Discussion Paper No. 05-05

Unemployment Duration and the Length of Entitlement Periods for Unemployment Benefits: Do the IAB Employment Subsample and the German Socio-Economic Panel Yield the Same Results?

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Non–technical Summary In this paper we analyze how the choice of data and how the specification of the econometric model affect the estimation results in an unemployment duration analysis for West-Germany. Robustness with respect to the data, the model and the definition of unemployment is indispensable for reliable empirical findings. Otherwise serious policy recommendations are not derivable. For our purpose at hand, we compare unemployment information extracted from the IAB employment subsample (IABS) 1975-1997 and from the German Socio-Economic Panel (GSOEP). The IABS has a large sample size and it is derived from administrative data, while the advantage of the GSOEP is the large variety of individual and household characteristics that can be related to individual unemployment duration. Since there is not explicit information on registered unemployment available in the IABS, we use two different proxies for unemployment as introduced by Fitzenberger and Wilke (2004). While self-reported information on registered unemployment is available in the GSOEP, this information may be subject to measurement error. Our results suggest that the distribution of unemployment durations in the GSOEP lies between the distribution of our wide (first proxy) and our narrow (second proxy) definition of unemployment in the IABS. Estimation of standard duration models further indicate that conclusions drawn from the IABS and the GSOEP differ in many cases. While the GSOEP suggests that the hazard rate has a maximum at about 12 months of unemployment for both men and women, the IABS results suggest that this maximum is at about 20 months. Contrary to our GSOEP results and contrary to many results based on the GSOEP found in the literature, we find a weak positive relationship between longer maximum entitlement periods of unemployment benefits ('Arbeitslosengeld') and longer unemployment durations for some cases in the IABS. However, the existence of this relationship is not robust with respect to changes in model specification and the definition of unemployment. Our results for men indicate that the hazard of exiting unemployment as measured in both the IABS and the GSOEP decreases with age, and that recipients of unemployment assistance ('Arbeitslosenhilfe') have longer unemployment spells than those of unemployment benefits ('Arbeitslosengeld'). The results for women do not show such clear patterns. The large sample size of the IABS also allows one to trace out statistically significant effects of characteristics such as regional and industry indicators, which is generally not possible in the relatively small GSOEP.

Das Wichtigste in Kürze Das Papier bietet einen Vergleich der Information zur Arbeitslosigkeitdauer in der IAB Beschäftigtenstichprobe (IABS) und dem Sozio-Ökonomischen Panel (SOEP). Da die IABS keine explizite Information zu registrierter Arbeitslosigkeit enthält, greifen wir hierzu auf zwei von Fitzenberger/Wilke (2004) vorgeschlagene Proxies für Arbeitslosigkeit in der IABS zurück. Das erste Proxy umfasst alle Arbeitslosigkeitsepisoden nach einer sozialversicherungspflichtigen Beschäftigung, bei der in mindestens einer Periode Arbeitslosenunterstützung bezogen wurde. Das zweite Proxy umfasst alle Arbeitslosigkeitsepsioden zwischen zwei Beschäftigungsverhältnissen, in denen kontinuierlich Arbeitslosenunterstützung bezogen wurde. Die Schätzung von Standard Verweildauermodellen legt nahe, dass die Schlussfolgerungen aus beiden Datensätzen sich in vielen Fällen unterscheiden. Während die SOEP Ergebnisse darauf hindeuten, dass die Austrittsrate aus Arbeitslosigkeit nach ca. 12 Monaten am höchsten ist, sprechen die IABS Resultate eher für ein Maximum bei 20 Monaten. Im Gegensatz zu unseren SOEP Resultaten und im Gegensatz zu vielen auf dem SOEP basierenden Ergebnissen in der Literatur, messen wir in der IABS für

Männer einen statistisch signifikanten Zusammenhang zwischen längeren Anspruchsdauern auf Arbeitslosengeld und längeren Arbeitslosigkeitsdauern. Für Frauen ergeben sich keine so klaren Zusammenhänge. Der grosse Stichprobenumfang der IABS ermöglicht ausserdem die Schätzung statistisch signifikanter Unterschiede zwischen verschiedenen Sektoren und Regionen, was aufgrund des relativ kleinen Stichprobenumfangs beim SOEP nicht möglich ist.

Unemployment duration and the length of entitlement periods for unemployment benefits: do the IAB employment subsample and the German Socio-Economic Panel yield the same results?

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Abstract

We compare information on the length of unemployment spells contained in the IAB employment subsample (IABS) and in the German Socio-Economic Panel (GSOEP). Due to the lack of information on registered unemployment in the IABS, we use two proxies of unemployment in the IABS as introduced by Fitzenberger/Wilke (2004). The first proxy comprises all periods of nonemployment after an employment spell which contain at least one period with unemployment compensation transfers. The second proxy includes all episodes between two employment spells during which an individual continuously received unemployment benefits. Estimation of standard duration models indicates that conclusions drawn from the IABS and the GSOEP differ in many cases. While the GSOEP suggests that the hazard rate has a maximum at about 12 months of unemployment, the IABS results suggest that this maximum is at about 20 months. Contrary to our GSOEP results and contrary to many results based on the GSOEP found in the literature, we find a statistically significant association between longer maximum entitlement periods of unemployment benefits ('Arbeitslosengeld') and longer unemployment durations for men in the IABS. The results for women do not show such clear patterns. The large sample size of the IABS also allows one to trace out statistically significant effects of characteristics such as regional and industry indicators, which is generally not possible in the relatively small GSOEP.

1 Introduction

The issue of German unemployment durations has received considerable attention in the recent literature. Prominent examples include Hunt (1995), Hujer/Schneider (1996), Schneider/Hujer (1997), Steiner (1997, 2001), Plaßmann (2002), Fahrmeir et al. (2003), Fitzenberger/Wilke (2004), Lüdemann et al. (2004) and Wilke (2004). While past contributions were usually based on the German Socio-Economic Panel (GSOEP), the more recent literature has used a relatively new data set, the employment sample of the Institute for Labour Market and Employment Research (IABS). In her influential article, Hunt (1995) used the GSOEP to evaluate the effects of increased maximum entitlement periods of unemployment benefits on the duration of unemployment. She concluded that the reforms increased the unemployment duration for certain age groups, but generally found it difficult to establish a statistically significant relationship between maximum entitlement periods and unemployment duration. Hujer/Schneider (1996) also used the GSOEP to study different aspects of unemployment duration in Germany. They found a unimodal pattern of duration dependence, where the re-employment hazard first increases and then decreases with elapsed unemployment duration. Hujer/Schneider (1996) also obtained that older workers had more difficulty escaping unemployment than younger workers, and that the length of the maximum entitlement period had a significant but very small negative effect on re-employment hazards. By contrast, Schneider/Hujer (1997) were not able to detect any statistically significant relationship between maximum entitlement periods and unemployment duration. Steiner (1997) considered remaining entitlement instead of maximum entitlement periods, but obtained the implausible result that lower remaining entitlement periods *decreased* re-employment hazards.

Starting with Plaßmann (2002), researchers have increasingly used the IABS as the data base for their analyses. Using a similar setup as Hunt (1995), Plaßmann (2002) established significant reform effects for the same age groups as Hunt (1995) and for additional age groups (older workers). Similar to Hunt (1995), Plaßmann (2002) provided no direct evidence for a relationship between maximum entitlement periods and unemployment duration but employed a difference-in-difference approach comparing how certain age-groups fared before and after the reform. Also based on the IABS, Fahrmeir et al. (2003) estimated a sophisticated semi-parametric Bayesian model for unemployment durations. They confirmed results found earlier in the literature that older workers face lower re-employment hazards, that individuals receiving unemployment assistance ('Arbeitslosenhilfe', ALH) have longer total unemployment duration than those receiving unemployment benefits ('Arbeitslosengeld', ALG), and that the temporal structure of unemployment spells is characterized by negative duration dependence over wide ranges. More recently, Fitzenberger/Wilke (2004) have pointed out that the finding of Hunt (1995) and others that longer entitlement periods increased the unemployment durations for some age groups during the 1980s and 1990s might not necessarily be due to disincentive effects for worker who are still looking for a job. They argued that instead the exit rates out of the labor force seem to have increased due to stronger incentives for early retirement. Koenker/Geling (2001) criticize the use of sensitive parametric assumptions in duration analysis. Van den Berg (2001) stresses that the results of single spell proportional hazard models have to be read with caution. Following their line, Lüdemann et al. (2004) and Wilke (2004) seek to provide more robust evidence on the effect of individual characteristics on unemployment durations using the IABS.

In view of this mixed and partly inconclusive evidence based on the two different data sets, the aim of this paper is to explicitly compare the information on unemployment durations contained in the IABS and the GSOEP, and to study to what extent standard duration models based on the two data sets yield similar results. We check the robustness of the results in terms of data source, definition of unemployment and model specification. We do this by extracting two comparable samples from both the IABS and the GSOEP, and by providing descriptive as well as econometric evidence on the length, the temporal structure and the determinants of unemployment durations in West Germany for the years 1983 to 1997. By doing so, we are also able to highlight the strengths and weaknesses of both data sets for the purpose at hand. The main advantage of the IABS is its large sample size and the fact that it is derived from administrative data. A disadvantage of the IABS is the lack of explicit information on registered unemployment. On the other hand, an important advantage of the GSOEP over the IABS is the large variety of individual and household characteristics that can be related to individual unemployment duration. Another advantage of the GSOEP is the detailed monthly employment calendar which also contains information on registered unemployment. However, a clear disadvantage of the GSOEP is its relatively small sample size and the fact that the retrospective information in the employment calendar is likely to be affected by recall error and the specific design of the questionnaire (compare Jürges (2004) and the discussion below).

The rest of the paper is organized as follows. Section 2 provides more details about the two data sets and presents first descriptive evidence on the length and the distribution of unemployment durations. Section 3 then discusses the results of some duration models and compares to what extent both data sets yield similar results. Section 4 concludes the paper.

2 Data

We use three different samples for our estimations. Two samples were extracted from the IABS 1975-1997 and one was extracted from the GSOEP. All three samples cover the period 1983 to 1997 and contain the same set of regressors for West German individuals aged 26 to 48 years when entering unemployment. The age limit of 48 years was chosen in order to avoid problems with early retirement programs that have been widely used in the period under consideration.

The IABS is based on German register data. It is a one percent random sample drawn from the population of gainfully employed individuals who are covered by social insurance. See Bender et al. (2000) for more details about the IABS. The IABS contains employment trajectories with daily information on employment periods and compensation transfers from the Federal Employment office (BA) of about 500K individuals. The recorded transfer payments are unemployment benefits (ALG), unemployment assistance (ALH) and maintenance payments during training measures (UHG). The unemployment information in the IABS is incomplete insofar as it only includes information about the receipt of unemployment compensation transfers from the Federal Employment Office (BA) during a period of nonemployment. It does not include explicit information on periods of registered unemployment as periods without unemployment compensation transfers are not recorded. Unemployment spells have therefore to be constructed from the individual employment and transfer trajectories using a particular definition of unemployment. In this paper we use two proxies for unemployment in the IABS as introduced by Fitzenberger/Wilke (2004): nonemployment (IABS-NE) and unemployment between jobs (IABS-UBJ).

The first proxy comprises all nonemployment periods after an employment period in which the individual received unemployment compensation from the BA for at least one day. The nonemployment period is regarded as censored (at the end of the benefit payment) if the last record involves an unemployment benefit payment that is not followed by an employment spell. The second proxy requires an employment period before and after the nonemployment period and a continuous flow of unemployment compensation during this period. Both IABS-NE and IABS-UBJ periods therefore require transfer payments from the BA. In addition, the IABS samples are conditional on ALG or ALH as the first compensation payment during the unemployment period, i.e. unemployment periods starting with UHG are excluded. IABS-NE is a broad proxy with possibly upward biased unemployment durations as it contains also periods which may not be related to unemployment. IABS-UBJ is a narrow proxy that ensures that any duration time corresponds to registered unemployment. It is selective by conditioning on a future employment period since in particular individuals with very long unemployment spells who never leave to employment are not considered. Given these definitions, one might wonder to what extent IABS-NE and IABS-UBJ spells overlap with times of benefit receipt. In the case of the IABS-NE subsample, about 70.1 % of the spell lengths represent times where the individual received unemployment compensation from the employment office. By construction, the length of IABS-UBJ spells coincides almost entirely with times of unemployment compensation receipt. For further details about the unemployment proxies, see Fitzenberger/Wilke (2004). To be comparable with the GSOEP, we created monthly spell length information from the IABS data by rounding towards the nearest integer and by dropping all observations shorter than half a month.

The GSOEP is a representative German panel survey that was started in 1984 in West Germany and extended to East Germany after reunification in 1990. See Haisken-DeNew/Frick (2003) for more details about the GSOEP. As we are interested in the period 1983 to 1997, and in order to be comparable to the IABS, we use the West German part only. This part of the data also contains over-proportionally many individuals of foreign nationality living in West Germany. We do not use information on these individuals as it is unclear how observations in duration models have to be weighted to account for oversampling of certain individuals. As a result, we also dropped foreign individuals from our IABS sample. The GSOEP contains a monthly retrospective employment calendar that records in which months (if any) in the year prior to the interview the individual was registered unemployed. It is important to note that this retrospective information may be subject to measurement error if individuals do not (or do not want to) remember when or even whether at all they were unemployed. For example, Kraus/Steiner (1998) found clear heaping effects in the GSOEP unemployment data at the end of each year. Furthermore, by comparing retrospective with contemporaneous unemployment information, Jürges (2004) concludes that up to one quarter of all retrospectively reported unemployment spells in the GSOEP may be subject to error, and that the amount of error may be related to other observed characteristics.

In both the IABS and the GSOEP, we use all unemployment periods after an employment period. Note that we do not distinguish between part-time and full-time employment. This should especially be borne in mind when interpreting the results for women. Moreover, we restricted unemployment spells to begin before 1 January 1997. Moreover, all unemployment information is cut off at 31 December 1997. This induces systematic right censoring in the IABS-NE and GSOEP samples. By construction, IABS-UBJ is a subset of IABS-NE, and we expect longer unemployment periods for the IABS-NE proxy since right censored durations without exit to employment are expected to be longer than periods with observed exit to employment. For our analysis we construct separate samples for males and females, i.e. in fact we have two times three samples.

As indicated in the introduction, a particular relevant aspect of unemployment durations is their possible relationship with the system of unemployment compensation, in particular the length of entitlement periods and the level of benefits. Such a relationship is suggested by job search models (see e.g. Mortensen (1986)) and is highly relevant from a policy point of view. Several changes of the German unemployment compensation system were conducted during the 1980s and 1990s. One consequence of these reforms were gradual changes in the maximum entitlement period for ALG for individuals aged over 41 years as summarized in Table 1. In our analysis, we use this information on maximum entitlement periods, but emphasize that these may differ from actual entitlement periods if the individual's prior employment record does not meet certain minimum employment durations. Another potentially important aspect of the unemployment compensation is the income replacement ratio, i.e. the level of ALG (or ALH) relative to the previous net wage ('pauschaliertes Nettoentgelt') of the individual. In 1994, this replacement ratio was cut from 68 % to 67 % for ALG recipients with dependent children (from 63 % to 60 % without children) and from 58 % to 57 % for recipients of ALH (from 56% to 53 % in the case without children). Given these institutional rules, we constructed a variable for the individual replacement ratio. In the case of ALH, the final level of the transfer may differ because ALH payments are means tested. Moreover, the individual may receive social assistance in addition to the unemployment compensation. More details on the reforms of the unemployment compensation system during the 1980s can be found in Hunt (1995) and Plaßmann (2002). As pointed out by Hunt (1995), institutional changes can help identify the effect of maximum entitlement periods and the income replacement ratio on the duration of unemployment as given individuals may change their search behaviour in reaction to the reform and because different individuals with the same characteristics can be compared before and after the reform.

— Table 1 about here —

Tables 2 and 3 give a descriptive summary for the six samples. Sample sizes for the IABS samples are in the range of ten thousands whereas, at around 500 observations, they are much lower for the GSOEP samples. There are more observations for females in the GSOEP compared to the IAB samples. This is not due to the conditioning on transfer payments during the unemployment period since the share of non-recipients in the GSOEP sample is almost independent of gender. As expected, the average IABS-NE spell length is greater than the average IABS-UBJ spell length. The amount of censoring is between 7% and 23%. We observe less censoring in the GSOEP, and the amount of censoring diverges when we compare men and women. When we look at the other variables we find that descriptive statistics for the two IABS proxies are much more similar to each other than to those of the GSOEP sample. The conditioning on future employment in the IABS-UBJ proxy does not affect the sample averages of many observed regressors. We only observe remarkable deviations in the length of the previous employment spell and for males in the composition of the blue/white collar variable. Since average unemployment duration for IABS-UBJ is less than half of IABS-NE for males and females, the selection seems to be due to unobserved terms. As remarked by Lüdemann et al. (2004), work history variables such as the length of the previous employment spell, whether the individual in question was unemployed before or whether it was rehired by the previous employer have high explanatory power for long term unemployment without exit to employment. The composition of these variables is therefore likely to change if one conditions on future employment as in the IABS-UBJ proxy. We observe this for the length of the previous employment spell but not for the recently unemployed. Note that information on job recall is not available in the GSOEP and is therefore not considered.

We observe that in the GSOEP sample there are more individuals with children, more married individuals and that individuals tend to have higher educational degrees than in the IABS. The regional distribution and distribution over the business sectors is very similar for all samples. White collar workers are much more numerous, and wages tend to be higher in the GSOEP sample. The distribution over the quintiles of the wage distribution is similar for women but for men, the GSOEP distribution appears rather different and somewhat implausible because of the high share of high-wage earners. The distribution over the type of unemployment compensation transfer at the beginning of the spell shows that in the GSOEP sample we have $10 - 15\%$ of individuals without any transfer payment. We observe fewer ALH recipients in the GSOEP.

— Tables 2 and 3 about here —

Descriptive results not reported here suggest that the differences between the IABS samples and the GSOEP are not due to the group of individuals who do not receive any form of unemployment support (these individuals are not covered by the IABS), as – judged from the GSOEP – this group is relatively small and the probability of belonging to it is not systematically related to any of the above characteristics. The differences are also unlikely to be caused by differences in variable definitions which appear comparable in most cases. For example, the variables 'vocational training', 'university' and 'blue'/'white collar' refer to generally accepted definitions of educational qualification ('Lehre' and 'Universitätsabschluss') and occupational status ('Arbeiter' and 'Angestellte'). The wage information refers to gross wages. These are given as daily gross wages ('Tagesentgelt') in the IABS and as monthly gross wages divided by 21 working days in the GSOEP. In the econometric analysis, this wage information is not used directly but in the form of whether an individual belonged to a particular wage quintile of the total population of wage earners in the last year of his or her last employment spell. For example, individuals who entered unemployment from a low-paid job belong to the first wage quintile.

Rather than being caused by differences in variable definitions we suspect that differences between the IABS and GSOEP samples are due to the fact that the IABS is an administrative data set collected among employers whereas the GSOEP is based on self-reported individual survey information. For this reason, we expect the two data sources to be affected by measurement error in a very different way. For example, we expect that variables in the IABS that are not directly related to the purpose of recording wage and employment information for social security purposes to be affected by measurement error to a larger extent than in the GSOEP, because employers face no sanctions if the corresponding information is incorrect. It is known that this concerns in particular the information on children, marital status and educational qualifications (see e.g. Fitzenberger (1999)). Checks not reported here also show that differences in the distribution of educational characteristics between the IABS and the GSOEP arise in a similar way if one compares employment instead of unemployment spells. For example, in the IABS, 69.8 % of male employment records that started in 1984 were related to individuals with vocational training as the highest educational qualification and 8.8 % to individuals with university education. In the GSOEP, at 61.4 % and 15.1 %, these shares were lower for vocational training and higher for university education. The figures for women and other years are similar.

On the other hand, for the reasons mentioned above, we expect the GSOEP information on unemployment durations to be affected by measurement error to some extent, because the design of the questionnaire for this question might tempt interviewees to round retrospectively reported unemployment information to 12 months. Figures 1 and 2 show the cumulative distribution function of unemployment durations in the all the six samples considered. For men, the distribution of the GSOEP durations lies everywhere between the distributions of the wide and the narrow unemployment definition of the IABS. This is an indication that for men the length of (self-reported) registered unemployment is between the IABS proxies. For women, this only seems to be the case for durations up to 20 months, after which the GSOEP durations have practically the same distribution as the narrowly defined unemployment durations in the IABS.

Figures 3 and 4 present unconditional hazard functions for the different samples. (These hazards were estimated non-parametrically using a kernel smoother and an optimally chosen bandwidth). The shape of the GSOEP hazards differs considerably from the shape of the two hazards based on the IABS data. For both men and women, the latter two have a relatively flat peak at around 20 months, whereas the GSOEP hazard has a pronounced peak at around 12 months. This peak at 12 months might be related to the fact that individuals tend to round retrospectively reported unemployment durations. It is remarkable that GSOEP and

IABS differ considerably in this important aspect of unemployment durations.

— Figures 1 to 4 about here —

3 Estimation results

3.1 Cox proportional hazard model

In order to investigate further to what extent the two samples share the same information on unemployment durations, we estimate the Cox proportional hazard model

$$h(t) = h_0(t) \exp\left(\beta_1 x_{i1}(t) + \beta_2 x_{i2}(t) + \ldots + \beta_k x_{ik}(t)\right) \tag{1}$$

(see e.g. Kalbfleisch/Prentice (2002)), where $h(t)$ is the hazard of leaving unemployment and $x_{i1}(t), x_{i2}(t), \ldots, x_{ik}(t)$ are (possibly time-varying) characteristics of individual i. The unspecified baseline hazard $h_0(t)$ captures how the probability of exiting unemployment depends on the already elapsed unemployment duration.

The results for men in Table 4 show that both IABS and GSOEP yield a similar age pattern, i.e. individuals aged more than 35 years have lower exit probabilities from unemployment than younger ones, although this pattern is less marked for the IABS-UBJ definition. Married individuals have higher hazards in the IABS, whereas no such effect can be measured in the GSOEP. On the other hand, men with children face higher hazards for leaving unemployment in the GSOEP and in the IABS-NE but not in the IABS-UBJ. As to the influence of educational qualifications, the conclusions from both samples also differ. University education appears to increase the hazard in the GSOEP when compared to vocational training but not in the IABS. Similarly, white collar workers have significantly lower hazards than blue collar workers in the IABS, while there is no such effect in the GSOEP. As discussed above, some of these differences may be related to the fact that some variables in the IABS such as the ones referring to educational qualifications or the number of children are less reliable.

— Tables 4 and 5 about here —

An advantage of the IABS is that it allows one to trace out statistically significant differences in re-employment hazard across regions, sectors of the economy and income classes, which is not possible in the GSOEP. For example, the IABS results in Table 4 show that workers in Bavaria find it much easier to end unemployment than those in other regions, whereas the corresponding results for the GSOEP are not statistically significant. Both IABS and GSOEP show that low-wage earners have significantly lower re-employment probabilities, but the effects for other income classes are insignificant in the GSOEP. Contrary to the findings in the IABS, there is no statistically significant relationship between the hazard rate and the length of the previous employment spell in the GSOEP. In principle, the large number of insignificant effects in the GSOEP may be due to the smaller sample size and/or due to a larger amount of measurement error in the dependent variable. In order to investigate this last possibility, we re-estimated all models in this paper for a randomly drawn subsample of the IABS, the size of which was identical to that of the GSOEP. The results of this exercise suggest that sample size is the reason for lower levels of statistical significance in the GSOEP, as the results for the randomly drawn IABS subsample showed even less statistical significance than those of the GSOEP. The results in Table 4 also show that, in both IABS and GSOEP, having been unemployed in the last 12 months significantly increases the probability of returning to employment quickly. This effect is probably due to seasonal employment.

As to the effect of maximum entitlement periods, the IABS yields a negative relationship, i.e. longer maximum entitlement periods are associated with lower exit probabilities as predicted by search theory. It is interesting to note that this pattern is much less pronounced and also statistically less significant in the case of unemployment between jobs (IABS-UBJ). The question of whether such a monotone relationship can be interpreted as evidence for a disincentive effect will be discussed in more detail below. In contrast to the IABS, the GSOEP results suggest that increasing the maximum entitlement period from 1 - 12 months to 13 to 24 months does not significantly change the hazard rate. By contrast, very long entitlement periods of 25 or more months seem to *increase* the rate of leaving unemployment in the GSOEP, which is at odds with search theory. As discussed in the introduction, such statistically insignificant or implausible results can be found in much of the literature on unemployment duration in Germany using the GSOEP. In Table 4, the category of zero months of unemployment benefits also includes the case of ALH. If one replaces the dummies indicating maximum entitlement periods by two dummies indicating ALG and ALH, then both GSOEP and IABS yield the statistically significant result that recipients of ALH have longer unemployment durations than recipients of ALG. Note that, in line with theoretical predictions, both data sets yield a significant and sizeable negative effect of higher replacement ratios on the probability of leaving unemployment.

Table 4 further shows that the IABS results pick up the more favourable labour market conditions during the boom period 1988 to 1991 and the less favourable conditions around the recession 1993. Apart from business-cycle indicators, we also included the so-called 'December dummy' into the hazard equation. This is sometimes seen as a remedy for the already mentioned rounding effects at the end of a year in the GSOEP, where individuals tend to check the corresponding boxes in the retrospective monthly questionnaire through December even if they were not continuously unemployed at the end of the year (see Kraus/Steiner (1998)). Confirming prior expectations which suggest that it is harder to exit unemployment in winter, the IABS results show a clear negative December effect. By contrast, the corresponding estimate in the GSOEP is positive but insignificant. An explanation might be that an originally negative effect – as correctly estimated in the IABS – is compensated by end-of-the-year rounding in the GSOEP, which produces disproportionately many spells that end in December. Finally and surprisingly, Table 4 shows that neither IABS nor GSOEP measure a significant relationship between individual hazards and aggregate outflow rates from unemployment.

Table 5 presents the corresponding results for women. A first observation is that the results generally seem to be less clear and much less robust across the different unemployment definitions in the IABS than those for men. On the other hand, some of the GSOEP results for women are surprisingly significant when compared to the corresponding results for men. This concerns in particular some regional and sectoral effects. For both IABS and GSOEP, the conclusions drawn from the estimates for women differ significantly from those for men in many cases. For example, there is no clear age or income pattern and there is no statistically significant relationship between maximum entitlement periods and unemployment durations for women. Also, according to the IABS, women do not seem to have been as vulnerable as men to worsening labour market conditions at the beginning of the 1990s. Lüdemann et al. (2004) suggest that this may be due to the introduction of parental leave benefits during the second half of the 1980s which prevented recent mothers from registering as unemployed. In line with theoretical predictions, women in the IABS tend to leave unemployment later if they have higher replacement ratios. The corresponding effect is insignificant in the GSOEP. As to the December effect, the results confirm those for men in that the IABS measures a negative December effect, while the GSOEP yields – probably due to the measurement problem discussed above – a large *positive* effect. Finally, the results for both IABS-NE and GSOEP suggest a strong correlation between individual unemployment exit behaviour and aggregate unemployment outflows.

Hazard functions implied by these estimates evaluated at average characteristics are shown in Figures 5 and 6. They resemble very much the unconditional hazard functions shown in Figures 3 and 4. This suggests that even after controlling for observed differences in individual characteristics, there is first positive and then negative duration dependence. As these characteristics also include a possible 'December effect', Figures 5 and 6 also show that the peak of the unconditional GSOEP hazard shown in Figures 3 and 4 is not solely due to the 'December effect', but that it appears to be a genuine feature of the data. Taken together, the conclusion often drawn from the GSOEP that negative duration dependence plays the dominant role is questioned by the IABS results, where the hazard keeps increasing up to month 20, suggesting that no form of duration dependence dominates over the relevant range of durations.

— Figures 5 and 6 about here —

In the remaining part of this section, we take a closer look at the relationship between longer maximum entitlement periods and longer unemployment durations as measured in the IABS. In order to disaggregate the effects further we re-estimated the Cox model for the IABS by replacing the age, year and maximum entitlement categories by a full set of dummies indicating each age, year and maximum length of unemployment benefits. Following Hunt (1995), the idea here is to separate as good as possible the effects of age, macroeconomic environment and changes in entitlement periods.

The results of this exercise are shown in Tables A1 and A2. The estimates for men (see Table A1) again indicate a generally positive relationship between the length of the entitlement period and unemployment duration in the case of the non-employment sample (IABS-NE). The pattern for unemployment between jobs is similar but weaker. Although the coefficients are statistically significant individually, the size of the standard errors, especially in the case of the IABS-UBJ, casts doubt on whether differences between them are also significant. Explicitly testing for these differences, we find that for both the IABS-NE and the IABS-UBJ, the hypothesis that all seven coefficients are equal is clearly rejected, as well as the hypothesis that the first six, five, four, three and two of them are equal. Pairwise comparisons between individual coefficients also yield statistically significant differences in the large majority of cases.

— Tables A1 and A2 about here —

An important question is to what extent these differences can be interpreted as evidence for a causal disincentive effect. First of all, it should be noted that the coefficients for entitlement periods over 22 months probably suffer from a selection effect as these maximum entitlement periods can only be reached by individuals who have entered unemployment before age 49 (this is a feature of our sample selection) and have stayed so for at least one year (or five years in the case of a maximum entitlement period of 32 months, see Table 1). These individuals are likely to represent bad risks, biasing the corresponding coefficients. More generally – and despite the additional variation introduced by the reforms – it seems very difficult to identify causal effects of changes in entitlement periods on the duration of unemployment. The problem is that long maximum entitlement periods can only be reached by older individuals. It is very likely that older workers faced very different labour market conditions than younger workers, especially during the times when the reforms came into force. After all, one motivation of the reforms was to soften worsening labour market conditions for the elderly. In this sense, the reforms were endogenous, biasing estimation results if these worsening conditions for older workers are not explicitly controlled for (which seems difficult). Moreover, the proportional hazard model assumes that a change in the entitlement length proportionally shifts the hazard rate over the full duration time. This restriction is rather implausible for long durations when ALG entitlements have already been exhausted, possibly adding further biases. However, the point for our analysis is not so much whether the relationship between entitlement periods and unemployment duration is causal, but that it can be measured in the IABS, whereas it is hard to measure it in the GSOEP.

Table A2 presents the corresponding results for women. The results for the IABS-NE definition in column 1 show no clear pattern for the relationship between maximum entitlement periods and unemployment duration, while those for the IABS-UBJ definition suggest a weakly positive relationship. However, in both cases, differences between the relevant coefficients are neither pairwise nor jointly statistically significant, so that in the case of women, both the IABS and the GSOEP do not provide any evidence for a relationship between longer entitlement periods and longer unemployment durations.

3.2 Accelerated failure time models with unobserved heterogeneity

A general caveat to the results of the Cox model is that they do not take account of possible unobserved heterogeneity. Ignoring unobserved differences in individuals' propensities to exit unemployment may make a pure sorting effect erroneously appear as duration dependence, where individuals with favourable unobserved characteristics exit first, leaving behind those with bad characteristics, and may bias other estimated coefficients. We tried to estimate the Cox model with unobserved heterogeneity but the estimates failed to converge in every single case.

In order to test the robustness of our results we therefore estimated in addition a number of further models that take into account unobserved heterogeneity. The models we estimated fall into the category of so-called accelerated failure time models (AFT models, see e.g. Kalbfleisch/Prentice (2002)). AFT models model the log of the unemployment duration of individual i as

$$\log T_i = \alpha_0 + \alpha_1 x_{i1} + \alpha_2 x_{i2} + \ldots + \alpha_k x_{ik} + u_i \tag{2}$$

where u_i has density $f(\cdot)$. For our analysis we used as densities the normal density (leading to the log-normal model), the logistic density with parameter γ (leading to the log-logistic model) and the gamma density with parameters κ and σ (leading to the gamma model). We did not use the widely employed Weibull or exponential models as they assume a monotonic or even constant hazard, which seems to be ruled out by Figures 5 and 6 (a non-monotonic hazard cannot be the result of a pure sorting effect). Also note that (2) does not allow for time-varying covariates.

Model (2) implies a hazard rate

$$h(t) = \frac{f(t)}{1 - F(t)} \tag{3}$$

where $F(\cdot)$ denotes the cumulative distribution function corresponding to $f(\cdot)$. Unobserved heterogeneity can be incorporated into the accelerated failure model by perturbing this hazard rate multiplicatively, i.e.

$$h(t|\alpha) = \alpha h(t), \tag{4}$$

where α is usually assumed to follow a gamma distribution with expectation one and variance θ. In this context, the individual effect α is also called 'frailty'. The model can be estimated by deriving the unconditional hazard, i.e. by integrating out the 'frailties' α, taking into account that multiple spells of the same individual share the same α.

Our results for the accelerated failure time models are shown in Tables A3 to A6. Note that in these models, the interpretation of the coefficients is reversed when compared to the Cox results in Tables 4 and 5: positive (negative) coefficients increase (decrease) the unemployment duration and therefore reduce (increase) the hazard rate. The estimates for the log-normal model were very similar to the ones of the log-logistic model and are therefore not reported. The results for the log-logistic model for men in Table A3 show that most of the conclusions drawn from the Cox model also hold when unobserved heterogeneity is modelled. In particular, the IABS results indicate a statistically significant positive relationship between longer entitlement periods and longer unemployment durations, while no such effect can be measured in the GSOEP. The only important difference compared to the Cox results is that in the case of the IABS, the relationship between higher replacement rates and longer unemployment durations does not hold when taking account of unobserved heterogeneity. The last line of the table further shows that the hypothesis of no unobserved heterogeneity is overwhelmingly rejected for both IABS and GSOEP in this model.

The results for the log-logistic model for women given in Table A4 are also very similar to the results of the Cox model. The results for the IABS show a positive relationship between maximum entitlement periods and unemployment durations, but this relationship is not statistically significant. As in the case of men, the AFT estimates yield no statistically significant association between replacement ratios and unemployment durations. Interestingly, in the case of the GSOEP, the hypothesis of no unobserved heterogeneity is *not* rejected.

Tables A5 and A6 present the corresponding results for the gamma model. With two parameters, the gamma model is more flexible than the log-logistic or the log-normal model. However, this added flexibility also led to convergence problems in the case of the GSOEP and the IABS-UBJ (female sample) where we do not report any results. The results of the gamma model in Tables A5 and A6 are very similar to the ones of the log-logistic model. In particular, there is a statistically significant association between longer entitlement periods and longer unemployment durations for men in both the IABS-NE and the IABS-UBJ. There is no such relationship for women. The only important difference between the log-logistic and the gamma estimates is that the hypothesis of no unobserved heterogeneity cannot be rejected in the gamma case.

4 Conclusion

In this paper we compared the information on West German unemployment durations contained in the two data sets that are in principle suited to study this question, the IAB employment subsample (IABS) and the German Socio-Economic Panel (GSOEP). We checked the robustness of the results by employing different duration models and definitions of unemployment. Our results suggest that there are similarities but also important differences. Starting with the similarities, both data sets yield a similar age pattern of unemployment duration for men (men aged over 35 years face longer unemployment durations) and agree in that there is no clear age pattern for women. They also agree with respect to the effect of a number of other variables on unemployment duration. For example, in both the IABS and the GSOEP, having been unemployed during the last 12 months increases the probability of leaving unemployment. This finding is clearly related to seasonal unemployment. Another finding common to both data sources is that individuals receiving unemployment assistance experience longer unemployment spells than those receiving unemployment benefits, and that higher replacement ratios are associated with lower unemployment exit rates (although this latter relationship did not prove robust with respect to changes in model specification).

However, there are also important differences. A first difference is that hazards in the GSOEP first increase until about 12 months and decrease afterwards, whereas they keep increasing until about 20 months in the IABS. It is unclear what causes this remarkable difference. A possibility is that these differences are related to rounding errors in the GSOEP in the sense that the yearly questionnaire design of the GSOEP makes interviewees report more often full 12 months of unemployment where in fact a different number of months were experienced. This rounding errors may also be reflected in the fact that in the case of the IABS, hazards are c.p. lower in December (reflecting unfavourable labour market conditions in winter), while in the case of the GSOEP the hazard of ending unemployment in December is, other things equal, much *higher*. On the other hand, the peak in the hazard at 20 months in the IABS may also appear surprising as in many cases unemployment benefits end after 12 months suggesting that individuals are unemployed for exactly 12 months more often. However, since the IABS is derived from administrative data on actual flows of transfer payments, its results seem much more credible in this respect than the GSOEP data.

Another difference between the IABS and the GSOEP is that the GSOEP often yields insignificant coefficients when estimating duration models with a large number of explanatory variables. This is generally not the case if one uses the IABS. We argued that this is due to the much larger sample size of the IABS rather than due to measurement error that adds noise to the estimated effects. In some cases, IABS and GSOEP differ in their predictions concerning the influence of individual covariates. For example, the GSOEP suggests that individuals holding an university degree have higher re-employment hazards, while this is not the case for the IABS. An important difference between results based on the IABS and the GSOEP is that the IABS yields a statistically significant relationship between long maximum entitlement periods and long unemployment durations. This result was both robust with respect to model specification and the definition of unemployment. However, we argued that one should be very cautious not to interpret such a relationship as a causal disincentive effect. We also showed that this relationship is weaker in the IABS-UBJ sample.

Overall, we conclude that the IABS adds a lot of new possibilities to the analysis of unemployment duration in Germany and leads to more significant results that are also more robust with respect to changes in model specification. The analysis of the effect of the unemployment compensation system yields new evidence, although a definite answer to the question of whether long entitlement periods and high replacement ratios lead to longer unemployment durations is still missing. This suggests that further research is warranted.

5 Appendix

— Table A1 about here —

— Table A2 about here —

— Table A2 about here —

— Table A3 about here —

— Table A4 about here —

— Table A5 about here —

— Table A6 about here —

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7 Figures

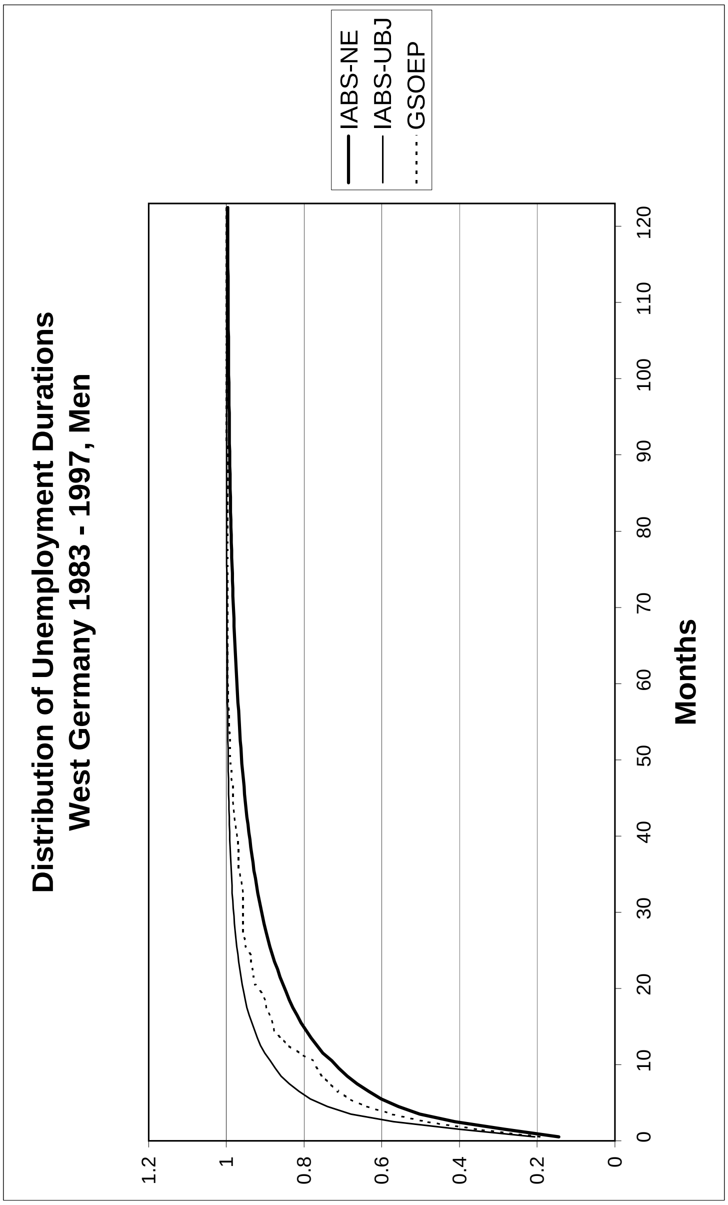

Figure 1:

Distribution of Unemployment Duration,

West Germany 1983 - 1997, Men

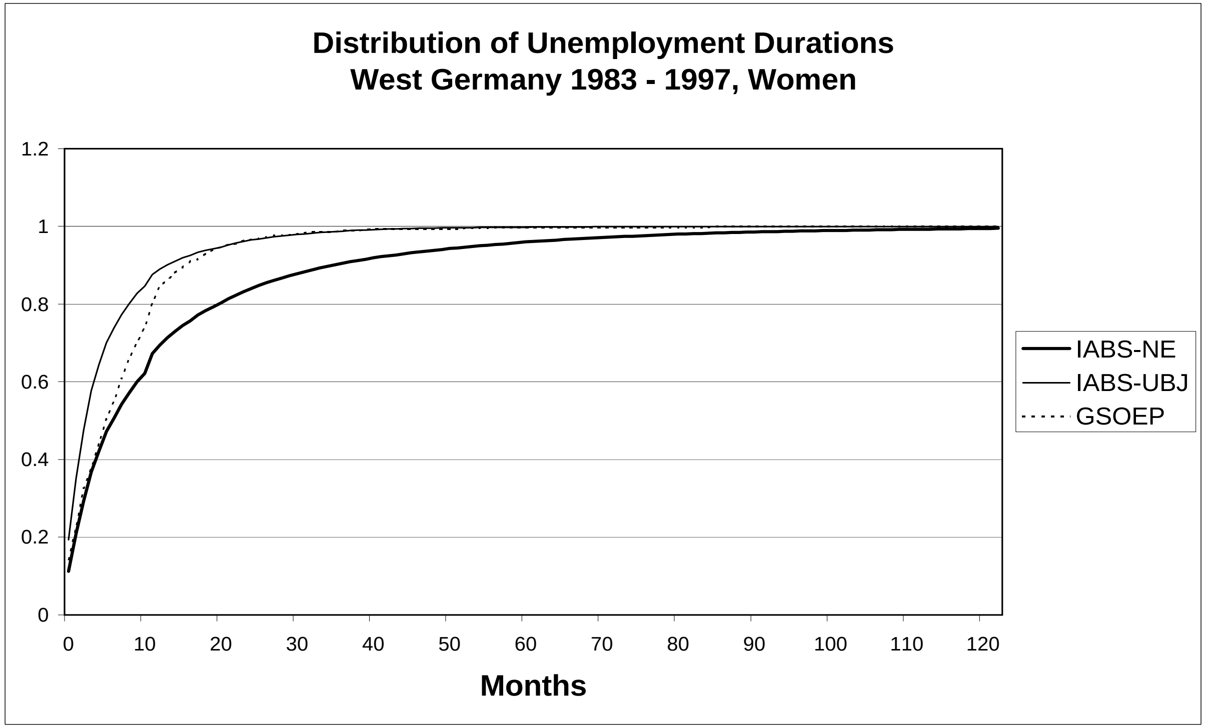

Figure 2:
Distribution of Unemployment Duration,
West Germany 1983 - 1997, Women

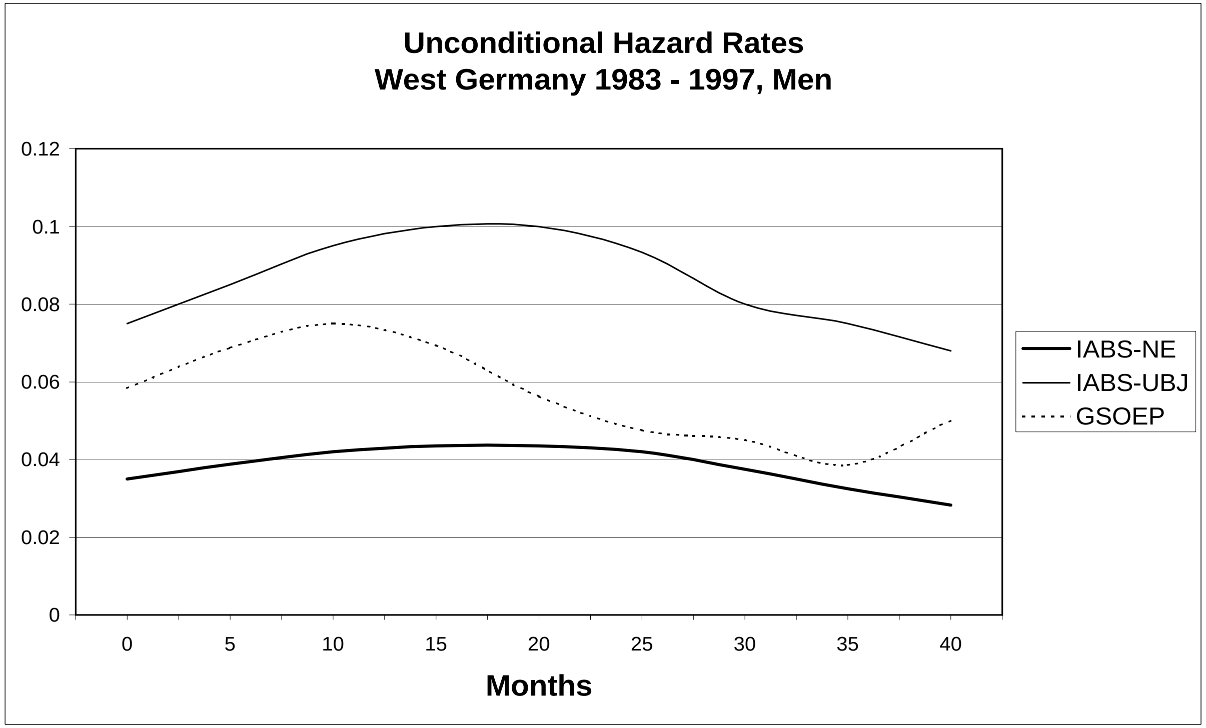

Figure 3:
Unconditional Hazard Rates,
West Germany 1983 - 1997, Men

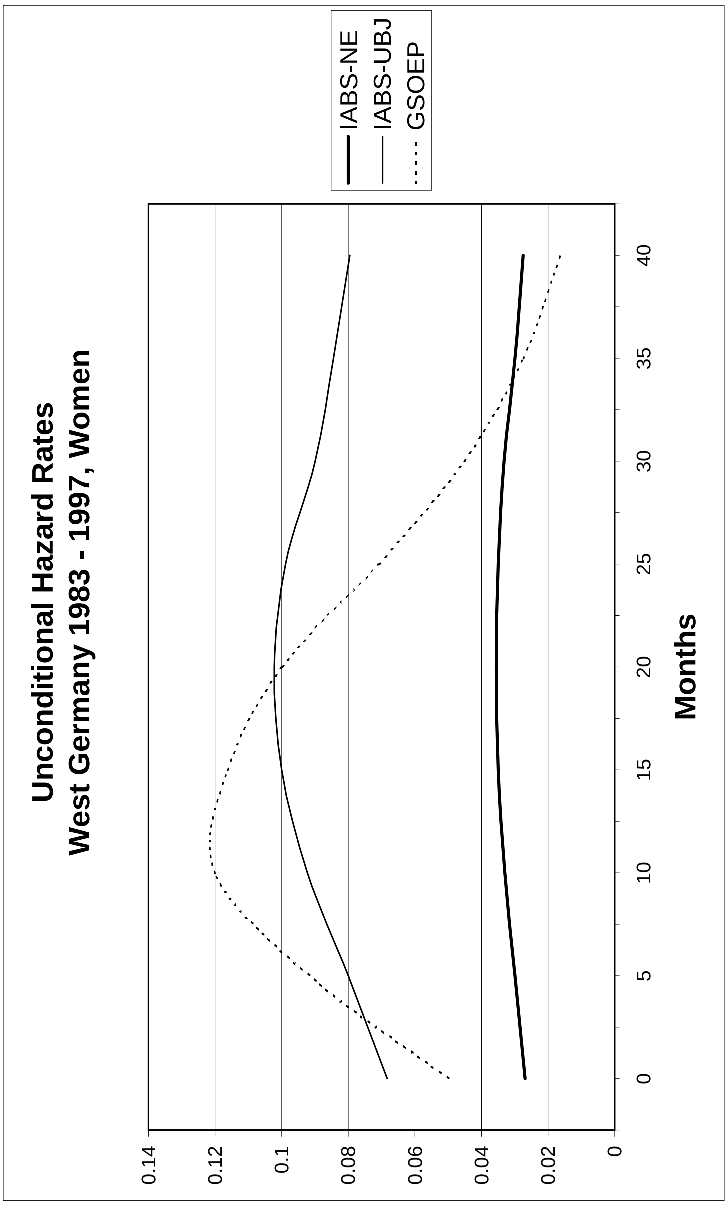

Figure 4:
Unconditional Hazard Rates,
West Germany 1983 - 1997, Women

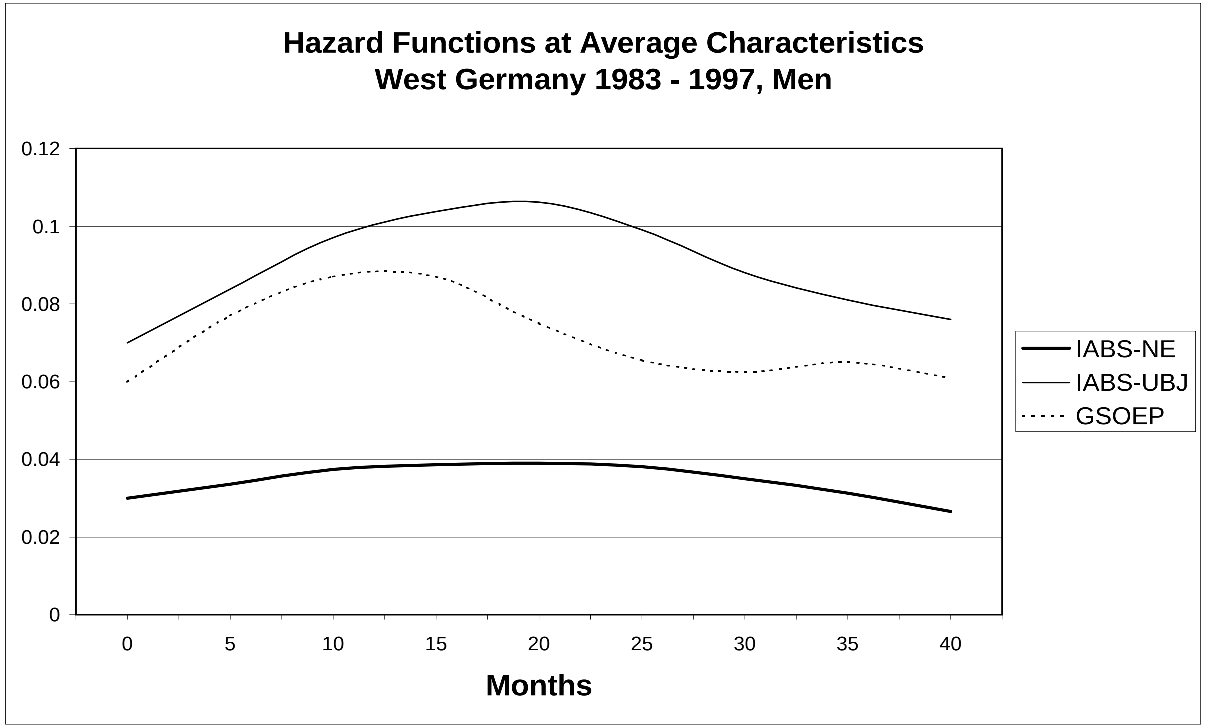

Figure 5:
Hazard Functions at Average Characteristics,
West Germany 1983 - 1997, Men

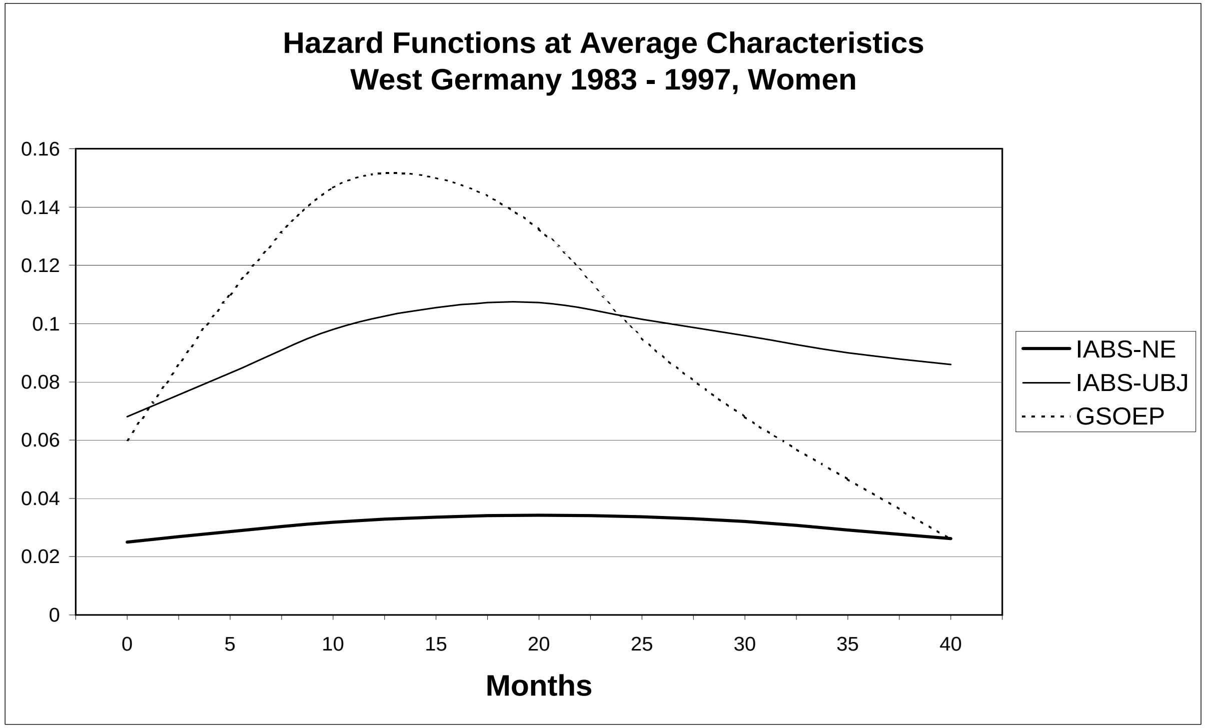

Figure 6:
Hazard Functions at Average Characteristics,
West Germany 1983 - 1997, Women

8 Tables

Table 1. Maximum entitlement period of unemployment benefits, months

Year	up to age in years							
	42	44	45	47	49	52	54	57
before 01/1985	12	12	12	12	12	12	12	12
01/1985 - 12/1985	12	12	12	12	18	18	18	18
1986 - 06/1987	12	16	16	16	20	20	24	24
07/1987 - 03/1997	18	20	22	22	26	26	32	32
from 04/1997 on	12	12	18	22	22	26	32	32

Source: Hunt (1985), Plaßmann (2002)

Table 2. Descriptive statistics for unemployment spells, Men
(characteristics as of spell beginning, standard deviations in parentheses)

	IABS-NE		IABS-UBJ		SOEP	
Number of obs.	54669	-	36050	-	488	-
Spell length[a]	11.25	(17.34)	5.51	(7.73)	7.76	(10.70)
Uncensored	0.8489	(0.3581)	1	(0)	0.9016	(0.2981)
Age	35.14	(6.6435)	35.17	(6.69)	34.87	(6.54)
Married	0.5026	(0.4999)	0.5418	(0.4982)	0.6086	(0.4885)
Child	0.4247	(0.4943)	0.4552	(0.4980)	0.4939	(0.5004)
Vocational training	0.6965	(0.4597)	0.7102	(0.4536)	0.7520	(0.4322)
University	0.0457	(0.2088)	0.0370	(0.1889)	0.0922	(0.2896)
Berlin	0.0320	(0.1761)	0.0238	(0.1526)	0.0327	(0.1782)
Northern states	0.2283	(0.4197)	0.2364	(0.4248)	0.2356	(0.4248)
North-Rhine Westfalia	0.2448	(0.4299)	0.2285	(0.4198)	0.2540	(0.4357)
Hesse/Rh.-Pal./Saarland	0.1560	(0.3629)	0.1517	(0.3587)	0.1332	(0.3401)
Baden-Württemberg	0.1078	(0.3102)	0.0947	(0.2929)	0.0860	(0.2807)
Bavaria	0.2305	(0.4211)	0.2643	(0.4409)	0.2561	(0.4369)
Blue collar	0.7939	(0.4044)	0.8302	(0.3754)	0.6393	(0.4806)
White collar	0.2060	(0.4044)	0.1697	(0.3754)	0.3606	(0.4806)
Farm./mining/energy	0.0399	(0.1958)	0.0463	(0.2103)	0.0328	(0.1783)
Basic industry	0.0729	(0.2599)	0.0791	(0.2700)	0.0266	(0.1612)
Investment goods	0.1296	(0.3358)	0.1180	(0.3226)	0.1577	(0.3649)
Consumption goods	0.0608	(0.2391)	0.0574	(0.2327)	0.0635	(0.2441)
Food/recreation	0.0249	(0.1560)	0.0223	(0.1477)	0	(0)
Construction	0.1875	(0.3903)	0.2255	(0.4179)	0.2623	(0.4403)
Auxiliary construction	0.0829	(0.2758)	0.0955	(0.2940)	0	(0)
Retail	0.1153	(0.3194)	0.1029	(0.3039)	0.0942	(0.2924)
Transport/communic.	0.0648	(0.2461)	0.0638	(0.2445)	0.0389	(0.1963)
Services (for firms)	0.0852	(0.2792)	0.0682	(0.2521)	0.0799	(0.2714)
Services (for households)	0.0402	(0.1965)	0.0380	(0.1912)	0.0676	(0.2513)
Services (public)	0.0545	(0.2270)	0.0433	(0.2037)	0.0778	(0.2682)
State	0.0409	(0.1982)	0.0389	(0.1935)	0.0205	(0.1418)
Wage[b]	105.00	(0.49)	106.00	(0.50)	152.38	(4.19)
First quintile[c]	0.0946	(0.2926)	0.0750	(0.2634)	0.0463	(0.2104)
Second quintile[c]	0.3458	(0.4756)	0.3429	(0.4747)	0.1851	(0.3888)
Third quintile[c]	0.2792	(0.4486)	0.3044	(0.4601)	0.3310	(0.4711)
Fourth quintile[c]	0.1750	(0.3800)	0.1841	(0.3875)	0.2292	(0.4308)
Fifth quintile[c]	0.1052	(0.3068)	0.0933	(0.2909)	0.2083	(0.4066)
Length prev. employment[a]	35.60	(44.82)	26.94	(36.52)	34.31	(35.29)
Unemployed last 12 months	0.4955	(0.4999)	0.5113	(0.4998)	0.2684	(0.4436)
Unemployment benefit	0.8880	(0.3153)	0.9084	(0.2884)	0.8586	(0.3488)
Unemployment assistance	0.1119	(0.3153)	0.0915	(0.2884)	0.0374	(0.1900)
Maximum entitlement period[d]	11.76	(5.0529)	11.99	(4.74)	11.04	(5.40)
Replacement ratio[e]	61.13	(12.78)	61.51	(12.83)	57.02	(21.02)

[a] in months
[b] of last job in deutschmarks per day, median
[c] quintiles of whole population of wage earners
[d] maximum entitlement period of unemployment benefits in months
[e] replacement ratio of unemployment benefits or unemployment assistance in percent × 100

Table 3. Descriptive statistics for unemployment spells, Women
(characteristics as of spell beginning, standard deviations in parentheses)

	IABS-NE		IABS-UBJ		SOEP	
Number of obs.	26587	-	14344	-	473	-
Spell length[a]	14.56	(20.15)	6.45	(8.10)	8.47	(8.91)
Uncensored	0.7775	(0.4159)	1	(0)	0.9300	(0.2550)
Age	34.82	(6.70)	35.03	(6.71)	34.29	(6.51)
Married	0.5317	(0.4989)	0.4841	(0.4997)	0.6511	(0.4771)
Child	0.3927	(0.4883)	0.3713	(0.4831)	0.4566	(0.4986)
Vocational training	0.6927	(0.4613)	0.7045	(0.4562)	0.6758	(0.4685)
University	0.0605	(0.2384)	0.0563	(0.2305)	0.0951	(0.2937)
Berlin	0.0340	(0.1812)	0.0288	(0.1674)	0.0465	(0.2108)
Northern states	0.2164	(0.4118)	0.2225	(0.4159)	0.2114	(0.4087)
North-Rhine Westfalia	0.2577	(0.4373)	0.2401	(0.4271)	0.2500	(0.4391)
Hesse/Rh.-Pal./Saarland	0.1577	(0.3645)	0.1572	(0.3640)	0.1501	(0.3575)
Baden-Württemberg	0.1394	(0.3464)	0.1428	(0.3499)	0.1479	(0.3554)
Bavaria	0.1943	(0.3957)	0.2083	(0.4061)	0.1818	(0.3861)
Blue collar	0.3803	(0.4854)	0.3919	(0.4882)	0.3129	(0.4641)
White collar	0.6196	(0.4854)	0.6080	(0.4882)	0.6871	(0.4641)
Farm./mining/energy	0.0158	(0.1248)	0.0195	(0.1383)	0.0148	(0.1209)
Basic industry	0.0364	(0.1874)	0.0361	(0.1865)	0.0486	(0.2153)
Investment goods	0.0998	(0.2998)	0.0884	(0.2839)	0.0909	(0.2877)
Consumption goods	0.0883	(0.2838)	0.0912	(0.2879)	0.0994	(0.2994)
Food/recreation	0.0432	(0.2034)	0.0435	(0.2039)	0.0042	(0.0649)
Construction	0.0125	(0.1113)	0.0147	(0.1203)	0.0211	(0.1440)
Auxiliary construction	0.0119	(0.1088)	0.0142	(0.1186)	0	(0)
Retail	0.1807	(0.3848)	0.1793	(0.3836)	0.1776	(0.3826)
Transport/communic.	0.0299	(0.1703)	0.0315	(0.1748)	0.0233	(0.1510)
Services (for firms)	0.1149	(0.3189)	0.1068	(0.3089)	0.1163	(0.3209)
Services (for households)	0.1252	(0.3309)	0.1412	(0.3482)	0.0761	(0.2654)
Services (public)	0.1982	(0.3986)	0.1901	(0.3924)	0.2030	(0.4026)
State	0.0426	(0.2019)	0.0428	(0.2025)	0.0317	(0.1754)
Wage[b]	85.00	(0.50)	85.00	(0.49)	100.00	(3.61)
First quintile[c]	0.3339	(0.4716)	0.3352	(0.4720)	0.3301	(0.4708)
Second quintile[c]	0.3763	(0.4844)	0.3976	(0.4894)	0.3756	(0.4848)
Third quintile[c]	0.1496	(0.3567)	0.1467	(0.3538)	0.1555	(0.3628)
Fourth quintile[c]	0.0894	(0.2853)	0.0821	(0.2746)	0.0933	(0.2912)
Fifth quintile[c]	0.0506	(0.2192)	0.0381	(0.1915)	0.0454	(0.2085)
Length prev. employment[a]	47.19	(48.59)	34.58	(41.24)	30.83	(26.99)
Unemployed last 12 months	0.3398	(0.4736)	0.3634	(0.4810)	0.1881	(0.3912)
Unemployment benefit	0.9278	(0.2586)	0.9276	(0.2590)	0.8038	(0.3975)
Unemployment assistance	0.0721	(0.2586)	0.0723	(0.2590)	0.0575	(0.2331)
Maximum entitlement period[d]	12.41	(4.61)	12.50	(4.69)	10.51	(5.93)
Replacement ratio[e]	61.19	(12.78)	61.96	(10.60)	54.74	(22.89)

[a] in months
[b] of last job in deutschmarks per day, median
[c] quintiles of whole population of wage earners
[d] maximum entitlement period of unemployment benefits in months
[e] replacement ratio of unemployment benefits or unemployment assistance in percent × 100

Table 4. Cox proportional hazard model, Men
(standard errors in parentheses[a])

	IABS-NE		IABS-UBJ		SOEP	
Age 26 - 30 years[b]	-		-		-	
Age 31 - 35 years[b]	-0.0655	(0.0122)	-0.0784	(0.0131)	-0.1453	(0.1084)
Age 36 - 40 years[b]	-0.1436	(0.0140)	-0.1136	(0.0150)	-0.3959	(0.1482)
Age 41 - 45 years[b]	-0.1697	(0.0170)	-0.1213	(0.0179)	-0.5656	(0.1814)
Age $\geq$ 46 years[b]	-0.1797	(0.0214)	-0.0941	(0.0223)	-0.7376	(0.2359)
Married	0.1995	(0.0125)	0.1391	(0.0135)	-0.0994	(0.1297)
Child	0.1200	(0.0296)	-0.2857	(0.0328)	0.3924	(0.1310)
Vocational training	0.1266	(0.0120)	0.1181	(0.0127)	0.2446	(0.1501)
University	0.1180	(0.0278)	0.0729	(0.0323)	0.4943	(0.2172)
Northern states	-		-		-	
Berlin	-0.2151	(0.0283)	-0.0984	(0.0340)	-0.2871	(0.2315)
North-Rhine Westfalia	-0.0781	(0.0143)	-0.0305	(0.0155)	-0.2085	(0.1426)
Hesse/Rh.-Pal./Saarland	0.0119	(0.0163)	0.0704	(0.0174)	-0.2619	(0.1492)
Baden-Württemberg	0.0250	(0.0194)	0.1644	(0.0211)	0.1095	(0.1742)
Bavaria	0.2525	(0.0149)	0.2282	(0.0149)	0.0948	(0.1357)
Blue collar	-		-		-	
White collar	-0.2706	(0.0152)	-0.2487	(0.0174)	-0.0802	(0.1113)
Farm./mining/energy	-		-		-	
Basic industry	-0.1942	(0.0361)	-0.1684	(0.0349)	0.2614	(0.4055)
Investment goods	-0.4140	(0.0332)	-0.4067	(0.0328)	-0.4044	(0.1869)
Consumption goods	-0.3470	(0.0363)	-0.2901	(0.0360)	-0.2403	(0.2017)
Food/recreation	-0.3577	(0.0421)	-0.3449	(0.0445)	-	
Construction	-0.1144	(0.0323)	-0.1765	(0.0304)	0.0189	(0.1532)
Auxiliary construction	-0.0875	(0.0351)	-0.0867	(0.0334)	-	
Retail	-0.3345	(0.0333)	-0.3195	(0.0327)	-0.2466	(0.1843)
Transport/communic.	-0.2437	(0.0363)	-0.1994	(0.0354)	-0.4031	(0.2731)
Services (for firms)	-0.3840	(0.0345)	-0.3164	(0.0350)	-0.2298	(0.2010)
Services (for households)	-0.2225	(0.0403)	-0.1637	(0.0399)	0.1193	(0.1958)
Services (public)	-0.5014	(0.0373)	-0.4455	(0.0383)	-0.1606	(0.2299)
State	-0.4624	(0.0411)	-0.4740	(0.0425)	-0.1716	(0.3854)
First quintile[c]	-		-		-	
Second quintile[c]	0.2016	(0.0186)	0.0666	(0.0203)	-0.5499	(0.2459)
Third quintile[c]	0.3863	(0.0199)	0.2245	(0.0220)	-0.2485	(0.2440)
Fourth quintile[c]	0.4669	(0.0215)	0.2924	(0.0234)	-0.0629	(0.2475)
Fifth quintile[c]	0.3598	(0.0248)	0.2563	(0.0270)	-0.2812	(0.2415)
Length prev. employment	-0.0008	(0.0001)	-0.0004	(0.0002)	0.0031	(0.0017)
Unemployed last 12 months	0.2493	(0.0128)	0.1076	(0.0123)	0.2411	(0.1209)
Max. entitlement 0 months[bd]	-		-		-	
Max. entitlement 1 - 12 months[bd]	0.6582	(0.0434)	0.8195	(0.0482)	1.0759	(0.3428)
Max. entitlement 13 - 24 months[bd]	0.6071	(0.0464)	0.7814	(0.0507)	1.2200	(0.3800)
Max. entitlement $\geq$ 25 months[bd]	0.4184	(0.0620)	0.7476	(0.0650)	2.4494	(0.5232)
Replacement ratio[f]	-0.0209	(0.0050)	-0.0544	(0.0055)	-0.0232	(0.0058)
1983 - 1987[b]	-		-		-	
1988 - 1991[b]	0.1042	(0.0151)	0.1615	(0.0159)	-0.1629	(0.1694)
1992 - 1997[b]	-0.1535	(0.0147)	0.0210	(0.0154)	-0.2148	(0.1300)
December[b]	-0.4531	(0.0194)	-0.5302	(0.0218)	0.1450	(0.1305)
Aggregate outflow rate[be]	-0.0621	(0.0349)	-0.0099	(0.0381)	0.3414	(0.4438)

[a] standard errors account for multiple spells of same individual

[b] time-varying covariate; all other covariates refer to spell beginning or last job

[c] quintiles of whole population of wage earners

[d] maximum entitlement period of unemployment benefits

[e] ratio of yearly outflow to yearly average unemployment

[f] replacement ratio of unemployment benefits or unemployment assistance in percent $\times$ 100

Table 5. Cox proportional hazard model, Women
(standard errors in parentheses[a])

	IABS-NE		IABS-UBJ		SOEP	
Age 26 - 30 years[b]	-		-		-	
Age 31 - 35 years[b]	0.0284	(0.0193)	-0.0907	(0.0220)	0.0162	(0.1287)
Age 36 - 40 years[b]	0.1055	(0.0215)	-0.0750	(0.0242)	-0.3399	(0.1528)
Age 41 - 45 years[b]	0.0958	(0.0290)	-0.0614	(0.0319)	-0.0208	(0.1973)
Age $\geq$ 46 years[b]	0.0243	(0.0383)	-0.0511	(0.0410)	-0.2188	(0.2433)
Married	-0.1009	(0.0165)	0.1687	(0.0175)	0.0490	(0.1038)
Child	-0.0534	(0.0464)	0.2258	(0.0524)	-0.2772	(0.1206)
Vocational training	0.1399	(0.0209)	0.1390	(0.0232)	0.0226	(0.1128)
University	0.0694	(0.0370)	0.0304	(0.0436)	-0.4737	(0.2462)
Northern states	-		-		-	
Berlin	-0.1711	(0.0406)	-0.0647	(0.0528)	0.1000	(0.2411)
North-Rhine Westfalia	-0.0736	(0.0219)	-0.0253	(0.0245)	0.0084	(0.1430)
Hesse/Rh.-Pal./Saarland	0.0264	(0.0244)	0.0915	(0.0262)	0.0056	(0.1537)
Baden-Württemberg	0.1338	(0.0250)	0.1223	(0.0269)	0.3644	(0.1776)
Bavaria	0.2287	(0.0244)	0.2278	(0.0258)	0.3416	(0.1507)
Blue collar	-		-		-	
White collar	-0.0229	(0.0214)	-0.0359	(0.0235)	0.0715	(0.1305)
Farm./mining/energy	-		-		-	
Basic industry	-0.3447	(0.0781)	-0.4046	(0.0682)	-0.0362	(0.2109)
Investment goods	-0.4951	(0.0706)	-0.4651	(0.0599)	-0.2474	(0.2181)
Consumption goods	-0.3042	(0.0718)	-0.2558	(0.0599)	-0.7901	(0.2212)
Food/recreation	-0.2792	(0.0771)	-0.1844	(0.0674)	0.5257	(0.2506)
Construction	-0.1653	(0.0889)	-0.2480	(0.0785)	-0.5779	(0.2575)
Auxiliary construction	-0.2192	(0.0919)	-0.2740	(0.0738)	-	
Retail	-0.3273	(0.0698)	-0.2640	(0.0579)	-0.1005	(0.1753)
Transport/communic.	-0.2660	(0.0824)	-0.1538	(0.0742)	0.5727	(0.3592)
Services (for firms)	-0.3583	(0.0706)	-0.2677	(0.0599)	-0.1558	(0.1981)
Services (for households)	-0.1600	(0.0716)	-0.0539	(0.0580)	-0.0247	(0.2226)
Services (public)	-0.3587	(0.0695)	-0.2840	(0.0582)	-0.1372	(0.1704)
State	-0.4637	(0.0774)	-0.3822	(0.0660)	-0.4118	(0.2454)
First quintile[c]	-		-		-	
Second quintile[c]	0.0940	(0.0182)	0.0388	(0.0195)	-0.2868	(0.1289)
Third quintile[c]	0.0943	(0.0231)	-0.0194	(0.0273)	-0.0533	(0.1398)
Fourth quintile[c]	0.0702	(0.0291)	0.0337	(0.0338)	0.3290	(0.1883)
Fifth quintile[c]	-0.0993	(0.0365)	0.0839	(0.0417)	0.0224	(0.2361)
Length prev. employment	-0.0011	(0.0002)	-0.0010	(0.0002)	-0.0005	(0.0022)
Unemployed last 12 months	0.3450	(0.0212)	0.2269	(0.0208)	0.5354	(0.1281)
Max. entitlement 0 months[bd]	-		-			
Max. entitlement 1 - 12 months[bd]	0.6621	(0.0704)	0.7613	(0.0354)	-0.0322	(0.2204)
Max. entitlement 13 - 24 months[bd]	0.6492	(0.0754)	0.6571	(0.0451)	-0.1314	(0.3073)
Max. entitlement $\geq$ 25 months[bd]	0.6743	(0.0953)	0.7987	(0.0744)	-0.1517	(0.4245)
Replacement ratio[f]	-0.0331	(0.0078)	-0.0636	(0.0088)	-0.0036	(0.0043)
1983 - 1987[b]	-		-		-	
1988 - 1991[b]	0.1336	(0.0255)	0.1173	(0.0289)	-0.3556	(0.1957)
1992 - 1997[b]	0.0400	(0.0243)	0.0568	(0.0268)	-0.1286	(0.1379)
December[b]	-0.0094	(0.0265)	-0.0835	(0.0312)	0.8169	(0.1153)
Aggregate outflow rate[be]	0.2661	(0.0533)	0.0737	(0.0606)	1.2577	(0.3599)

[a] standard errors account for multiple spells of same individual
[b] time-varying covariate; all other covariates refer to spell beginning or last job
[c] quintiles of whole population of wage earners
[d] maximum entitlement period of unemployment benefits
[e] ratio of yearly outflow to yearly average unemployment
[f] replacement ratio of unemployment benefits or unemployment assistance in percent × 100

Table A1. Cox proportional hazard model, full dummy specification, Men (standard errors in parentheses[a])

	IABS-NE		IABS-UBJ	
Controls include same variables as in Table 4 and a full set of time-varying year and age dummies				
Max. entitlement[b] 0 months	-		-	
Max. entitlement 12 months	0.2997	(0.0187)	0.2076	(0.0209)
Max. entitlement 16 months	0.3740	(0.0373)	0.2792	(0.0383)
Max. entitlement 18 months	0.1935	(0.0360)	0.1179	(0.0395)
Max. entitlement 20 months	0.2270	(0.0461)	0.0724	(0.0491)
Max. entitlement 22 months	0.1260	(0.0338)	0.1185	(0.0354)
Max. entitlement 26 months	0.0519	(0.0633)	0.0693	(0.0750)
Max. entitlement 32 months	0.1376	(0.5246)	-0.0242	(0.4831)

[a] standard errors account for multiple spells of same individual

[b] maximum entitlement period of unemployment benefits, time-varying

Table A2. Cox proportional hazard model, full dummy specification, Women (standard errors in parentheses[a])

	IABS-NE		IABS-UBJ	
Controls include same variables as in Table 5 and a full set of time-varying year and age dummies				
Max. entitlement[b] 0 months	-		-	
Max. entitlement 12 months	0.1986	(0.0352)	0.0736	(0.0385)
Max. entitlement 16 months	0.3555	(0.0779)	-0.0195	(0.0892)
Max. entitlement 18 months	0.0932	(0.0613)	0.0330	(0.0663)
Max. entitlement 20 months	0.2635	(0.0813)	-0.1087	(0.0858)
Max. entitlement 22 months	0.3056	(0.0630)	-0.0079	(0.0698)
Max. entitlement 26 months	0.2034	(0.1116)	-0.2181	(0.1238)
Max. entitlement 32 months	0.6077	(0.7828)	-	

[a] standard errors account for multiple spells of same individual

[b] maximum entitlement period of unemployment benefits, time-varying

Table A3. Log-logistic accelerated failure time model with gamma distributed unobserved heterogeneity, Men (standard errors in parentheses[a])

	IABS-NE		IABS-UBJ		SOEP	
Age 26 - 30 years[b]	-		-		-	
Age 31 - 35 years	0.1232	(0.0136)	0.0805	(0.0124)	0.2028	(0.1346)
Age 36 - 40 years	0.2048	(0.0153)	0.1183	(0.0138)	0.3220	(0.1487)
Age 41 - 45 years	0.2098	(0.0190)	0.1113	(0.0170)	0.5338	(0.1814)
Age $\geq$ 46 years	0.2190	(0.0244)	0.0941	(0.0218)	0.6203	(0.2325)
Married	-0.2449	(0.0146)	-0.1356	(0.0131)	0.1040	(0.1442)
Child	0.0237	(0.0143)	0.0288	(0.0128)	-0.5330	(0.1440)
Vocational training	-0.1253	(0.0128)	-0.0870	(0.0114)	-0.3526	(0.1576)
University	-0.1249	(0.0339)	-0.0477	(0.0329)	-0.6752	(0.2410)
Northern states	-		-		-	
Berlin	0.3120	(0.0349)	0.1214	(0.0345)	0.1016	(0.3181)
North-Rhine Westfalia	0.0498	(0.0168)	-0.0109	(0.0148)	-0.1618	(0.1566)
Hesse/Rh.-Pal./Saarland	-0.0110	(0.0185)	-0.0501	(0.0160)	0.1720	(0.1689)
Baden-Württemberg	-0.0735	(0.0211)	-0.1733	(0.0188)	-0.2785	(0.2030)
Bavaria	-0.1586	(0.0163)	-0.1011	(0.0138)	-0.2371	(0.1464)
Blue collar	-		-		-	
White collar	0.3111	(0.0178)	0.1848	(0.0168)	0.0451	(0.1310)
Farm./mining/energy	-		-		-	
Basic industry	0.1731	(0.0318)	0.1094	(0.0270)	-0.3251	(0.3447)
Investment goods	0.4018	(0.0301)	0.2757	(0.0264)	0.1749	(0.2068)
Consumption goods	0.2861	(0.0338)	0.1661	(0.0297)	0.2896	(0.2593)
Food/recreation	0.3888	(0.0420)	0.2730	(0.0390)	-	
Construction	0.1686	(0.0280)	0.2039	(0.0235)	-0.2181	(0.1795)
Auxiliary construction	0.0358	(0.0313)	0.0458	(0.0264)	-	
Retail	0.3405	(0.0305)	0.2488	(0.0268)	0.2945	(0.2345)
Transport/communic.	0.2543	(0.0326)	0.1574	(0.0283)	0.1715	(0.3178)
Services (for firms)	0.3647	(0.0323)	0.1913	(0.0292)	0.1280	(0.2408)
Services (for households)	0.1948	(0.0372)	0.1160	(0.0327)	-0.1444	(0.2435)
Services (public)	0.5301	(0.0368)	0.3592	(0.0340)	-0.1325	(0.2683)
State	0.4536	(0.0382)	0.3202	(0.0343)	0.1970	(0.4127)
First quintile[c]	-		-		-	
Second quintile[c]	-0.2373	(0.0202)	-0.0933	(0.0196)	0.5635	(0.2842)
Third quintile[c]	-0.3839	(0.0214)	-0.2166	(0.0204)	0.2744	(0.2783)
Fourth quintile[c]	-0.4380	(0.0228)	-0.2520	(0.0216)	0.0082	(0.2855)
Fifth quintile[c]	-0.3386	(0.0262)	-0.2207	(0.0248)	0.3657	(0.2943)
Length prev. employment	0.0002	(0.0002)	-0.0001	(0.0002)	-00040	(0.0018)
Unemployed last 12 months	-0.1324	(0.0139)	-0.0176	(0.0115)	-0.2125	(0.1312)
Max. entitlement 0 months[d]	-		-		-	
Max. entitlement 1 - 12 months[d]	-0.3493	(0.0192)	-0.2117	(0.0187)	-1.2455	(0.4428)
Max. entitlement 13 - 24 months[d]	-0.2691	(0.0267)	-0.1527	(0.0254)	-1.1407	(0.4872)
Max. entitlement $\geq$ 25 months[de]	-		-		-	
Replacement ratio[g]	-0.0067	(0.0004)	-0.0059	(0.0003)	0.0262	(0.0073)
1983 - 1987	-		-		-	
1988 - 1991	-0.0067	(0.0003)	-0.2129	(0.0122)	0.0165	(0.1432)
1992 - 1997	0.1578	(0.0135)	-0.1365	(0.0112)	0.1389	(0.1271)
Constant	2.4965	(0.0445)	1.8375	(0.0398)	1.0978	(0.3562)
γ	0.5629	(0.0031)	0.4411	(0.0027)	05030	(0.0303)
Variance of unobs. heterog.	0.4510	(0.0113)	0.1972	(0.0080)	0.1836	(0.0822)
P-value of H_0 : no unobs. heterog.	0.0000		0.0000		0.0030	

[a] standard errors account for multiple spells of same individual
[b] all covariates refer to spell beginning
[c] quintiles of whole population of wage earners
[d] maximum entitlement period of unemployment benefits
[e] had to be dropped due to collinearity with age variable
[f] ratio of yearly outflow to yearly average unemployment
[g] replacement ratio of unemployment benefits or unemployment assistance in percent $\times$ 100

Table A4. Log-logistic accelerated failure time model with gamma distributed unobserved heterogeneity, Women (standard errors in parentheses[a])

	IABS-NE		IABS-UBJ		SOEP	
Age 26 - 30 years[b]	-		-		-	
Age 31 - 35 years	-0.0035	(0.0233)	0.1006	(0.0225)	0.0459	(0.1258)
Age 36 - 40 years	-0.0927	(0.0260)	0.0862	(0.0250)	0.1441	(0.1624)
Age 41 - 45 years	-0.0563	(0.0338)	0.1105	(0.0329)	0.1176	(0.2062)
Age $\geq$ 46 years	0.0188	(0.0448)	0.1212	(0.0432)	0.3323	(0.2693)
Married	0.1789	(0.0192)	-0.0928	(0.0181)	-0.0517	(0.1111)
Child	0.2426	(0.0197)	0.1520	(0.0190)	0.2172	(0.1174)
Vocational training	-0.2046	(0.0237)	-0.1402	(0.0226)	-0.0835	(0.1236)
University	-0.0919	(0.0460)	-0.0118	(0.0453)	0.0108	(0.2200)
Northern states	-		-		-	
Berlin	0.2357	(0.0534)	-0.0099	(0.0544)	0.1164	(0.2594)
North-Rhine Westfalia	0.0937	(0.0259)	-0.0050	(0.0247)	0.0224	(0.1438)
Hesse/Rh.-Pal./Saarland	-0.0777	(0.0292)	-0.0927	(0.0273)	0.0468	(0.1697)
Baden-Württemberg	-0.1720	(0.0302)	-0.1244	(0.0281)	-0.3024	(0.1660)
Bavaria	-0.2539	(0.0273)	-0.2041	(0.0251)	-0.3217	(0.1558)
Blue collar	-		-		-	
White collar	0.0390	(0.0241)	0.0650	(0.0224)	-0.0189	(0.1304)
Farm./mining/energy	-		-		-	
Basic industry	0.5234	(0.0789)	0.3208	(0.0698)	-0.0920	0.2543)
Investment goods	0.6630	(0.0711)	0.3898	(0.0618)	0.0601	0.2254)
Consumption goods	0.3425	(0.0715)	0.1191	(0.0611)	0.5283	0.2188)
Food/recreation	0.2731	(0.0774)	0.0285	(0.0672)	-0.4045	0.5918)
Construction	0.2156	(0.1001)	0.1469	(0.0864)	0.5659	0.3291)
Auxiliary construction	0.3081	(0.0999)	0.2977	(0.0855)	-	
Retail	0.3703	(0.0692)	0.1359	(0.0589)	-0.0985	(0.1919)
Transport/communic.	0.2018	(0.0833)	-0.0622	(0.0722)	-0.8774	(0.3437)
Services (for firms)	0.4206	(0.0711)	0.1354	(0.0614)	-0.0893	(0.2176)
Services (for households)	0.1542	(0.0693)	-0.0340	(0.0582)	-0.1794	(0.2234)
Services (public)	0.4386	(0.0691)	0.1518	(0.0590)	-0.0822	(0.1860)
State	0.5791	(0.0783)	0.3151	(0.0687)	0.1842	(0.3054)
First quintile[c]	-		-		-	
Second quintile[c]	-0.1345	(0.0212)	-0.0790	(0.0198)	0.1002	(0.1249)
Third quintile[c]	-0.0668	(0.0285)	-0.0474	(0.0276)	0.0901	(0.1573)
Fourth quintile[c]	-0.0693	(0.0349)	-0.0994	(0.0345)	-0.2905	(0.2047)
Fifth quintile[c]	0.1765	(0.0440)	-0.0690	(0.0458)	-0.0396	(0.2473)
Length prev. employment	0.0011	(0.0002)	0.0012	(0.0002)	-0.0003	(0.0021)
Unemployed last 12 months	-0.4507	(0.0243)	-0.2092	(0.0207)	-0.5186	(0.1406)
Max. entitlement 0 months[d]	-		-		-	
Max. entitlement 1 - 12 months[d]	-0.3173	(0.0382)	-0.0925	(0.0356)	-0.0993	(0.2557)
Max. entitlement 13 - 24 months[d]	-0.2756	(0.0509)	-0.0233	(0.0481)	-0.3158	(0.3256)
Max. entitlement $\geq$ 25 months[de]	-		-		-	
Replacement ratio[g]	-0.0079	(0.0007)	-0.0056	(0.0007)	0.0067	(0.0046)
1983 - 1987	-		-		-	
1988 - 1991	-0.3173	(0.0239)	-0.2133	(0.0230)	0.1104	(0.1368)
1992 - 1997	-0.2756	(0.0220)	-0.2118	(0.0209)	0.0427	(0.1235)
Constant	2.8406	(0.0889)	1.9081	(0.0795)	1.5518	(0.2873)
γ	0.7036	(0.0053)	0.5325	(0.0048)	0.5358	(0.0226)
Variance of unobs. heterog.	0.2014	(0.0128)	0.0531	(0.0094)	0.0000	(0.0001)
P-value of H_0 : no unobs. heterog.	0.0000		0.0000		1.0000	

[a] standard errors account for multiple spells of same individual
[b] all covariates refer to spell beginning
[c] quintiles of whole population of wage earners
[d] maximum entitlement period of unemployment benefits
[e] had to be dropped due to collinearity with age variable
[f] ratio of yearly outflow to yearly average unemployment
[g] replacement ratio of unemployment benefits or unemployment assistance in percent × 100

Table A5. Gamma accelerated failure time model with gamma distributed unobserved heterogeneity, Men (standard errors in parentheses[a])

	IABS-NE		IABS-UBJ		SOEP[b]
Age 26 - 30 years[c]	-		-		-
Age 31 - 35 years	0.0964	(0.0132)	0.0672	(0.0119)	-
Age 36 - 40 years	0.1730	(0.0156)	0.1035	(0.0139)	-
Age 41 - 45 years	0.1751	(0.0188)	0.1012	(0.0166)	-
Age $\geq$ 46 years	0.1842	(0.0245)	0.0877	(0.0217)	-
Married	-0.2137	(0.0145)	-0.1189	(0.0131)	-
Child	0.0301	(0.0140)	0.0332	(0.0126)	-
Vocational training	-0.1217	(0.0132)	-0.0854	(0.0119)	-
University	-0.1228	(0.0344)	-0.0477	(0.0331)	-
Northern states	-		-		-
Berlin	0.2743	(0.0364)	0.1007	(0.0362)	-
North-Rhine Westfalia	0.0468	(0.0161)	-0.0029	(0.0145)	-
Hesse/Rh.-Pal./Saarland	0.0090	(0.0177)	-0.0286	(0.0159)	-
Baden-Württemberg	-0.0488	(0.0213)	-0.1370	(0.0192)	-
Bavaria	-0.1424	(0.0159)	-0.0839	(0.0142)	-
Blue collar	-		-		-
White collar	0.2284	(0.0184)	0.1478	(0.0171)	-
Farm./mining/energy	-		-		-
Basic industry	0.1568	(0.0343)	0.0940	(0.0297)	-
Investment goods	0.3492	(0.0329)	0.2271	(0.0291)	-
Consumption goods	0.2602	(0.0361)	0.1395	(0.0315)	-
Food/recreation	0.3420	(0.0452)	0.2198	(0.0420)	-
Construction	0.1719	(0.0302)	0.1868	(0.0260)	-
Auxiliary construction	0.0502	(0.0327)	0.0423	(0.0285)	-
Retail	0.3171	(0.0330)	0.2112	(0.0291)	-
Transport/communic.	0.2302	(0.0364)	0.1344	(0.0322)	-
Services (for firms)	0.3317	(0.0352)	0.1678	(0.0316)	-
Services (for households)	0.1907	(0.0401)	0.1014	(0.0361)	-
Services (public)	0.4670	(0.0404)	0.3009	(0.0370)	-
State	0.4128	(0.0473)	0.2900	(0.0433)	-
First quintile[d]	-		-		-
Second quintile[d]	-0.2020	(0.0166)	-0.0727	(0.0218)	-
Third quintile[d]	-0.3513	(0.0180)	-0.1827	(0.0228)	-
Fourth quintile[d]	-0.4030	(0.0195)	-0.2171	(0.0238)	-
Fifth quintile[d]	-0.2892	(0.0227)	-0.1808	(0.0271)	-
Length prev. employment	0.0006	(0.0002)	0.0001	(0.0002)	-
Unemployed last 12 months	-0.1770	(0.0139)	-0.0301	(0.0111)	-
Max. entitlement 0 months[e]	-		-		-
Max. entitlement 1 - 12 months[e]	-0.3826	(0.0209)	-0.1867	(0.0203)	-
Max. entitlement 13 - 24 months[e]	-0.3187	(0.0283)	-0.1427	(0.0263)	-
Max. entitlement $\geq$ 25 months[ef]	-		-		-
Replacement ratio[g]	-0.0083	(0.0003)	-0.0068	(0.0003)	-
1983 - 1987	-		-		-
1988 - 1991	-0.1064	(0.0133)	-0.1660	(0.0118)	-
1992 - 1997	0.0238	(0.0129)	-0.1139	(0.0111)	-
Constant	2.3511	(0.0493)	1.6488	(0.0453)	-
κ	-0.8234	(0.0205)	-0.6374	(0.0203)	-
σ	1.1073	(0.0056)	0.8045	(0.0044)	-
Variance of unobs. heterog.	0.0000	(0.0000)	0.0000	(0.0000)	-
P-value of H_0 : no unobs. heterog.	1.0000		1.0000		-

[a] standard errors account for multiple spells of same individual
[b] estimates for GSOEP did not converge
[c] all covariates refer to spell beginning
[d] quintiles of whole population of wage earners
[e] maximum entitlement period of unemployment benefits
[f] had to be dropped due to collinearity with age variable
[g] replacement ratio of unemployment benefits or unemployment assistance in percent $\times$ 100

Table A6. Gamma accelerated failure time model with gamma distributed unobserved heterogeneity, Women (standard errors in parentheses[a])

	IABS-NE		IABS-UBJ[b]	SOEP[b]
Age 26 - 30 years[c]	-		-	-
Age 31 - 35 years	-0.0187	(0.0230)	-	-
Age 36 - 40 years	-0.0966	(0.0257)	-	-
Age 41 - 45 years	-0.0476	(0.0344)	-	-
Age $\geq$ 46 years	0.0257	(0.0455)	-	-
Married	0.1468	(0.0195)	-	-
Child	0.2268	(0.0203)	-	-
Vocational training	-0.1962	(0.0253)	-	-
University	-0.1080	(0.0477)	-	-
Northern states	-		-	-
Berlin	0.1695	(0.0557)	-	-
North-Rhine Westfalia	0.0752	(0.0270)	-	-
Hesse/Rh.-Pal./Saarland	-0.0623	(0.0293)	-	-
Baden-Württemberg	-0.1510	(0.0294)	-	-
Bavaria	-0.2358	(0.0285)	-	-
Blue collar	-		-	-
White collar	0.0433	(0.0254)	-	-
Farm./mining/energy	-		-	-
Basic industry	0.4378	(0.0824)	-	-
Investment goods	0.5947	(0.0733)	-	-
Consumption goods	0.2779	(0.0746)	-	-
Food/recreation	0.2228	(0.0809)	-	-
Construction	0.1867	(0.0966)	-	-
Auxiliary construction	0.2856	(0.0965)	-	-
Retail	0.3206	(0.0715)	-	-
Transport/communic.	0.1538	(0.0911)	-	-
Services (for firms)	0.3703	(0.0732)	-	-
Services (for households)	0.1153	(0.0717)	-	-
Services (public)	0.3800	(0.0714)	-	-
State	0.5285	(0.0820)	-	-
First quintile[d]	-		-	-
Second quintile[d]	-0.1348	(0.0216)	-	-
Third quintile[d]	-0.0937	(0.0286)	-	-
Fourth quintile[d]	-0.0824	(0.0349)	-	-
Fifth quintile[d]	0.1660	(0.0450)	-	-
Length prev. employment	0.0012	(0.0002)	-	-
Unemployed last 12 months	-0.4435	(0.0243)	-	-
Max. entitlement 0 months[e]	-		-	-
Max. entitlement 1 - 12 months[e]	-0.2923	(0.0413)	-	-
Max. entitlement 13 - 24 months[e]	-0.2769	(0.0529)	-	-
Max. entitlement $\geq$ 25 months[ef]	-		-	-
Replacement ratio[g]	-0.0089	(0.0006)	-	-
1983 - 1987	-		-	-
1988 - 1991	-0.2481	(0.0238)	-	-
1992 - 1997	-0.1770	(0.0224)	-	-
Constant	2.7688	(0.0922)	-	-
κ	-0.4262	(0.0228)	-	-
σ	1.3049	(0.0063)	-	-
Variance of unobs. heterog.	0.0000	(0.0000)	-	-
P-value of H_0 : no unobs. heterog.	1.0000		-	-

[a] standard errors account for multiple spells of same individual
[b] estimates for did not converge
[c] all covariates refer to spell beginning
[d] quintiles of whole population of wage earners
[e] maximum entitlement period of unemployment benefits
[f] had to be dropped due to collinearity with age variable
[g] replacement ratio of unemployment benefits or unemployment assistance in percent $\times$ 100