Being low paid: Springboard or dead end?

Evidence from administrative data in Germany and Austria

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Does the low wage sector serve as a stepping stone towards integration into better-paid jobs or at least towards integration of jobless people into employment? There is evidence for a "low-wage trap" and for a high risk of low-wage earners to get unemployed, but this may also be due to sorting effects and not to low-wage work itself. We want to contribute to this debate and analyse employment spells of male low-wage earners, who had been unemployed before, with methods of continuous-time event history analysis. Our data have been retrieved from two large administrative micro-data sources: The IAB employment sample (IABS) for Germany, and a combination of social security data from the Austrian Social Insurance Institutions with information on registered unemployment from the public employment service for Austria. We focus on two possible exits of low-wage spells: Exits to higher-paid employment (upward mobility vs. persistence), and exits to unemployment ("no-pay-low-pay cycle"). The results point to many commonalities between both countries. In both countries we find evidence for a low-pay – no-pay cycle, particularly for short low-wage spells. ,Spell durations are generally shorter in Austria, pointing to a higher fluctuation and labour turnover in the Austrian labour market. We investigate the influence of individual and firm-related characteristics and of the individual unemployment history on exit probabilities and the role of duration dependence in both countries. Tentative results show that, after controlling for these characteristics, upward wage mobility does neither increase nor decrease with employment duration, and longer low wage spells seem to reduce the risk of falling back into unemployment, at least in Germany.

1. Introduction

With high and rising unemployment levels, European labour market institutions have often been blamed for being too rigid. This criticism also applies to the wage structure. Wage setting institutions are supposed to prevent the creation of more low-wage jobs that could bring unemployed people back into jobs – especially those who are low-skilled or have other competitive disadvantages.

On the other hand, a growing low-wage sector may also increase the share of the "working poor", which in Continental Europe is still low, compared to the US. Previous evidence[1] has shown that low-wage jobs are often unstable and the low paid are exposed to the risk of becoming unemployed and/or fluctuating between low-paid jobs and unemployment. Furthermore, those who have been in employment for a longer time have only limited chances to get into better-paid jobs. So it is still unclear if (or to what extent) the low pay sector serves as a stepping stone towards better-paid jobs or at least towards integration of jobless people into employment.

With our paper, we want to contribute to clarify this issue. More specifically, we address two questions, namely if (and to what extent) there is

1. *persistence* of low-wage employment, preventing people from getting better paid jobs ("low wage trap"); and
2. a *low-pay-no-pay cycle*, meaning that low wages earners tend to have unstable employment histories with frequent changes between employment and unemployment.

This is not the first study on these questions, but we depart from previous studies by using techniques of continuous-time duration analysis for employment spells of people entering the low-wage sector out of unemployment - a group that is particularly important for labour market policy.

2. Theoretical and methodological considerations

2.1. Stock samples vs. flow samples

One approach to analyse low-wage persistence and the low-pay-no-pay cycle is to consider year-to-year transitions between higher-wage jobs, low-paid jobs and unemployment (or non-employment) with longitudinal panel data. In a first step, this yields a transition matrix with aggregate transition rates (or probabilities) between these labour market states. Such evidence is presented for Britain in Stewart / Swaffield (1999), Cappellari / Jenkins (2004) and Stewart (2006), and for Germany in Uhlendorff (2006), based on data from the British Household Panel Survey (BHPS) and the German Socio-Economic Panel (GSOEP). The

[1] See, for example, OECD (1999 and 2004), and Stewart (2006) for Britain; recent evidence for Germany is presented in Schank et al. (2008).

transition rates show a considerable degree of low-wage persistence as well as a much higher risk for the low paid to get unemployed, and this is also confirmed by our data (see section 4).

However, for the analysis in question, two types of samples are conceivable:

1. *Stock samples,* i.e. persons observed in low paid jobs at a given point in time, and
2. *Inflow samples,* i.e. persons *taking up* low paid jobs during a given time span.

In both cases, subsequent employment careers are analysed (and can be compared to the career of higher wage earners).

The mentioned studies all use *stock samples.* This is due to the fact that both the BHPS and the GSOEP are not large enough[2] to yield sufficient inflow numbers for a multivariate analysis. But when using stock samples, the problem of left censoring arises, which is closely related to the problem of "initial conditions" (Heckman 1981): The initial state of a person (in our case: being in low-wage employment) is not independent of his/her preceding employment history. This leads to a sample selection bias, and the subsequent employment career cannot only be explained by observable characteristics. The studies using BHPS and GSOEP data are well aware of this problem and use various econometric techniques to control for initial conditions.

In our study, we circumvent the problems associated with left censoring by using *inflow samples.* We can do so, since we use administrative datasets for Germany and Austria that are much larger than both the BHPS and the GSOEP.

2. 2. Individual heterogeneity, state dependence and duration dependence

Low-wage persistence, as well as unstable employment careers of the low-paid, may be the result of individual heterogeneity: Persons with "unfavourable" personal characteristics may be over-represented among low-wage workers as a result of sorting mechanisms. So, as one step of our analysis, we investigate the role of observable personal characteristics that is skill level, age and nationality.

A higher skill level should foster upward wage mobility and reduce the risk of falling back into unemployment, since acquired human capital is associated with higher productivity potential, and formal education may also facilitate the acquisition of firm-specific human capital. With regard to age, we should expect that upward wage mobility decreases with age, since age-earnings profiles are steeper in younger years. Foreign workers, especially from non-EU-15-countries,

[2] For the years considered in our analysis, the average number of adult respondents per year was clearly below 20,000 per year in each dataset.

are often employed in unstable jobs with poor promotion prospects, partly as a result of discrimination, and partly due to insufficient language skills.

We also include sector and firm size as employer-related characteristics. Low-wage persistence should decrease with firm size, since larger firms offer larger internal labour markets with better promotion prospects. For the same reason, the risk of falling back into unemployment should decrease with firm size.

In addition to personal and firm-related characteristics, we also use available information on past periods of unemployment of low-wage earners as a proxy for the labour market attachment of individuals, in order to reduce the degree of unobserved heterogeneity.

Apart from individual characteristics and sorting mechanisms, there may also be the influence of state dependence[3] and duration dependence. In our context, state dependence means that the mere fact of being low paid or unemployed at a given point in time influences future labour market prospects unfavourably. This can be thought of as a result of negative signalling effects for potential employers, who think that low-wage earners are poor performers and not enough motivated. State dependence could also be due to discouragement effects of unfavourable working conditions.

We use the available continuous-time data to draw at least some preliminary conclusions on the extent of the duration dependence of low-wage spells. Duration dependence may be positive or negative. Decreasing exit rates for a given sample over time do not necessarily imply "true" negative duration dependence, but this may also be due to sorting effects: Individuals with high exit probabilities are likely to exit relatively early, so that over time, the share of individuals with low exit probabilities increases. In the case of exits to higher wage jobs, there are both arguments for positive and negative duration dependence. It may be positive because workers can accumulate work experience and job-specific human capital and get better insight into internal labour markets and promotion chances over time. However, if the job match is bad, demotivation and depreciation effects of human capital may prevail over time, which would lead to negative duration dependence.

With regard to exits to unemployment, the same arguments apply, but with inverse effects: the acquisition of work experience over time should diminish the risk of being fired, whereas demotivation effects would increase the risk of unemployment over time.

[3] In labour economics, the term "state dependence" was first used (in the 1980s) to analyse the persistence of *unemployment*. For a review of this literature, see Arulampalam et al. (2000). For the use of the term for low-wage jobs, see Stewart / Swaffield (1999) or Stewart (2006). Duration dependence implies that the length of time spent in a particular state influences the exit probability, whereas state dependence simply means that being in a particular state influences the exit probability, regardless of the time spent in this state. See Cappellari et al. (2007).

3. Data and sample selection of our study

For Germany, we use the so-called weakly anonymised version 1975-2004 of the IAB Employment Sample (IABS), containing information on the employment history (including wages) of employees liable to social security on a daily basis[4]. The IABS is a 2% sample drawn from the IAB employee history supplemented by information on unemployment benefit recipients, the IAB recipient history. The sample covers a continuous flow of data on employment subject to social security as well as on receipt of unemployment benefits, unemployment assistance and maintenance allowance; therefore, it is highly suitable for performing analyses on the employee and benefit recipient history. It also contains a number of establishment characteristics.

For Austria, we use a similar dataset based on social insurance data, offering detailed longitudinal and cross section information for dependent employment spells and unemployment spells. These data from the Austrian Social Security Database contain detailed (anonymised) information on individual employment, unemployment on a daily basis as well as earnings histories, public pension contributions and allowances since 1972 and also basic employer information.[5] These matched employer-employee data cover the essentials of the Austrian labour market because of their nearly universal coverage. This database is combined with information on unemployment spells registered at the public employment service (since 1998).[6] Due to their administrative character both data-sources are highly reliable.

We will make use of the entire spells of dependent employment (except for civil servants) and unemployment in Austria from 1998 to 2006.

Anyway, some limitations of both datasets must be taken into account.

The German data first, do not cover self-employed persons and civil servants, but only employees liable to social security contributions. Second, when people are out of employment, we can observe them only if they are in *registered* unemployment and receive unemployment benefits or maintenance allowance (in Germany)[7]. Third, IABS data allow distinguishing between full-time and part-time employment, but do not contain information on working hours. This is why we do not consider part time employees.

In the Austrian dataset, we even lack the information on whether a worker is employed full time or part time. This made it necessary to identify full-time

[4] For more information on IABS, see http://fdz.iab.de/en/FDZ_Individual_Data.aspx.
[5] See also Hofer and Winter-Ebmer (2003) for a description.
[6] At the Austrian Institute of Economic Research these anonymised administrative data are processed, validated and systematised within the INDI-DV Group (see Schöberl, 2004.
[7] This allowance ("Unterhaltsgeld") is paid to unemployed persons participating in training measures, instead of unemployment benefits ("Arbeitslosengeld" or "Arbeitslosenhilfe").

workers with imputation procedures[8]. Wages as the basis of social security contributions are top coded because of the social security contribution cap (about 10% of the cases).

We construct comparable datasets for both countries according to the following rules:

We use information on wages for West German and Austrian full-time workers aged between 18 and 60 years to calculate a low wage threshold of two thirds of the median wage for each year between 1995 and 2000. For this period, we then construct a *sample of low-wage spells* starting out of unemployment. For Austria, we do this for the period 1998-2003. In order to reduce the heterogeneity of the sample, the spell samples only include *males* aged between 25 and 54 years at the time of inflow, and, in the case of Germany, only *West German* men[9]. As further restrictions, only those low-wage spells are included that

1. have a minimum duration of 30 days, and
2. are preceded by a spell of unemployment of at least two weeks.

With these two restrictions, we try to exclude short-lived spells and correct for "artificial" fluctuation, i.e. quick changes between different labour market states that do not reflect sustainable transitions between unemployment and employment. Furthermore we exclude spells starting in the public sector. If we observe two or more inflows between 1995 and 2000 (Germany) or between 1998 and 2003 (Austria) for the same individual, we select only the first spell.

In our understanding, a low-wage spell continues if the employee changes the employer but still remains in low pay. Or to put it otherwise: A firm change terminates the spell only in the case the wage in the new firm is above the low-wage threshold.

This selection leaves us with a sample of 11,919 spells in Germany and 59,847 in the Austrian dataset, which are analysed using continuous-time event history techniques. As to possible exits, we distinguish between 1. full-time higher-wage employment (above the low-wage threshold), 2. unemployment, and 3. "other", including part-time employment as well as men dropping out of the sample for various reasons[10]. Since "other" is a very heterogeneous category in our case, we do not look at these exits in detail, but confine our analysis to the exits 1. and 2.. We consider a low-wage spell as terminated only if it is interrupted for more than

[8] Since this analysis is limited to 25 to 54 years old men outside the public services, who showed an extremely low part time share, this problem is of minor relevance.

[9] Confining the analysis to males also reduces the influence of possible data errors on the part-time/full-time distinction (part-time jobs wrongly classified as full-time), since part-time jobs play only a minor role for men in both countries.

[10] Exits into higher-wage jobs (1.) or unemployment (2.) are only counted as such if the spells have a minimum duration of two weeks *and* have started not later than two weeks after the end of the low-wage spell. Otherwise exits are counted as "other". This is done in order to reduce the "noise" in the data, caused by changes of employment status immediately after the end of a low-wage spell.

two weeks. For Germany, if low-wage spells persist up to the end of the year 2000, we follow them up to the end of 2004, but we do not include new inflows after the end of 2000. In Austria, low-wage spells persisting up to the end of the year 2003, will be followed until 2006.

We then repeat the sampling procedure for *higher-wage spells* (above the low wage threshold) starting out of unemployment during the same period, with 1. low wage employment, 2. unemployment and 3. "other" as possible exits. This allows us to draw further conclusions on the low-pay-no-pay cycle – we expect that a "higher-pay-no-pay cycle" is of minor importance. In Germany, there were 29,528 such higher-wage spells, making up roughly 70% of all full-time jobs started out of unemployment. In Austria more than 82% of the employment spells started in 2001 (by men between 25 and 54 years in the private sector) were paid wages above the low-wage threshold (2/3 of the median).

4. Comparing Austria and Germany with administrative data

The reasons for comparing Austria and Germany with administrative data are twofold: First, there are lots of cross-country studies based on micro data from standardized international survey panels, such as the ECHP or the CNEF[11]. But comparisons based on administrative data are extremely rare. This is partly because in many countries administrative data are not available to researchers for reasons of data privacy, or because the data are inappropriate for empirical analysis and not comparable across countries, since they were not gathered for research purposes. So our cross-country analysis should be interesting to data users from a methodological point of view.

The second reason is that the comparison promises to yield interesting results. With regard to labour market institutions, Austria and Germany display many common features. In Esping-Andersen's influential typology of welfare states (1990) both countries are classified as "continental" or "conservative" welfare states. It is true that in recent years, Germany has implemented reforms, especially the so-called Hartz laws, which constitute a departure from this welfare state model. But for the period under investigation, most relevant institutions were similar, such as tax and social security systems, replacement rates for the unemployed, and the dual system of vocational training. Both countries are were also similar with regard to wage setting procedures: No general minimum wage, but a well-established system of collective bargaining at the sectoral level. Collective bargaining coverage of employees is traditionally high (still nowadays at almost 100% in Austria), but had declined during the 90s in West Germany to slightly more than 70% in 2002 (see OECD Employment Outlook 2004, Chapter

[11] ECHP = European Household Community Panel, a household survey with longitudinal data for fourteen European Countries 1994-2001; CNEF = Cross National Equivalent File, with similar data for Germany, the UK, the US, Canada and Australia; the German data are from the GSOEP.

3). Moreover, there is one difference that might be relevant for the quantitative importance and the characteristics of low wage employment: Employment protection is more "liberal" in Austria than in Germany.[12] It is not easy to identify the influence of employment protection in the data, since we cannot distinguish temporary contracts from "standard" permanent contracts. So, if a spell ends in unemployment, we cannot be sure whether there is a layoff or just the expiration of a temporary contract. However, the results should allow at least tentative conclusions in this regard.

The general labour market situation in both countries should also be considered. During the 90s, after a short "post-unification boom" the economy in the unified Germany suffered from the deep crisis in the New Länder. Real GDP growth was only modest up to 1997 (1.4%), then started to rise in 1998 and peaked at 3.0% in 2000. After that year, the so-called "new-economy-crisis" caused growth rates to fall below 1%.

Unemployment rates rose sharply in the early 90s, were at 8.2% in 1995 and continued to rise to 9.9% (1997), then dropped to 7.9% (2000, all rates according to ILO standards). Total employment mirrored this trend and started to rise after 1997. So the years 1998-2000 were somewhat more favourable for job-starters out of unemployment than the preceding years.

Economic trends in Austria were similar, reflecting the close economic ties with Germany. The country had relatively high GDP growth rates around 3% between 1998 and 2000 and suffered a downturn in 2001 with growth rates around 1% between 2001 and 2003. But unemployment rates were much lower than in Germany and declined from 4.5% (1997) to 3.6% (2000) and then increased again to 4.3% in 2003.

To sum up, in the period 1998-2000 economic trends in the two countries were similar. But the labour market situation, in terms of unemployment rates, was clearly better in Austria. However our analysis refers only to West Germany, whereas the unemployment figures given above refer to Germany as a whole. Standardized unemployment rates are not published separately for West and East Germany. But when comparing "official" rates based on registered unemployment, West German rates were between 1 and 2 percentage points below the national average. From this we can infer that the labour market situation in Austria was far better than in Germany as a whole, but also clearly better than in West Germany.

[12] Although many legal stipulations of dismissal law were (and still are) similar between Germany and Austria, dismissals are *de facto* easier to push through in Austria, since the employee has less chances to contest it with legal action. In Germany, dismissals are often contested, leading to court procedures and (in many cases) to dismissal payments, which makes dismissals more expensive for employers.

5. Descriptive evidence on low-wage employment dynamics

In a first step, we turn to the low-wage incidence of our target group in a cross-sectional perspective (see *Figures 1 and 2).* The ratio of low paid men, as a percentage of all West German men aged 25-54 and working full-time, has risen continuously from 4.2%, in 1990, to 7.2% in 2000[13]. The latter percentage corresponds to an absolute number of roughly 670,000 men. Figure 1 also indicates that the rise of the low-wage incidence has continued up to 2004. In Austria the ratio of low paid men rose from 4% in 1998 to 5% in 2006. But the underlying low-wage threshold is much lower in Austria than in Germany: In Austria monthly earnings on the low-wage threshold amount to 1.380 € in 2001, while it was 1.710 in Germany. In spite of a similar GDP per capita (25,700 € in Germany and 26,400 € in Austria in the year 2001[14]), median wages (and thus also the low wage threshold) exhibit considerable differences.

Tables 1 and 2 give a broad idea of the aggregate evidence on the dynamics of low-paid employment in both countries. The matrix shows year-to-year transition rates, based on pooled data for the years 1995-2000. Included are men aged 25-54 who could be observed in two consecutive years, on November 1st, as either unemployed or full-time employed. In the latter case we distinguish between low-wage and higher-wage employment.

The numbers illustrate a considerable degree of low wage persistence and very similar findings for Austria and Germany: Of those low paid in year *t*, almost two thirds (63.4% Austria 62.5%)) remain in low-wage employment one year later, whereas only 23.7% of them are found in higher-wage employment (Austria 25.4%). We also find evidence for a low-wage-no-wage cycle: Of the low paid in year *t*, 12.9% are unemployed in *(t+1)* in Germany and 12.0% in Austria, so they face a much higher risk of unemployment than those in higher-wage employment (Germany 2%, Austria 3.1%).

When looking at the unemployed in year *t* in Germany, we observe a higher probability to move to higher-wage jobs (18.4%) than to low-wage jobs (9%); but this does not contradict the existence of a low-wage-no-wage cycle, since almost 95% of full-time employed men during the period 1995-2000 were in better-paid jobs (see Figure 1). These results are even more pronounced in the Austrian case: 31.1% of unemployed in year *t* took up a higher-wage job in *(t+1)* whereas only 7.7% may be found in a full-time-low wage job. The data in Tables 1 and 2 refer to 25 to 54 years old men working full-time or being unemployed at the annual reference day November 1st.

[13] Note that the low wage threshold (two thirds of the median wage) is calculated on the basis of all dependent full-time workers (men and women) aged 18-60 in West Germany and Austria respectively.

[14] Values that control for purchasing power parities widen the gap between Austria and Germany slightly.

We now turn to the spell sample resulting from inflows into low-wage employment out of unemployment, as described in section 3. *Table 3 and 4* provide information on the exits of these spells in absolute numbers as well as in percentages that can be interpreted as exit probabilities. The first two rows contain aggregate numbers. Of the 11,919 males in our sample taking up low-wage jobs in Germany, 36.4% got unemployed again, compared to only 25.7% who managed to cross the low-wage threshold. In Austria even 53.6% were registered as unemployed afterwards and 20.4% took up a full time job with higher wages. This again seems to confirm the existence of a low-wage-no-wage cycle. Almost every third exit in Germany is classified as "other" (see above), far more than in Austria (22.1%). Only a small minority of the low-wage spells persisted up to the end of the sample period (5.1%in Germany, 2.0% in Austria).

Tables 3 and 4 also present a breakdown of the spells according to skill level and age. With regard to skill level, we distinguish between "low skilled" and "higher skilled"; "low skilled" refers to at most a lower secondary degree. Unfortunately, the German data contain a relatively high share of males with unknown formal education level[15]. However, we can assume that the majority of those with "unknown" skill level is low skilled. Of the total number of inflows, 46% in Germany and 43% in Austria are classified as "higher skilled" - far less than the corresponding share of the higher-skilled in the total workforces. However, this is not surprising since they have acquired more human capital and therefore are less likely to take up low-paid jobs than the low skilled. Additionally, this also reflects the structure of the unemployed: about 45% of the average stock of unemployed are unskilled in Austria and 47% in West Germany (average for the year 2000).

From human capital theory, we expect that higher-skilled persons have better chances to end up in higher-wage employment. This expectation is confirmed in both countries (see figures in the second column of tables 3 and 4)), whereas their risk to return to unemployment is almost as high as for the low-skilled in both counties, which is somewhat surprising.

When looking at different age groups in Germany, the exit probabilities do not differ much and are similar to the aggregate numbers. This comes a bit as a surprise: We know from numerous studies that age-earnings profiles are clearly steeper for the younger. So we should expect higher exit probabilities to higher wage jobs for younger than for older workers. This is the case indeed (see column 2), but the differences are only minor. Exit rates to unemployment tend to rise slightly with age, which also is surprising, since previous studies on job durations (e.g. Wolff 2004) haven shown that job spells of young workers end up more often in unemployment. This again indicates that dynamics among low wage earners

[15] This is due to the fact that the IABS data is not provided by the employee himself, but by the employer, who not always has reliable information on the formal educational attainment of each of his/her employees, especially in the case of non-German workers.

are different. The age specific exit probabilities in higher wage jobs turn out to be more in accordance with our assumptions in Austria; they decrease noticeable with rising age. At the same time returns to unemployment increase considerably with age.

In Tables 5 and 6 we present additional information on the mean and median duration (measured in weeks) of low wage spells that end in unemployment and in higher-paid employment respectively . In Germany, the mean duration of spells ending in unemployment was 38.7 weeks, considerably shorter than for spells ending in better-paid employment (51 weeks).[16] For both groups the Austrian data reflect higher turnover in the labour market. The low wage spells ending in unemployment had a mean duration of 32.5 weeks that ending in higher wage employment lasted on average for 41 weeks. But still spells ending in unemployment were considerably shorter than those ending in better-paid employment in Austria. Median durations show that more than half of all spells ending in unemployment are shorter than 6 months, pointing to an important share of high-frequency changes between low-wage jobs and unemployment in both countries.

When looking at the breakdown according to educational attainment, there are only small differences in durations with regard to spells ending in unemployment, but spells ending in higher-wage employment are considerably shorter for the higher skilled in Germany, as one would expect. This relationship does not hold for Austria, were this skill-specific difference is small.

Mean and median durations tend to increase with higher age for both exits in Germany, which points to a higher persistence of low-paid employment among older workers. Again this interrelation can not be found in Austria, where differences of spell-duration in age-groups are very small.

As already mentioned above, the figures seem to confirm the relevance of a low-wage-no-wage cycle. The share of workers returning to unemployment is much higher than the share of those finding higher wage employment and the share of those persisting in low-wage jobs (right censored spells).

The results, presented in Tables 7 and 8 , are not immediately comparable to those for low wage spells described before, because the exit destinations are defined differently: While a considerable share of low-wage spells end in higher-wage employment (25,6% in Germany and 22,4% in Austria) the share of transition from higher wage employment into low wage (full-time) employment are marginal. Low-wage spells may end in higher-wage employment when wages rise sufficiently; higher-wage spells just go on. Therefore, we observe high wage spells on average for a longer time-period and thus the probability of observing

[16] Mean and median durations of these higher wage periods are fairly long (132.6 and 82.4 weeks, respectively). This suggests that upward wage mobility leads to more employment stability.

unemployment as a destination of an ending spell is higher for higher-wage than for low-wage spells.[17]

In West Germany, 41.9% of these spells are observed to end in unemployment, in Austria 69.1%. Again, Austria shows a higher fluctuation: Not only the higher transition rates to unemployment also the lower share of right-censored spells confirm this general observation.. Additionally we observe longer mean and median durations of higher wage spells returning to unemployment in Germany than in Austria (in Germany 72.2 and 40.7 weeks, respectively; in Austria 52.7 and 39.7 weeks, respectively).

6. Econometric method and preliminary results

Since the unit of measurement in both datasets is days, we can apply duration models that allow for continuous time. The semi-parametric proportional hazard model provides a good starting point for our analysis. It allows one to estimate a baseline hazard function $h_o(t)$ capturing how the transition rate varies with spell length. It does not depend on any covariates and is assumed to be common to all spells (i.e. people). In addition we can test for the effect of other factors like age, skill level, industry and other relevant characteristics. These factors will only shift the baseline hazard (and hence do not depend on the duration or survival time) which is a crucial assumption of the proportional hazards model (Cox, 1972). The function for the transition rate $r(t,x)$ can be described as

$r(t,x) = h_0(t)e^{(x\beta)}$ with x being a vector of covariates.

Figures 3 to 6 plot baseline hazards for the following exits: transition from low wage into higher wage employment and transition from low wage employment into unemployment. Both hazard functions first increase. They peak before the end of the first year and decline thereafter in both countries. Although the overall shape of the hazard functions is similar, the decline for transition into higher wage proceeds less steeply than the job-endings into unemployment. The survival functions (Figures 7 to 10) demonstrate more clearly the differences between the two destination states. Within a year, more low-wage spells end in unemployment than in higher wage employment. Looking at exit higher wage employment, after 52 weeks around 25% have made the transition and 75% are still in low wage employment. Regarding the destination state unemployment, after 52 weeks almost 50% of West German men and even more than 60% of Austrian men have lost their low wage job. The shape of the survival function in Figures 9 and 10 indicates a certain rise of job losses after 52 months, probably caused by the expiration of fixed-term contracts, but this effect is not really important in both countries.

[17] We will construct a separate view on employment spell in the ongoing research process to produce comparable descriptive data. In the duration .analysis this construction of the dataset is appropriate and comparable results can be obtained

Using the results of the multivariate proportional hazard models in Table 9 and 10 we can identify further factors that play a significant role determining transition rates out of low wage jobs into different types of job-endings: into higher wage jobs (column 1) and into unemployment (column 2).

Transition to higher wage jobs

Looking at the results obtained for the destination state higher wage job, the younger age groups and better skilled realise faster transitions. Remember that in the descriptive analysis, this interrelation did not come out so clearly, especially for Austria.

Low-wage employees in manufacturing or the construction sector have a better chance to change into higher payment than employees in the service sector in both countries. One peculiarity of Austria is the importance of the tourism industries, which are characterised by high seasonal variations and thus short employment spells. Therefore, the chance for a transition into higher wage is low, compared to other industries. With respect to nationality, we cannot determine a significant difference between German or Austrian and EU-15 foreign low wage earners. However, foreigners from non-EU 15 countries have a significantly lower exit rate into higher wage jobs in Germany but a slightly higher in Austria.

With regard to firm size, the results suggest that smaller firms provide lower chances to leave a low wage job for a higher wage job in both countries. The smaller the firms are the lower is the chance to change into higher wage employment. Firm age does not seem to be very important for the exit probability into higher wage job. Only in Austrian firms that entered the labour market in the year they have hired a low wage worker chances for a change into higher wage employment are significantly better than in older firms.

Of particular interest are variables which capture past labour market experiences. We have included the length of the unemployment period preceding the low wage spell considered in our sample and have counted the unemployment spells within the preceding three years.[18]

The length of the unemployment spells ending in a low wage episode has negative and highly significant effects on the transition probability. The longer people were in unemployment before they started the low wage job, the lower is the transition rate into a higher wage job. This holds for Germany and Austria and is in line with the argument that human capital depreciates with the length of an unemployment spell.

[18] Since all low wage spells were conditioned to start from an unemployment spell, the minimum number is 1. For additional unemployment spells within the last three years, the control variable in the regressions equals one, and zero otherwise.

Transition into unemployment

The transition into unemployment is analysed not only for low-wage spells but also for the higher wage sample. To get further evidence for the existence of low-pay no-pay circles we first look at the baseline hazards of the Cox regressions for the low wage and the higher wage sample, respectively (see Figures 5 and 6 for the low wage and 11 and 12 for the higher wage sample): The baseline hazard of returning into unemployment is clearly higher for low wage spells in Austria and Germany, especially in the first year of the spell duration. This observation is a further indication for the relevance of low-pay – no-pay circles.

Looking now at the sample specific results we find for the low wage sample (column 2) that – as expected – higher qualification levels correspond to lower exit rates in Germany and Austria.. Across age groups we cannot detect statistically significant differences in Germany; in Austria older workers seem to have a somewhat higher risk than their young and middle-aged colleagues to fall back into unemployment.

The rates of transition between Germans and foreigners from non-EU 15 countries seem to be similar. However, this could be due to the relatively low number of non-EU 15 foreigners in our sample. In Austria non-EU foreigners have a lower risk to fall back into unemployment. This result may reflect the importance of seasonal migration behaviour created by the demand for unskilled workers in the tourism as well as construction industries.[19] Interestingly, foreigners from EU-15 countries do experience a higher transition rate into unemployment in Austria.

In terms of firm related characteristics, we observe higher transition rates when working in manufacturing, construction or trade, hotel and restaurant business for Germany. In Austria low-wage jobs in the manufacturing sector are linked with the lowest risk to end up in unemployment again while the risk in the construction industry is higher than in the service sector.

Working in a new firm lowers the risk of a transition into unemployment, but this effect is not significant for Germany. In Germany the effects of firm size are somewhat unexpected: transition rates for very small firms (1-10 employees) are similar to those of firms with more than 230 employees. The transition rates into unemployment are significantly lower for medium-sized firms, though. One would expect that the probability of becoming unemployed would decrease with firm size as the results for Austria show. The German results could be caused by the relatively small number of large firms in our sample (for Austria we use the information of the whole relevant population), and individual events like mass layoffs could influence the results. Alternatively, one could argue that this reflects employment strategies of big companies in Germany. Often, the workforce in such firms is divided into permanent and temporary staff, where permanent

[19] In this respect, the higher risk to exit low-wage jobs into "other" positions (including the disappearance from the Austrian labour market) has to be noted.

employees are better paid. If low wage earners were predominantly hired as temporary staff in larger firms, one would expect the higher exit rates into unemployment that we see.

The variables capturing previous unemployment experience are highly significant. Both the length of the unemployment period preceding the low wage spell which is analysed here and the fact to have been unemployed more than once within the last three years significantly increase the transition rate into unemployment, seemingly indicating the existence of a low-pay – no-pay cycle that seems to be more pronounced in Austria. In Germany, one additional unemployment spell increases the risk to fall back into unemployment by one third in Germany (coefficient=0.33), and by even two thirds in Austria (coefficient=0.64). However, to be more confident about this particular result, a closer look at transition from higher wage into unemployment, as outlined above, seems advisable.

The last two columns of Tables 9 and 10 present the results obtained from the sample of workers earning higher wages following a period of unemployment lasting for at least 2 weeks. Column 3 shows the results for those full time jobs that pay more than the low wage threshold but less than the median wage. Column 4 presents results for the complete sample of higher wage jobs. The results for the two samples of higher wage spells do not differ much, but in particular the comparison with the results shown in column 2 reveals that certain effects change in a systematic way when moving from wages that are below the low wage threshold, to wages that lie between the threshold and the median wage to eventually all higher wage spells.

For the group of higher wage episodes that are ended by unemployment we can identify significant age effects, indicating that also for Germany younger age groups realise lower transition rates into unemployment. In addition, the effect of firm size is now in accordance with the expectations (and with the Austrian results), that employment at a large firm reduces the risk of unemployment. However, the estimated coefficients for the unemployment history variables do not differ much from the coefficients obtained for the sample of low wage spells (column 2). The length of the unemployment spell that was ended by the higher wage episode as well as the fact that there was more than one unemployment spell increase the probability of becoming unemployed again. The effect of the number of unemployment periods within the last three years is even more pronounced for the sample of higher wage episodes, both in Austria and Germany. Hence, the comparison of the effects of unemployment history on the transition rates into unemployment between the samples of low wage and higher wage spells cannot confirm the existence of a distinct low wage – no wage cycle.

Duration dependence

As discussed previously, in particular for policy implications it is important to try estimating the effects of duration dependence. Parametric models would allow us to directly estimate the extent of duration dependence. Tables 11 and 12 therefore replicate the results obtained from the semi-parametric Cox model, using the Weibull model. The hazard function for this model equals

$$h(t,x) = \alpha t^{\alpha-1} e^{-\alpha x \beta}$$

with α measuring duration dependence. For $\alpha > 1$, we observe positive duration dependence, indicating that the risk of failure increases with time. Conversely, if $\alpha < 1$, negative duration dependence is present and the risk of failure will decrease with time.

Turning to Tables 11 and 12, significance and magnitude of the estimates are very similar for both the proportional hazard model and the Weibull model, so here we will only focus on the interpretation of α. A number of interesting findings can be noted. First, the transition rate from low wage jobs into higher wage employment (column 1) seems to be independent of time spent in low pay for Germany, since α is not significantly different from unity. The comparison of the estimates obtained for transition probabilities into unemployment depending on the wage level (column 2-4) also reveals interesting results. Negative duration dependence is present for all groups in Germany, but is more pronounced among higher wage spells, indicating that the risk of failure (i.e. becoming unemployed) decreases faster with time for this group. This suggests that they can accumulate job-related human capital over time protecting them from being dismissed again. This is less the case for low wage earners, since their risk of falling back into unemployment decreases at a slower rate.

This result holds for Germany, but not for Austria. In Austria slightly negative duration dependence appears for the transition rate from low wage jobs into higher wage employment. This means that the chance to change from low wage into higher wage employment decreases with time spent in low wage employment. We find also slightly negative duration dependence for the transition into unemployment, which means that the risk of returning to unemployment decreases with the time spent in a job. But we do not find the large differences between the duration dependences for low-wage compared to higher-wage jobs like in the results for Germany.

7. Conclusions

Low-wage jobs are often described as a bridge between unemployment and more stable and better paid jobs. To explore this possibility we have presented results to gain a better understanding of the role of low wage jobs using German and

Austrian datasets that provide very accurate information on past labour market experiences as well as duration of current low wage jobs.

On an aggregate level, we show that low wage persistence seems to exist on a great scale. At the same time, low wage earners face higher risks of getting trapped in a low pay – no pay cycle, since the chances of being unemployed one year later are much higher for people in low wage jobs. These results are similar for both countries and are in line with those for other European countries.

The descriptive evidence shows that a high share of low-wage spells started out of unemployment end again in unemployment, and more than half of these spells last less than six months. Anyway, this share is higher in Austria than in Germany, pointing to the high labour turnover in this country. The importance of industries with highly seasonal employment patterns as well as the frequent utilisation of temporary lay-offs that appear in the unemployment register may be factors explaining this difference.

The baseline hazard of returning into unemployment is clearly higher for low wage spells in Austria and Germany. This observation is a further indication for the relevance of low-pay – no-pay cycles. A strong and positive effect of previous unemployment history on the risk of becoming unemployed would be another evidence for a low-pay – unemployment trap, but the hazard rates are similar for the low wage and the higher wage sample.

Results obtained from the Weibull model suggest that the degree of duration dependence differs between low wage and higher wage jobs in Germany. The risk of becoming unemployed again decreases with time for everyone, but faster for people who have commenced higher wage jobs. Together with the longer mean duration of those jobs, we can conclude that higher wage jobs are more stable (and become so at a faster rate). In Austria we do not observe large differences in this duration dependence between wage groups.

Furthermore, when analysing the transition rate from low wage into higher wage jobs, the estimated parameter of duration dependence indicates an almost constant risk of failure over time. So, after controlling for individual chararcteristics, working in a low-wage job for a longer time seems neither to increase nor to decrease the chances for getting a better-paid job. So, with regard to observed low wage persistence, sorting effects seem to prevail over “genuine” duration effects, at least in Germany.

However, the conclusions on duration dependence must be considered as preliminary and have to be confirmed by further analyses. We will include further covariates[20] in order to reduce unobserved heterogeneity, and we intend to specify and estimate a piecewise-constant hazard rate model and to compare the results with the results of the Weibull model used in this version of the paper.

[20] Covariates for regional labour market tightness (unemployment and vacancy rates) and additional firm characteristics.

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Appendix: Tables and figures

Table 1: Pooled year-to-year transitions and transition rates between unemployment and full-time employment, 1995-2000 (West Germany)

	Status in (t+1)			
	Full-time higher wage	Full-time low wage	Unemployment	Total
Status in (t)				
Full-time higher wage	884,212 97.07	8,479 0.93	18,244 2.00	910,935 100.00
Full-time low wage	12,490 23.73	33,360 63.38	6,786 12.89	52,636 100.00
Unemployment	13,878 18.39	6,812 9.03	54,784 72.59	75,474 100.00
Total	910,580 87.64	48,651 4.68	79,814 7.68	1,039,045 100.00

Source: Own calculations, based on IABS. In each cell, upper figures are absolute numbers, lower figures are percentage shares.

Table 2: Pooled year-to-year transitions and transition rates between unemployment and full-time employment, 1998-2003 (Austria)

	Status in (t+1)			
	Full-time higher wage	Full-time low wage	Unemployment	Total
Status in (t)				
Full-time higher wage	4,435,748 96.04	39,248 0.85	143,530 3.11	4,618,526 100.00
Full-time low wage	57,241 25.44	140,675 62.53	27,073 12.03	224,989 100.00
Unemployment	108,405 31.10	26,933 7.73	213,271 61.18	348,609 100.00
Total	4,601,394 88.62	206,856 3.98	383,874 7.39	5,192,124 100.00

Source: Own calculations, based on WIFO INDI-DV. In each cell, upper figures are absolute numbers, lower figures are percentage shares.

Table 3: Inflows into low-wage jobs out of unemployment and destination state (West Germany)

	Exits				
	Unemployment	**Higher Wage**	**Other**	**Right censored**	**Total**
All	4,334	3,068	3,904	613	11,919
	36.4%	25.7%	32.8%	5.1%	100.0%
Skill Level					
low	1,218	762	1,156	145	3,281
	37.1%	23.2%	35.2%	4.4%	100.0%
higher	1,963	1,630	1,645	290	5,528
	35.5%	29.5%	29.8%	5.3%	100.0%
unknown	1,153	676	1,103	178	3,493
	37.1%	21.7%	35.5%	5.7%	100.0%
Age					
25-34	2,340	1,724	2,161	288	6,513
	35.9%	26.5%	33.2%	4.4%	100.0%
35-44	1,395	984	1,219	215	3,813
	36.6%	25.8%	32.0%	5.6%	100.0%
45-54	599	360	524	110	1,593
	37.6%	22.6%	32.9%	6.9%	100.0%

Source: Own calculations, based on IABS. Low skilled = less than upper secondary education
The first inflow into low wage employment per person between 1995 and 2000 are considered and followed until 2004.

Table 4: Inflows into low-wage jobs out of unemployment and destination state (Austria)

	Exits				
	Unemployment	**Higher Wage**	**Other**	**Right censored**	**Total**
All	31,953	13,431	13,248	1,211	59,843
	53.39%	22.44%	22.14%	2.02%	100.0%
Skill Level					
low	18,279	6,952	8,188	656	34,075
	53.64%	20.40%	24.03%	1.93%	100.0%
higher	13,605	6,433	5,013	546	25,597
	53.15%	25.13%	19.58%	2.13%	100.0%
unknown	69	46	47	9	171
	40.35%	26.90%	27.49%	5.26%	100.0%
Age					
25-34	13,301	6,815	6,421	469	27,006
	49.25%	25.24%	23.78%	1.74%	100.0%
35-44	12,720	4,845	4,821	505	22,891
	55.57%	21.17%	21.06%	2.21%	100.0%
45-54	5,932	1,771	2,006	237	9,946
	59.64%	17.81%	20.17%	2.38%	100.0%

Source: Own calculations, based on WIFO INDI-DV. Low skilled = less than upper secondary education
The first inflow into low wage employment per person between 1998 and 2003 are considered and followed until 2004.

Table 5: Mean and median durations of low-wage spells (in weeks) (West Germany)

		Exits	
		Unemployment	**Higher Wage**
All	mean duration	38.7	51.0
	median duration	24.3	32.9
Skill Level			
low	mean duration	37.9	55.2
	median duration	23.0	37.6
higher	mean duration	39.4	49.0
	median duration	24.7	30.6
unknown	mean duration	38.3	51.0
	median duration	24.6	33.0
Age			
25-34	mean duration	36.3	48.6
	median duration	22.4	31.1
35-44	mean duration	39.3	53.7
	median duration	25.0	34.6
45-54	mean duration	46.4	54.8
	median duration	27.0	36.4

Source: Own calculations, based on IABS.

Table 6: Mean and median durations of low-wage spells (in weeks) (Austria)

		Exits	
		Unemployment	**Higher Wage**
All	mean duration	32.51	41.03
	median duration	21.86	23.71
Skill Level			
low	mean duration	32.52	39.85
	median duration	21.86	22.07
higher	mean duration	32.47	42.22
	median duration	21.71	25.14
unknown	mean duration	40.49	53.39
	median duration	21.14	28.79
Age			
25-34	mean duration	32.45	41.27
	median duration	21.00	24.00
35-44	mean duration	32.68	41.29
	median duration	22.00	23.57
45-54	mean duration	32.32	39.38
	median duration	23.71	21.86

Source: Own calculations, based on WIFO INDI-DV.

Table 7: Inflows into higher-wage jobs (above low-wage threshold) out of unemployment and destination state
(West Germany)

	Exits			Right censored	Total
	Unemployment	Low Wage	Other		
Absolute figures	12,365	2,143	8,001	7,019	29,528
Shares (in %)	41.9%	7.3%	27.1%	23.8%	100.0%
Mean duration	72.2	84.3	-	-	-
Median duration	40.7	47.7	-	-	-

Source: Own calculations, based on IABS. Mean and median durations are measured in weeks.

Table 8: Inflows into higher-wage jobs (above low-wage threshold) out of unemployment and destination state

	Exits			Right censored	Total
	Unemployment	Low Wage	Other		
Absolute figures	320,535	10,990	93,287	39,417	464,229
Shares (in %)	69.05%	2.37%	20.10%	8.49%	100.00%
Mean duration	52.69	61.08	69.75		
Median duration	39.71	36.07	35.29		

Source: Own calculations, based on WIFO INDI-DV. Mean and median durations are measured in weeks.

Table 9: Proportional hazards model (West Germany)

	Low-wage spells started out of unemployment		Higher-wage spells started out of unemployment	
			Up to median wage	All higher-wage spells
	Exit: higher wage	Exit: unemployment	Exit: unemployment	Exit: unemployment
Personal characteristics:	(1)	(2)	(3)	(4)
Foreign: EU-15	-0,160 (0.097) ‡	-0.121 (0.078)	- 0.131 (0.064)*	-0.012 (0.055)
Foreign: Non-EU-15	-0.139 (0.054)*	0.057 (0.043)	0.028 (0.037)	0.045 (0.034)
Age 25-34	0.425 (0.060)**	0.088 (0.047) ‡	-0.184 (0.030)**	-0.227 (0.026)**
Age 35-44	0.277 (0.063)**	0.024 (0.050)	-0.130 (0.032)**	-0.164 (0.028)**
Higher skill level	0.255 (0.046)**	-0.080 (0.039)*	-0.123 (0.028)**	-0.168 (0.026)**
Skill level unknown	0.021 (0.056)	-0.081 (0.044) ‡	-0.000 (0.035)	-0.023 (0.032)
Firm related characteristics:				
Manufacturing	0.113 (0.048)*	0.321 (0.042)**	0.099 (0.031)**	0.111 (0.027)**
Construction	0.251 (0.075)**	0.727 (0.053)**	0.618 (0.031)**	0.668 (0.027)**
Trade, hotel, restaurant	-0.081 (0.050)	0.193 (0.043)**	-0.036 (0.037)	0.003 (0.033)
Firm size: 1-10 employees	-0.701 (0.071)**	0.015 (0.063)	0.514 (0.038)**	0.622 (0.033)**
Firm size: 11-50 employees	-0.299 (0.067)**	- 0.055 (0.063)	0.276 (0.038)**	0.369 (0.032)**
Firm size: 51-230 employees	-0.074 (0.066)	- 0.199 (0.065)**	0.091 (0.041)*	0.179 (0.035)**
Firm age up to 1 year	0.053 (0.062)	-0.069 (0.049)	-0.062 (0.040)	-0.062 (0.036) ‡
Firm age more than 1 and up to 2 years	0.129 (0.070) ‡	-0.020 (0.060)	- 0.005 (0.047)	0.005 (0.042)
Unemployment history:				
Unemployment duration preceding employment spell	-0.002 (0.000)**	0.001 (0.000)**	0.001 (0.000)*	0.001 (0.000)*
Number of unemployment spells > 1	-0.104 (0.038)**	0.331 (0.033)**	0.388 (0.021)**	0.431 (0.019)**
Log likelihood	-24,121	-34,610	-88,114	-115,553

Notes: Reference categories: German citizenship; age group 45-54; low skilled; all remaining sectors; firms with more than 230 employees; only one unemployment spell within last three years. For further explanations, see main text.
Significance levels: ‡: 10%, *: 5%, ** 1%. Standard errors in parentheses.

Table 10: Proportional hazards model (Austria)

	Low-wage spells started out of unemployment		Higher-wage spells started out of unemployment	
			Up to median wage	All higher-wage spells
	Exit: higher wage	Exit: unemployment	Exit: unemployment	Exit: unemployment
Personal characteristics:	(1)	(2)	(3)	(4)
Foreign: EU-15	0.078 (0.070)	0.150 (0.042)**	0.207 (0.022)**	0.159 (0.017)**
Foreign: Non-EU-15	0.067 (0.021)**	-0.114 (0.014)**	0.016 (0.006)**	0.048 (0.005)**
Age 25-34	0.362 (0.027)**	-0.135 (0.016)**	-0.197 (0.007)**	-0.184 (0.005)**
Age 35-44	0.186 (0.028)**	-0.052 (0.016)**	-0.085 (0.007)**	-0.081 (0.005)**
Higher skill level	0.248 (0.019)**	-0.084 (0.012)**	-0.116 (0.005)**	-0.117 (0.004)**
Skill level unknown	-0.138 (0.148)	-0.159 (0.121)	-0.567 (0.076)**	-0.784 (0.067)**
Firm related characteristics:				
Manufacturing	0.052 (0.028)‡	-0.355 (0.022)**	-0.332 (0.008)**	-0.300 (0.006)**
Construction	0.162 (0.032)**	0.120 (0.019)**	0.219 (0.006)**	0.301 (0.005)**
Trade, hotel, restaurant	-0.228 (0.020)**	-0.115 (0.013)**	0.002 (0.007)	0.116 (0.006)**
Firm size: 1-10 employees	-0.745 (0.029)**	0.428 (0.023)**	0.635 (0.008)**	0.640 (0.006)**
Firm size: 11-50 employees	-0.288 (0.029)**	0.236 (0.024)**	0.426 (0.008)**	0.432 (0.006)**
Firm size: 51-230 employees	-0.048 (0.029)‡	0.125 (0.026)**	0.201 (0.009)**	0.196 (0.006)**
Firm age up to 1 year	0.233 (0.026)**	-0.134 (0.017)**	0.022 (0.008)**	-0.064 (0.007)**
Firm age more than 1 and up to 2 years	0.023 (0.035)	-0.013 (0.021)	0.019 (0.010)‡	-0.016 (0.008)*
Unemployment history:				
Unemployment duration preceding employment spell	-0.004 (0.000)**	0.001 (0.000)**	0.001 (0.000)**	0.001 (0.000)**
Number of unemployment spells > 1	-0.124 (0.018)**	0.636 (0.012)**	0.748 (0.005)**	0.872 (0.004)**
Log likelihood	-133,171	-321,366	-2,138,497	-3,913,773

Notes: Reference categories: Austrian citizenship; age group 45-54; low skilled; all remaining sectors; firms with more than 230 employees; only one unemployment spell within last three years. For further explanations, see main text.
Significance levels: ‡: 10%, *: 5%, ** 1%. Standard errors in parentheses.

Table 11: Weibull model (West Germany)

	Low-wage spells started out of unemployment		Higher-wage spells started out of unemployment	
			Up to median wage	All higher-wage spells
	Exit: higher wage	Exit: unemployment	Exit: unemployment	Exit: unemployment
Personal characteristics:	(1)	(2)	(3)	(4)
Foreign: EU-15	- 0.170 (0.097)‡	- 0.125 (0.078)	-0.140 (0.064)*	- 0.012 (0.055)
Foreign: Non-EU-15	-0.116 (0.54)*	0.084 (0.043) ‡	0.035 (0.037)	0.052 (0.034)
Age 25-34	0.460 (0.060)**	0.126 (0.047)**	-0.222 (0.030)**	-0.268 (0.026)**
Age 35-44	0.300 (0.063)**	0.043 (0.050)	-0.156 (0.032)**	-0.196 (0.028)**
Higher skill level	0.259 (0.046)**	-0.085 (0.039)*	-0.135 (0.028)**	-0.187 (0.026)**
Skill level unknown	-0.012 (0.056)	-0.091 (0.044)*	-0.007 (0.035)	-0.032 (0.032)
Firm related characteristics:				
Manufacturing	0.102 (0.048)*	0.321 (0.042)**	0.089 (0.031)**	0.101 (0.027)**
Construction	0.259 (0.075)**	0.795 (0.053)**	0.681 (0.031)**	0.726 (0.027)**
Trade, hotel, restaurant	-0.085 (0.050) ‡	0.196 (0.043)**	-0.057 (0.037)	-0.011 (0.033)
Firm size: 1-10 employees	-0.728 (0.071)**	-0.010 (0.063)	0.590 (0.039)**	0.693 (0.033)**
Firm size: 11-50 employees	-0.320 (0.067)**	-0.078 (0.063)	0.322 (0.038)**	0.415 (0.032)**
Firm size: 51-230 employees	-0.073 (0.066)	-0.204 (0.065)**	0.116 (0.041)**	0.203 (0.035)**
Firm age up to 1 year	0.060 (0.062)	-0.067 (0.049)	-0.067 (0.040) ‡	-0.065 (0.036) ‡
Firm age more than 1 and up to 2 years	0.150 (0.070)	0.000 (0.060)	-0.008 (0.047)	0.003 (0.042)
Unemployment history:				
Unemployment duration preceding employment spell	-0.002 (0.000)**	0.001 (0.000)*	0.001 (0.000)**	0.001 (0.000)**
Number of unemployment spells > 1	-0.088 (0.038)*	0.366 (0.033)**	0.434 (0.021)**	0.472 (0.019)**
alpha	0.995	0.881	0.740	0.739
Log likelihood	-8,052	-10,954	-26,432	-34,066

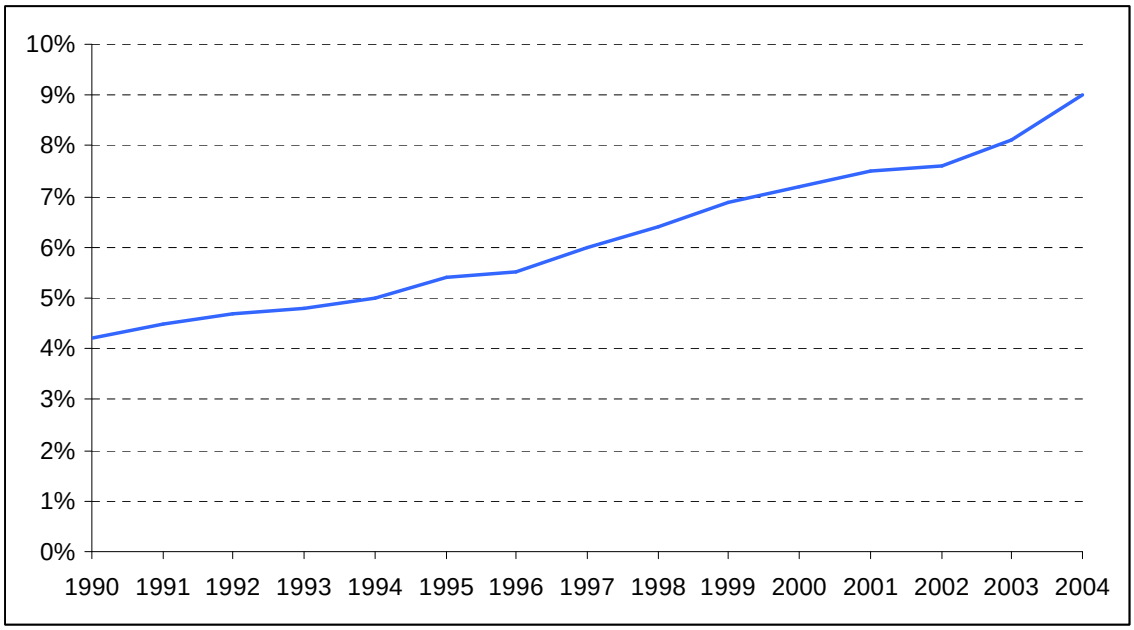
Notes: Reference categories: German citizenship; age group 45-54; low skilled; all remaining sectors; firms with more than 230 employees; only one unemployment spell within last three years. For further explanations, see main text.
Significance levels: ‡: 10%, *: 5%, ** 1%. Standard errors in parentheses.

Table 12: Weibull model (Austria)

	Low-wage spells started out of unemployment		Higher-wage spells started out of unemployment	
			Up to median wage	All higher-wage spells
	Exit: higher wage	Exit: unemployment	Exit: unemployment	Exit: unemployment
Personal characteristics:	(1)	(2)	(3)	(4)
Foreign: EU-15	0.134 (0.070)‡	0.208 (0.042)**	0.214 (0.022)**	0.161 (0.017)**
Foreign: Non-EU-15	0.076 (0.021)**	-0.105 (0.014)**	0.004 (0.006)	0.020 (0.005)**
Age 25-34	0.370 (0.027)**	-0.140 (0.016)**	-0.239 (0.007)**	-0.232 (0.005)**
Age 35-44	0.184 (0.028)**	-0.062 (0.016)**	-0.103 (0.007)**	-0.100 (0.005)**
Higher skill level	0.253 (0.019)**	-0.084 (0.012)**	-0.136 (0.005)**	-0.140 (0.004)**
Skill level unknown	-0.165 (0.148)	-0.272 (0.121)*	-0.737 (0.076)**	-0.974 (0.067)**
Firm related characteristics:				
Manufacturing	-0.008 (0.028)	-0.438 (0.022)**	-0.381 (0.008)**	-0.341 (0.006)**
Construction	0.184 (0.032)**	0.166 (0.019)**	0.342 (0.006)**	0.449 (0.005)**
Trade, hotel, restaurant	-0.273 (0.020)**	-0.182 (0.013)**	-0.052 (0.007)**	0.067 (0.006)**
Firm size: 1-10 employees	-0.717 (0.029)**	0.495 (0.023)**	0.694 (0.008)**	0.649 (0.006)**
Firm size: 11-50 employees	-0.264 (0.029)**	0.294 (0.024)**	0.481 (0.008)**	0.453 (0.006)**
Firm size: 51-230 employees	-0.039 (0.029)	0.147 (0.026)**	0.236 (0.009)**	0.221 (0.006)**
Firm age up to 1 year	0.223 (0.026)**	-0.166 (0.017)**	-0.012 (0.008)	-0.099 (0.007)**
Firm age more than 1 and up to 2 years	0.019 (0.035)	-0.022 (0.021)	0.007 (0.010)	-0.028 (0.008)**
Unemployment history:				
Unemployment duration preceding employment spell	-0.004 (0.000)**	0.001 (0.000)**	0.000 (0.000)	0.000 (0.000)
Number of unemployment spells > 1	-0.075 (0.018)**	0.725 (0.012)**	0.851 (0.005)**	0.981 (0.004)**
alpha	0.941 (0.006)**	0.926 (0.004)**	0.938 (0.002)**	0.974 (0.001)**
Log likelihood	-39,915	-69,018	-371,833	-631,892

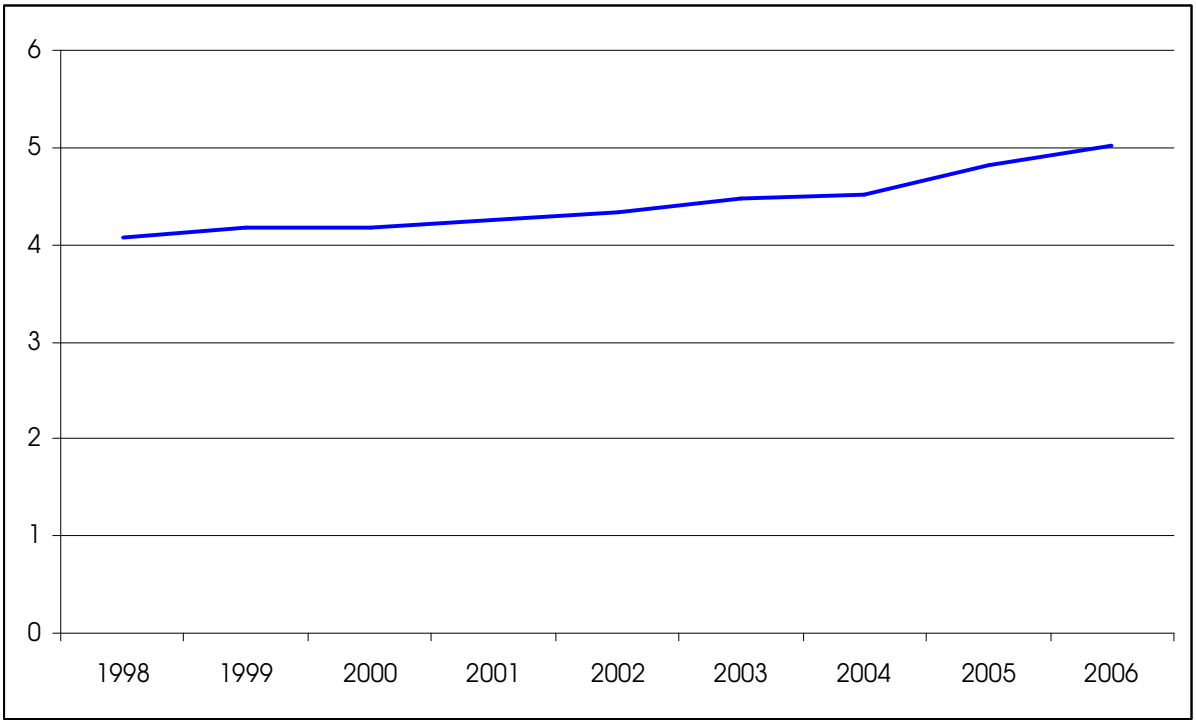
Notes: Reference categories: Austrian citizenship; age group 45-54; low skilled; all remaining sectors; firms with more than 230 employees; only one unemployment spell within last three years. For further explanations, see main text.
Significance levels: ‡: 10%, *: 5%, ** 1%. Standard errors in parentheses.

Figure 1: Incidence of low-wage work for West German males aged 25-54 in full-time jobs liable to social security (apprentices excluded), 1990-2004



Source: Own calculations, based on IABS. The low-wage threshold is calculated as two thirds of the median wage of all full-time employees liable to social security (men and women) aged 18-60 and working in West Germany.

Figure 2: Incidence of low-wage work for Austrian males aged 25-54 in full-time jobs liable to social security, 1998-2006



Source: Own calculations, based on WIFO-INDI-DV. The low-wage threshold is calculated as two thirds of the median wage of all full-time employees liable to social security (men and women) aged 18-60 and working in Austria.

Figure 3: Baseline hazard function: transition rates from low wage into higher wage employment (West Germany)

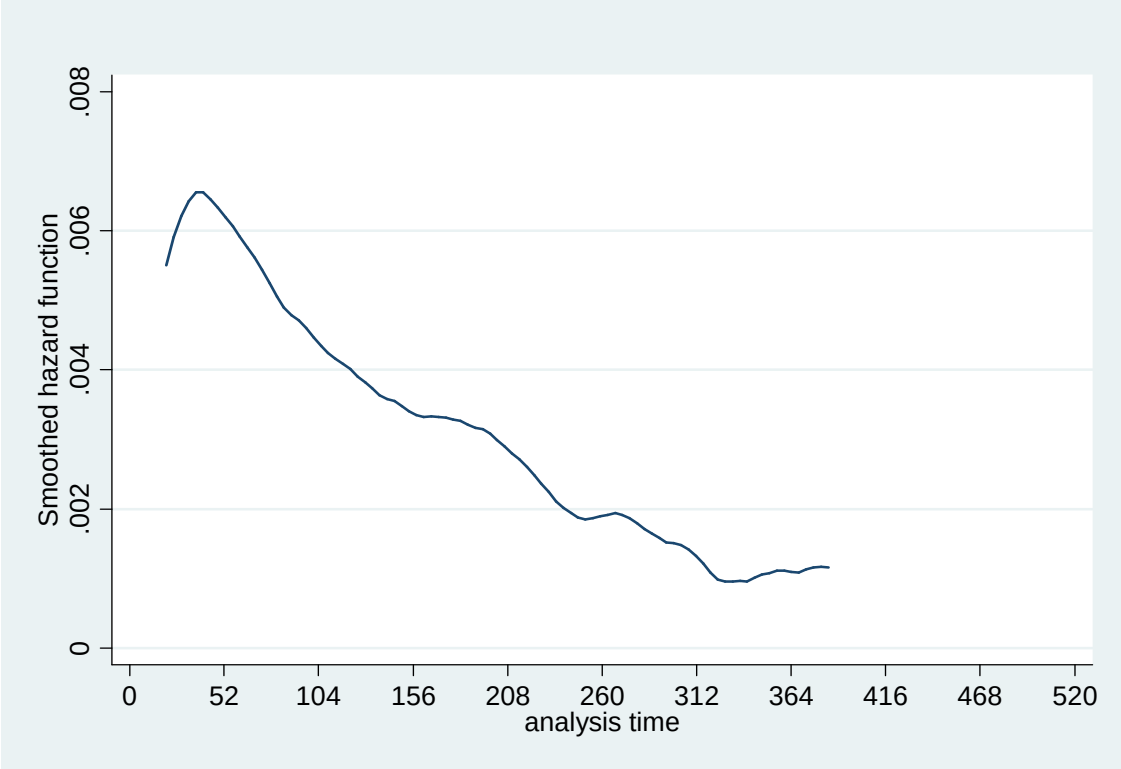


Figure 4: Baseline hazard function: transition rates from low wage into higher wage employment (Austria)

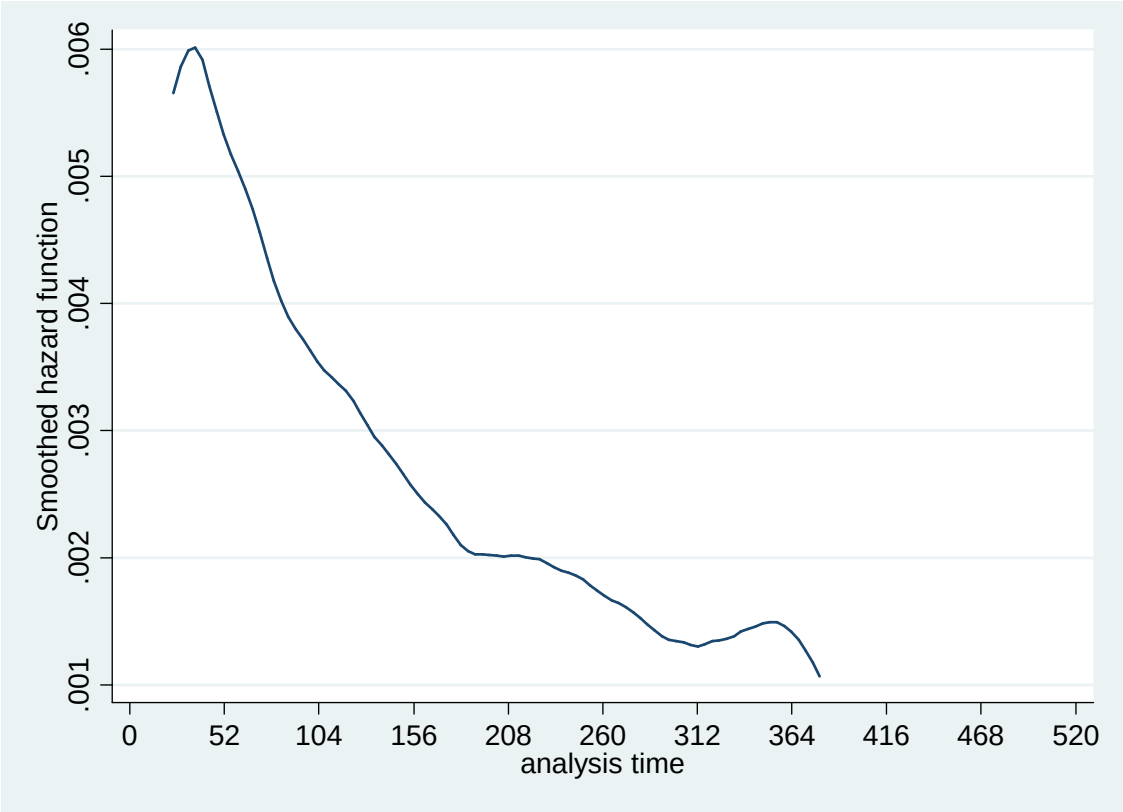


Figure 5a: Baseline hazard function: transition rates from low wage employment into unemployment (West Germany)

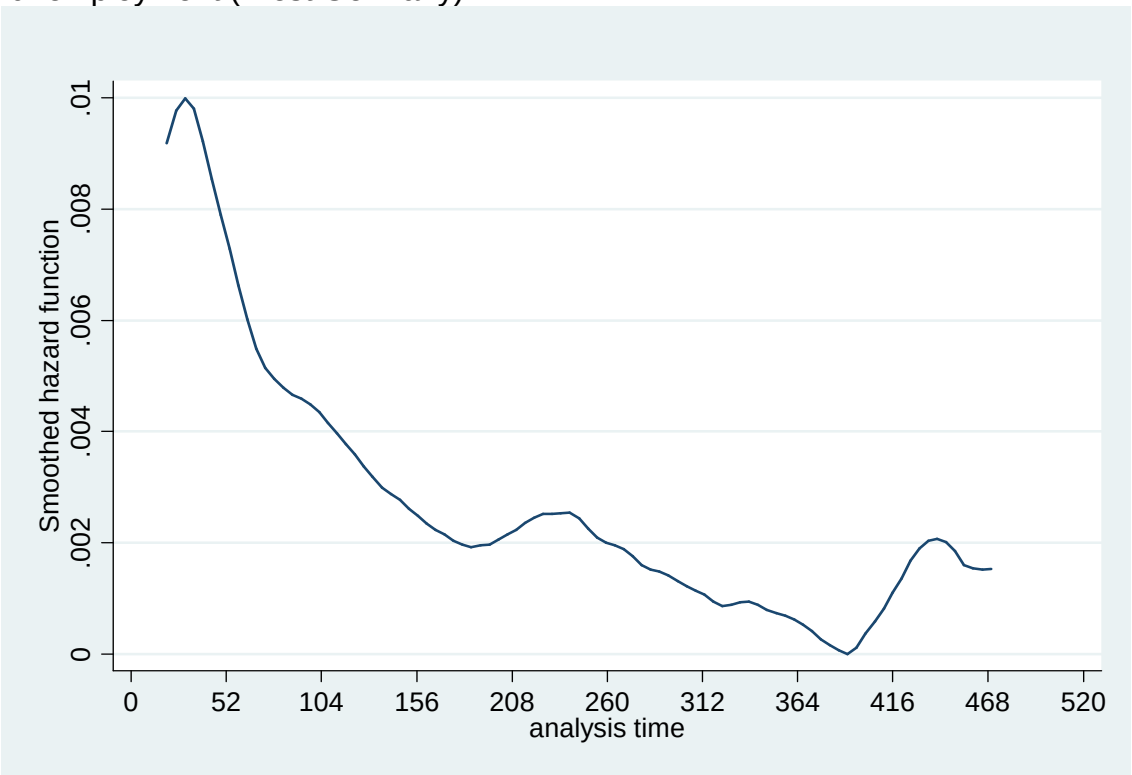


Figure 5b: Baseline hazard function: transition rates from higher wage employment into unemployment (West Germany)

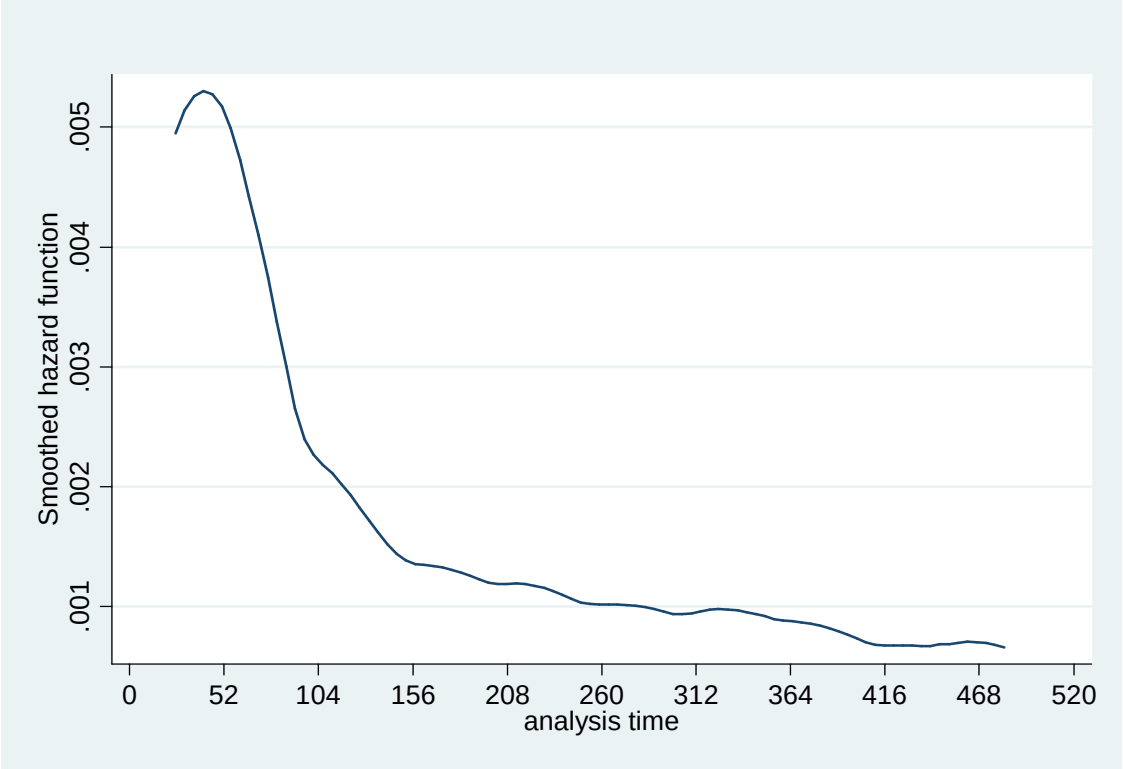


Figure 6a: Baseline hazard function: transition rates from low wage employment into unemployment (Austria)

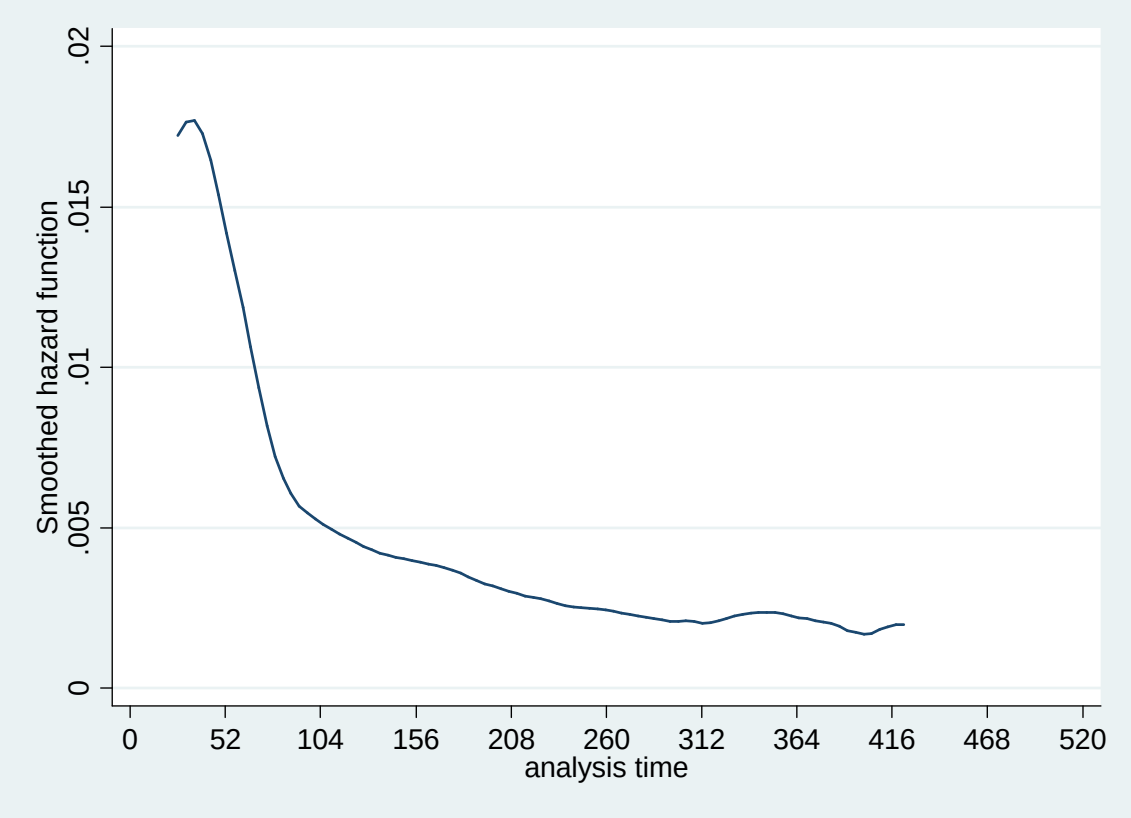


Figure 6b: Baseline hazard function: transition rates from higher wage employment into unemployment (Austria)

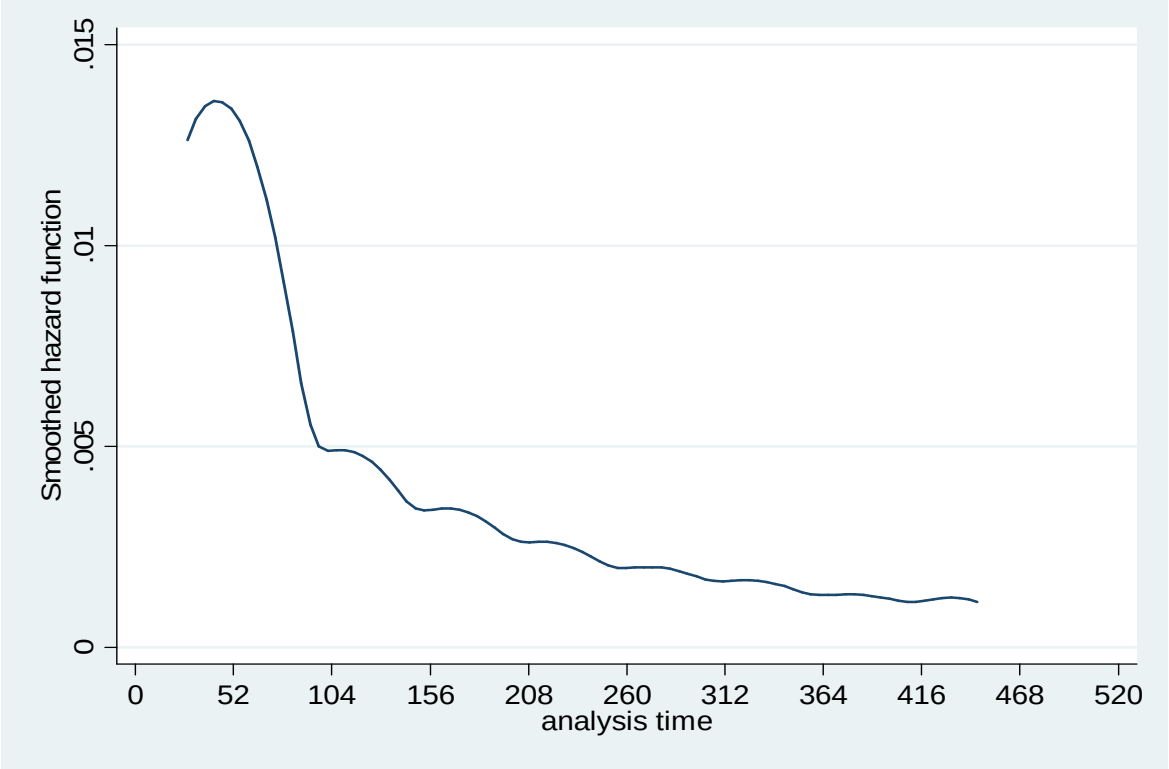


Figure 7: Survival function: low wage into higher wage employment (West Germany)

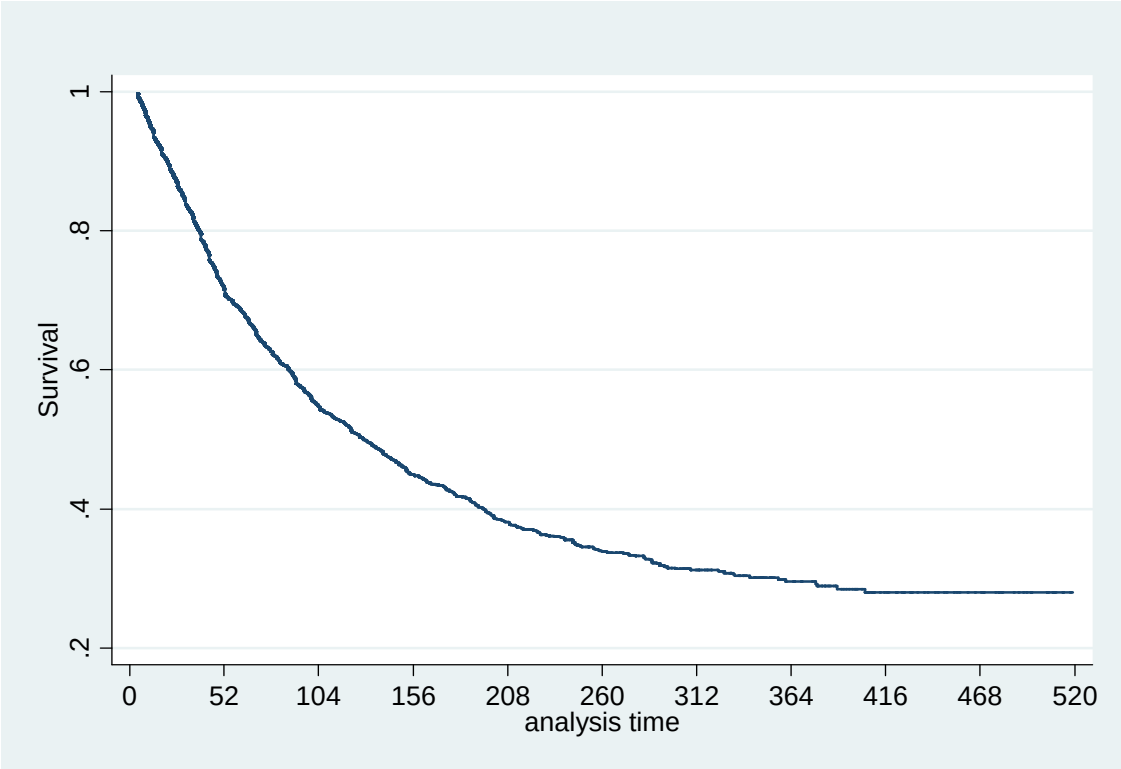


Figure 8: Survival function: low wage into higher wage employment (Austria)

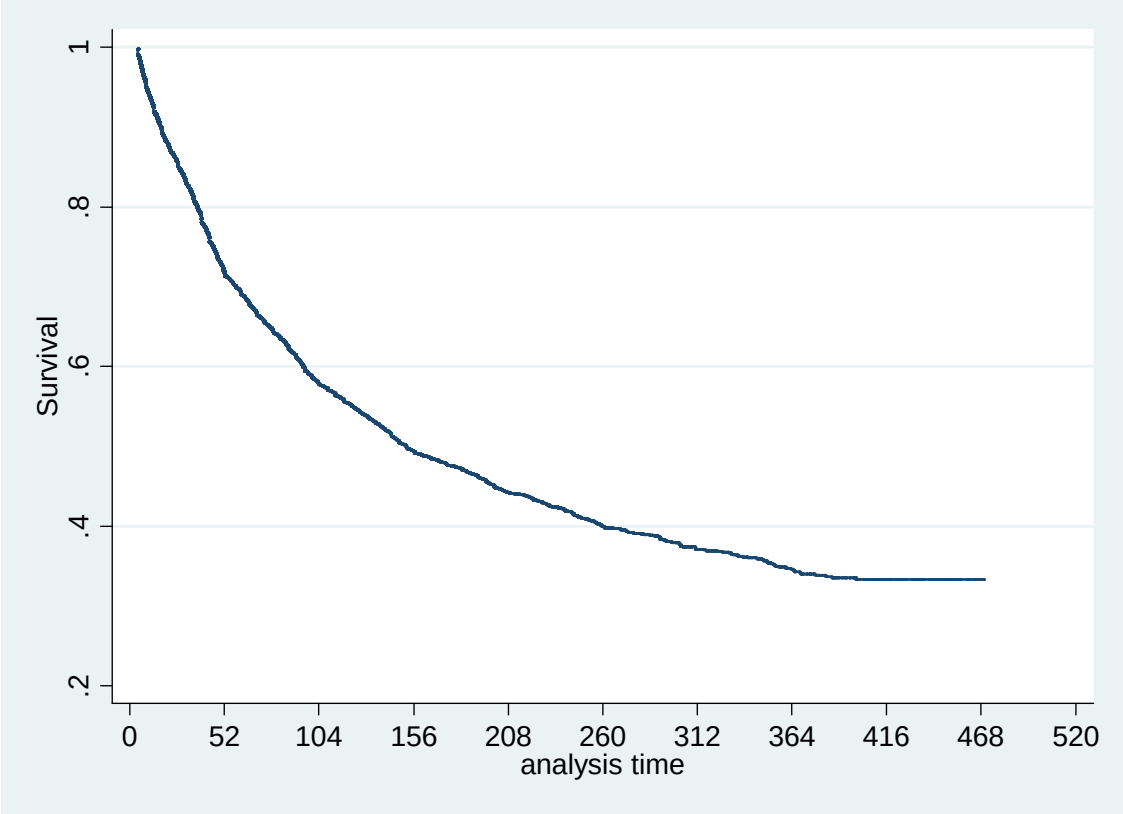


Figure 9: Survival function: low wage employment into unemployment (W. Germany)

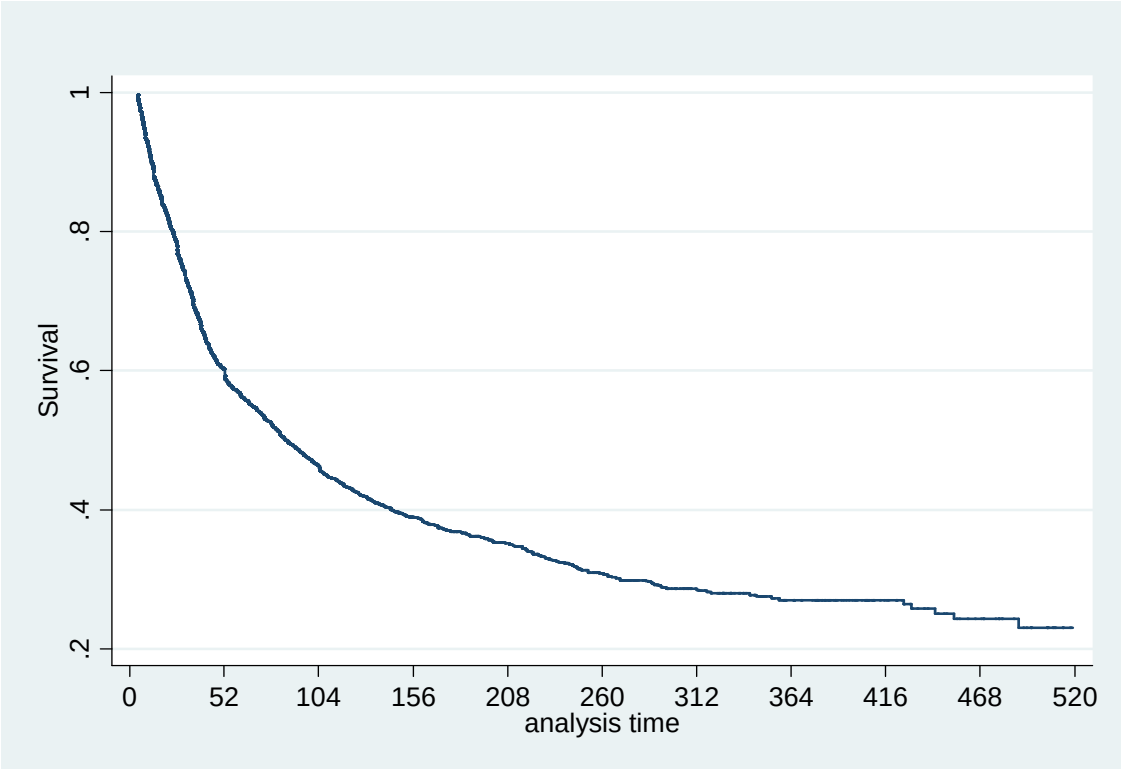


Figure 10: Survival function: low wage employment into unemployment (Austria)