

Session Number: Session 7D  
Time: Friday, August 29, AM

*Paper Prepared for the 30th General Conference of  
The International Association for Research in Income and Wealth*

**Portoroz, Slovenia, August 24-30, 2008**

Being low paid in Germany: springboard or dead end?  
Evidence from the IAB Eemployment Sample

Carola Grün  
Thomas Rhein

For additional information please contact:

Carola Grün  
Georg-August Universität Göttingen  
Platz der Göttinger Sieben 3  
37073 Göttingen  
Germany  
carola.gruen@wiwi.uni-goettingen.de

**This paper is posted on the following website: <http://www.iariw.org>**

# **Being low paid in Germany: Springboard or dead end? Evidence from the IAB Employment Sample**

Carola Grün (University of Göttingen)

Thomas Rhein (Institute for Employment Research, Nuremberg)

Since the 1990's the share of low wage workers in Germany has increased, partly as a result of reforms aiming to increase labour market flexibility. In 2006, almost 20 per cent of all full-time workers were low paid. This development added to an ongoing debate whether or not the low pay sector serves 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. Our data have been retrieved from the IAB employment sample (IABS), a large administrative sample containing information on individual employment careers that permits the application of continuous-time event history analysis. 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”). 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. After controlling for these characteristics, we find that upward wage mobility does not increase with employment duration, suggesting that there is genuine low-wage persistence. Our tentative results show only weak evidence for a low-pay – no-pay cycle.

## 1. Introduction

Since the mid 1990s, the German labour market is characterized by a rising share of low-wage jobs. This development is partly due to the expansion of marginal part-time jobs (so-called “Mini-Jobs”); but even when considering only full-time employment, wage inequality has risen: Today, almost every fifth full-time employee in Germany is low paid, when using a low-wage threshold of two thirds of the median wage. This development added to an ongoing debate whether or not 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 instable 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.

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 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<sup>1</sup> 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 an administrative dataset for Germany that is much larger than both the BHPS and the GSOEP. In order to reduce the heterogeneity of our samples, we only include West-German men in the main working age.

## **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, 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.

---

<sup>1</sup> 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.

Apart from individual characteristics and sorting mechanisms, there may also be the influence of state dependence<sup>2</sup> 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 unfavorable 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. Data and sample selection of our study**

We use the so-called weakly anonymized 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<sup>3</sup>. 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

---

<sup>2</sup> 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).

<sup>3</sup> For more information on IABS, see [http://fdz.iab.de/en/FDZ\\_Individual\\_Data.aspx](http://fdz.iab.de/en/FDZ_Individual_Data.aspx).

the employee and benefit recipient history. It also contains a number of establishment characteristics.

Anyway, some limitations of the IABS must be taken into account. First, it does not cover self-employed persons and civil servants, but only employees liable to social security contributions, making up roughly 80% of total employment in Germany. 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<sup>4</sup>. 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. We use information on wages for West German 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. As already mentioned, we only include West German *men* aged between 25 and 54 years at the time of inflow, and, as further restrictions, only those low-wage spells that

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

If we observe two or more inflows between 1995 and 2000 for the same individual, we select only the first one.

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 13,846 spells, 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<sup>5</sup>. 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 two weeks. 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.

---

<sup>4</sup> This allowance (“Unterhaltsgeld”) is paid to unemployed persons participating in training measures, instead of unemployment benefits (“Arbeitslosengeld” or “Arbeitslosenhilfe”).

<sup>5</sup> 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.

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. There were 32,649 such higher-wage spells, making up roughly 70% of all full-time jobs started out of unemployment.

#### 4. 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 *Figure 1*). 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<sup>6</sup>. 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.

*Table 1* gives a broad idea of the aggregate evidence on the dynamics of low-paid employment. The matrix shows year-to-year transition rates, based on pooled data for the years 1995-2000. Included are West-German men aged 25-54 who could be observed in two consecutive years, on November 1<sup>st</sup>, 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: Of those low paid in year  $t$ , almost two thirds (63.4%) remain in low-wage employment one year later, whereas only 23.7% of them are found in higher-wage employment. We also find evidence for a low-wage-no-wage cycle: Of the low paid in year  $t$ , 12.9% are unemployed in  $(t+1)$ , so they face a much higher risk of unemployment than those in higher-wage employment (2%). When looking at the unemployed in year  $t$ , 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*).

The data in *Table 1* refer to all men working full-time or being unemployed at the annual reference day November 1<sup>st</sup>. We now turn to the spell sample resulting from inflows into low-wage employment out of unemployment, as described in section 3. *Table 2* provides 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 13,846 males taking up low-wage jobs, 38.5% got unemployed again, compared to only 24.6% who managed

---

<sup>6</sup> 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) in West Germany aged 18-60.

to cross the low-wage threshold. This again seems to confirm the existence of a low-wage-no-wage cycle. Almost every third exit is classified as “other” (see above); only a small minority of the low-wage spells (5.0%) that started between 1995 and 2000 persisted up to the end of 2004.

Table 2 also presents 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, our data contain a relatively high share of males with unknown formal education level<sup>7</sup>. However, we can assume that the majority of those with “unknown” skill level is low skilled. Of the total number of 13,846 inflows, 45% are classified as “higher skilled” - far less than the corresponding share of the higher-skilled in the total German workforce. 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.

From human capital theory, we expect that higher-skilled persons have better chances to end up in higher-wage employment, and are less likely to return to unemployment. This expectation is confirmed by the figures in the first two columns.

When looking at different age groups, 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 are different.

For the spells in Table 2 (except for “other”), we present additional information on their mean and median duration (measured in weeks) of exits into unemployment and into higher-paid employment in Table 3. The mean duration of spells ending in unemployment was 40.2 weeks, considerably shorter than for spells ending in better-paid employment (50.4 weeks).<sup>8</sup> 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, as one would expect. Mean and

---

<sup>7</sup> 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.

<sup>8</sup> 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.



median durations tend to increase with higher age for both exits, which points to a higher persistence of low-paid employment among older workers.

As already mentioned above, the figures of Table 2 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). However, when we speak of a *low-wage-no-wage* cycle, we assume that it would be different for *higher-wage* jobs started out of unemployment.

To test this hypothesis, we have also analysed *higher-wage* job spells (with wages above the low-wage threshold) that followed an unemployment spell. Possible exits are 1. unemployment, 2. “other” (as specified above) and 3. low-wage employment.

The results, presented in Table 4, are somewhat surprising. 41.3% of these spells end in unemployment, even a bit more than in the case of low-wage spells (38.5%, see Table 2). So it seems to be a general feature of jobs started out of unemployment that a high percentage of them end in unemployment again, regardless of the wage level.

On the other hand, we observe much longer mean and median durations for higher wage spells returning to unemployment (71.8 and 41 weeks, respectively) than in the case of low-wage spells (40.2 and 26.3 weeks, see Table 3). This suggests that employment stability is higher for better-paid employees. So far, the descriptive evidence is mixed and at this point it is still not clear whether we can speak of a low-wage-no-wage cycle in a meaningful sense.

## 5. Econometric method and preliminary results

Since the unit of measurement in the IABS data 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

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

Figures 2 and 3 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. Although the overall shape of the

hazard functions is similar, the decline for transition into higher wage proceeds less steeply. The survival functions (Figures 4 and 5) demonstrate more clearly the differences between the two destination states: It becomes obvious that 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% have lost their low wage job. The pattern of the survival function in Figure 5 also suggests that many low wage jobs are temporary jobs, ending after 12 or 24 months.

The results of the proportional hazard models in Table 5 mean that we can identify further factors that play a significant role determining transition rates out of low wage jobs into higher wage jobs (column 1) or into unemployment (column 2). Looking at the results obtained for the destination state higher wage job, the younger age groups and better skilled realise faster transitions as do people who are employed in manufacturing or the construction sector. With respect to nationality, we cannot determine a significant difference between German and EU-15 foreign low wage earners. However, foreigners from non-EU 15 countries have a significant lower exit rate into higher wage jobs. With regard to firm size, the results suggest that smaller firms (up to 50 employees) provide lower chances to leave a low wage job for a higher wage job. Also, firm age does not seem to be important for the exit probability into higher wage job.

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. Furthermore, we have calculated total time spent in registered unemployment within the last three years prior to the relevant low wage episode (excluding the spell that ends in the low wage job considered in our sample) and have counted the unemployment spells within that time period.<sup>9</sup>

Both the length of the unemployment spell ending in a low wage episode and the cumulative duration of unemployment within the last three years have 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 is in line with the argument that human capital depreciates with the length of an unemployment spell.

The results for the transition into unemployment mirror to some extent the results just discussed. But noteworthy differences emerge as well. Higher qualification levels correspond to lower exit rates as expected. 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

---

<sup>9</sup> 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.

sample. Interestingly, foreigners from EU-15 countries do experience a somewhat lower transition rate into unemployment and the effect is still statistically significant. Across age groups we cannot detect statistically significant differences.

In terms of firm related characteristics, we observe higher transition rates when working in manufacturing, construction or trade, hotel and restaurant business. Firm age has a very small but significant effect on the transition rate into unemployment, indicating that working for a younger firm reduces the transition rate into unemployment. 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. The results could be caused by the relatively small number of large firms in our sample, and individual events like mass layoffs could influence the results. Alternatively, one could argue that this reflects employment strategies of big companies. Often, the workforce in such firms is divided into permanent and temporary staff, where permanent 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.

All variables capturing previous unemployment experience are highly significant. Both the length of the unemployment period directly preceding the low wage spell which is analysed here, total time spent in unemployment and the fact to have been unemployed more than once within the last three years significantly increase the transition rate into unemployment, indicating the existence of a low-pay – no-pay cycle. 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 Table 5 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 younger age groups realise lower transition rates into unemployment. Also, the effect of firm size is now in accordance with the expectations, 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 total time spent in unemployment within the last three years will 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. 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.

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. Table 6 therefore replicates 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  $\alpha$  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 Table 6, significance and magnitude of the estimates are very similar for both the proportional hazard model (see Table 5) and the Weibull model, so here we will only focus on the interpretation of  $\alpha$ . 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, since  $\alpha$  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, 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 although previous unemployment history has negative consequences for higher wage jobs and will increase the transition rate into unemployment, over time higher wage spells are less likely to become unemployed again. For low wage earners the risk of falling back into unemployment also decreases with time, but at a slower rate. This suggests that even after a prolonged time in low pay, the risk of losing the (low wage) job is comparatively higher.

Hence, for people taking up full time employment after they spent some time in unemployment the risk of becoming unemployed again is more or less irrespective of the wage level and their past unemployment history. However, to

what extent the risk of falling back into unemployment changes over time seems to be dependent from the wage level.

## **6. Preliminary conclusions**

Over the last decade, the German labour market has seen a growing low pay sector. It is often described by policy makers as a bridge between unemployment and more stable and better paid jobs. To explore this possibility we have presented preliminary results to gain a better understanding of the role of low wage jobs using a dataset that provides 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, since people in low wage jobs have a much lower upwards mobility. At the same time, they 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 in line with those for other European countries.

The duration analysis suggests that the share of people falling back into unemployment is similar for low wage and higher wage employees. Also, the effects of previous unemployment history are rather similar for both groups. These results do not point to a distinct low-wage – no-wage cycle. Results obtained from the Weibull model suggest that the degree of duration dependence differs between low wage and higher wage jobs. 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). 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. We interpret this as a sign of low wage persistence. On the other hand, we could also show that average duration of higher wage jobs that followed a low wage episode is even longer than the duration of higher wage jobs that ended an unemployment spell. So in terms of employment stability, low wage jobs may still serve as a stepping stone. Further research is needed to fully understand for whom it may do so. One possible route for further analysis is to account for unobserved heterogeneity as well and hopefully this will help us to shed some more light onto the questions raised in the beginning of this paper.

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

	Status in (t+1)			Total
	Full-time higher wage	Full-time low wage	Unemployment	
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: Inflows into low-wage jobs out of unemployment and destination state

	Exits			Right censored	Total
	Unemployment	Higher Wage	Other		
<b>All</b>	5,333 38.5%	3,409 24.6%	4,411 31.9%	693 5.0%	13,846 100.0%
<b>Skill Level</b>					
low	1,720 41.5%	881 21.2%	1,384 33.4%	163 3.9%	4,148 100.0%
higher	2,269 36.6%	1,788 28.8%	1,827 29.4%	321 5.2%	6,205 100.0%
unknown	1,344 38.4%	740 21.2%	1,200 34.4%	209 6.0%	3,493 100.0%
<b>Age</b>					
25-34	2,752 37.4%	1,887 25.6%	2,400 32.6%	324 4.4%	7,363 100.0%
35-44	1,745 39.1%	1,096 24.5%	1,385 31.0%	242 5.4%	4,468 100.0%
45-54	836 41.5%	426 21.1%	626 31.1%	127 6.3%	2,015 100.0%

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 3: Mean and median durations of low-wage spells (in weeks)

		<b>Exits</b>	
		<b>Unemployment</b>	<b>Higher Wage</b>
<b>All</b>	mean duration	40.2	50.4
	median duration	26.3	32.3
<b>Skill Level</b>			
low	mean duration	40.3	53.4
	median duration	28.2	35.4
higher	mean duration	40.4	48.7
	median duration	26.3	30.6
unknown	mean duration	39.6	51.2
	median duration	26.1	33.6
<b>Age</b>			
25-34	mean duration	37.6	48.8
	median duration	25.1	31.1
35-44	mean duration	40.5	52.2
	median duration	27.7	32.5
45-54	mean duration	47.8	53.1
	median duration	33.3	35.0

Source: Own calculations, based on IABS.

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

	<b>Exits</b>			<b>Right censored</b>	<b>Total</b>
	<b>Unemployment</b>	<b>Low Wage</b>	<b>Other</b>		
<b>Absolute figures</b>	13,484	2,356	8,753	8,056	32,649
<b>Shares (in %)</b>	41.3%	7.2%	26.8%	24.7%	100.0%
<b>Mean duration</b>	71.8	83.0	-	-	-
<b>Median duration</b>	41.0	46.6	-	-	-

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

Table 5: Proportional hazards model

	Low-wage spells started out of unemployment		Higher-wage spells started out of unemployment	
	Exit: higher wage	Exit: unemployment	Up to median wage Exit: unemployment	All higher-wage spells Exit: unemployment
	(1)	(2)	(3)	(4)
<b>Personal characteristics:</b>				
Foreign: EU-15	-0.114 (0.093)	-0.118 (0.075) <sup>‡</sup>	-0.105 (0.061) <sup>‡</sup>	0.006 (0.053)
Foreign: Non-EU-15	-0.094 (0.052) <sup>‡</sup>	0.031 (0.040)	0.037 (0.035)	0.056 (0.033) <sup>‡</sup>
Age 25-34	0.396 (0.056)**	0.077 (0.041)	-0.186 (0.029)**	-0.219 (0.025)**
Age 35-44	0.263 (0.059)**	0.016 (0.043)	-0.116 (0.031)**	-0.145 (0.263)**
Higher skill level	0.311 (0.043)**	-0.140 (0.034)**	-0.139 (0.026)**	-0.177 (0.245)**
Skill level unknown	0.053 (0.053)	-0.107 (0.039)**	-0.009 (0.034)	-0.126 (0.031)
<b>Firm related characteristics:</b>				
Manufacturing	0.177 (0.047)**	0.192 (0.039)**	0.095 (0.027)**	0.090 (0.024)**
Construction	0.301 (0.074)**	0.676 (0.050)**	0.619 (0.028)**	0.652 (0.025)**
Trade, hotel, restaurant	-0.028 (0.049)	0.081 (0.040)*	-0.378 (0.034)	-0.142 (0.030)
Firm size: 1-10 employees	-0.585 (0.066)**	-0.047 (0.051)	0.542 (0.037)**	0.632 (0.318)**
Firm size: 11-50 employees	-0.189 (0.062)**	-0.107 (0.050)*	0.301 (0.035)**	0.382 (0.030)**
Firm size: 51-230 employees	0.021 (0.059)	-0.202 (0.050)**	0.107 (0.037)**	0.177 (0.032)**
Firm age	0.000 (0.000)	-0.000 (0.000)**	-0.000 (0.000)**	-0.000 (0.000)**
<b>Unemployment history:</b>				
Unemployment duration preceding employment spell	-0.003 (0.000)**	0.001 (0.000)**	0.001 (0.000)**	0.001 (0.000)**
Total time spent in unemployment	-0.003 (0.006)**	0.002 (0.000)**	0.001 (0.000)**	0.001 (0.000)**
Number of unemployment spells > 1	-0.007 (0.044)	0.250 (0.036)**	0.351 (0.024)**	0.396 (0.022)**
Log likelihood	-27,372	-43,539	-96,602	-127,487

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: <sup>‡</sup>: 10%, \*: 5%, \*\* 1%. Standard errors in parentheses.



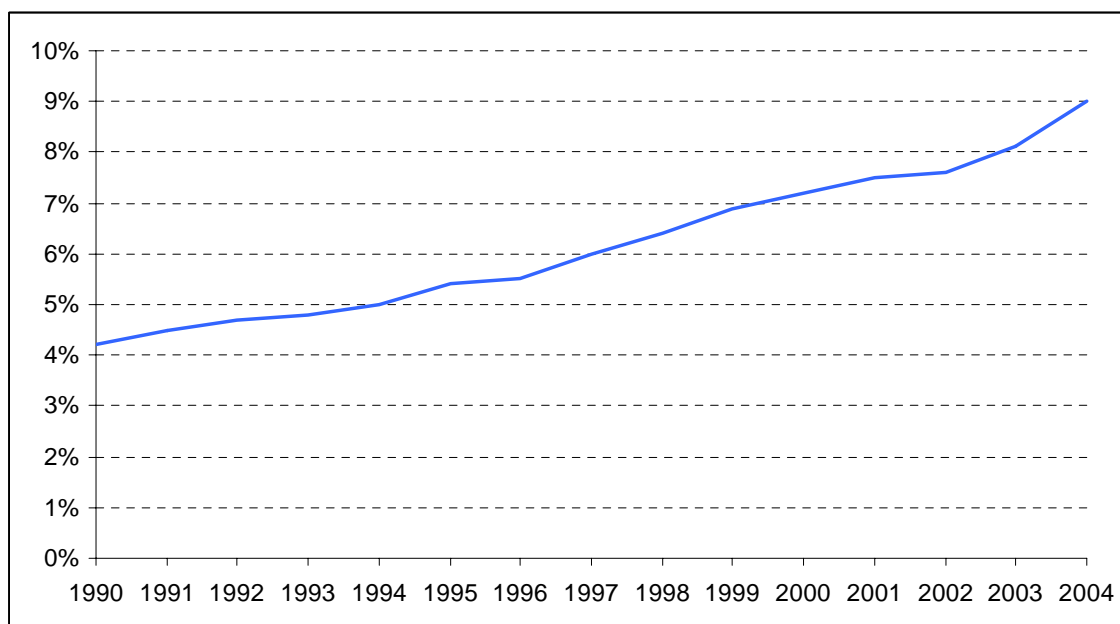
Table 6: Weibull model

	Low-wage spells started out of unemployment		Higher-wage spells started out of unemployment	
	Exit: higher wage	Exit: unemployment	Up to median wage Exit: unemployment	All higher-wage spells Exit: unemployment
	(1)	(2)	(3)	(4)
<b>Personal characteristics:</b>				
Foreign: EU-15	-0.129 (0.093)	-0.124 (0.075) <sup>‡</sup>	-0.109 (0.061) <sup>‡</sup>	0.010 (0.053)
Foreign: Non-EU-15	-0.073 (0.052) <sup>‡</sup>	0.054 (0.040)	0.043 (0.035)	0.063 (0.033) <sup>‡</sup>
Age 25-34	0.421 (0.056)**	0.102 (0.041)*	-0.225 (0.029)**	-0.261 (0.025)**
Age 35-44	0.279 (0.059)**	0.026 (0.043)	-0.142 (0.031)**	-0.178 (0.026)**
Higher skill level	0.304 (0.043)**	-0.163 (0.034)**	-0.154 (0.026)**	-0.198 (0.245)**
Skill level unknown	0.030 (0.053)	-0.136 (0.039)**	-0.019 (0.034)	-0.024 (0.031)
<b>Firm related characteristics:</b>				
Manufacturing	0.158 (0.047)**	0.166 (0.039)**	0.083 (0.027)**	0.076 (0.024)**
Construction	0.307 (0.074)**	0.716 (0.050)**	0.680 (0.028)**	0.707 (0.025)**
Trade, hotel, restaurant	-0.038 (0.049)	0.064 (0.040)	-0.061 (0.034) <sup>‡</sup>	-0.031 (0.030)
Firm size: 1-10 employees	-0.659 (0.066)**	-0.127 (0.051)	0.607 (0.037)**	0.692 (0.318)**
Firm size: 11-50 employees	-0.240 (0.062)**	-0.107 (0.050)*	0.342 (0.035)**	0.420 (0.030)**
Firm size: 51-230 employees	-0.006 (0.060)	-0.251 (0.050)**	0.128 (0.037)**	0.195 (0.032)**
Firm age	0.000 (0.000)	-0.000 (0.000)**	-0.000 (0.000)**	-0.000 (0.000)**
<b>Unemployment history:</b>				
Unemployment duration preceding employment spell	-0.002 (0.000)**	0.002 (0.000)**	0.001 (0.000)**	0.001 (0.000)**
Total time spent in unemployment	-0.002 (0.006)**	0.002 (0.000)**	0.001 (0.000)**	0.001 (0.000)**
Number of unemployment spells > 1	0.002 (0.045)	0.270 (0.036)**	0.391 (0.024)*	0.436 (0.022)**
alpha	0.9992	0.9231	0.7365	0.7342
Log likelihood	-9,139	-12,949	-96,602	-37,485

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: <sup>‡</sup>: 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: Baseline hazard function: transition rates from low wage into higher wage employment

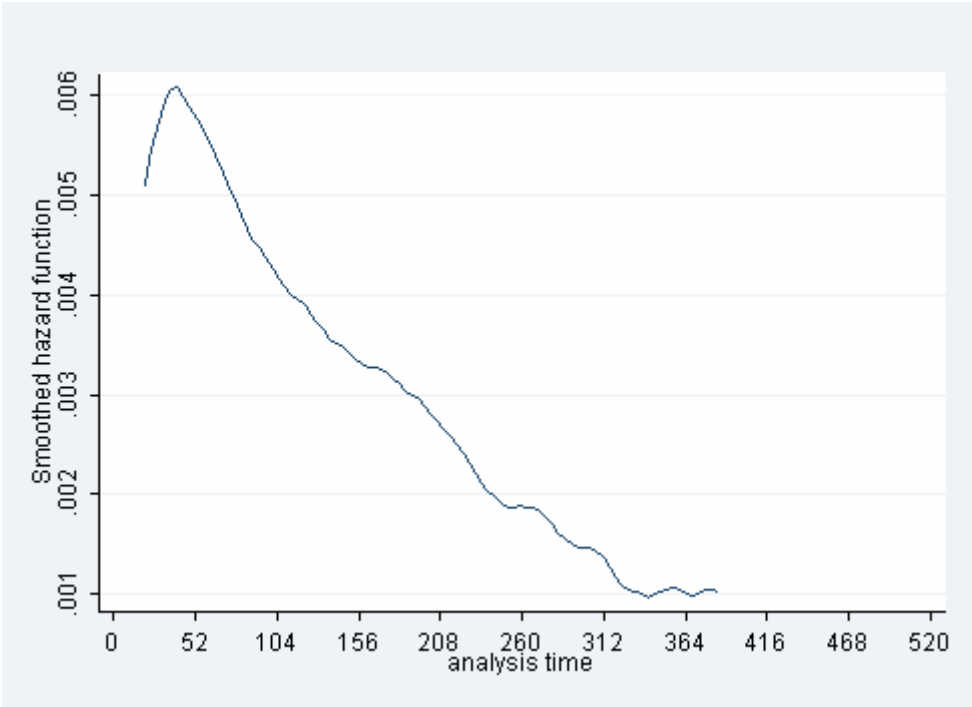


Figure 3: Baseline hazard function: transition rates from low wage employment into unemployment

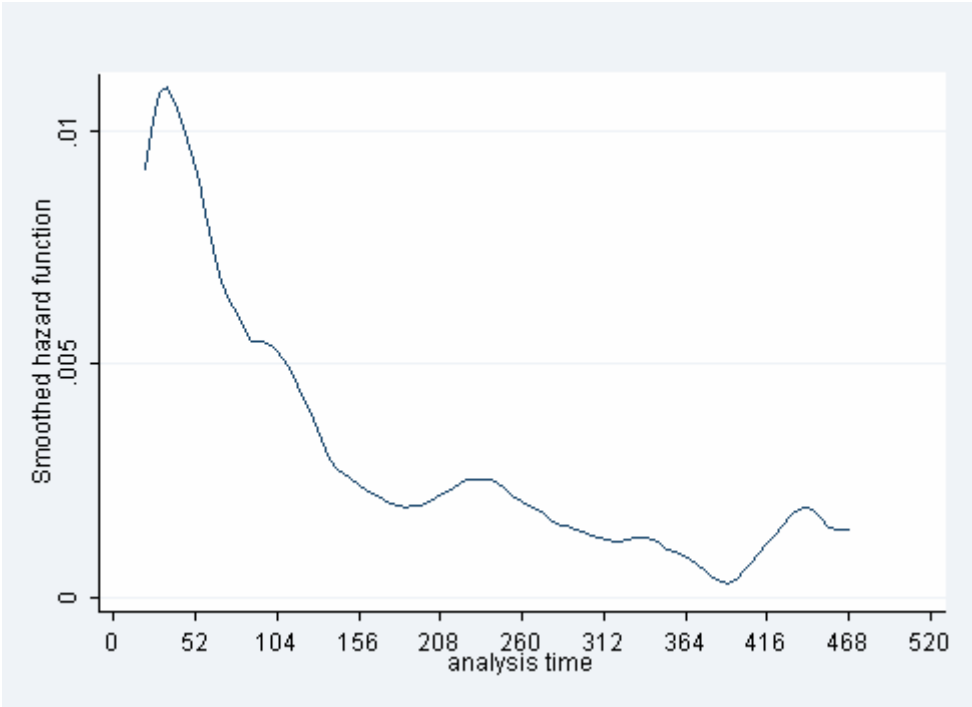


Figure 4: Survival function: low wage into higher wage employment

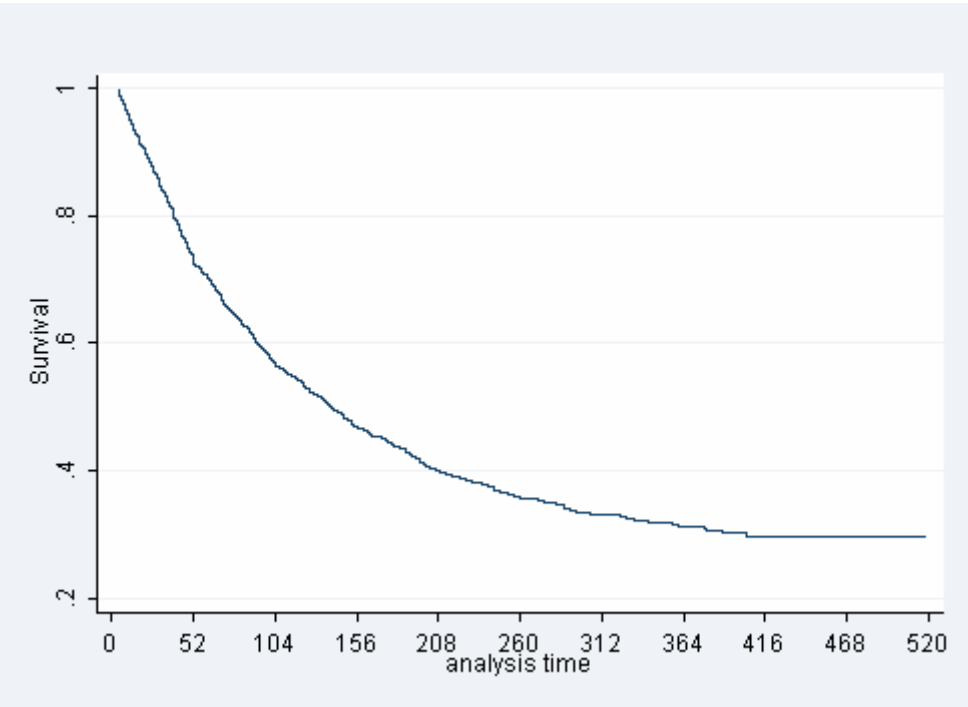
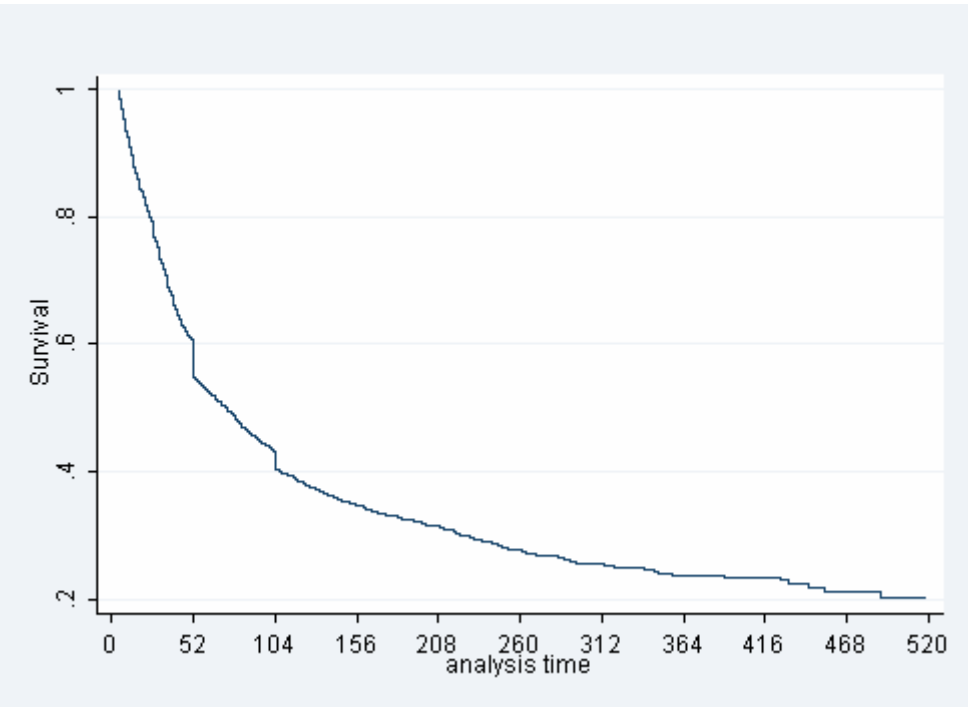


Figure 5: Survival function: low wage employment into unemployment



## References

- Arulampalam, W.; Booth, A.L.; Taylor, M. P. (2000): Unemployment persistence, in: Oxford Economic Papers 52, pp. 24-50
- Bolvig, I. (2006): Moving out of low pay, falling back in – the importance of the employing firm, In: Empirical analyses of employers and employees: the case of workers at the low end of the labour market, PhD Thesis, Aarhus Business School, Department of Economics, Denmark.
- Cappellari, Lorenzo (2000): Low-wage mobility in the Italian labour market, International Journal of Manpower 21, 264-290.
- Cappellari, Lorenzo and Stephen P. Jenkins (2004): Modelling Low Income Transitions, in: Journal of Applied Econometrics, 19, 593-610.
- Cappellari, Lorenzo; Dorsett, Richard; Haile, Getinet (2007): State dependence, duration dependence und unobserved heterogeneity in the employment transitions of the over-50s. ISER Working Paper 2007-16. Colchester: University of Essex.
- Dickens, R. (2000): Caught in a Trap? Wage Mobility in Great Britain: 1975-1994, in: Economica, Vol. 67, No. 268, pp. 477-498
- Eichhorst, Werner; Gartner, Hermann; Krug, Gerhard; Rhein, Thomas; Wiedemann, Eberhard; (2005): Niedriglohnbeschäftigung in Deutschland und im internationalen Vergleich. In: J. Allmendinger, W. Eichhorst & U. Walwei (Hrsg.), IAB Handbuch Arbeitsmarkt. Analysen, Daten, Fakten, (IAB-Bibliothek, 01), Frankfurt am Main u.a.: Campus Verlag, S. 107-142.
- European Commission (2004): Employment in Europe 2004. Recent Trends and Prospects. Chapter 4: Labour market transitions and advancement: temporary employment and low-pay in Europe.
- Heckman, James J. (1981): The incidental parameters problem and the problem of initial conditions in estimating a discrete time – discrete data stochastic process, in Manski, C.F. and McFadden, D. (eds.): Structural Analysis of Discrete Data with Economic Applications, MIT Press, Cambridge.
- OECD (1996): Employment Outlook, Chapter 3: Earnings inequality, low-paid employment and earning mobility. Paris
- OECD (2003): Employment Outlook, Chapter 2: The Labour Mobilisation Challenge: Combating Inactivity Traps and Barriers to Moving Up Job Ladders. Paris
- OECD (2006): Employment Outlook, Chapter 5: Social Implications of Policies Aimed at Raising Employment. Paris
- Pavlopoulos, D., Fouarge, D., Muffels, R., Vermunt, J.K. (2007): Labor Market and Income Inequality. Job Mobility and Wage Mobility of High- and Low-paid Workers, in: Schmollers Jahrbuch 127 (2007), pp. 47-58
- Rhein, Thomas, Hermann Gartner und Gerhard Krug (2005): Niedriglohnsektor. Aufstiegschancen für Geringverdiener verschlechtert. IAB Kurzbericht 3/2005

Rhein, Thomas; Stamm, Melanie (2006): Niedriglohnbeschäftigung in Deutschland \* deskriptive Befunde zur Entwicklung seit 1980 und Verteilung auf Berufe und Wirtschaftszweige. (IAB-Forschungsbericht, 12/2006), Nürnberg, 40 S.; 293 KB.

Stewart, Mark (2007): The Inter-related Dynamics of Unemployment and Low-Wage Employment, in: Journal Of Applied Econometrics, Vol. 22/3, pp. 511-531

Stewart, Mark B., Joanna K. Swaffield (1999): Low Pay Dynamics and Transition Probabilities, *Economica* 66, 23-42.

Uhlendorff, A. (2006): From No Pay to Low Pay and Back Again? A Multi-State Model of Low Pay Dynamics. IZA discussion paper No. 2482

Wolff, J. (2004): The duration of new job matches in East and West Germany. (Universität München, Volkswirtschaftliche Fakultät. Discussion paper, 2004-10), Munich.