

Institute for Employment
Research

The Research Institute of the
Federal Employment Agency



IAB-Discussion Paper

34/2015

Articles on labour market issues

Under heavy pressure

Intense monitoring and accumulation of sanctions
for young welfare recipients in Germany

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ISSN 2195-2663

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Intense monitoring and accumulation of sanctions for young welfare recipients in Germany

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Abstract

With the introduction of a new welfare benefit system in 2005, Germany implemented quite strict benefit sanctions for welfare recipients aged younger than 25 years. For all types of non-compliance except for missing appointments, their basic cash benefit is withdrawn for three months. A second sanction of the same type within one year implies a complete benefit cut for three months. We analyze the impact of these sanctions on job search outcomes and on transitions out of the labor force. Our analysis is based on administrative data on a large inflow sample of young male jobseekers into welfare in West Germany. We estimate separate models for people living alone and people living with their family, as sanctioned welfare recipients living with other household members can partly rely on their support and might react less by increasing search intensity and lowering reservation wages. We estimate the parameters of multivariate duration models taking selection based on unobservables into account. Our results suggest that both the first and the second sanction increase the probability of finding a job, but that these jobs go along with lower earnings due to first but not the second sanction. Moreover, first sanctions significantly increase the transition rate out of the labor force of both groups of young men, while second sanctions amplify this effect only for young men living in single households.

Zusammenfassung

Mit der Einführung der Grundsicherung für Arbeitsuchende im Jahr 2005 wurde in Deutschland ein System von Sanktionen implementiert, das für Arbeitslosengeld(ALG)-II-Bezieher im Alter von unter 25 Jahren besonders starke Leistungsminderungen nach sich ziehen kann. In unserem Untersuchungszeitraum der Jahre 2007 bis 2009 war bei allen Pflichtverletzungen ausser den Meldeversäumnissen für Unter-25-jährige vorgesehen, dass bei einer ersten Pflichtverletzung die ALG-II-Regelleistung für drei Monate entfällt. Folgt eine zweite Sanktion dieser Art innerhalb von einem Jahr, entfällt das gesamte ALG II für drei Monate und damit auch die Leistungen für Unterkunft und Heizung. Diese Studie untersucht Effekte dieser Sanktionen auf den Erfolg der Arbeitsuche und einen Rückzug vom Arbeitsmarkt von jungen ALG-II-Beziehern. Es wird ein administrativer Datensatz des Zugangs von jungen männlichen ALG-II-Beziehern in Westdeutschland ausgewertet, die zum Zeitpunkt des Zugangs keiner versicherungspflichtigen Beschäftigung oder betrieblichen Ausbildung nachgingen. Die Schätzungen erfolgen getrennt für alleinlebende junge Männer und junge Männer, die mit anderen Bedarfsgemeinschaftsmitgliedern zusammen leben. Junge Männer in Mehrpersonenbedarfsgemeinschaften sollten im Falle einer Sanktionierung ihre Suchaktivitäten weniger stark intensivieren und ihre Anspruchslöhne nicht so weit zurücknehmen wie alleinlebende junge Männer. Der Grund dafür für ist, dass junge Männer in Mehrpersonenbedarfsgemeinschaften durch andere Bedarfsgemeinschaftsmitglieder (finanziell) unterstützt werden. Die Schätzungen beruhen auf einem multivariaten Verweildauermodell, das die Selektion durch unbeobachtbare Faktoren berücksichtigt. Simultan modelliert werden die Übergangsrate in die erste und in die zweite Sanktion, die Übergangsrate in ungeförderter versicherungspflichtige Beschäftigung und die Rate des Rückzugs aus dem Erwerbsleben sowie im Falle eines Übergangs in eine ungeförderter ver-

sicherungspflichtige Beschäftigung das Tagesentgelt. Die Befunde zeigen, dass aufgrund der ersten ebenso wie der zweiten Sanktion die individuelle Übergangsrate in Beschäftigung der jungen ALG-II-Bezieher steigt, wobei die erzielten Entgelte nur wegen der ersten Sanktionierung geringer ausfallen. Die erste Sanktion erhöht für beide Gruppen junger Männer die Rate des Rückzugs aus dem Erwerbsleben; die zweite Sanktion verstärkt den Effekt der ersten nur für alleinlebende junge Männer.

JEL classification: J64, J65, C41, C21

Keywords: social assistance, unemployment, sanctions, post unemployment outcomes, youth unemployment

Acknowledgements: We would like to thank Johan Vikström and the participants of the workshop on “Job Search Assistance, Monitoring and Sanctions” organized by the Institute for Employment Research and the Center of Econometrics and Empirical Economics of the University of Mannheim for their very helpful comments on earlier versions of this paper. All errors are ours.

1 Introduction

Social welfare systems usually imply specific obligations for benefit recipients. If a welfare recipient does not comply with his or her obligations, benefit rules often lead to an imposition of a sanction. For unemployed welfare recipients sanctions can be imposed if the benefit recipient refuses a job opportunity or a training program participation. By setting an incentive to comply with such job search requirements the intention is to combat moral hazard and to increase the transition probability from welfare receipt to work. The German welfare system is characterized by especially strong sanctions for young welfare recipients: If they do not comply with their obligations like the requirement to search for a job, they risk not receiving any welfare payments for up to three months (besides payments for rent and heating). If they are sanctioned a second time within a specific time period, even the payments for rent and heating can be cut. The main reason for this is that young welfare recipients under the age of 25 are defined as a special target group which should be pushed out of welfare receipt as soon as possible. Therefore, these young welfare recipients have on the one hand a higher probability of participating in active labor market programs and on the other hand they can be sanctioned more strongly if they do not comply with their obligations.

Economic job search models that incorporate sanctions explicitly predict a faster transition to work once a sanction is imposed since we expect the reservation wage to fall and the search intensity to rise. For corresponding evidence in the context of unemployment insurance systems, see e.g. Abbring/van den Berg/van Ours (2005), Lalive/van Ours/Zweimüller (2005), Svarer (2011), Røed/Weslie (2012) and van den Berg/Vikström (2014). However, once the welfare recipients have been sanctioned, not only the current utility of searching for a job but also the expected utility from future welfare receipt might drop. This, and the considerable reduction of their welfare benefit, might increase the probability of dropping out of the regular labor market. This implies that sanctions might have negative long-run effects by pushing sanctioned individuals into black market activities or by lowering the probability that these individuals benefit from the counseling by the caseworkers, have access to job search and training programs and receive vacancy referrals. Therefore, it is important to consider the impact of strong sanctions on the probability of leaving the labor force without continuing welfare benefit receipt.

In this paper we analyze the impact of imposed sanctions on both the probability of taking up a regular job and of leaving our sample without any activity that can be observed in the available administrative data base. Leaving our sample implies that the individuals do not receive any transfer payments, do not participate in any measure of active labor market policy, are not registered as a job-seeker at the job center, and neither have a regular job nor a vocational training position which is subject to social security contributions. Taken together we regard this as a proxy for leaving the labor force without welfare receipt.

Most of the previous studies focus on recipients of unemployment insurance benefits and not on recipients of means-tested welfare benefits. One exception is van den Berg/van der Klaauw/van Ours (2004), who analyze the impact of imposed sanctions on social welfare recipients in Rotterdam, Netherlands. They find that the imposition of sanctions substan-

tially increases the individual transition rate from welfare to work. van der Klaauw/van Ours (2014) analyze the effects of a re-employment bonus and of sanctions on the probability of leaving welfare receipt for a job. Their results suggest that the re-employment bonuses do not work, while benefit sanctions increase the transition rate from welfare to work significantly. Based on German data, Boockmann/Thomsen/Walter (2014) apply an instrumental variable approach using job centers' reported sanction strategy and their actual sanction rates as instruments for imposed sanctions at the individual level. Their results suggest strong effects on employment probabilities. van den Berg/Uhlendorff/Wolff (2014) analyze the impact of mild and strong sanctions on the exit rate to work for young unemployed welfare recipients in West Germany. They find positive effects of both types of sanctions, while strong sanctions lead to a larger change in the exit rate to work than mild sanctions.

Two qualitative studies exist that indicate further potential implications of strong sanctions for young welfare recipients in Germany. Based on a survey among a small number of caseworkers, Götz/Ludwig-Mayerhofer/Schreyer (2010) report that caseworkers are rather skeptical about strong sanction that lead to a withdrawal of the basic cash benefit. While caseworkers state that strong sanctions can change the behavior of sanctioned welfare recipients in a desirable way, they additionally stress potential adverse consequences for the sanctioned individuals. For example they might accept jobs that are low paid, unstable and that provide too little training for people at the beginning of their career. In a related study, Schreyer/Götz (2012) conducted a survey in one job center among young sanctioned welfare recipients. The respondents' statements suggest that sanctions lead to restricted nutrition without leading to hunger. Some respondents reported that they lost their apartments and had to temporarily move into a hostel for the homeless. Many respondents reported increased debt problems related to sanctions. Moreover, the responses provided some indication that due to the sanction, welfare recipients took up jobs without declaring them to the welfare agency or engaged in criminal activities in order to earn some money.¹ Finally, the responses indicate that sanctions might negatively affect psychosocial well-being and social inclusion. Overall, the qualitative evidence indicates that strong sanctions might bring about negative effects for the sanctioned individuals that are usually not captured in studies focusing on the duration until finding a job and the corresponding quality of this job.

In contrast to the previous literature on the effects of sanctions on welfare recipients, we consider the quality of the job matches and analyze whether sanctions push the young welfare recipients into lower paid contributory jobs.² Moreover, by measuring the effect of sanctions on the probability of leaving the labor force and the benefit systems, we extend the analysis of sanctions by an important dimension. Our study is based on a large inflow sample into welfare without employment during the period of January 2007 to March 2008. Our sample is drawn from administrative records. It is restricted to welfare recipients aged 18 to 24 years and to their first welfare spell during this observation window. Our analysis

¹ Results on the United Kingdom by Machin/Marie (2006) also point to a positive relationship between crime and benefit cuts or sanctions.

² For corresponding studies in the context of sanctions in unemployment insurance (UI) systems see, Arni/Lalive/van Ours (2013), van den Berg/Vikström (2014) and van den Berg/Hofmann/Uhlendorff (2015). Their results suggest that jobs found after the imposition of a sanction go along with lower wages and are less stable.

is based on a sample of about 70,400 young men in West Germany. Welfare recipients' transitions into employment and out of the labor force of are available until August 2009. We estimate separate models for people living alone and people living with their family, as sanctioned welfare recipients living with other household members can partly rely on their support and might react less by increasing search intensity and lowering reservation wages.

We take into account the dynamic selection of young welfare recipients into the treatment by applying the “timing of events approach” following Abbring/van den Berg (2003). This approach allows to control for selection into treatment based on both observed and unobserved characteristics. One central assumption of this approach is the no-anticipation assumption, which implies that individuals do not know exactly when a treatment will take place.³ The benefit rules imply an imposition of a sanction, if a welfare recipient does not comply with his obligations. However, for several reasons sanctions are not automatically imposed. One reason is that not all infringements are fully observed by the caseworkers. Another reason is that caseworkers have some discretion with respect to imposing a benefit sanction, i.e. they have some degree of freedom to decide whether personal reasons that a welfare recipient provides justify his non-compliance to his obligations. Overall, the no-anticipation assumption is very likely to hold, since the exact moment when a caseworker imposes a sanction cannot be anticipated by the welfare recipient. We are interested in the impact of imposed sanctions on two outcomes: leaving unemployment for a job and dropping out of the labor force. Therefore, we estimate a competing risks model for the two destination states, and additionally evaluate the treatment effect on the job match quality by estimating a wage equation for the initial daily wage. Moreover, we allow for different effects of the first and the second (cumulative) sanction.

Our results suggest that the first and the second strong sanction increase the probability of finding a job. However, these employment spells come along with a significantly lower daily wage. This negative impact on the wages is driven by the first sanction. Jobs found after the imposition of a second sanction do not lead to an additional wage cut. Moreover, sanctions significantly increase the transition rate out of the labor force. This holds for male jobseekers living in single households. For this group, we observe an increase in the exit rate out of labor force after the first sanction and an additional significant effect of the imposition of a second sanction. In contrast to this, individuals living in multi-person households are not pushed out of the labor force after the imposition of a strong sanction. The reason for this might be that multi-person households still receive additional benefits which are not affected by the sanction, like benefit payments for children. Overall our results indicate that there exist – next to the strong positive effects on employment probabilities – additional effects on the job quality and on the exit rate out of the labor market which have to be taken into account when evaluating strong sanctions for young benefit recipients.

The paper is organized as follows: Section 2 describes the institutional background. Section 3 presents the administrative data and descriptive statistics. Section 4 describes the econometric approach. The results of the empirical analysis are presented in Section 5,

³ It is important to note that this does not imply that the individuals do not know the probability distribution of future events conditional on observable and unobservable characteristics.

and Section 6 concludes.

2 Welfare benefit sanctions in Germany

This section describes the means-tested benefit system of the Social Code II in place during our observations window and highlights its sanction rules. In January 2005 Germany introduced a new means-tested benefit, the unemployment benefit II (UB II). This (mostly) flat-rate welfare benefit replaced the former unemployment assistance (UA) benefit and the social assistance benefit for people who are regarded as capable of working.⁴ The main issue of this reform was to move towards a system that activates welfare benefit recipients (see e.g. Hohmeyer/Wolff, 2012). In our period under review of the years 2007 to 2009 the average stock of welfare recipients aged at least 15 years who were capable of working ranged from 4.9 to 5.3 million persons (Source: Statistics Department of the German Federal Employment Agency); about one fifth of them were aged younger than 25 years.

Activation implied that public employment services (PES) were supposed to support the welfare recipients by a large variety of active labor market programs, to enable them to take up employment or at least to increase their employability. Moreover, strict rules were introduced that require welfare recipients to take actions that help to reduce the dependence on the welfare benefit. Under the new welfare system all members of welfare recipient households who are capable of working are supposed to take such actions.⁵ Hence, they must cooperate with their job centers, e.g., by participating in suitable active labor market programs and by actively searching for jobs or suitable training opportunities. Basically any job was defined as suitable, irrespective of a welfare recipient's qualification or past experience in the labor market.

A system of benefit sanctions is intended to help to enforce the benefit rules. To understand how sanctions operate, it is necessary to describe the different components of the welfare benefit UB II. One component, the basic cash benefit, is supposed to cover regular expenditures. In 2007 this component amounted to 345 € a month for singles, single parents or welfare recipients whose partner was younger than 18 years. It is 80 percent of this level for additional household members aged 15 years or more. For each of two adult partners it is 90 percent of the level for singles. Household members who were not capable of working aged below 15 years received 60 percent of the benefit level for singles who are capable of working. In our observation period the basic cash benefit was raised annually in July and was set to 359 € in July 2009. A second important component of the UB II is the benefit that covers costs for accommodation and heating. It is determined by job centers under consideration of key factors like size and composition of the household, local rent levels, etc. There are other parts of the welfare benefit covering contributions to old-age pension or some temporary expenditures/special needs (e.g. costs related to pregnancy). Until the start of the year 2011, an additional benefit was available to people who had exhausted their unemployment insurance (UI) benefit within the last two years.

⁴ According to the Social Code II people aged 15 to 64 years are considered to be capable of working if they are able to work at least three hours per day.

⁵ Before 2005 this was not the case in households with an UA recipient; only the UA recipient himself was obliged to search for work and to be available for the placement into jobs or active labor market programs.

If welfare benefit recipients do not comply with specific obligations they can be sanctioned for a duration of three months. Any sanction leads to a temporary loss of the additional benefit available to people who had exhausted their unemployment insurance benefit. The overall level of benefit sanctions in the unemployment benefit II system depends on several factors though. The first is the type of infringement. Relatively low sanctions apply if welfare recipients miss an appointment with the job center or a necessary medical examination. In this case in our observation period the sanction was 10 percent of their (full) basic cash benefit if it is the first non-compliance of this type within a year.⁶ For any further non-compliance in the form of missing an appointment within a period of one year the sanction is set at the level of the last sanction in response to such an infringement augmented by 10 percent of the full basic cash benefit.

While the benefit sanctions due to missing an appointment are relatively mild, much harsher sanctions exist for infringements against other obligations. These sanctions apply for instance for insufficient efforts to search for work and to improve job finding perspectives, refusal of job offers, non-compliance with an individual action plan, refusal of participation in active labor market programs, and deliberate reduction of other sources of income than welfare. The sanction amount again depends on the number of sanctions of the same type within a year. Additionally, it depends on age. A first non-compliance reduces the welfare benefit of people aged at least 25 years by 30 percent of the full cash benefit. It is 60 percent of the full cash benefit for a second infringement of the same category within one year and the sanction is a full temporary benefit loss for any further non-compliance within one year. For welfare recipients aged younger than 25 years the sanctions are particularly severe. A first non-compliance of the types mentioned above implies that they are not paid their basic cash benefit. For this broad group of infringements any further non-compliance within one year leads to a full loss of the welfare benefit for three months. For welfare recipients that are aged younger than 25 years caseworkers may reduce the duration of the sanction period to six weeks under certain circumstances, e.g., if a welfare recipient is very young and not fully aware of the consequences of his/her non-compliance. Moreover, for any sanction that exceeds 30 percent of the basic cash benefit the job centers can provide the sanctioned welfare recipient with non-cash benefits like food stamps.⁷

Imposing a benefit sanction is a process involving several steps. The job centers must first of all inform welfare recipients about their obligations and the consequences of non-compliance as soon as they register. If an infringement against benefit rules then takes place and is observed by the job center, the case-worker has to document the infringement. The job center sends a written notification to the welfare recipients that contains the details of the infringement and of the related sanction. The letter includes an answer form with which the welfare benefit recipient can explain a good cause for the non-compliance. It also includes a date until which the response has to be provided to the job center. How much time the welfare recipient has to provide a response is not specified by the benefit

⁶ The actual basic cash benefit of a person may be lower than the levels described before if the person can rely on other sources of income like limited own earnings that reduce the welfare benefit. The sanction amount is not calculated as a percentage of the actual basic cash benefit, but of the full basic cash benefit that applies if a person cannot rely on any other income than the welfare benefit.

⁷ No data are available that show how frequently sanction periods are reduced and how frequently non-cash benefits are received by sanctioned welfare recipients.

rules, but information available in our administrative microdata on the time between the non-compliance and the start of the sanction suggest that the time interval for such a response is one to three weeks. If a welfare recipient does not provide a good cause for non-compliance, the sanction comes into force the first day of the calendar month following the month in which the answer form to the notification letter had to be handed in.

The benefit rules envisage that a welfare recipient is sanctioned after a non-compliance with his obligations. For various reasons though a benefit sanction might not actually be imposed: First, not all infringements are fully observed and in turn cannot be well documented by the caseworkers, so that by imposing a sanction they would risk a law suit. Next, job center staff with a huge workload might not have enough time to monitor all welfare recipients with the same intensity or to provide them with job offers and active labor market program participation offers. Moreover, there is some scope for discretion of caseworkers when it comes to imposing a benefit sanction, as the benefit rules do not fully define what is a good cause for non-compliance. The literature on welfare benefit sanctions suggests that benefit sanctions are most likely not universally imposed. Boockmann/Thomsen/Walter (2014) for instance emphasize the substantial variation in job center sanction rates. The previously mentioned qualitative survey of Götz/Ludwig-Mayerhofer/Schreyer (2010) is concerned with sanctions for young welfare recipients and the caseworkers' view of the sanction practices. One result of this study is that benefit sanctions are not universally imposed. Another qualitative analysis on the handling of benefit sanctions for young welfare recipients studies conversations between caseworkers and welfare recipients (Karl/Müller/Wolff, 2011). It shows that even in situations in which a sanction against a welfare recipient would be possible, some caseworkers attempt to find ways for avoiding a benefit sanction.

Aggregate data from the Statistics Department of the German Federal Employment Agency show that from 2007 to 2009 the annual number of new welfare benefit sanctions ranged from 727 to 785 thousand. Among these sanctions the share of relatively severe sanctions due to infringements other than missing appointments ranged from 42.1 to 46.4 percent. Young welfare recipients aged less than 25 years are defined as a special target group that after their benefit claim should be placed immediately to work, training or (before April 2012) into work opportunities, an active labor market program. Therefore, their sanction rates are particularly high. Table 1 displays sanction rates, defined as the share of welfare recipients with at least one sanction. We show them for the entire German economy and for the regions West and East Germany. We also distinguish between men and women and several age-groups. The overall sanction rates range from 2.4 to 2.5 percent from 2007 to 2009. They are somewhat higher in West than in East Germany. Moreover, the sanction rates for men at 3.4 to 3.6 percent are more than twice as high as those for women. Finally, the sanction rates for welfare recipients aged less than 25 years at 3.8 to four percent are far higher than the overall sanction rate and the sanction rates for 25-49 year-olds or those aged at least 50 years. This is to be expected as young welfare recipients, as a special target group according the Social Code II, are granted more attention by their job centers than people in other age-groups.

Table 1: Average share of welfare recipients with at least one sanction (stock) in the period under review (in percent)

Region Year	Germany			West			East		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
- All	2.4	2.5	2.5	2.5	2.7	2.6	2.1	2.3	2.3
- Men	3.4	3.6	3.6	3.7	3.9	3.8	3.0	3.2	3.2
- Women	1.4	1.5	1.5	1.5	1.6	1.6	1.2	1.3	1.4
- Aged younger than 25 years	3.8	3.9	4.0	3.7	3.8	3.8	4.0	4.1	4.4
- Aged 25-49 years	2.6	2.8	2.8	2.8	3.0	2.9	2.2	2.3	2.4
- Aged at least 50 years	0.8	0.9	0.8	0.9	1.0	0.9	0.6	0.7	0.7

Source: Statistics Department of the German Federal Employment Agency.

3 The administrative data base and descriptive statistics on our sample

Our analysis is based on administrative data. We combine information from two databases: the Integrated Employment Biographies (IEB) and the Unemployment Benefit II History Records. The IEB contain spell data of daily precision on contributory and minor employment as well as registered unemployment and job search, and active labor market program participation. It also includes spells of unemployment benefit receipt (unemployment insurance, unemployment benefit II and the abolished unemployment assistance). The Unemployment Benefit II History Records and its companion files provide spell data on unemployment benefit II receipt together with a household identifier so that families can be tracked. These data also provide the benefit sanction information, including the day when a sanction started and ended and the sanction type. No information on sanction warnings is available in the data. Taken together these data offer precise daily information on the duration of welfare receipt while not being employed, the calendar day of the start of a welfare benefit sanction and the sanction type as well as on a number of different destination states and the (daily) post-unemployment wage.

Our sample was drawn from the population of young men aged 18 up to 24 years who started a period of welfare receipt while not being employed in the period of January 2007 up to March 2008. We restricted the sample to people who at their spell start were registered as jobseekers. If non-employed welfare recipients are not registered as jobseeker, there is still some scope for sanctioning them. However, their potential activities like full-time education or care for other household members are generally regarded as a good cause for non-compliance.⁸ Therefore, it is quite unlikely that they will be sanctioned for refusing a job offer or a program participation offer. However, we did not generally exclude individuals who were participating in an active labor market program or worked in minor employment, as these individuals are at risk of being sanctioned.

We focus on West German men. A considerably lower unemployment rate in West Germany implies much more scope for job centers to place welfare recipients to work. In turn, benefit sanctions in response to refusing job offers are far more likely for young welfare recipients living in the West than in the East and it is easier for sanctioned people to take up

⁸ Unfortunately we cannot observe such activities in the available data.

employment in the West as opposed to East Germany. We did not study women, because they are the primary caretaker of children below the age of three implying much less strict job search requirements than for other welfare recipients. In turn compared with young fathers they face a much lower risk of being sanctioned. Moreover, for women in the age-group 18 to 24 years it would have been quite important to model the (endogenous) fertility decisions together with the other dependent variables in our model, which is beyond the scope of this paper.

Note that we excluded from our data welfare recipients in 50 West German job centers for which micro data on sanctions were not available. These job centers are entirely run by municipalities and not jointly with local labor agencies. In the years 2007 to 2009 about 13 percent of (the stock of) unemployed welfare recipients were registered in these job centers in West Germany (Source: Statistics Department of the Federal Employment Agency). Next, we excluded observations with sanctions during the first seven days after entry into welfare without employment, as these sanctions are very likely a result of an infringement that took place prior to the studied welfare spell. Moreover, we excluded some observations due to missings in key variables. Finally, we discarded a few observations of disabled people who are rarely sanctioned and people with a university or technical university degree as extremely few of the young welfare recipients in our data (about 0.6 percent) are characterised by such a degree.

Though in the available data we could track employment transitions until December 2009, we modeled the duration of welfare spells at longest until the end of August 2009. The reason for this is that we regarded an exit state “out of the labor force for at least four months”. This transition is defined by leaving welfare for at least four months without being observed as employed, as a jobseeker, as an active labor market program participant or as a recipient of UI benefit (or the welfare benefit) during the four month period after a spell end. We right-censored spells at the time when a welfare recipient reaches the age of 25 years, since the sanction rules change upon reaching this age threshold.

Table 2 displays the share of transitions into strong sanctions and into the two exit states that we consider. The Table displays these numbers for two sub-samples that we study separately: people living in single and in multi-person households (at the start of the spell). The sample consists of about 31,900 spells of people in single-person households and 38,500 spells of people in multi-person households. At 14.4 percent the share of young men in single households who were sanctioned at least once is about two percentage points higher than for young men in multi-person households. The share of transitions into unsubsidized contributory jobs is 33 percent for young men in single households and 38 percent for young men in multi-person households. 6.1 percent of young men in single households and 5.1 percent of young men in multi-person households leave the labor force. These statistics show that young men in multi-person households are hence more successful in the labor market than men in single households. As the former are also less frequently sanctioned, the different shares of employment exit might be a result of a difference in the compliance with job search requirements and other benefit rules.

Table 2: Share of exit into strong sanctions and into different labor force states¹

	All	No strong sanction	At least one strong sanctions	At least two strong sanctions
In single-person household				
Share of exit into				
- 1st sanction	0.144	0.000	1.000	1.000
- 2nd sanction	0.029	0.000	0.203	1.000
- 2nd sanction within one year after 1st sanction	0.027	0.000	0.185	0.914
- unsubsidized contributory job	0.330	0.343	0.255	0.200
- out of the labor force	0.061	0.060	0.069	0.067
Number of spells	31,890	27,307	4,583	930
In multi-person household				
Share of exit into				
- 1st sanction	0.124	0.000	1.000	1.000
- 2nd sanction	0.029	0.000	0.238	1.000
- 2nd sanction within one year after 1st sanction	0.027	0.000	0.216	0.909
- unsubsidized contributory job	0.380	0.394	0.278	0.199
- out of the labor force	0.051	0.051	0.055	0.057
Number of spells	38,492	33,727	4,765	1,134

Source: Own calculations

1) Contributory jobs exclude vocational training.

Table 2 also displays the just mentioned statistics for three sub-samples of people who have (i) never been sanctioned, (ii) have been sanctioned at least once or (iii) have been sanctioned at least twice. The share of employment exits is highest for those who were not sanctioned. The differences in the share of employment exit among these groups might be due to a selection effect in the sense that people with relatively low job finding perspectives are sanctioned more often than people with better job finding perspectives. The differences might reflect that people with relatively high job hazards are more likely than others to exit into jobs prior to facing a situation in which the job center could sanction them.

Table 3: No status found 6, 9 and 12 months after an out of the labor force transition (shares)¹

Months after exit	6 months	9 months	12 months	Number of spells
In single-person household				
- No strong sanction	0.855	0.691	0.600	1,531
- At least one strong sanction	0.802	0.645	0.542	273
In multi-person household				
- No strong sanction	0.870	0.737	0.637	1,599
- At least one strong sanction	0.800	0.677	0.614	220

Source: Own calculations

1) Only for out of the labor force exits prior to January 2009.

An important issue is what happens to welfare recipients who leave the labor force for at least four months. To shed light on this, we display in Table 3 for all exits of this type that took place prior to January 2009 the share of welfare recipients that are again not observed in one of the states available in our administrative data six, nine or twelve months after their exit. For more than 85.5 percent of these welfare recipients without a strong sanction in

single households we cannot find any information in our administrative data six months after their exit date. This share gradually declines between the 6th and the 9th to more than 69 percent and the 9th and the 12th month after the exit out of the labor force to about 60 percent. The pattern is similar if we only regard the sanctioned men in single-person households, even though the shares are somewhat but not remarkably lower. There are no substantial differences between men in single households and men in multi-person households, when we compare the development of the share of individuals who are still out of the labor force at the three points in time.

To be sure that leaving the labor force for at least four months is not mainly a phenomenon of entering vocational training in classrooms starting in September, we studied the distribution of the out of labor force outflow over the calendar months from January 2007 until August 2009. The results show that the share of outflow in September of the total outflow into this state is only higher by a few percentage points than in the months just before or after September.⁹ Therefore, exiting into vocational training in schools/classrooms is not a key reason for our out of the labor force exits.

Figure 1
Empirical transition rate into the first strong punitive sanction for men in single and in multi-person households (with a 95 percent confidence band)

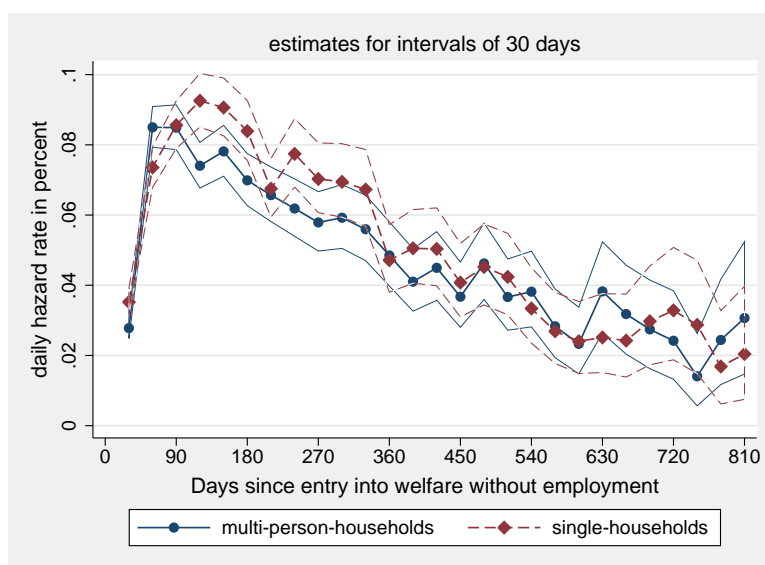


Figure 1 plots the empirical transition rates (Kaplan-Meier estimates) of men living in single households and men living in multi-person households into a first strong sanction against the duration of welfare receipt without employment. Both groups' exit rates start at a daily rate of around 0.03 percent in the first 30 days. They quickly reach their peak for individuals in multi-person households in the duration interval of more than 30 up to 90 days at more than 0.08 percent. For men in single households the peak is reached in the interval of more than 90 up to 120 days at more than 0.09 percent. The transition rates then tend to fall to levels of usually 0.02 to 0.04 percent after a duration of more than 510 days. The pattern of an initial peak and then a gradual decline is not surprising. One reason is

⁹ The results are available on request.

that job centers were supposed place young welfare recipients into jobs, training or work opportunities immediately after they enter welfare receipt, so that very quickly after entering welfare receipt much scope for non-compliance emerges. Therefore, transition rates into a first sanction should initially be quite high and should decrease considerably when the actions that job centers take to activate young welfare recipients decline with the duration of their spells. Moreover, the pattern may reflect heterogeneity among the welfare recipients, e.g., if they consist of different groups of people with different attitudes towards risking a sanction for non-compliance. Finally, it may be (partly) a result of a negative duration dependence, e.g., because over time individuals gather more knowledge about benefit rules and learn how to comply with them in order to reduce their risk of being sanctioned. The differences between the sanction rates of the two groups are not very large. In the duration intervals of more than 90 up to 330 days the sanction hazards are nearly always higher for men in single households than for men living in multi-person households. Yet, with one exception (the fourth interval of 30 days) we always find an intersection of the 95 percent confidence bands of the two groups.

Figure 2
Empirical transition rate into unsubsidized contributory employment for men in single and in multi-person households (with a 95 percent confidence band)

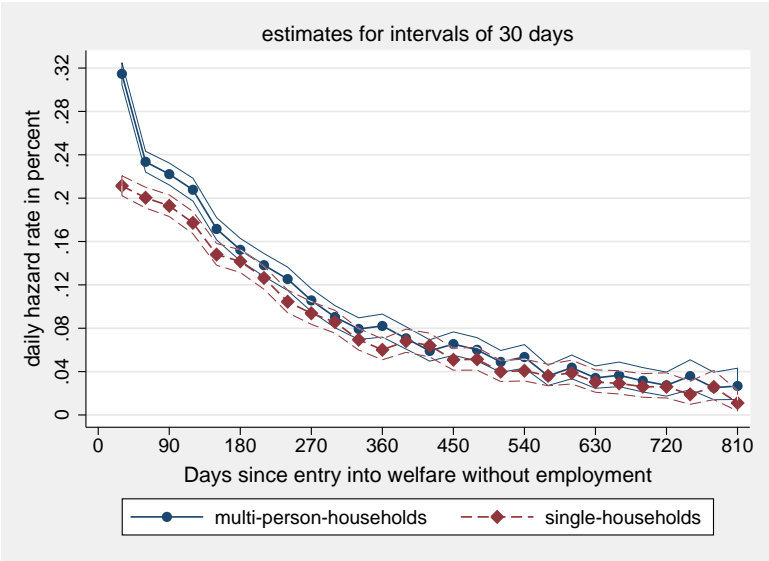
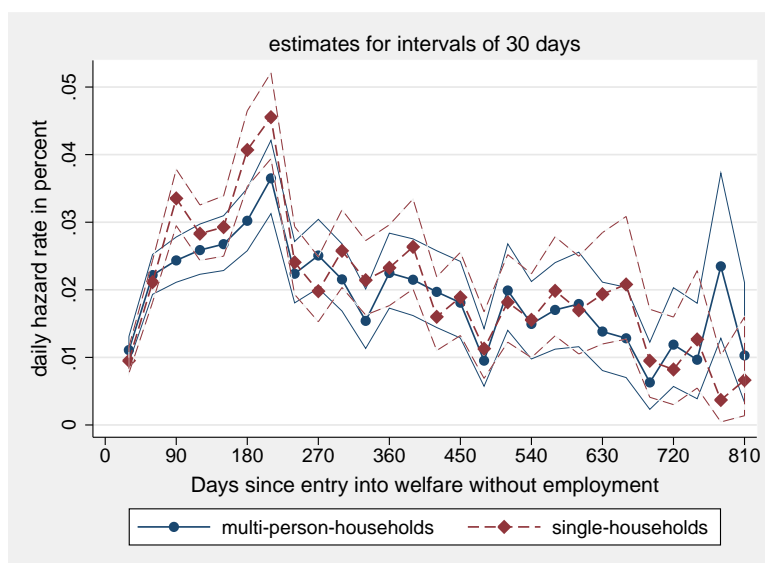


Figure 2 shows that both for men in single households and in multi-person households the daily transition rates into unsubsidized contributory employment tend to decline with duration of welfare receipt. In the first interval of 30 days they are quite high at more than 0.2 percent for men in single households and about 0.32 percent for men in multi-person households. Up to a duration of 150 days they are significantly higher for the latter than for the former group, but the differences, at less than 0.04 percentage points, are far lower than in the first interval. In the longer run the employment exit rates decline considerably to below 0.04 percent, when we regard a duration of more than 1.5 years. Compared with the employment transition rates, the transition rates into our out-of-labor-force status are much smaller (Figure 3). They show a peak in the interval of more than 180 up to 210 days, and decline remarkably in the next month. Thereafter, they still tend to decline somewhat. The

Figure 3
Empirical transition rate into out of the labor force for men in single and in multi-person households (with a 95 percent confidence band)



out-of-labor-force transition rates of men in single households often exceed those of men in multi-person households. But only in one interval (more than 60 up to 90 days) do the confidence bands imply a significant difference.

Our analysis will be concerned with sanction effects on welfare recipients' post-unemployment (real daily) wage in an unsubsidized contributory job. Table 4 displays selected percentiles of the wages separately for welfare recipient who were not sanctioned, who were sanctioned at least once or at least twice. Note that the jobs considered include part-time jobs. Hence, daily wages can be quite low. Our statistics therefore only take exits into employment into account provided that the daily wage exceeds 16.44 €, which corresponds to a monthly wage of 500 €. In all our analyses spells that are characterized by an exit into a contributory job that pays a lower wage were regarded as right-censored.

It becomes clear from Table 4 that the daily wages of sanctioned people are lower than those of welfare recipients who were not sanctioned. They tend to be lowest for people who were sanctioned at least twice. The differences between the non-sanctioned group and the group with at least one sanction are quite low at the 10th percentile of the post-unemployment wage distribution. However, there are already some considerable differences between the wages of these two groups at the 25th percentile of close to three Euros. This holds both for the sample of men in single and in multi-person households. These differences reach more than six Euros when we regard the 75th and eight to nine Euros for the 90th percentile. The differences in post-unemployment wages between the group of welfare recipients that were sanctioned at least once and the group of welfare recipients that were sanctioned at least twice are relatively small for men living in multi-person households (1.4 € or less). For men in single households this difference is very small for the 10th and 25th percentile, but ranges from about two up to more than three Euros when we consider the other percentiles. These descriptive results fit well to an

expectation that sanctions lower reservations wages and hence sanctioned welfare recipients more frequently accept low-paid jobs than non-sanctioned welfare recipients. This hypothesis, however, needs to be tested in our main analysis. The descriptive statistics may just imply that the sanctioned welfare recipients are more frequently characterized by placement impediments like low skills or low talents than the non-sanctioned ones.

Table 4: Distribution of the post-unemployment real daily wage of non-sanctioned and sanctioned welfare recipients¹

	No strong sanction	At least one strong sanction	At least two strong sanctions
In single-person household			
Number of observations	9,356	1,167	186
10th percentile	22.3	20.8	20.7
25th percentile	28.6	25.9	25.7
median	36.2	32.9	31.0
75th percentile	46.9	40.5	38.0
90th percentile	58.7	50.9	47.6
In multi-person household			
Number of observations	13,286	1,327	226
10th percentile	22.5	20.5	20.8
25th percentile	29.2	26.3	26.0
median	36.4	33.2	32.2
75th percentile	47.2	40.8	39.9
90th percentile	59.6	50.7	49.3

Source: Own calculations

1) In prices of the year 2005.

Tables 5 to 7 display averages of the covariates for the non-sanctioned and sanctioned welfare recipients with at least one and at least two sanctions for the single household and multi-person household sample. The statistics refer to characteristics at the start of the welfare spells in our sample. The sanctioned welfare recipients tend to be younger, more frequently of German nationality and unskilled than those that did not face a sanction.

Table 5: In single-person household sample: Averages of selected characteristics of the welfare recipients¹

	No strong sanction	At least one strong sanction	At least two strong sanctions
Number of observations	27,307	4,583	930
Entry quarter			
- Quarter 1, year 2007	0.279	0.260	0.281
- Quarter 2, year 2007	0.201	0.220	0.228
- Quarter 3, year 2007	0.206	0.203	0.212
- Quarter 4, year 2007	0.160	0.174	0.156
- Quarter 1, year 2008	0.155	0.143	0.124
Age-distribution:			
- 18 to 19 years	0.161	0.242	0.283
- 20 years	0.121	0.151	0.165
- 21 to 22 years	0.304	0.328	0.342
- 23 to 24 years	0.415	0.280	0.211
Nationality			
- German	0.873	0.913	0.931
- Turkish	0.037	0.029	0.028
- other foreign nationality	0.090	0.058	0.041
Education:			
- no occupational degree, no schooling degree	0.141	0.215	0.249
- no occupational degree, low schooling degree	0.407	0.484	0.482
- no occupational degree, high schooling degree	0.029	0.011	0.013
- voc. training, no high schooling degree	0.229	0.119	0.090
- voc. training, high schooling degree	0.023	0.005	0.004
- education missing	0.170	0.167	0.161
Federal States			
- Schleswig-Holstein	0.071	0.079	0.098
- Hamburg	0.047	0.047	0.053
- Lower Saxony	0.145	0.152	0.157
- Bremen	0.025	0.024	0.024
- North Rhine-Westphalia	0.335	0.341	0.337
- Hesse	0.063	0.054	0.053
- Rhineland-Palatinate	0.053	0.063	0.061
- Baden-Württemberg	0.097	0.075	0.057
- Bavaria	0.142	0.138	0.137
- Saarland	0.022	0.026	0.025
Other regional controls			
- District unemployment rate in %	9.150	9.267	9.532
- District long-term unemployment rate in %	4.347	4.388	4.523
- District vacancy-unemployment ratio	0.134	0.129	0.126

Source: Own calculations

1) Measured at the start of their spell.

Table 6: In multi-person household sample: Averages of selected characteristics of the welfare recipients¹ (part A)

	No strong sanction	At least one strong sanction	At least two strong sanctions
Number of observations	33,727	4,765	1,134
Entry quarter			
- Quarter 1, year 2007	0.279	0.259	0.272
- Quarter 2, year 2007	0.202	0.208	0.205
- Quarter 3, year 2007	0.226	0.202	0.201
- Quarter 4, year 2007	0.151	0.180	0.184
- Quarter 1, year 2008	0.142	0.152	0.137
Age-distribution:			
- 18 to 19 years	0.274	0.373	0.411
- 20 years	0.144	0.150	0.151
- 21 to 22 years	0.271	0.280	0.287
- 23 to 24 years	0.311	0.197	0.151
Family status:			
- not living with partner	0.640	0.710	0.719
- married	0.144	0.075	0.061
- not married but living with partner	0.216	0.215	0.220
Nationality			
- German	0.746	0.764	0.747
- Turkish	0.110	0.108	0.122
- other foreign nationality	0.144	0.127	0.131
Education:			
- no occupational degree, no schooling degree	0.170	0.258	0.284
- no occupational degree, low schooling degree	0.425	0.472	0.462
- no occupational degree, high schooling degree	0.027	0.009	0.009
- voc. training, no high schooling degree	0.164	0.084	0.076
- voc. training, high schooling degree	0.011	0.003	0.002
- education missing	0.203	0.174	0.168
Number of own children:			
- aged less than 3 years	0.163	0.150	0.154
- aged 3 to 5 years	0.049	0.040	0.036
- aged 6 to 17 years	0.031	0.038	0.036

Source: Own calculations

1) Measured at the start of their spell.

Table 7: In multi-person household sample: Averages of selected characteristics of the welfare recipients¹ (part B)

	No strong sanction	At least one strong sanction	At least two strong sanctions
Partner information			
- aged at least 26 years	0.069	0.046	0.045
- foreign nationality	0.069	0.049	0.043
- no occupational degree, no schooling degree	0.043	0.047	0.053
- no occupational degree, schooling degree	0.133	0.113	0.110
- education missing	0.095	0.082	0.078
Federal States			
- Schleswig-Holstein	0.060	0.056	0.049
- Hamburg	0.038	0.041	0.047
- Lower Saxony	0.141	0.140	0.131
- Bremen	0.023	0.021	0.019
- North Rhine-Westphalia	0.341	0.345	0.336
- Hesse	0.064	0.064	0.073
- Rhineland-Palatinate	0.073	0.084	0.087
- Baden-Württemberg	0.101	0.082	0.084
- Bavaria	0.140	0.145	0.148
- Saarland	0.019	0.022	0.026
Other regional controls			
- District unemployment rate in %	8.874	8.844	8.846
- District long-term unemployment rate in %	4.181	4.145	4.130
- District vacancy-unemployment ratio	0.131	0.128	0.128

Source: Own calculations

1) Measured at the start of their spell.

4 Empirical Model

We are interested in the causal impact of the imposition of a sanction on two duration outcomes, the duration of welfare receipt until taking up employment and the duration until dropping out of the labor force. We apply the “timing of events” approach (Abbring/van den Berg, 2003) – which is the standard approach in the literature on sanction effects – to a setting with competing risks; we estimate a mixed proportional hazard rate model with one dynamic treatment and two competing risks.¹⁰ Some individuals are sanctioned more than once during the observed welfare spell. We extend the model by taking into account transition rates to the first and to the second strong sanction. In addition to that, we evaluate the impact on the job match quality, measured by the initial daily wage of the employment spell.

We observe an inflow sample into welfare receipt. We assume that all individual differences in the probability of finding a job at time t can be characterized by observed characteristics x_t , unobserved characteristics V_e , and a sanction effect if a sanction has been imposed before t . Similarly, we assume that all individual differences in the probability of leaving the labor force can be characterized by the same observed characteristics x_t , unobserved characteristics V_o , and a sanction effect if a sanction has been imposed before t . Also the duration until a sanction depends on observable characteristics x_t , whether or not the individual has been sanctioned before, and unobserved characteristics V_s .

We specify the transitions rate from welfare receipt to a job $\theta_e(t)$, the transition rate out of the labor force $\theta_o(t)$, and the transition rate into the first and the second sanction $\theta_s(t)$ as exponential transition rates with piecewise constant terms allowing for a flexible durations dependence:

$$\begin{aligned}
 \theta_e(t) &= \exp\left(\sum_{j=2}^J I_j(t)\lambda_{je} + x'_t\beta_e + I_s(t > t_{s1})\alpha_{e1} + I_s(0 < t_{s2} - t_{s1} < 365)\alpha_{e2} \right. \\
 &\quad \left. + I_s(t_{s2} - t_{s1} \geq 365)\alpha_{e3} + V_e\right) \\
 \theta_o(t) &= \exp\left(\sum_{j=2}^J I_j(t)\lambda_{jo} + x'_t\beta_o + I_s(t > t_{s1})\alpha_{o1} + I_s(0 < t_{s2} - t_{s1} < 365)\alpha_{o2} \right. \\
 &\quad \left. + I_s(t_{s2} - t_{s1} \geq 365)\alpha_{o3} + V_o\right) \\
 \theta_s(t) &= \exp\left(\sum_{j=2}^J I_j(t)\lambda_{js} + x'_t\beta_s + I_s(t > t_{s1}) \sum_{j=1}^J I_{sj}(t_{s1})\gamma_j + V_s\right) \tag{1}
 \end{aligned}$$

$I_j(\cdot)$ takes on the value one if t is in the interval j . λ_{je} , λ_{jo} and λ_{js} describe the interval specific baseline hazard rates for J intervals. $I_s(\cdot)$ takes on the value one if $t > t_{s1}$, $0 < t_{s2} - t_{s1} < 365$ and $t_{s2} - t_{s1} \geq 365$, respectively. t_{s1} is the day of the first sanction, while t_{s2} is the day of the second sanction. α_{e1} (α_{o1}) is the effect of the first sanction on the transition rate into jobs (out of the labor force). The second sanction is more severe if the infringement takes place within one year after the first sanction, see Section 2. Therefore, we allow for different effects of sanctions which are imposed within one year after the first

¹⁰ see Drepper/Effraimidis (2015) for identification results for timing of events models with competing risks.

sanction (α_{e2} and α_{o2}) and of sanctions which are imposed later (α_{e3} and α_{o3}). The hazard rate of the imposition of a sanction might change after the first sanction and might depend on the timing of the first sanction. We control for this by including a series of dummies indicating the timing of the first sanction. The interval specific indicator $I_{sj}(\cdot)$ takes on the value one if the first sanction has been imposed in interval j . This indicator $I_{sj}(\cdot)$ is one from t_{s1} onwards.

We assume that a sanction does not affect the two transition rates before the moment of the sanction. This assumption is referred to as the no-anticipation assumption. In the case of sanctions this assumption is very likely to hold, since the exact moment when a caseworker imposes a sanction cannot be anticipated by the welfare recipient, see Section 2. Moreover, we assume that the unobserved heterogeneity V_e , V_o and V_s is constant over time, and that V_e , V_o and V_s are uncorrelated with observed characteristics x .

In order to identify the causal impact of sanctions on realized wages, we assume that the unobserved heterogeneity and the causal effect have an additive impact on the mean log wage. We specify the following equation for the wage at the beginning of the new employment spell:

$$\begin{aligned} \ln w = & x'_t \beta_w + I_s(t > t_{s1})\alpha_{w1} + I_s(0 < t_{s2} - t_{s1} < 365)\alpha_{w2} + I_s(t_{s2} - t_{s1} \geq 365)\alpha_{w3} \\ & + \sum_{j=2}^J I_j(t_e)\eta_w + V_w + \varepsilon_w \end{aligned} \quad (2)$$

The sanction effects are given by α_{w1} , α_{w2} and α_{w3} , V_w is the unobserved heterogeneity, and ε_w is assumed to be normally distributed with mean zero and unknown variance σ_w^2 . We allow the log wage to vary with respect to the previous duration of welfare receipt t_e by including indicator $I_j(\cdot)$, which takes on the value one if t_e is in the interval j .

Distribution of unobserved heterogeneity

We specify the distribution of unobserved heterogeneity G to have a discrete support with M support points. In order to force the corresponding probabilities to be between zero and one and to sum to one we use a multinomial logit parameterization of the class probabilities:

$$\pi_m = \frac{\exp(\omega_m)}{\sum_{m=1}^M \exp(\omega_m)}, \quad m = 1, \dots, M, \quad \omega_1 = 0$$

Each of the equation specific components of the unobserved heterogeneity V takes on a specific value at support point m . This implies that for a model with $M = 2$ G would be described by 5 parameters, for $M = 3$ we estimate 10 parameters, etc. This approach allows for a flexible covariance matrix for the unobserved components. For a similar model for unobserved heterogeneity in the context of timing of events models see Crepon et al. (2014) and in the context of random coefficient models in the statistical literature see e.g. Aitkin (1999). Gaure/Roed/Zhang (2007) provide Monte Carlo evidence that modeling se-

lection based on unobservables by a flexible discrete distribution works well in the context of timing of events models.

In the estimation we increase the number of support points until the model fit cannot be improved by a further support point anymore, evaluated on the basis of the Akaike Criterion. This model selection is based on the estimation of the multivariate duration model, i.e. the joint estimation of the parameters of the three hazard rates $\theta_e(t)$, $\theta_o(t)$ and $\theta_s(t)$. In a second step we estimate the full model including the wage equation using the “optimal” number of support points M for each equation determined in the first step.

Likelihood function

Given this setup, the likelihood contribution of an individual i with an observed welfare spell duration t for given unobserved and observed characteristics V and x is given by:

$$\begin{aligned}
 L_i(x, V) = & \theta_e(t|x_i)^{\delta_e} \theta_o(t|x_i)^{\delta_o} S(t|x_i, \theta_e, \theta_o) \\
 & \left[\theta_{s1}(t_{s1}|x_i) \exp\left[-\int_0^{t_{s1}} \theta_{s1}(\tau|x_i) d\tau\right] \right]^{\delta_{s1}} \left[\exp\left[-\int_0^t \theta_{s1}(\tau|x_i) d\tau\right] \right]^{1-\delta_{s1}} \\
 & \left[\theta_{s2}(t_{s2}|x_i) \exp\left[-\int_{t_{s1}}^{t_{s2}} \theta_{s2}(\tau|x_i) d\tau\right] \right]^{\delta_{s2}} \left[\exp\left[-\int_{t_{s1}}^t \theta_{s2}(\tau|x_i) d\tau\right] \right]^{(1-\delta_{s2})\delta_{s1}} \\
 & \left(\frac{1}{\sqrt{2\pi\sigma_w^2}} \exp\left(-\frac{(\ln w_i - \widehat{\ln w_i})^2}{2\sigma_w^2}\right) \right)^{\delta_e} \tag{3}
 \end{aligned}$$

t_{s1} and t_{s2} are the duration until a first sanction and the duration until a second sanction, respectively. Both have to be lower than t and the duration until the first sanction has to be shorter than the duration until the second sanction. The indicator δ_e is one if an exit into employment is observed and zero otherwise. δ_o is the corresponding indicator variable for an out of the labor force exit. $S(t|x_i, \theta_e, \theta_o)$ is the survivor function representing the probability of no exit into employment nor out of the labor force until duration t . $\theta_{s1}(t_{s1}|x_i)$ is the transition rate into the first sanction and δ_{s1} is an indicator that is one if an exit to a first sanction occurred and zero otherwise. $\theta_{s2}(t_{s2}|x_i)$ represents the transition rate into the second sanction and δ_{s2} indicates an occurrence of such a sanction by one and no such occurrence by zero. S_{s1} represents the survival probability with respect to first sanctions. If we observe a second sanction, the left part of the third row enters the likelihood. If no second sanction occurs but we observe a first sanction, the second part of the third row of equation (3) $\exp\left[-\int_{t_{s1}}^t \theta_{s2}(\tau|x_i) d\tau\right]$ enters the likelihood. This corresponds to the probability of receiving no second sanction until t given an imposed first sanction at t_{s1} . If the individual is not sanctioned at all, the third row does not enter the likelihood. Finally, in the last row of equation (3) $\ln w_i$ is the logarithm of the observed wage in our data - in case we observe a transition from welfare to a regular job - and $\widehat{\ln w_i}$ corresponds to the predicted value based on the coefficients β_w .

The log-likelihood contribution of individual i equals to the weighted sum of the M log-likelihood contributions corresponding to the different points of support. The log-Likelihood function for the M points of support with N individuals is given by:

$$\ln L = \sum_{i=1}^N \ln \sum_{m=1}^M \pi_m L_i(x, V(m)) \quad (4)$$

5 Results

We estimate two separate models for young men living alone and young men living in multi-person households. For both samples, we start by selecting the preferred specification for the discrete distribution of unobserved heterogeneity based on the competing risks models without the wage equation. In our empirical specifications, we control for observed characteristics as reported in Tables 5 to 7 and allow for flexible duration dependencies. For the estimation of the hazard rate into strong sanctions we additionally control in a flexible way for the timing of the first sanction by a set of dummy variables.

It turns out that it is difficult to find support for more than two unobserved groups with respect to the hazard rate from welfare to out of the labor force. Therefore, we only increase the number of mass points for the unobserved heterogeneity with respect to the hazard rate to work and the hazard rate for the risk of being sanctioned. The maximum number of support points for the hazard rate to out of the labor force is set to two. An evaluation of the model fit based on the Akaike Criterion suggests a specification with three support points for the sample of individuals living in single households. For the sample of individuals living in multi-person households four support points is the preferred specification. This implies that for the competing risks model the unobserved heterogeneity distribution is estimated with seven and ten additional parameters, respectively, compared to the model without unobserved heterogeneity. The effects of imposed sanctions for these models are reported in the Tables A3 and A4 in the Appendix. The results are qualitatively the same when we slightly increase or decrease the number of support points, which suggests that our findings are robust with respect to small changes in the specification of the unobserved heterogeneity. Moreover, neither the estimated effects for imposed sanctions nor the parameter estimates of the unobserved heterogeneity change qualitatively when we estimate the full model including the wage equation.

In the following, we will first present results of a baseline model which allows for homogeneous treatment effects. In a second step, we introduce effect heterogeneity by allowing the impact of a sanction to be different for skilled welfare recipients and for welfare recipients living in households with children.

5.1 Baseline results

Tables 8 and 9 display estimation results of our baseline models for people living in single households and people living in multi-person households. We focus on the sanction effects on our three outcomes. The parameter estimates for the sanction transition rate

and the parameter estimates for other covariates than sanctions for each of the three outcomes including the distributions of the unobserved heterogeneity are presented in the Appendix Tables A5 and A6. The results for singles imply a considerable positive effect of the first sanction on the transition rate to employment. It is raised by about 109 percent (permanently). The order of magnitude of the effect of the first sanction on the employment hazard is lower than in a comparable study for welfare recipients in Rotterdam by van den Berg/van der Klaauw/van Ours (2004). Their results imply an effect of more than 140 percent, though applying to men and women in all age-groups and households and not only to young men in single households. The second sanction within 12 months, which implies a complete temporary benefit loss, increases the employment transition rate further by more than 150 percent. The second sanction after more than 12 months also implies such considerable increases of the hazards, this latter result however is based on few sanctions in our sample.

Table 8: Model for male jobseekers living in single households

	Exit to work	Exit out of Labor Market	Log(Wage)
Coefficients and standard errors in brackets			
First sanction	0.7368 *** (0.1087)	1.3496 *** (0.3759)	-0.0549 ** (0.0272)
Second sanction within 12 months	0.9215 *** (0.1488)	0.7199 ** (0.3222)	0.0100 (0.0432)
Second sanction after 12 months	0.7659 * (0.4151)	0.9293 (0.6100)	0.0704 (0.2766)

Joint estimation with unobserved heterogeneity (M=3). Estimations are based on inflow samples of individuals who are registered as jobseekers at the beginning of the spell. Standard errors in parentheses. ***, **, * indicate significance at 1%, 5% and 10% respectively. n=31,890. LogLikelihood= -142,748.44. We control for observed characteristics and duration dependence. For the full set of coefficients see Table A5.

The results on the exit rate to employment are in line with implications of a standard job search model that would suggest that sanctions will lead to lower reservation rates and/or more search effort, in turn leading to a faster take up of jobs. The effects on daily earnings in the post-unemployment job are compatible with such an interpretation. The first sanction lowers them by more than five percent and the effect is well determined. The two types of second sanctions though do not exhibit any significant additional effect on daily wages, even though they further increase the exit rate into employment. This would be in line with an explanation that repeated sanctions do not affect reservation wages, but only raise job search effort. And this is plausible, as we regard a population that from the start is characterised by a rather low earnings potential and low reservation wages. Their scope for raising their exit rate into employment by lowering reservation wages may be very limited.

The first sanction leads to a 286 percent higher exit rate out of the (regular) labor market, which is considerably higher than the corresponding effect on employment. When comparing these magnitudes one should keep in mind that the employment transition rates as displayed in Figure 2 are usually at least more than twice up to more than 20 times higher than the transition rate out of the labor market, shown in Figure 3. The employment effect contributes more to an increased (overall) exit rate out of welfare receipt than the effect on

the out of the labor market hazard. The second sanction within a year amplifies the effect of the first and raises the transition rate out of the labor market by more than 105 percent. The point estimate of the parameter of the second sanction after more than one year would even imply a greater effect, but is not well determined. These results suggest that sanctions make alternatives to job search on welfare more attractive, including work in the shadow economy or continued job search while receiving support by friends or the family. That the effect of the first sanction is stronger than the effect of a second one might be due to various reasons. A plausible explanation is that after the first, but not after the second sanction monitoring is increased considerably. That could for instance be a key issue for people working in the shadow economy. Some of them could fear that their activity might be detected due to increased monitoring, which might lead to more severe consequences than only a second benefit sanction. Increased monitoring that is accompanied by more active labor market program offers might make it difficult to continue with an activity in the shadow economy. Therefore, for some people an exit from welfare could become the best option. A similar argument might hold for welfare recipients who on top of their welfare benefit rely on some other undeclared source of income like financial support from their family and friends.

Table 9: Model for male jobseekers living in multi-person households

	Exit to work	Exit out of Labor Market	Log(Wage)
Coefficients and standard errors in brackets			
First sanction	0.5294 *** (0.1088)	0.0649 (0.0949)	-0.0332 * (0.0172)
Second sanction within 12 months	0.8073 *** (0.1502)	0.2940 (0.1901)	0.0528 (0.0456)
Second sanction after 12 months	0.2033 (0.4234)	0.3874 (0.5156)	-0.0592 (0.1780)

Joint estimation with unobserved heterogeneity (M=4). Estimations are based on inflow samples of individuals who are registered as jobseekers at the beginning of the spell. Standard errors in parentheses. ***, **, * indicate significance at 1%, 5% and 10% respectively. n=38,492. LogLikelihood=-174,581.35. We control for observed characteristics and duration dependence. For the full set of coefficients see Table A6.

Let us now turn to Table 9 with the baseline results for young men living in multi-person households. Once more we first regard the effects on the employment hazard and on daily wages. Again the implications are that the first sanction affects the hazard and the second sanction within one year amplifies the effect of the first sanction and raises the hazard even further. The positive effect of a second sanction after more than one year is insignificant. With rises of about 70 percent due to the first and an additional 124 (22.5) percent for the second sanction within (after more than) one year, the effects are considerably smaller than for men living in single households. Also, the significant wage effect of the first sanction at about -3.3 percent is in absolute terms smaller than for the group living in single households. The wage effects for the second sanction are again statistically insignificant. These differences just described are quite plausible. In contrast to men in single households men in multi-person households can rely on the remaining welfare benefit of other household members, provided that they at least partly pool their welfare

benefit. Hence, the financial consequences of the welfare benefit sanction are absorbed as additional financial resources are available and the need to reduce reservation wages and to raise search effort is lower than for singles. However, we have to be cautious with the interpretation of the differences in the point estimates. The 95 percent confidence intervals of the point estimates for the two samples are overlapping, which suggests that the differences do not differ significantly from zero.

The different sanction effects on the transition rate out of the labor market are all statistically insignificant for men in multi-person households. Moreover, the point estimates are considerably lower than for men in single households. That unlike men in single households men in multi-person households do not react by increasing their transition rate out of the labor force is again a plausible result. They do not have much reason either to let their household leave welfare, because in this case they could no longer rely on welfare benefits of other household members. Moreover, in contrast to single males, men in multi-person households could only react this way if among the members of the welfare recipient household an agreement on ending benefit receipt is reached, which is not very likely.

5.2 Effect Heterogeneity

Our second set of specifications includes interactions of the first sanction with being skilled (possessing a formal occupational qualification) and for people in multi-person households additionally with having children. We do not include interaction effects for the second sanctions as the number of second sanctions is rather small.

The results for singles are reported in Table 10. The point estimates for the interaction effects with the skill level imply a stronger rise of the exit rates into work and out of labor force for skilled than for unskilled welfare benefit recipients. In addition, we find a stronger reduction of the post-unemployment wage for skilled individuals due to a first sanction. As the number of job opportunities but also reservation wages tend to be higher for skilled than for unskilled workers, they might reduce their reservation wages further. However, all interaction terms are statistically insignificant and rather small.

Table 10: Model for male jobseekers living in single households: Effect heterogeneity

	Exit to work	Exit out of Labor Market	Log(Wage)
First sanction	0.7021*** (0.1077)	1.3497*** (0.3822)	-0.0527** (0.0266)
First sanction x skilled worker	0.1601 (0.1135)	0.0421 (0.2371)	-0.0365 (0.0341)
Second sanction within 12 months	0.9981*** (0.15668)	0.7003** (0.3357)	-0.0036 (0.0503)
Second sanction after 12 months	0.8314** (0.4211)	0.9114 (0.6059)	0.0573 (0.2803)

Joint estimation with unobserved heterogeneity (M=3). Estimations are based on inflow samples of individuals who are registered as jobseekers at the beginning of the spell. Skilled worker are individuals having a vocational training. Standard errors in parentheses. ***, **, * indicate significance at 1%, 5% and 10% respectively. n=31,890. LogLikelihood=-142,746.69. We control for observed characteristics and duration dependence.

For welfare recipients living with other household members, Table 11 shows no significant effects of the first sanction's interaction with being skilled on the transition rate into work. It also has no well-determined effect on the logarithmic wage, even though the size of the interaction effect would imply a negative wage effect that is twice as high as for unskilled workers. We find a considerable and significant effect of this interaction on the transition rate out of the labor force. The rise of this exit rate due to a first sanction is about 80 percent higher for skilled people than for unskilled people in multi-person households. One reason for this may be that skilled people might more easily have access to support from relatives with (relatively) high income living in other households or might even move back into such a household not qualifying for welfare.

For the interaction of first sanctions with having at least one child we find a significant impact on the transition rate to employment and on the daily post-unemployment wage. The estimates imply that the effect of a first sanction on the employment rate is still positive for people with children, but it is roughly 20 percent lower than for childless people. According to the parameter estimates for the interaction between first sanction and own children in the wage equation, the negative effect of a first sanction disappears for parents. These results are plausible. The job search behavior of parents as opposed to childless people is affected to a lower extent by a benefit sanction, as parents have to deal with more restrictions in order to balance future work and time with their family. Hence, after a benefit sanction they remain more particular with respect to acceptable jobs than childless people. For the impact on the transition rate out of labor force we find a negative point estimate for the interaction effect with having children, which is not statistically significant.

Table 11: Model for male jobseekers living in multi-person households: Effect heterogeneity

	Exit to work	Exit out of Labor Market	Log(Wage)
First sanction	0.5628*** (0.1167)	0.0684 (0.0994)	-0.0357* (0.0184)
First sanction x skilled worker	0.0228 (0.1216)	0.5884 *** (0.2208)	-0.0485 (0.0339)
First sanction x children	-0.1994** (0.0864)	-0.4006 (0.2641)	0.0419* (0.0246)
Second sanction within 12 months	0.7788*** (0.1519)	0.3474 (0.1966)	0.0459 (0.0489)
Second sanction after 12 months	0.1931 (0.4204)	0.4615 (0.5175)	-0.0731 (0.1908)

Joint estimation with unobserved heterogeneity (M=4). Estimations are based on inflow samples of individuals who are registered as jobseekers at the beginning of the spell. Skilled worker are individuals having a vocational training. The variable children is an indicator being one if there are children living in the household, zero otherwise. Standard errors in parentheses. ***, **, * indicate significance at 1%, 5% and 10% respectively. n=38,492. LogLikelihood=-174,571.73. We control for observed characteristics and duration dependence.

6 Conclusions

Sanctions are a key tool to provide incentives to unemployed benefit recipients to cooperate with their job center and to take actions that raise their chances of getting a job. The German welfare system is characterized by especially strong sanctions for welfare recipients younger than 25 years. Strong sanctions, which are imposed for instance if the jobseeker refuses a job offer, imply a loss of the basic cash benefit for three months. After the first sanction, the recipients still receive the benefit to cover the costs of their accommodation. A second sanction for repeated non-compliance within one year leads to the loss of their entire welfare benefit for three months. These sanctions are particularly harsh as people who pass the means-test for welfare benefit have no or insufficient income to meet their basic needs.

The existing literature on sanctions for unemployed jobseekers focusses on the impact of a first benefit sanction on the exit rate from unemployment to work. Our study contributes to the literature by investigating the effects of not only the first but also the second sanctions on the transition rate to work. Moreover, we investigate the effects of sanctions on the transition rate out of the labor force and on daily earnings. Our study is based on the inflow of unemployed welfare recipients during the period from January 2007 to March 2008. The sample is restricted to males aged less than 25 years in West Germany. We apply timing-of-events models to account for selection into the treatment based on unobserved heterogeneity. As the sanction effects might be less pronounced if sanctioned individuals can rely on support from other household members, we estimate separate models for individuals living alone and individuals living in multi-person households.

We find considerable effects of a first benefit sanction on the transition rate into employment. For people living alone, the first sanction raises their employment hazard by about 109 percent. At about 70 percent this effect is smaller for people living with other household members. A first sanction reduces the daily wages by more than five percent for welfare recipients living alone and three percent for welfare recipients in multi-person households. Hence, the positive employment effect is accompanied by a wage reduction, which implies that due to these very strong benefit sanctions, welfare recipients tend to reduce their reservations wages. The second sanction further raises the exit rates into employment, in particular for young men living alone. For both groups the second sanction has no statistically significant effect on the post-unemployment earnings. We find large effects of the first and the second sanction on the exit rate out of the labor force for young males living alone, while there is no evidence for such an effect for young males living with other welfare recipients.

Taken together these results indicate that sanction effects are (in absolute terms) lower in multi-person households than in single households. With more than one person in the household, a sanctioned person can often rely on support from other household members and hence on their welfare benefit. In turn, effects on exit rates into employment and wages are less pronounced. Moreover, a multi-person as opposed to a single household has no considerable incentive to leave the welfare benefit system if one person is sanctioned. Taken together the severe second sanctions that follow a first sanction within one year

amplify the effects of the first sanction on the employment hazard for both groups. They also reinforce the effect on the out of the labor market exit rate for men living alone.

The results from our analysis should be interpreted taking the results of qualitative studies on the sanction regime for young welfare recipients in Germany into account. The qualitative evidence suggests that sanctioning is accompanied by some effects that are not desirable. The qualitative studies show that young sanctioned recipients report harsh consequences like having their energy supply cut off or losing their accommodation. Some caseworkers seem to be reluctant to implement the very strong repeated sanctions within one year because they fear for instance that young welfare recipients can no longer pay their rent and end up homeless. Moreover, they fear that sanctioned individuals might terminate their registration at their job center and start activities in the shadow economy including petty crime.

The presented evidence underlines the importance of a sanction system in providing incentives to search for jobs. However, there are good reasons for policy-makers to take actions that avoid an increased exit rate out of the labor market that is induced by very strong benefit sanctions. Our results show that temporarily losing the entire benefit for a single household has more severe consequences in terms of increased exit rates out of the labor force than losing temporarily the benefit for a member of a multi-person household. A reform might therefore try to prevent particularly high sanctions so that singles have sufficient incentives to remain registered with their job center. An upper limit for the sanction could be defined in such a way that it would help to avoid extreme consequences for people who have to rely on welfare benefits to meet their basic needs. When designing such a policy, the policy-makers should be aware of the fact that some people are particularly vulnerable, because they cannot even rely on the support of other household or family members. Very high sanctions with severe short-term consequences for people without any sources of income other than welfare could also be avoided by reducing the monthly sanction amount while prolonging the number of months the sanction is in force. This could allow welfare recipients to continue paying regular bills and in turn avoid having the energy supply to their apartments cut or losing their apartment.

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Appendix A Appendix tables

Models without unobservables

Table A1: Model for male jobseekers living in **single** households

	Exit to work	Exit out of Labor Market	Log(Wage)
First sanction	0.2614*** (0.0337)	0.2267*** (0.0705)	-0.04771*** (0.0129)
Second sanction within 12 months	0.18430** (0.0793)	0.1662 (0.1492)	-0.0213 (0.0301)
Second sanction after 12 months	0.0440 (0.3793)	0.3034 (0.5354)	0.0445 (0.2707)

Estimations are based on inflow samples of individuals who are registered as jobseekers at the beginning of the spell. Standard errors in parentheses. ***, **, * indicate significance at 1%, 5% and 10% respectively. n=31,890. LogLikelihood= -142,810.77. We control for observed characteristics and duration dependence.

Table A2: Model for male jobseekers living in **multi-person** households

	Exit to work	Exit out of Labor Market	Log(Wage)
First sanction	0.1201*** (0.0320)	-0.0002 (0.0784)	-0.0490*** (0.0115)
Second sanction within 12 months	0.0165 (0.0735)	0.1629 (0.1500)	-0.0008 (0.0281)
Second sanction after 12 months	-0.3523 (0.3737)	0.2885 (0.5102)	-0.0858 (0.1692)

Estimations are based on inflow samples of individuals who are registered as jobseekers at the beginning of the spell. Standard errors in parentheses. ***, **, * indicate significance at 1%, 5% and 10% respectively. n=38,492. LogLikelihood= -174,773.41. We control for observed characteristics and duration dependence.

Competing risk model for exit to work and out of labor market

Table A3: Model for male jobseekers living in **single** households. Estimations based on joint ToE models for exit to work and exit out of the Sample

	Exit to work	Exit out of Labor Market
First sanction	0.7653*** (0.1099)	1.2595*** (0.3820)
Second sanction within 12 months	0.9652*** (0.1490)	0.6785** (0.3235)
Second sanction after 12 months	0.8024* (0.4160)	0.8821 (0.6118)

Joint estimation with unobserved heterogeneity (M=3). Estimations are based on inflow samples of individuals who are registered as jobseekers at the beginning of the spell. Standard errors in parentheses. ***, **, * indicate significance at 1%, 5% and 10% respectively. n=31,890. LogLikelihood= -138,912.91. We control for observed characteristics and duration dependence.

Table A4: Model for male jobseekers living in **multi-person** households. Estimations based on joint ToE models for exit to work and exit out of the Sample

	Exit to work	Exit out of Labor Market
First sanction	0.5479*** (0.1156)	0.0742 (0.1049)
Second sanction within 12 months	0.8679*** (0.1551)	0.3156 (0.2211)
Second sanction after 12 months	0.2459 (0.4178)	0.4141 (0.5224)

Joint estimation with unobserved heterogeneity (M=4). Estimations are based on inflow samples of individuals who are registered as jobseekers at the beginning of the spell. Standard errors in parentheses. ***, **, * indicate significance at 1%, 5% and 10% respectively. n=38,492. LogLikelihood= -169,394.30. We control for observed characteristics and duration dependence.

Table A5: Full model for male jobseekers living in **single** households

	Exit to work		Exit out of LF		Sanction		Log(Wage)	
	Coeff.	Std. err.	Coeff.	Std. err.	Coeff.	Std. err.	Coeff.	Std. err.
Constant	-7.046	0.190	-10.181	0.484	-6.224	0.142	3.652	0.074
Months (4-6)	-0.101	0.030	0.381	0.064	0.353	0.038	-0.010	0.009
Months (7-9)	-0.330	0.046	0.356	0.075	0.224	0.051	-0.022	0.014
Months (10-12)	-0.682	0.062	0.062	0.094	0.145	0.064	-0.033	0.018
Months (13-15)	-0.736	0.076	-0.090	0.112	-0.067	0.082	-0.019	0.022
Months (16-18)	-1.006	0.093	-0.373	0.139	-0.125	0.096	-0.041	0.028
Months (19-21)	-1.095	0.113	-0.153	0.147	-0.401	0.123	-0.061	0.036
Months (22+)	-1.424	0.121	-0.627	0.169	-0.388	0.126	0.038	0.035
First sanction	0.736	0.108	1.349	0.375	-	-	-0.054	0.027
Second sanction within 12 months	0.921	0.148	0.719	0.322	-	-	0.010	0.043
Second sanction after 12 months	0.765	0.415	0.929	0.610	-	-	0.070	0.276
District unempl. rate	-0.024	0.016	0.087	0.035	0.057	0.021	0.001	0.005
District long-term unempl. rate	-0.050	0.026	-0.202	0.059	-0.149	0.036	-0.013	0.008
District vacancy-unempl. ratio	0.827	0.178	1.339	0.397	-0.203	0.248	-0.168	0.054
20 years	0.262	0.046	0.252	0.085	-0.231	0.054	0.042	0.014
21 to 22 years	0.394	0.039	0.173	0.075	-0.301	0.049	0.080	0.012
23 to 24 years	0.416	0.040	-0.010	0.080	-0.337	0.051	0.121	0.013
No occ. degree, no schooling degree	-0.988	0.042	-0.067	0.099	0.614	0.060	-0.204	0.012
No occ. degree, low schooling degree	-0.830	0.032	-0.141	0.083	0.526	0.051	-0.165	0.009
No occ. degree, high schooling degree	-0.848	0.078	0.902	0.145	-0.274	0.124	-0.145	0.024
Voc. training, high schooling degree	0.068	0.074	1.185	0.161	-0.587	0.186	0.089	0.021
Education missing	-0.947	0.046	0.402	0.099	0.092	0.066	-0.134	0.014
Schleswig-Holstein	-0.150	0.054	-0.077	0.112	-0.055	0.069	-0.027	0.017
Hamburg	0.072	0.063	-0.589	0.153	-0.036	0.089	-0.035	0.019
Lower Saxony	-0.125	0.039	-0.217	0.087	0.036	0.052	0.007	0.011
Bremen	0.069	0.076	0.086	0.156	-0.110	0.106	0.000	0.025
Hesse	-0.178	0.053	-0.014	0.110	-0.156	0.073	0.002	0.016
Rhineland-Palatinate	-0.158	0.058	-0.029	0.125	0.079	0.077	0.002	0.017
Baden-Württemberg	-0.067	0.053	-0.115	0.117	-0.149	0.075	-0.018	0.016
Bavaria	0.190	0.047	0.122	0.103	0.143	0.065	0.026	0.014
Saarland	0.207	0.075	-0.452	0.200	0.060	0.109	-0.073	0.023
Turkish nationality	0.333	0.060	-0.228	0.151	-0.188	0.086	0.035	0.017
Other nationality	0.455	0.039	-0.069	0.093	-0.426	0.065	0.004	0.011
Quarter 2	-0.189	0.032	-0.056	0.074	0.128	0.044	-0.027	0.009
Quarter 3	-0.331	0.034	0.170	0.072	-0.005	0.046	-0.044	0.010
Quarter 4	-0.431	0.037	-0.086	0.081	0.003	0.050	-0.047	0.011
Year 2008	-0.284	0.037	-0.107	0.086	-0.059	0.053	-0.032	0.011
First sanction in month 1-3	-	-	-	-	-0.436	0.114	-	-
First sanction in month 4-6	-	-	-	-	-0.424	0.124	-	-
First sanction in month 7-9	-	-	-	-	-0.239	0.139	-	-
First sanction in month 10-12	-	-	-	-	-0.076	0.166	-	-
First sanction in month 13-15	-	-	-	-	-0.150	0.205	-	-
First sanction in month 16-18	-	-	-	-	0.233	0.235	-	-
First sanction in month 19-21	-	-	-	-	-0.917	0.525	-	-
First sanction in month 22+	-	-	-	-	0.143	0.372	-	-
Log(σ_w)	-	-	-	-	-	-	-1.065	0.016
V ₁	0	0	0	0	0	0	0	0
V ₂	1.267	0.246	2.431	0.518	-2.517	0.508	-0.014	0.109
V ₃	2.239	0.168	0	0	-1.196	0.232	0.100	0.072

Estimations are based on inflow samples of individuals who are registered as jobseekers at the beginning of the spell. $n=31,890$. LogLikelihood= -142,748.44. The estimated probabilities of the discrete distribution of the unobserved heterogeneity are $\pi_1 = 0.225$, $\pi_2 = 0.349$ and $\pi_3 = 0.425$. Correlations of unobservables: -0.42 (job-sanction), -0.05 (OLF-sanction), 0.44 (job-OLF), 0.92 (job-wage), 0.44 (OLF-wage), -0.05 (wage-sanction).

Table A6: Full model for male jobseekers living in **multi-person** households

	Exit to work		Exit out of LF		Sanction		Log(Wage)	
	Coeff.	Std. err.	Coeff.	Std. err.	Coeff.	Std. err.	Coeff.	Std. err.
Constant	-7.551	0.239	-8.662	0.271	-5.909	0.161	3.541	0.088
Months (4-6)	-0.008	0.031	0.375	0.064	0.147	0.039	0.025	0.010
Months (7-9)	-0.147	0.046	0.490	0.073	0.089	0.052	0.024	0.014
Months (10-12)	-0.421	0.059	0.151	0.097	-0.020	0.066	0.023	0.018
Months (13-15)	-0.548	0.072	0.191	0.110	-0.176	0.081	0.027	0.021
Months (16-18)	-0.664	0.084	-0.069	0.136	-0.182	0.095	0.032	0.026
Months (19-21)	-0.892	0.104	0.113	0.150	-0.403	0.119	0.065	0.030
Months (22+)	-0.953	0.111	-0.110	0.160	-0.500	0.127	0.098	0.032
First sanction	0.529	0.108	0.064	0.094	-	-	-0.033	0.017
Second sanction within 12 months	0.807	0.150	0.294	0.190	-	-	0.052	0.045
Second sanction after 12 months	0.203	0.423	0.387	0.515	-	-	-0.059	0.178
District unempl. rate	-0.023	0.016	0.064	0.033	0.043	0.020	-0.001	0.004
District long-term unempl. rate	-0.057	0.026	-0.175	0.055	-0.149	0.035	-0.010	0.007
District vacancy-unempl. ratio	1.668	0.167	1.411	0.338	0.110	0.246	-0.096	0.046
20 years	0.223	0.039	0.242	0.067	-0.289	0.048	0.040	0.010
21 to 22 years	0.321	0.033	0.113	0.063	-0.237	0.041	0.068	0.009
23 to 24 years	0.305	0.036	0.132	0.073	-0.319	0.047	0.112	0.009
No occ. degree, no schooling degree	-0.962	0.041	-0.213	0.104	0.480	0.063	-0.214	0.011
No occ. degree, low schooling degree	-0.821	0.034	-0.198	0.092	0.376	0.057	-0.182	0.008
No occ. degree, high schooling degree	-0.994	0.084	0.744	0.130	-0.497	0.133	-0.160	0.022
Voc. training, high schooling degree	-0.187	0.112	0.878	0.202	-0.752	0.274	0.047	0.026
Education missing	-1.118	0.044	0.207	0.099	-0.031	0.067	-0.188	0.011
Schleswig-Holstein	-0.192	0.057	-0.152	0.114	-0.375	0.075	-0.011	0.014
Hamburg	-0.198	0.068	-0.545	0.146	-0.139	0.089	-0.077	0.018
Lower Saxony	-0.100	0.039	-0.107	0.082	-0.044	0.050	0.008	0.010
Bremen	0.033	0.078	0.153	0.152	-0.144	0.108	0.028	0.019
Hesse	-0.098	0.051	-0.164	0.106	-0.036	0.065	-0.021	0.012
Rhineland-Palatinate	-0.063	0.050	0.135	0.100	-0.017	0.066	0.001	0.013
Baden-Württemberg	0.017	0.051	0.068	0.102	-0.156	0.070	0.030	0.012
Bavaria	0.163	0.046	0.394	0.093	0.083	0.063	0.028	0.012
Saarland	0.149	0.085	-0.448	0.231	0.170	0.109	-0.001	0.023
Married	0.535	0.051	-0.450	0.134	-0.676	0.082	0.113	0.012
Living with partner, not married	0.324	0.043	-0.358	0.113	-0.170	0.067	0.038	0.011
Turkish nationality	0.279	0.038	-0.203	0.083	0.117	0.048	0.019	0.009
Other nationality	0.132	0.033	-0.093	0.069	-0.062	0.045	-0.021	0.008
No. of children < 3 years	0.054	0.028	-0.361	0.092	0.186	0.042	0.034	0.007
No. of children between 3-5 years	0.000	0.043	-0.108	0.156	0.108	0.061	0.014	0.011
No. of children between 6-17 years	-0.139	0.054	-0.168	0.179	0.083	0.072	-0.001	0.014
Partner below 25 years old	0.000	0.048	-0.087	0.150	-0.060	0.079	-0.024	0.011
Partner foreigner	-0.144	0.049	-0.171	0.139	-0.073	0.077	0.005	0.011
Partner no occ. degree, no schooling degree	-0.137	0.062	-0.007	0.171	0.303	0.090	-0.066	0.015
Partner no occ. degree, schooling degree	0.066	0.043	-0.060	0.125	0.121	0.070	-0.030	0.010
Partner educ. missing	-0.194	0.050	0.065	0.129	0.184	0.077	-0.040	0.012
Quarter 2	-0.034	0.032	0.002	0.067	0.095	0.044	-0.038	0.008
Quarter 3	-0.246	0.033	-0.048	0.066	-0.056	0.044	-0.062	0.008
Quarter 4	-0.306	0.037	-0.214	0.075	0.120	0.047	-0.059	0.009
Year 2008	-0.115	0.037	-0.094	0.078	0.061	0.051	-0.032	0.009
First sanction in month 1-3	-	-	-	-	-0.206	0.118	-	-
First sanction in month 4-6	-	-	-	-	0.024	0.122	-	-
First sanction in month 7-9	-	-	-	-	0.268	0.135	-	-
First sanction in month 10-12	-	-	-	-	0.202	0.156	-	-
First sanction in month 13-15	-	-	-	-	0.376	0.185	-	-
First sanction in month 16-18	-	-	-	-	0.540	0.225	-	-
First sanction in month 19-21	-	-	-	-	0.602	0.323	-	-
First sanction in month 22+	-	-	-	-	0.302	0.390	-	-
Log(σ_w)	-	-	-	-	-	-	-1.109	0.012
V ₁	0	0	0	0	0	0	0	0
V ₂	2.391	0.227	0.516	0.392	-1.442	0.168	0.194	0.084
V ₃	4.058	0.238	0	0	-1.775	0.406	0.316	0.094
V ₄	0.754	0.349	0	0	-1.980	0.288	-0.090	0.105

Estimations are based on inflow samples of individuals who are registered as jobseekers at the beginning of the spell. n=38,492. LogLikelihood=-174,581.35. The estimated probabilities of the discrete distribution of the unobserved heterogeneity are $\pi_1 = 0.134$, $\pi_2 = 0.513$, $\pi_3 = 0.117$ and $\pi_4 = 0.237$. Correlations of unobservables: -0.38 (job-sanction), -0.87 (OLF-sanction), -0.11 (job-OLF), 0.78 (job-wage), -0.71 (OLF-wage), 0.27 (wage-sanction).

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Imprint

IAB-Discussion Paper 34/2015

01 December 2015

Editorial address

Institute for Employment Research
of the Federal Employment Agency
Regensburger Str. 104
D-90478 Nuremberg

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ISSN 2195-2663

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