66	1.41	0.43	4.7 ***	0.30	0.61
Entry state	Ref. group: Employment, voc. training							
Unemployment	3.12	8.2 ***	2.38	4.10	2.25	8.6 ***	1.87	2.70
Non-participation	0.77	1.1	0.47	1.25	0.57	2.2 **	0.34	0.95
# of job starts in the two years prior to the current start	Ref. group: none							
1	1.30	1.8 *	0.98	1.73	1.09	0.9	0.90	1.32
2 to 3	1.86	2.0 **	1.02	3.38	1.37	1.3	0.85	2.18
Job start in year	Ref. group: Before 1993							
1993 to 1995	0.80	1.2	0.54	1.17	1.74	3.5 ***	1.28	2.37
1996 to 1997	0.57	2.6 ***	0.37	0.88	2.15	4.5 ***	1.54	3.00
After 1997	0.75	1.3	0.49	1.16	2.01	3.9 ***	1.42	2.84

[a] * 10 % significance level, ** 5 % significance level, *** 1 % significance level.

5.3.2 Estimation results for women

Finally turn to the results for women as displayed by Tables 9 and 10. Only for west German women I found evidence for unobserved heterogeneity and display its estimated variance.[42] Again some covariates turned out to be insignificant determinants of the hazards in both regions: These were the industry, seasonal and federal state dummies, which were not included in the final estimation.

Table 9 displays again the reference individual's monthly unemployment hazard in the first three months of tenure.[43] It is 0.11 % (0.08 %) in west (east) Germany.[44] The west German exit rates vary remarkably with tenure, but hardly in a way suggested by hypotheses G1 and G2. In particular, the hazard ratios for more than 19 months are often above six and above the hazard ratios at tenures lower than 12 months. This is different for east Germany. There is a large spike in month 12 to 13; the hazard ratio exceeds 16 reflecting the termination of many temporary contracts. But the hazard ratios after month 13 are all below 2.7 and some of them are far below those at tenures of less than 12 months. Apart from the spike, the pattern for east Germany supports hypotheses G1 and G2.

Table 9 shows no clear age pattern for the west German labour market. Workers aged 31 to 40 years or 46 to 50 years all exit significantly less rapidly into unemployment

[42] The BIC criterion is clearly in favour of the unobserved heterogeneity model.

[43] Coefficients of less important control variables are displayed in Table A7 in the Appendix.

[44] Here, I assume the unobserved heterogeneity term, v, for west German women to be at its expected value of one.

TABLE 9
ESTIMATED HAZARD RATIOS FOR EXIT INTO UNEMPLOYMENT - WOMEN (1)[a]

	west Germany				east Germany			
			95 % conf. band				95 % conf. band	
Covariates	hazard ratio	$\|t\|$	lower	upper	hazard ratio	$\|t\|$	lower	upper
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant term (coeff.)	-6.78	9.1 ***	-8.24	-5.32	-7.12	11.0 ***	-8.40	-5.85
Hazard of the reference individual	0.0011	.	.	.	0.0008	.	.	.
Baseline hazard (tenure intervals, months)	Ref. group: ≤ 3							
4 to 5	2.43	2.5 **	1.22	4.84	2.92	4.4 ***	1.82	4.69
6 to 7	5.32	5.0 ***	2.75	10.31	3.68	5.5 ***	2.31	5.85
8 to 9	5.56	4.6 ***	2.68	11.52	3.71	5.4 ***	2.31	5.95
10 to 11	5.66	4.3 ***	2.55	12.58	3.25	4.6 ***	1.97	5.36
12 to 13	8.14	5.0 ***	3.60	18.38	16.06	13.2 ***	10.63	24.27
14 to 18	4.55	3.4 ***	1.90	10.91	2.68	4.0 ***	1.65	4.35
19 to 24	6.20	3.9 ***	2.45	15.70	2.55	3.7 ***	1.55	4.19
25 to 30	6.82	3.6 ***	2.38	19.54	1.54	1.4	0.84	2.81
31 to 36	7.82	3.5 ***	2.45	24.95	2.05	2.4 **	1.14	3.69
≥ 37	5.30	2.6 ***	1.50	18.77	1.31	0.9	0.71	2.41
Age	Ref. group: ≤ 20							
21 to 25	0.70	0.9	0.32	1.52	1.10	0.3	0.63	1.95
26 to 30	0.86	0.3	0.37	2.01	1.09	0.3	0.59	1.99
31 to 35	0.34	2.2 **	0.13	0.90	1.20	0.6	0.63	2.26
36 to 40	0.38	1.9 *	0.14	1.04	1.32	0.9	0.71	2.47
41 to 45	0.69	0.7	0.26	1.84	1.22	0.6	0.65	2.29
46 to 50	0.30	2.0 **	0.09	0.98	1.79	1.8 *	0.96	3.36
> 50	0.49	1.2	0.15	1.60	2.47	2.9 ***	1.33	4.60
Marital status	Ref. group: Not married							
Married	0.63	1.8 *	0.38	1.05	1.01	0.1	0.79	1.30
Children								
# of children	1.09	0.5	0.77	1.56	1.09	0.9	0.91	1.30
Children aged 0 to 5	0.94	0.2	0.49	1.83	1.68	3.2 ***	1.22	2.31
Children aged 6 to 10	0.85	0.5	0.43	1.67	1.25	1.5	0.93	1.68
Observations	48,241				35,805			
McFadden's Pseudo-R^2	.				0.1191			
Log. of the likelihood	-1,359.6				-2,281.0			
σ_v^2	4.71 ***	2.7			.	.		

[a] * 10 % significance level, ** 5 % significance level, *** 1 % significance level.

than workers younger than 21. The hazard ratios of these three groups range from about 0.3 to 0.4. For all other age groups, the hazard ratios are also lower but never significantly lower than one. There is no general decline of the hazards with age.

In east Germany elder women tend to exit significantly more rapidly into unemployment than those aged less than 21 years. The hazard ratios of women aged 46 to 50 or older than 50 are 1.8 and 2.5, respectively. One potential reason is that their experience and skills to a large extent stem from the socialist period. Compared with younger workers they are more likely to be in low quality job matches or on temporary jobs.

The results on marital status and children differ between the east and the west. The hazard ratios in Table 9 show that in the east married and unmarried women exit at the same speed into unemployment. In the west though the hazard of married women is 37 % below that of unmarried women. Children instead do not alter significantly the hazards for women in west but in east Germany. It is not the number of children that matters but whether at least one child is younger than six. Mothers of such children exit nearly 70 % faster into unemployment than mothers whose youngest child is older than ten. A reason is that the value of household production is higher before children go to school. There is no evidence for stronger protection against dismissal due to maintenance of dependent children.

Table 10 presents the estimated hazard ratios of the remaining set of covariates. Both for female workers in the west and east Germany higher skills are associated with less rapid exit into unemployment. Compared with the reference group "apprentices or apprenticeship", in the west, the hazards of less skilled workers are more than twice as high; those of the categories vocational school and university degree are 0.65 and 0.76 times as high, respectively. But the latter two hazard ratios are not significant. In east Germany the hazards of the two least skilled groups are almost the same. But at hazard ratios of 0.61 for special vocational school and 0.53 for university degree the highly skilled exit far less rapidly into unemployment than the reference skill group.

TABLE 10
ESTIMATED HAZARD RATIOS FOR EXIT INTO UNEMPLOYMENT - WOMEN (2)[a]

	west Germany				east Germany			
			95 % conf. band				95 % conf. band	
Covariates	hazard ratio (1)	$\|t\|$ (2)	lower (3)	upper (4)	hazard ratio (5)	$\|t\|$ (6)	lower (7)	upper (8)
Occupational qualification	Ref. group: Apprenticeship or apprentice							
No qualification	2.08	2.6 ***	1.20	3.61	0.98	0.1	0.64	1.49
Special voc. School or other training	0.65	1.6	0.39	1.10	0.61	3.9 ***	0.48	0.78
University	0.76	0.8	0.40	1.45	0.52	3.4 ***	0.35	0.76
Entry state	Ref. group: Employment, voc. training							
Unemployment	5.46	6.0 ***	3.14	9.52	2.36	7.8 ***	1.90	2.92
Non-participation	0.61	1.8 *	0.36	1.05	0.68	1.5	0.41	1.13
# of job starts in the two years prior to the current start	Ref. group: none							
1	1.12	0.5	0.70	1.78	1.24	2.0 **	1.00	1.53
2 to 3	0.90	0.2	0.34	2.39	0.50	1.5	0.21	1.22
Job start in year	Ref. group: Before 1993							
1993 to 1995	0.63	1.6	0.36	1.13	1.32	1.9 *	0.98	1.78
1996 to 1997	0.77	0.8	0.41	1.45	1.82	3.7 ***	1.32	2.52
After 1997	0.66	1.3	0.36	1.23	1.44	2.1 **	1.02	2.04

[a] * 10 % significance level, ** 5 % significance level, *** 1 % significance level.

As for men the entry state unemployment implies a far higher hazard than the entry state employment or vocational training. The estimated hazard ratio is about 5.5 for the west and 2.4 for the east (Table 10). In contrast the hazard ratio for the entry state non-participation is in both regions below 0.7. There is no overall evidence that the

unemployment hazard rises with the number of job starts. Only for east Germany the hazard ratio for one such job start at 1.2 differs significantly from one.

The estimated hazard ratios for the period of the job start do not differ significantly from one for the west. Yet for the east all of them do. The hazard of job matches that started from 1993 onwards are 30 to 80 % above those of job matches that began in 1992. Hence jobs that started early in the transition process are more likely to be the more profitable jobs with a low probability of job loss.

6 Summary and conclusions

This study contributed to the empirical literature on labour mobility in various ways. It is the first study that compares the stability of new job matches in east and west Germany after the start of the transition process and examines in how far the speed of exit from these job matches is in line with implications of theories of labour mobility. I find mainly evidence in support of predictions of theories of job-specific capital and of matching theories that regard match quality as uncertain at the start of a job match:

The non- and semi-parametric analysis showed that the speed of exit into other jobs and into unemployment increases rapidly during the first months in the job. For the destination unemployment it is quite high at around six months of tenure, the end of the probation period. For intermediate values of tenure of four up to 13 or 14 months the both the job and unemployment hazards are usually relatively high, and sometimes decreasing. At higher values of tenure the hazards tend to be much lower. Spikes at around a tenure of close to one year reflect the termination of temporary contracts.

The semi-parametric analysis controlled for different characteristics and in particular for past job mobility. This analysis showed, that the duration dependence pattern is usually in line with the predictions of the above mentioned theories of labour mobility. So a pure mover-stayer model does not explain job-to-job and job-to-unemployment mobility. Yet there is one exception: The unemployment hazard of west German women, which remains high even for tenures of more than 13 months. This is the only model, where considerable evidence for unobserved heterogeneity was found.

The comparison of the east and west German labour market shed some light on the east German transition process. It is plausible that for a transition economy uncertainty about the match quality of jobs is higher than in a non-transition economy. In the latter economy jobs are created to a larger extent by established firms and less by firms that entered the market only a short time ago or firms that have to restructure. Therefore, also the likelihood that jobs turn out to be unprofitable is relatively high in the east rather than the west. The findings support this hypothesis. Non-parametric estimates of the survival probabilities showed that jobs are much less stable in the environment of a transition economy. Faster exit into unemployment and not a faster job change rate in east compared with west Germany account for this. Large gaps between the east and west German unemployment hazards during the first 14 months of tenure are to some extent the result of a higher incidence of temporary contracts in the east.

However, for men and women alike, the survival probabilities of new job matches that formed in the east at the start of the transition process differ only little from those in the west. Only job matches starting from 1993 onwards are much less stable in east Germany compared with west Germany. Thus job matches that started in the early transition process were generally of a higher quality than those starting after 1992.

For a transition economy one might generally expect that uncertainty about the match quality decreases less quickly with tenure compared with a non-transition economy. Hence, the job separation rates at high tenures relative to those at low tenures should be larger in the transition rather than the non-transition economy. The non- and the semi-parametric analysis showed however little evidence for this fact. There is some evidence in favour of this hypothesis for the transition rate into alternative jobs.

The analysis did not focus on economic policy. Nevertheless, there are some conclusions on labour market policy that may improve the stability of jobs. One important issue is that small children in the east German labour market, make jobs of women less stable. A better provision of affordable child care facilities in the east are hence one factor that could reduce the risk of job loss for these women. Next, there is much less stability of the jobs of relatively low skilled workers as compared with highly skilled ones. Thus policies could aim at improving the skills of the low skilled workers in both regions.

Moreover, there is the general issue that jobs in east Germany are much less stable than in west Germany. Following an argument of Burgess (1999), there are two sides of this coin. One is that a larger share of jobs of short duration in a labour market where firms restructure heavily is beneficial for the economy. It eases the necessary labour reallocation. But also in recent years, new jobs in east Germany are considerably less stable than in the east German one. Thus, efficiency gains within firms by the accumulation of job specific capital are lower in the east than in the west. The east in contrast to the west German labour market shows more features of a dual labour market. Policies should aim at changing this. A shift from promoting temporary jobs in public work programs towards policies that aim at a better matching of workers to jobs is suitable.[45] To provide additional incentives for employers to convert temporary contracts at their end into permanent ones could be a further policy instrument.

Future research with these data should address various issues. The first issue is the quality of the data. Validation studies should show to what extent job spell data drawn from the GSOEP are subject to measurement error. Confronting them with data from social security records should show, whether there is under- or overreporting of job starts and whether this is specific to certain groups of workers. It should also show whether there is heaping of the calendar entry and exit months.

The second issue is concerned with the mover-stayer model and duration dependence. At least for the west German samples, where data over a longer time horizon is available, future studies could show whether not only the frequency of job starts in the last two years but also in the less recent past matters in determining the hazard rates. The resulting duration dependence patterns may then be more in line with predictions of a pure mover-stayer model and less with the job-specific capital and matching theories.

Another issue of interest are incentives of the unemployment benefit system. With the GSOEP one could distinguish between individuals who are eligible and those who are not eligible for unemployment insurance (UI) benefits, when they start a job match. Hence, one could study whether compared with other people those who during the job match have to gain eligibility to such benefits exit less rapidly into other states and particular unemployment so long as they are not eligible for UI.

[45] The recent plans to improve the effectiveness of job centers and in particular to increase their staff responsible for the mediation are a step in this direction.

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Appendix tables

Table A1

Number of observations underlying the computations of Figures 2 to 5[a]

Figures	2 and 4		3 and 5	
	Men		Women	
	west	east	west	east
Year	Germany		Germany	
1991	2,094	1,399	1,373	1,215
1992	2,056	1,174	1,390	977
1993	1,996	1,081	1,354	914
1994	1,941	1,054	1,276	873
1995	1,925	1,051	1,271	889
1996	1,897	998	1,278	852
1997	1,844	964	1,241	846
1998	1,776	907	1,215	810
1999	2,090	999	1,444	872
2000	2,009	961	1,422	828
2001	3,762	1,330	2,713	1,184

[a] Males aged 16 to 65, females aged 16 to 60

TABLE A2
DESCRIPTIVE STATISTICS OF COVARIATES (1)

		west Germany		east Germany	
		Men	Women	Men	Women
Covariates		Mean	Mean	Mean	Mean
Baseline hazard (months)					
	≤ 3	0.135	0.145	0.149	0.145
	4 to 5	0.081	0.087	0.089	0.088
	6 to 7	0.073	0.078	0.079	0.079
	8 to 9	0.065	0.071	0.070	0.071
	10 to 11	0.060	0.064	0.062	0.064
	12 to 13	0.055	0.057	0.056	0.057
	14 to 18	0.119	0.120	0.114	0.111
	19 to 24	0.119	0.115	0.111	0.108
	25 to 30	0.097	0.089	0.088	0.088
	31 to 36	0.079	0.070	0.071	0.075
	≥ 37	0.116	0.105	0.110	0.114
Personal and household characteristics					
Age:	≤ 20	0.048	0.073	0.045	0.078
	21 to 25	0.148	0.150	0.135	0.120
	26 to 30	0.259	0.198	0.138	0.146
	31 to 35	0.202	0.192	0.162	0.168
	36 to 40	0.138	0.163	0.148	0.170
	41 to 45	0.087	0.115	0.133	0.130
	46 to 50	0.051	0.064	0.092	0.098
	> 50	0.068	0.043	0.147	0.090
Location of	Missing	0.190	0.178	0.076	0.066
childhood:	Large City	0.196	0.191	0.166	0.208
	Medium-sized city	0.134	0.137	0.186	0.173
	Small city	0.190	0.187	0.204	0.195
	Countryside	0.289	0.308	0.368	0.358
	Married	0.528	0.583	0.664	0.662
Children:	# of children	0.668	0.708	0.767	0.765
	Children younger than 6	0.225	0.164	0.136	0.118
	Children aged 0 to 5	0.159	0.198	0.216	0.223
	Children aged 6 to 10	0.434	0.453	0.392	0.396
Occupational qualification, industry					
Qualification:	No qualification	0.097	0.151	0.037	0.037
	Apprentice or apprenticeship	0.415	0.458	0.551	0.530
	Special voc. School or other training	0.205	0.226	0.235	0.265
	University	0.240	0.121	0.144	0.123
Industry:	Non-service sectors	0.449	0.209	0.553	0.217
	Trade/transp./communication	0.179	0.245	0.183	0.219
	Other services	0.372	0.545	0.264	0.564

Table A3
Descriptive statistics of covariates (2)

Covariates		west Germany Men Mean	west Germany Women Mean	east Germany Men Mean	east Germany Women Mean
Entry state, number of job starts in the two years prior to the current job start					
Entry state:	Employment/voc. training	0.675	0.543	0.594	0.479
	Unemployment	0.183	0.143	0.341	0.422
	Non-participation	0.142	0.313	0.064	0.099
# of job starts:	0	0.745	0.752	0.702	0.760
	1	0.220	0.213	0.261	0.217
	2 to 3	0.034	0.035	0.037	0.022
Season, year of job start, regional vacancy unemployment ratio, region					
Season:	First quarter	0.243	0.246	0.237	0.242
	Sec. quarter	0.241	0.239	0.238	0.238
	Third quarter	0.252	0.249	0.257	0.251
	Forth quarter	0.264	0.265	0.268	0.269
Job start in year:	1992	0.163	0.160	0.193	0.212
	1993 to 1995	0.378	0.417	0.408	0.403
	1996 to 1997	0.250	0.203	0.214	0.210
	After 1997	0.208	0.221	0.185	0.175
	ln(vacancy-unemployment ratio)	-2.162 SD= 0.456	-2.149 SD= 0.456	-3.103 SD= 0.351	-3.105 SD= 0.346
Region (west):	Nordrhein-Westfalen	0.292	0.288	.	.
	Berlin-west/Hamburg/Bremen	0.056	0.051	.	.
	Schleswig-Holstein	0.044	0.046	.	.
	Niedersachsen	0.131	0.118	.	.
	Hessen	0.083	0.077	.	.
	Rheinl.-Pfalz, Saarland	0.064	0.068	.	.
	Baden-Wuerttemberg	0.138	0.165	.	.
	Bayern	0.192	0.187	.	.
Region (east):	Sachsen	.	.	0.278	0.296
	Berlin-east	.	.	0.061	0.079
	Mecklenburg-Vorpommern	.	.	0.103	0.113
	Brandenburg	.	.	0.172	0.145
	Sachsen-Anhalt	.	.	0.182	0.192
	Thüringen	.	.	0.205	0.176

TABLE A4
ESTIMATED HAZARD RATIOS FOR EXIT INTO ANOTHER JOB, FURTHER CONTROL VARIABLES - MEN[a]

Covariates	west Germany				east Germany			
	hazard ratio	$\|t\|$	95 % conf. band lower	upper	hazard ratio	$\|t\|$	95 % conf. band lower	upper
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Location of Childhood	Ref. group: Large city							
Missing	1.29	1.5	0.91	1.82	1.13	0.5	0.69	1.85
Medium-sized city	1.12	0.7	0.79	1.58	1.03	0.1	0.70	1.51
Small city	1.08	0.5	0.79	1.48	1.01	0.1	0.70	1.47
Countryside	1.10	0.6	0.82	1.47	0.69	2.1 **	0.48	0.98
Industry	Ref. group: All non-service sectors							
Trade/transp./communication	1.30	2.0 **	1.01	1.66	0.87	0.9	0.63	1.20
Other services	1.00	0.0	0.80	1.24	1.00	0.0	0.75	1.32
Season	Ref. group: First quarter							
Sec. quarter	0.84	1.4	0.66	1.08	0.66	2.5 **	0.48	0.91
Third quarter	0.75	2.2 **	0.59	0.97	0.71	2.2 **	0.52	0.97
Forth quarter	0.63	3.4 ***	0.49	0.82	0.66	2.6 ***	0.48	0.91
Region (west)	Ref. group: Nordrhein-Westfalen							
Berlin-west/Hamburg/Bremen	1.31	1.3	0.87	1.97	.	.	.	.
Schleswig-Holstein	1.30	1.2	0.83	2.02	.	.	.	.
Niedersachsen	1.20	1.2	0.88	1.63	.	.	.	.
Hessen	1.06	0.3	0.72	1.54	.	.	.	.
Rheinl.-Pfalz, Saarland	1.14	0.6	0.76	1.71	.	.	.	.
Baden-Wuerttemberg	0.89	0.7	0.65	1.24	.	.	.	.
Bayern	1.18	1.2	0.90	1.55	.	.	.	.
Region (east)	Ref. group: Sachsen							
Berlin-east	.	.	.	.	1.63	2.0 **	1.02	2.60
Mecklenburg-Vorpommern	.	.	.	.	1.62	2.4 **	1.09	2.41
Brandenburg	.	.	.	.	1.05	0.3	0.71	1.55
Sachsen-Anhalt	.	.	.	.	1.22	1.1	0.85	1.76
Thüringen	.	.	.	.	1.23	1.1	0.86	1.75

[a] * 10 % significance level, ** 5 % significance level, *** 1 % significance level.

TABLE A5
ESTIMATED HAZARD RATIOS FOR EXIT INTO ANOTHER JOB, FURTHER CONTROL VARIABLES - WOMEN[a]

	west Germany				east Germany			
			95 % conf. band				95 % conf. band	
Covariates	hazard ratio	$\|t\|$	lower	upper	hazard ratio	$\|t\|$	lower	upper
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Relationship to household head	Ref. group: Household head							
Partner	0.82	1.5	0.62	1.07	0.98	0.1	0.69	1.40
Child/other	0.66	2.2 **	0.45	0.96	0.62	1.6	0.34	1.10
Industry	Ref. group: All non-service sectors							
Trade/transp./communication	1.02	0.2	0.75	1.39	1.00	0.0	0.64	1.55
Other services	1.05	0.3	0.80	1.36	0.72	1.7 *	0.49	1.06
Season	Ref. group: First quarter							
Sec. quarter	0.63	3.1 ***	0.47	0.84	0.64	2.0 **	0.42	0.99
Third quarter	0.85	1.2	0.65	1.11	0.66	2.0 **	0.44	1.00
Forth quarter	0.68	2.7 ***	0.52	0.90	0.82	1.0	0.56	1.21

[a] * 10 % significance level, ** 5 % significance level, *** 1 % significance level.

TABLE A6
ESTIMATED HAZARD RATIOS FOR EXIT INTO UNEMPLOYMENT, FURTHER CONTROL VARIABLES - MEN[a]

	west Germany				east Germany			
			95 % conf. band				95 % conf. band	
Covariates	hazard ratio	$\|t\|$	lower	upper	hazard ratio	$\|t\|$	lower	upper
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Location of Childhood	Ref. group: Large city							
Missing	0.92	0.4	0.60	1.42	1.01	0.1	0.69	1.47
Medium-sized city	0.70	1.6	0.44	1.10	0.77	1.6	0.56	1.06
Small city	0.66	2.0 **	0.44	1.00	1.29	1.8 *	0.98	1.71
Countryside	0.79	1.3	0.55	1.14	1.03	0.2	0.78	1.37
Owner of dwelling	0.77	1.9 *	0.59	1.01	0.77	2.6 ***	0.64	0.94
Industry	Ref. group: All non-service sectors							
Trade/transp./communication	0.68	2.2 **	0.48	0.96	0.72	2.4 **	0.56	0.94
Other services	0.63	3.0 ***	0.47	0.85	1.01	0.1	0.83	1.23
Season	Ref. group: First quarter							
Sec. quarter	0.89	0.6	0.60	1.32	0.63	3.2 ***	0.47	0.84
Third quarter	0.87	0.7	0.59	1.28	0.83	1.4	0.64	1.08
Forth quarter	1.33	1.8 *	0.97	1.84	1.53	3.7 ***	1.22	1.91
ln(vacancy-unemployment ratio)	0.55	2.1 **	0.32	0.95	0.69	2.5 **	0.51	0.93
Region (west)	Ref. group: Nordrhein-Westfalen							
Berlin-west/Hamburg/Bremen	0.57	1.6	0.28	1.15	.	.	.	.
Schleswig-Holstein	1.86	2.3 **	1.09	3.19	.	.	.	.
Niedersachsen	1.29	1.2	0.86	1.95	.	.	.	.
Hessen	1.21	0.7	0.71	2.06	.	.	.	.
Rheinl.-Pfalz, Saarland	1.97	2.5 **	1.16	3.36	.	.	.	.
Baden-Wuerttemberg	1.39	1.2	0.80	2.42	.	.	.	.
Bayern	1.96	2.6 ***	1.18	3.25	.	.	.	.
Region (east)	Ref. group: Sachsen							
Berlin-east	.	.	.	.	0.62	1.9 *	0.39	1.01
Mecklenburg-Vorpommern	.	.	.	.	1.14	0.8	0.84	1.54
Brandenburg	.	.	.	.	1.06	0.4	0.81	1.39
Sachsen-Anhalt	.	.	.	.	1.10	0.7	0.85	1.42
Thüringen	.	.	.	.	1.16	1.2	0.91	1.49

[a] * 10 % significance level, ** 5 % significance level, *** 1 % significance level.

TABLE A7
ESTIMATED HAZARD RATIOS FOR EXIT INTO UNEMPLOYMENT, FURTHER CONTROL VARIABLES - WOMEN[a]

	west Germany				east Germany			
			95 % conf. band				95 % conf. band	
Covariates	hazard ratio	$\|t\|$	lower	upper	hazard ratio	$\|t\|$	lower	upper
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Location of Childhood	Ref. group: Large city							
Missing	1.37	0.9	0.69	2.72	1.36	1.4	0.88	2.11
Medium-sized city	0.98	0.1	0.49	1.98	1.36	1.8 *	0.97	1.90
Small city	1.48	1.2	0.79	2.79	1.26	1.4	0.90	1.77
Countryside	1.32	0.9	0.73	2.40	1.72	3.5 ***	1.27	2.32
Owner of dwelling	0.73	1.4	0.47	1.14	0.82	1.9 *	0.67	1.01
Relationship to household head	Ref. group: Household head							
Partner	0.92	0.3	0.55	1.54	0.71	3.3 ***	0.57	0.87
Child/other	0.70	1.0	0.35	1.41	0.93	0.3	0.59	1.45
ln(vacancy-unemployment ratio)	0.61	2.4 **	0.41	0.91	0.87	1.0	0.66	1.16

[a] * 10 % significance level, ** 5 % significance level, *** 1 % significance level.