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UNEMPLOYMENT DURATION, LAYOFFS AND COMPETING RISKS*

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Abstract

The main objective of this paper is to investigate the determinants of unemployment duration in a competing risks framework with two destination states: employment and inactivity. In particular, we analyze labour market trajectories of job losers and workers without previous labour experience using data from the Spanish Labour Force Survey (EPA) for the period 1992-2004. We find that male workers, people aged 25-34, higher educated job losers in regions with low unemployment rates and workers with previous employment experience exhibit higher exit rates from unemployment into a job. On the contrary, the same variables present a negative effect on the probability of exiting from unemployment to inactivity. We also find that non-claimants of unemployment benefits exit from unemployment faster than claimants do. Finally, the existence of a *dead-end job effect* is detected in the Spanish labour market during the 1990s.

JEL Classification: J64, J65

Keywords: unemployment duration, job loss, competing risks,
unobserved heterogeneity, dead-end jobs

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1. Introduction

Since the 1980s, the persistence of high unemployment has been one of the most relevant economic problems in most OECD countries, and especially worrying in Spain¹. The investigation of the phenomenon of unemployment persistence and of what circumstances may influence it is an important step toward developing economic policies. In that context, the analysis of the future labour market position of job losers and if they may remain in unemployment for a long period of time may provide additional insights on the knowledge of the cost of unemployment.

The notion that unemployed individuals may be permanently trapped in joblessness is explored theoretically in Blanchard and Diamond (1994), Ljungqvist and Sargent (1998) and Ridder and van den Berg (2001). Most studies in the literature regarding the effect of a job loss on displaced workers focus their attention on the issue of earning losses associated with spells of job interruption: Farber (1997), Jacobson et al. (1993) and Stevens (1997) for the US and Arulampalam (2001) and Gregory and Jukes (2001) for the UK. Evidence for other European economies is much more sparse (Ackum, 1991, for Sweden; Burda and Mertens, 2001, for Germany; García-Pérez and Rebollo, 2006, and Arranz and García-Serrano, 2004, for Spain).

Other studies analyze the effect of unemployment incidence and/or duration on future unemployment spells: Arulampalam et al. (2000) and Gregg (2001), for the UK; Muhleisen and Zimmermann (1994) for Germany; Roed et al. (1999) for Norway; Arranz and Muro (2004) for Spain; and Heckman and Borjas (1980) and Omori (1997) for the US. Finally, research on the labour market position of job losers and whether or not they face problems in leaving unemployment is already extensive in North America (Ruhm, 1991, and Jacobson et al., 1993) but limited in the European literature (Bender et al., 2002, for France and Germany; Addison and Portugal, 2003, for Portugal;

¹ In 1991, the Spanish unemployment rate was 16.3 percent, increasing during the sharp crisis of the early-1990s up to 24.2 percent in 1994. Since then, it has shown a continuing decreasing trend. Nowadays, the unemployment rate is below 9 percent, still high when compared with the US (4.8 percent), Japan (4.1 percent) and the average OECD countries (6.3 percent), although close to the average Euro zone (8.2 percent) (see OECD, 2006). This rate is not strictly comparable to that of 1991, due to the change in the definition of unemployment introduced in 2001, in application of a new EC Regulation. The comparable figure would probably be 2-3 points higher (for more details, see Garrido and Toharia, 2004).

Lubyova and Van Ours, 1999, for Slovakia; and Cebrián et al., 1996, Bover et al., 2002, and Alba-Ramírez et al., 2006, for Spain)².

The analysis of the future labour market position of the unemployed in a competing risks framework with two destination states (employment and inactivity), while not yet commonplace in the duration literature, is becoming more familiar (Meyer, 1990; Narendranathan and Stewart, 1993; Addison and Portugal, 2003). This will be the main objective of this paper. For that purpose, we will consider an unemployment duration model in which hazard rates from unemployment may result into the risks of entering a job or becoming inactive³. In our analysis, we will distinguish between workers with previous labour experience (job losers) and without it (first-job seekers), allowing for observed and unobserved characteristics to affect the unemployment exit process. Furthermore, the investigation will also focus on the possible disincentive effects of benefits on exits out of unemployment and the transitions from unemployment to either temporary or permanent job contracts.

The data come from the quarterly Spanish Labour Force Survey (EPA, *Encuesta de Población Activa*) linked files. We select those individuals who have just started an unemployment spell (“new entrants”) in each quarter of every year over the period 1992 (first quarter)-2004 (fourth quarter). These individuals are followed during the period they remain in the survey (up to six quarters), so that the duration of their unemployment spells ranges from one month to a maximum of 18 months. Obviously, some workers remain unemployed for the whole observation window but other experience transitions into either employment or out of labour force⁴.

The paper is organized as follows. In section 2, we present the data, how the sample has been extracted and the way the information on the unemployment spells has

² There are also studies that investigate the influence of individual's previous unemployment experience on future job duration; see, for instance, Booth et al. (1999) and Böheim and Taylor (2002) in the UK and García-Pérez (1997) and Arranz and García-Serrano (2004) in Spain.

³ Flinn and Heckman (1983) addressed the question of whether unemployment and out of labour force are distinct states.

⁴ In the Spanish literature, there is a previous work by Alba (1999) which analyzes individual transitions from unemployment to either employment or inactivity. Our paper presents some relevant differences with it. First, we use the period 1992- 2004 in our analysis while he used the period 1987-1995. Second, we analyze transitions out of unemployment obtained by worker's labour market status in all six consecutive quarters, while he used only two consecutive quarters. Third, we use time varying covariates, and observed and unobserved heterogeneity in a competing risk duration model, while he used a multinomial logit without time varying covariates and without unobserved heterogeneity terms in the estimations. Finally, we consider all men and women who become unemployed at the time of the quarterly survey, aged between 16-64 years old, with and without previous labour experience, while he analyzed only men, aged 20-59, with previous work experience.

been constructed. Section 3 outlines the methodology employed in the empirical analysis: the discrete time competing risks hazard rate model. Section 4 provides the estimation results. Finally, section 5 summarizes the main findings and offers some conclusions.

2. The data

The data we use in this paper is taken from the Spanish Labour Force Survey (EPA). This is a nationally representative survey developed quarterly by the National Statistical Office (INE, *Instituto Nacional de Estadística*). The period under analysis is 1992(1)-2004(4), the starting and ending dates being dictated by changes in survey design after the first quarter of 1992 and 2005, respectively. In each quarter, the EPA sample consists of approximately 60,000 households, or 200,000 individuals. One sixth of them leave the sample each quarter. This allows following transitions out of unemployment for up to six subsequent quarters. Hence, the individual is observed over a time interval of up to six quarters of length.

Since our attention focuses on the unemployed, we select those individuals who enter the unemployment state in each quarter. The longitudinal nature of the survey makes it possible to check their labour market status in subsequent quarters, allowing for three exclusive states: unemployment (U), employment (E) and out of the labour force (OLF). Therefore, we are able to know whether an unemployed individual has experienced no transition from unemployment or he/she has moved from U to E or from U to OLF between two subsequent quarters. The questionnaire in each quarter provides us with individual demographic information (such as gender, marital status, age, level of schooling), information on previous job match (the reason for job loss, job occupation, institutional sector, firm's industry affiliation) and other variables (tenure on current unemployment spell and whether the individual receive unemployment benefits).

Data files have been linked thanks to the existence of individual identification numbers. The data on unemployment history is brought into person-month format and then the variables necessary for the implementation of the estimations are constructed, in particular the spell identifiers, the censoring indicators and the hazard rates. The selection consists of individuals aged 16-64 who become unemployed at the time of the quarterly survey (in fact, those who have been unemployed for less than three months at the moment of the interview). We assume that unemployment spells that are not completed (i.e. the unemployed that have not moved from U either to E or to OLF) from

the first quarter up to the sixth quarter are right-censored durations at that length. 13.7 percent of total spells are censored unemployment spells, 58.6 percent end in a transition from U to E and 27.7 percent in a transition from U to OLF.

After the sample selection, the total inflow consists of 14,861 individuals. Table A.1 in the Appendix provide descriptive statistics for the entire sample and for individuals with and without previous labour experience. Job losers represent 81.3 percent of the total inflow into unemployment (65.6 percent lost their last job due to the end of a temporary contract, 5.9 percent due to layoffs, and 2.3 and 7.5 percent because of involuntary and voluntary reasons, respectively). This information is displayed in Figure 1 for the whole time period under analysis.

The mean unemployment duration is around 7 months for job losers and 8 months for those without previous labour experience. We also observe a higher percentage (17.9 percent) of censored unemployment spells for workers without previous job experience than for job losers (12.2 percent). The proportion of individuals who exit from U to OLF is higher in the case of those without previous job experience (48.9 percent) than in the case of job losers (22.8 percent). On the contrary, the proportion of job losers who exit from U to E is higher than that for those without previous job experience: 64.5 percent against 33.2 percent. The evolution of these proportions may be viewed in Figures 2 and 3.

Figures 4-6 show the proportions of unemployed workers who find a job, who exit to out of the labour force and who remain in unemployment by cause of exit from the last job. In general, data from these figures suggest that workers without previous employment experience are less prone to make transitions from U to E while those entering in unemployment due to the ending of a temporary contract are more likely to move to the employment state.

Finally, figures 7-9 contain information on the survival function of exiting from U to E and to OLF for the entire sample, for workers with and without previous job experience, and by cause of exit from the last job, respectively. The duration of a spell of unemployment is defined as the period of time elapsed between the first quarter of inflow into unemployment and the last quarter of outflow from unemployment. From Figure 7, we see that there are more right censored observations in the exits from U to OLF (51.5 percent) than into E (26.7 percent). Therefore, the unemployed remain shorter time in unemployment when they exit to E than to OLF. Distinguishing job

losers from the unemployed without previous job experience makes it possible to detect a different behaviour in the individuals: unemployment spells for job losers before exiting to E (to OLF) are the shortest (the longest); on the contrary, the unemployment duration for individuals without previous job experience is shorter before exiting to OLF than to E.

Figure 8 shows that individuals without labour experience remain longer in unemployment before exiting to a job than the rest of workers, with a 48.2 percent of censored observations. Then, we have workers entering unemployment from layoffs (with 35 percent of censored observations), due to voluntary reasons (32.4 percent) and due to involuntary reasons (29 percent). Finally, those who ended a contract exhibit the shortest unemployment duration (20.5 percent of censored durations).

Finally, in analyzing the transitions from U to OLF, Figure 9 suggests that the unemployed without previous job experience remain the shortest in unemployment before exiting to OLF (with 37.2 percent of censored observations), followed by those who entered unemployment due to voluntary reasons (42.1 percent), due to the end of a contract (57 percent), and due to layoffs and involuntary reasons (around 60 percent of censored spells).

3. Econometric specification

3.1. The econometric model

The model chosen for the empirical analysis is a discrete time competing risks hazard rate model. A discrete time model is chosen because the data is available in discrete time intervals (monthly data). A competing risks framework is selected since we are able to distinguish between two exit modes out of unemployment for each individual: employment and out of labour force. In the formulation of the model, we follow the terminology proposed by Allison (1982) and Jenkins (1995), extended by Steiner (2001), Lauer (2003), D'Addio and Rosholm (2005) and Alba et al. (2006).

In our case, the basic idea of the hazard rate model is that one divides the unemployment duration into a discrete and finite number of time intervals and looks whether the individual has left or not the unemployment state in each time interval. The hazard rate is assumed to be constant within time intervals but is allowed to differ between them. In this context, the hazard rate (h_{ij}^s) that individual i leaves her sth spell

of state j (unemployment) to destination k (employment or out of labour force) in the interval I_t , given that her spell lasted in state j until the beginning of interval I_t , conditional on observed characteristics $x_{ijk}(t)$ and unobserved characteristics v_{ij} , is as follows:

$$h_{ijk}^s(t | x_{ijk}(t), v_{ij}) = \Pr(T_{ijk}^s = t, d_{ijk}^s) | T_{ijk}^s \geq t, x_{ijk}(t), v_{ij}) \quad (1)$$

$$i=1, \dots, N; j, k=1, \dots, K; t=1, \dots, T_{ij}^s; S=1, \dots, S_i$$

Where T_{ij}^s is the time spent by individual i in the s th spell of state j , I_t is a discrete number of intervals and d_{ij}^s equals 1 if the s th spell of individual i in state j ends in state k , 0 otherwise (spell censored or ends in other state than k).

Assuming that all spell observations -conditional on the explanatory variables and the unobserved factors- are independent and that censoring is random, the sample likelihood function for the original state j may be written as follows (see Jenkins, 1995; Steiner, 2001; and Lauer, 2003)⁵:

$$L_j = \prod_{i=1}^N \prod_{s=1}^{S_i} \prod_{k \neq j} \prod_{t=1}^{T_{ij}^s} h_{ijk}^s(t)^{y_{ijk}^s} \left[1 - \sum_{k \neq j} h_{ijk}^s(t) \right]^{1 - \sum_{k \neq j} y_{ijk}^s} \quad (2)$$

Where y_{ijk}^s is a binary variable that takes value equal 1 if the s th spell of individual i in state j is censored and 0 otherwise.

In order to estimate empirically the likelihood function, it is necessary to assume further specification choices. For the hazard rate we choose the logistic specification that, with multiple events, generates the multinomial *logit* model (Maddala, 1983). It allows for the three possible states considered: employment, out of labour force, and remaining unemployed (which is the reference state category). For individual i , the transition rate from state j to k specified as a multinomial logit can be written as (Steiner, 2001; Lauer, 2001):

$$h_{ijk}^s(t | x_{ijk}(t), v_{ij}) = \frac{\exp(\alpha_{jk}(t) + \beta'_{jk} x_{ijk}(t) + v_{ij})}{1 + \sum_{l \neq j} \exp(\alpha_{jl}(t) + \beta'_{jl} x_{ijl}(t) + v_{ij})} \quad (3)$$

⁵ We omit temporarily $x_{ijk}(t)$ and v_{ij} to simplify notation.

In (3) x_{ijk} is a vector of explanatory variables that may vary with time, β_{jk} is a vector of parameters to be estimated; the terms α_{jk} stands for the so-called baseline hazard which represents the pattern of duration dependence. The specification of the baseline hazard is very important in duration models. A common but restrictive approach consists in specifying a parametric form (for instance, gamma, weibull, log-normal, etc.). Nevertheless, this approach is very strong because the assumptions over the form are difficult to justify from an economic point of view and provokes a misspecification problem. To avoid that problem, we specify a semi-parametric approach: a piecewise constant hazard, by specifying monthly dummy variables for which coefficients for transitions from unemployment to employment can differ from those for transitions to inactivity. This method presents the advantage of being a flexible pattern of duration dependence assuming that this pattern may vary among the states where the duration effect is found to be constant or the number of observations is very small.

Finally, v_{ij} account for unobserved heterogeneity characteristics in the model such as motivation, ability, effort, etc. We assume that the unobserved heterogeneity effect is a specific destination state, time constant, and independent of the observed characteristics⁶. Unobserved heterogeneity is discretely distributed with unknown support points. These points can be interpreted as latent individual's variables. Heckman and Singer (1984) described the non-parametric approach based on the existence of some latent classes of individuals. In this approach, one assumes that v_{ij} may be divided in a limited number of mass points v_{mj} with a given probability π^7 . Then, the likelihood function for an individual may be obtained integrating the following conditional likelihood distribution:

$$L_j = \sum_{z=1}^Z \pi_z \left[\prod_{i=1}^N \prod_{s=1}^{S_i} \prod_{k \neq j} \prod_{t=1}^{T_{ij}^s} h_{ijk}^s(t | x_{ijk}, v_{zj})^{y_{ijk}^s} \left[1 - \sum_{k \neq j} h_{ijk}^s(t | x_{ijk}, v_{zj}) \right]^{1 - \sum_{k \neq j} y_{ijk}^s} \right] \quad (4)$$

⁶ This is a standard assumption in duration models (Jenkins, 1995; Steiner, 2001 D'Addio and Rosholm, 2005). If we relax the assumption and v is correlated with X , then the probability of exiting from unemployment through employment or inactivity will be affected, and a test for endogeneity will be required.

⁷ The number of mass points will be determined by the approach of Baker and Melino (2000). A comparison of information criteria is computed from the estimation results of models with a different number of mass points: the number of mass points is increased until the addition of a further mass point stops improving the model.

In the next section we estimate this likelihood function by maximum likelihood to know how personal, job and labour market characteristics influence unemployment durations of spells that end either in employment or in inactivity.

3.2. *Specification tests*

The main limitation of the multinomial (or competing risks) specification is the property of the *independence of irrelevant alternatives (IIA)* that has to be fulfilled. In a setting with three alternatives, the IIA means that the ratio of the probabilities of any two alternatives does not depend on the characteristics of a third alternative. The validity of the IIA assumptions will be tested by means of two tests: the Hausman (HM) test (Hausman and Mc Fadden, 1984) and the Small-Hsiao (SH) test (Small and Hsiao, 1985). These popular tests consist in partitioning the choice set of alternatives into subsets and therefore comparing the coefficients (HM) or the likelihood functions (SH) from the complete model and from the restricted model obtained by leaving out one or more alternatives. We also have Wald and LR tests to test whether some of the outcome categories should be combined (for instance, whether the parameter estimates differ significantly across outcome categories).

Table 1 provides the results of these tests. The HM and SH tests show that the null hypothesis is accepted; then, the IIA assumption would be fulfilled. Therefore, these tests indicate that the data support the multinomial logit specification for each departure state. Wald and LR tests examine whether some states can be pooled into a single state, in which case the specification should binomial rather than multinomial. As the results show, the null hypothesis that the coefficients of the two candidates for pooling are not significantly different is rejected for any pair of potential alternatives. The rejection means that unemployment, employment and OLF are distinct states. Then, the multinomial specification seems to be appropriate, since none of the categories could be combined.

Finally, in order to see whether the number of mass points found as optimal is robust towards the specification with unobservables in the standard multilogit model which is implicit in the text, three alternative information criteria are used: Akaike information criterion (AIC), Hannan-Quinn criterion (HQ) and Bayesian info criterion (BIC)⁸. Table 2 reports the value of these information criteria. The preferred model is

⁸ A description of the AIC, BIC and HQI criterias are presented in Baker and Melino (2000) and Lauer (2003).

that yielding the lowest IC value. As can be seen, all information criteria lead to the same conclusion. For all the unemployed, for job losers and for the unemployed without previous labour experience, accounting for individual unobserved heterogeneity by distinguishing two mass points does not improve the fit of the models, which means that the best model should not include any mass point.

Alternatively, a simple likelihood ratio test of a model with unobserved heterogeneity against another without unobserved heterogeneity confirms the conclusion that unobserved heterogeneity is not significant. The value of the likelihood ratio test statistic for the entire sample of a model with unobserved heterogeneity against that without it is 1.144. This value exceeds the critical chi square value of 5.99 for 2 d.f. at significance level of 5 percent and, therefore, the unobserved heterogeneity component should not be included in the specification of the model. The values of the likelihood ratio test statistic are 0.922 and 1.591 for the estimations regarding job losers and those unemployed without previous labour experience sample, respectively. Both values exceed the critical chi square value (previously mentioned); therefore, unobserved heterogeneity is also not significant⁹.

4. Empirical analysis

4.1. Explanatory variables

In the estimation, we consider the following set of variables (an extended description is presented in Table A.2 in the Appendix):

- Socio-demographic variables: gender, age dummies, marital status, attained educational level and relation with the person of reference in the household.
- Previous job variables: previous employment experience, type of sector, cause of exit from the last job, occupation, industry affiliation, and last job duration.
- Job search variables: previous position in the labour market before job search (working, engaged in education, domestic work, etc.), whether workers

⁹ We have also estimated a third order polynomial specification for the baseline hazard function with two support points for the unobserved heterogeneity (that was significant) rather a piecewise-constant baseline hazard function. Although the likelihood ratio tests cannot be used to differentiate between both specifications because the models are not nested, we chose a piecewise constant baseline hazard function in this paper since the data we use is discrete and it provides a more flexible representation of the baseline hazard function. Nevertheless, the results of the third order polynomial for the baseline hazard function are very similar to those presented in the text (see Appendix, Tables A3-A5).

receive unemployment benefits, type of job he/she is looking for (only full-time job, preferably full-time, preferably part-time, only part-time, or whatever type), and whether the unemployed would accept a job that implied to move to a different city, a change in occupation, less income given his/her qualifications, or a job category below what was expected.

- Other variables: the quarterly regional unemployment rate to control for labour demand conditions, the quarterly GDP rate to capture the effect of the business cycle, and four dummies to control for the quarter of exit and entry to examine the existence of a possible seasonal effect and the calendar time effect, respectively. Furthermore, a duration dependence pattern through a number of monthly dummies used for the baseline hazard specification is included for each exit state.

4.2. Expected effects

Turning to the effect of particular individual and job related characteristics on the exit rate of unemployment, we expect the following effects. If inactivity were a true destination state for women when they are in active age, then men would exhibit a positive effect on the risk of exiting from unemployment to employment. Elderly unemployed workers have skills that are more likely to become obsolete, so they would experience more difficulties in adapting to a new job and will show less probability of exiting to employment and more probability of exiting to inactivity (Narendranathan and Nickell, 1985)¹⁰. Single workers are more able to accept a job because they are more mobile. On the contrary, married unemployed may search more intensively since they have familiar responsibilities and need more income. The effect of the educational level is ambiguous. On the one hand, the higher the worker's educational level, the higher his/her reservation wage and, hence, the lower the probability of accepting a job offer. On the other hand, employers may prefer those unemployed with higher educational level expecting a higher productivity, so the probability of exiting to a job may be higher.

The prediction on the influence of benefits on the exit from unemployment is also ambiguous, since there are an incentive and a disincentive effect on the intensity of job

¹⁰ Elderly unemployed workers normally accumulate more labour experience which generates a higher reservation wage. This provokes that they have less probability of getting a new job (Folmer and van Dijk, 1988).

search by the unemployed (Atkinson and Micklewright, 1991). On the one hand, the standard prediction is that the unemployed receiving benefits will exhibit a lower probability of transition from unemployment to employment since the incentive of unemployed workers to search for a job is reduced. On the other hand, there is an incentive effect arising from the fact that the level of benefits increases the resources devoted to search and hence increases the probability of finding a job.

Regarding the influence of previous labour market experience, it may be anticipated that those individuals with previous experience may be considered as wage earners and, therefore, they would show a higher probability of experiencing transitions from unemployment to employment than those without previous labour market experience. An additional insight comes from the fact that individuals become unemployed due to different reasons. In this sense, we may expect that workers who have been laid off face more difficulties to find a job, if job-match specific human capital has been lost (Podgursky and Swaim, 1987; Ruhm, 1991). Moreover, tenure on the last job may have a scarring effect on the duration of the current unemployment spell (Kuhn, 2002).

We expect GDP growth rate to have a positive effect on the hazard rate of finding a job. Concerning the state of local labour market demand, the unemployed who live in regions with low regional unemployment rates will enjoy a higher probability of finding a job since there would be less competition for existing vacancies. Finally, regarding the influence of industry affiliation, we expect that workers in service and building sectors will face expanding employment opportunities and higher chances to find a job.

4.3. Results

Table 3 reports parallel results from fitting a competing risks hazard model to analyze the determinants of exiting from unemployment through two destination states: employment (E) and out of the labour force (OLF). The first two columns provide the determinants of exits from U through E or through OLF for the entire sample. The following two columns offer the results regarding the same specification of the model but for the unemployed with previous labour experience, and the last two columns for those workers without previous labour experience.

The reference individual for the estimations without previous experience is a man, aged 25-34 years old, non-married, without studies, main person of the household, who

declare that he/she does not know if would accept a job in another city, in another occupation, of less income and with a lower job category, and looking for a job of whatever type regarding working time. Supplement regressors are incorporated in the estimations for job losers. The reference here is that last job was in a white-collar high-skilled occupation, in the private sector, and in industry; in addition, he/she exited from the last job by voluntary reasons and does not receive unemployment benefits.

We first present the results for socio-demographic variables; later, we shall report results for previous job characteristics; finally, we will comment results on job search variables and will conduct some extensions.

4.3.1. Socio-demographic variables

We observe differences in the regression coefficients estimated across destination states. With respect to the exit from U to E, gender, marital status and age seem to matter for the two groups of unemployed. Female job losers exhibit a significantly 11 percent lower probability of exiting from U to E than similar men. This negative effect is larger (around 20 percent) for those women without previous labour experience. The familiar pro-supply effect of marital status is quite confirmed in the case of job losers: being married increases the probability of transitions from U to E. Nevertheless, this effect is larger for married men. On the contrary, while women without previous labour experience show a lower risk of exiting from U to OLF than men (a 22 percent), women who are job losers and married are more likely to be less attached to the labour force than men. This can be related to family reasons.

Regarding the effect of age, differences are very marked. While individuals aged 25-34 have more chances of getting an employment (for job losers and for workers without previous job experience as well), the oldest workers tend to be the most disadvantaged since they exhibit the lowest transition rates from U to E (these are even lower for those without previous labour experience). On the other hand, the age variable does not affect significantly the risk of exiting from U to OLF for the unemployed without previous labour experience. But for the group of job losers the oldest and the youngest are those who show the largest likelihood of exiting from U to OLF. This means that younger job losers are more inclined to come back to study or to domestic or family care, while older job losers are more inclined to retire.

Finally, attained educational level affects transitions from U to OLF: all workers with any educational level different from having no studies (save for post-compulsory secondary) are less likely to drop out the labour force. However, the educational level is not significant in explaining transitions from U to E since it appears to have no influence on the search process. The reason may be that the educational level segments the labour market and therefore workers search for a job in their own labour segment. Then, the probability that a job is offered does not depend on the educational level, and although the reservation wage is higher for the unemployed with more formal education, their probability of accepting a job offer is not lower since their wage offers are also higher. Gonzalo (2002) has also detected this insignificant effect of educational level on transitions from U to E for Spain.

4.3.2. Previous job experience variables

There are several job experience variables that provide interesting insights into the way workers exit from U either into E or into OLF: whether or not the individual has been employed previously, the cause of exit from last job, the type of sector, occupation and industry affiliation.

One of the most interesting findings relates to the first of those variables. In fact, having been employed previously increases 37 percent the probability of returning to employment in the future after unemployment. This result seems to indicate that workers who have been somehow attached to the labour market in the past possess some characteristics making them more prone to coming back to employment relative to those individuals who have never been employed. On the contrary, previous job experience does not play any role in the transitions from U to OLF.

Comments on the rest of variables are only for job losers. Those workers who entered unemployed due to a layoff exhibit a 22 percent lower probability of exiting from U to E vis-à-vis the reference category (voluntary reasons as early retirement, quitting, etc.), while workers who entered unemployment following the termination of a fixed-term contract have noticeably a 11 percent higher probability of moving from one job to another with an intermediate unemployment period. Therefore, the latter are more employable but at the same time they have more risk of experiencing unemployment. Böheim and Taylor (2002) in the UK and by Arranz and García-Serrano (2004) in Spain have also found previously this effect. Not surprisingly, those who entered unemployed

for voluntary reasons show a larger probability of exiting to OLF than the rest of individuals.

With regards to the industry affiliation, job losers from the agriculture and building sector exhibit a higher hazard rate from U to E across the period of study than workers from the industry sector. This is an expected result since those are the sectors with the highest proportion of temporary employment in the Spanish economy. Therefore, worker turnover is high, individuals move from one job to another very frequently and job durations are short. We also find that job losers from the agriculture and the service sectors show higher probability of dropping the labour force. Finally, hazard rates from U to E are larger for workers who previously worked in blue-collar jobs and in the public sector.

4.3.3. Job search variables

The variable that captures the situation of the unemployed previously to begin the process of searching for a job provides some interesting results. Compared to the unemployed who were working before they started looking for a job, job losers who were in domestic work or were in education are stigmatised because they have less probability of entering to a job and have more probability of dropping out of the labour force. Again, this result stresses the importance of being attached to the labour market to increase the employability of individuals and to avoid definitive exits to inactivity.

Second, we have constructed a set of variables as indicators of either pressure to accept a job or labour force attachment. These are based on four variables that capture the effect of willingness to accept a job in a different city, in a different occupation, commanding less wage for the given qualification or in a job category lower than expected (possible answers to these variables are ‘yes’, ‘no’, and ‘don’t know’). The first dummy variable takes value 1 if the worker indicates that he would be ready to accept a job in *all* the above-mentioned four dimensions. The second dummy variable takes value 1 if he is ready to accept a job in *at least one* of those options. Finally, the third variable (reference category) takes value 1 if he would not accept (or he does not know) a job in *neither* of these options. Results indicate that job losers and workers without previous labour experience who report that they would accept a job under either all the referred conditions or any of those conditions have around 20-22 percent less probability of finding a job. Moreover, they exhibit much less probability of leaving the

labour force. These are the same results obtained by Alba-Ramírez (1999) using two consecutive waves of the Spanish LFS.

Another variable trying to capture workers' choosiness in the job search process is that relating to the type of job (working time) they are looking for. In this case, our findings suggest that job losers who declare that they are searching only for a full-time job exhibit more probability of exiting from U to E. At the same time, job losers and those without previous labour experience who are willing to accept only a part-time job are more likely to drop out the labour force.

The receipt of unemployment benefits¹¹ has the standard expected effects on the exits from U into E and OLF: non-claimants exit from unemployment faster than claimants do. The effect on the exit from U into E agrees with that found previously by Alba-Ramírez (1999), Bover et al. (2002) and Gonzalo (2002) with the Spanish LFS data. Results also suggest that the benefits' disincentive effect translates into a lower probability of exiting to inactivity: transition rates from U to OLF are two times more important than from U to E. This effect was previously documented by Wadsworth (1991) for the UK.

4.3.4. Other variables

There is a clear indication that the higher the quarterly regional unemployment rates the lower the probability of exiting from U to E and the higher the probability of leaving the labour force for the two groups analyzed, being both effects lower in absolute value for job losers. This result suggests that there is a discouragement effect from participation when labour market is slack. Similarly, the business cycle variable indicates that the higher the quarterly GDP rate, the higher the probability of finding a job for job losers. This means that in expansions the hazard rate from unemployment increases because firms create new vacancies and offer better wages. However, these opportunities are only available to job losers: the business cycle does not alter the transitions from unemployment of workers without previous experience.

Year dummies variables also allow observing the effect of business cycle on transitions from U to E and OLF. Concerning the transition from U to E, the coefficients for year dummies are positive but only significant for job losers, increasing from 1995

¹¹ This variable contains information on individuals who receive either unemployment insurance or unemployment assistance benefits.

to 2003. The probability is especially large in the period 2000-2002. As for the probability of leaving the labour force, it increased from 1998 to 2003. This result is worrying since it has happened in a period of economic expansion and net employment creation.

Finally, Figure 10 displays the estimated duration dependence for job losers and unemployed without previous work experience at mean of covariates. As can be observed, estimated hazard rates from U to E are greater than from U to OLF for the entire sample. Furthermore, it can be observed how in a competing risks framework the U-E and U-OLF estimated hazard rates steadily exhibit positive duration dependence during the first months up to the fourth month, negative duration dependence until the tenth month, and a positive duration dependence thereafter. Notice that the mobility pattern of both collective for each outcome is similar. The estimated hazard rates from U to E for job losers keeps over the hazard rate from unemployment to OLF and from U to E and OLF for the unemployed without previous work experience. Then, expected unemployment duration for job losers who exit to a job is shorter than for the rest of outcomes. On the contrary, the unemployed without previous work experience exhibits shorter unemployment duration when they exit from U to OLF than job losers for the same outcome.

4.3.5. Further extensions

- *Previous job tenure*

Table 4 reports an extension to the results offered in Table 4. In this new estimation, we examine the effect of previous job tenure on transitions out of unemployment. The purpose is to try and analyze whether duration in the last job influences (positively or negatively) the probability of exiting from unemployment. For that, we use the whole set of variables included in the previous estimation except the cause of exit from last job and the unemployment benefits variables since there is some correlation between previous job tenure and these variables. As it is well known, previous job tenure and the reason for leaving last job provide indirect information on unemployment benefits: whether the individual has the right to receive benefits and its duration.

The results suggest that the influence of previous job tenure on the probability of leaving the labour force is non-existent, but the longer the duration in the previous job,

the lower the hazard rate from U into E. This effect might be related to the loss of specific human capital when workers are separated from their previous jobs: if firms and workers are engaged in long-term relationships, the rupture of a job match makes the specific component of human capital to vanish and individuals may find more difficult to search for a new job suitable for their skills. In this sense, there is a risk of human capital deterioration and qualifications get obsolete with time, which may reduce productivity and, as a result, re-employment probabilities.

- *Cause of exit from previous job: end of contract and layoffs*

The distinction across individuals according to the reason of exit from the previous job is potentially relevant since it may illuminate the effect of specific human capital on re-employment probabilities. In order to investigate this, Table 5 displays the results for the estimation of transitions from U to E and OLF for workers who were previously employed but were separated from their last job due to either the end of a contract or a layoff.

Regarding those workers who became unemployed due to contract ending, their results are similar to those mentioned for the entire sample and for job losers (Table 3), save for the benefit and job category variables that do not influence transitions from U to E. Hence, the unemployed with less probability of finding a job are women (specially married), the elderly workers, workers in the private sector, in industry sector, in regions with the highest regional unemployment rate, who became unemployed in a recession, who were in domestic work previously to start looking for a job, ready to accept a job in another city and/or occupation and/or of less income and/or with lower job category, and those with large previous job duration. We also find that the coefficients for year dummies are positive, suggesting that the probability of transitions from U to E increased from 1994 to at least 2000.

On the contrary, married women, older and younger job losers, blue collar workers, workers in agriculture and service sectors, in regions with high unemployment rates, who were in education or in domestic work previously to start searching for a job, who do not receive benefits, do not accept a job in another city and/or occupation and/or of less income and/or with lower job category, are more likely to be less attached to the labour force. The coefficients for year dummies are positive after 1997, but only significant from 2000 to 2003.

If we focus our attention on transitions of workers who were laid-off from their previous job, we find that married women, workers aged more than 35 years old, workers from the private sector, white collar high skilled workers, those working in regions with the highest regional unemployment rates and with longer previous job tenure are more prone to experience lower transitions from U to E. In contrast, married women, individuals without studies, who worked in the public sector, with longer previous job tenure, who are not ready to accept a job in another city and/or occupation and/or of less income and/or with lower job category are the group of workers with more probability of leaving the labour force. These transitions have increased steadily from 2000 to 2003.

- *Stepping-stones versus dead-end jobs for the unemployed*

Temporary contracts are often regarded as an important component of labour market flexibility in Spain in the last twenty years. There is an extensive debate on the effects of temporary employment on the economy and on welfare, in general, and on the labour history of workers, in particular. On the one hand, some authors (Booth et al., 2002) argue that the existence of temporary jobs helps to currently unemployed workers since they provide them with opportunities to gain work experience and acquire human capital and acts as a positive signal (*stepping-stones*) towards a permanent and more desirable jobs. On the other hand, other authors consider temporary jobs as *dead-end* jobs since they are undesirable jobs compared to permanent ones: worse labour conditions (lower wages, greater labour security and bad time schedules) and less work-related training, which implies that workers are more likely to have lower motivation at work. Hence, workers trapped in a chain of temporary jobs and unemployment have more risk of developing worse labour careers and of exclusion from the labour market.

In the literature, we may find studies analyzing empirically the effect of temporary jobs on workers' labour careers. There is not a clear conclusion since results differ across countries. Thus, works by Hagen (2003) for Germany, Zijl et al. (2004) for the Netherlands, Glagiarducci (2005) for Italy and Engelland and Riphahn (2005) for Switzerland find that temporary jobs have a positive signal (*stepping-stones*) towards a permanent job. On the contrary, Amuedo (2000) for Spain finds that temporary jobs have a negative signal on the probability of getting a permanent job, and Booth et al. (2002) for UK, Güell and Petrongolo (2003) for Spain, and D'Addio and Rosholm (2005) for the UE find evidence for both theories. In this section, we analyze the extent

to which temporary employment makes it easy for unemployed workers to move from unemployment either to a permanent work (*stepping-stones*) or to other temporary job (*dead-end*).

Table 6 reports determinants of transitions for the entire sample from unemployment directly to a permanent job, from unemployment to a temporary job, from unemployment to other type of job (self-employment) or to inactivity. We first focus our attention on the estimation for the exits from unemployment either to a temporary or to a permanent job. Our findings indicate that the unemployed who were separated from a previous job match due to the ending of a temporary job and experience an intermediate unemployment period show a 22.6 percent higher probability of exiting to a temporary job. By contrast, they have an 18 percent less probability of finding a temporary job if the prior job match finished due to a layoff. These results suggest the presence of a *dead-end* effect since workers who accepted a temporary job in the past are strongly attached to a temporary job in the future. Thus, as we mentioned previously, they are trapped in a chain of temporary jobs and unemployment with more risk of developing worse labour careers and of exclusion from the labour market. Furthermore, we also find that the unemployed whose previous job termination was due to the end of a contract (temporary job) exhibit a 30 percent lower probability of accessing to a permanent job.

Given the presence of a *dead-end effect*, the comparison of the parameters of the transitions from unemployment to permanent jobs and from unemployment to temporary jobs is informative of the relevance of this effect for obtaining temporary jobs¹². Older unemployed have less probability of moving from unemployment to permanent or temporary jobs. Males have higher probability of finding temporary jobs. Being married (and being female) has a strong negative effect on the transitions from unemployment to temporary jobs. Having worked in the public sector increases the probability of exiting to temporary jobs and reduces the probability of accessing to permanent jobs. This evidence suggests the existence of a temporary job-unemployment-temporary job channel in the public sector that reflects its increasing use of temporary jobs¹³. The transition rates into temporary jobs are also higher in the

¹² Table A.6 in the appendix reports similar estimation results for job losers.

¹³ This evidence is not a surprise since Dolado et al. (2002) highlighted it previously: the public sector exhibits a steadily increase of the share of temporary employment since the mid-1990s. The reasons may be a change in the hiring behaviour after the Growth and Stability Pact and that a high proportion of the EC Structural Funds received by the Local Administrations for promoting active labour market policies have been used to hire workers in targeted groups under temporary contracts.

agriculture and the building sector compared to workers from the industry. And finally, workers in blue-collar (high and low skilled) occupations and those with previous job experience are more likely to exit to temporary jobs.

Other informative results come from the regional unemployment rate and the business cycle variables. The unemployed in regions with high unemployment rates (associated with higher job destruction and lower job creation rates) present less probability of exiting to either temporary or permanent jobs. As for the business cycle variable, we obtain the expected result: in seasons when the quarterly GDP rates are higher, the transitions from unemployment to temporary jobs increase.

5. Conclusions

In this paper, we have investigated the transitions from unemployment to employment and inactivity using a competing risks framework. In particular, we have distinguished between job losers and workers without previous job experience, allowing for observed and unobserved characteristics to affect the unemployment exit process. The unobserved heterogeneity was not significant in our estimations. The possible disincentive effects of benefits on exits out of unemployment and the transitions from unemployment to temporary or permanent contracts are other issues that have been analyzed. Data used have come from the quarterly Spanish Labour Force Survey (EPA) linked files over the 1992-2004 period. In what follows, we summarize the main findings.

First of all, it is worth noting the notion that employment and inactivity are two very distinct behavioural states. For its part, the role of previous labour market experience and the type of exit from the last job is critical. We have found that previous labour market experience enhances the probability of returning into employment after unemployment in the future but does not seem to influence the leaving from the labour force. Among job losers, those who entered unemployed due to layoffs exhibit a lower probability of transition from U to E, while workers who entered unemployment following the termination of a fixed-term contract have noticeably higher probability of transitions between jobs with an intermediate unemployment period. Workers unemployed due to a voluntary exit from a job are more likely to exit to OLF than the rest.

Secondly, some personal, job and firm characteristics appear to have an effect on the transitions of the unemployed. The influence of seniority on the last job held by the individual seems to be a relevant factor: the higher the length of service in previous job, the lower the hazard rate from U into E. Moreover, non-claimants exit from unemployment (either to E or to OLF) faster than claimants do. This finding suggests that benefits not only exerts a negative effect in slowing transitions from unemployment to employment but also that the benefits' disincentive effect translates into a lower probability of exiting to inactivity. And male workers, those aged 25-34, and individuals living in regions with low unemployment rates (either with and without previous labour experience) are those more prone to experience exits from U to E. On the contrary, women, the youngest and the oldest job losers exhibit more probability of leaving the labour force.

Finally, the distinction of different destination states within employment (either fixed-term or permanent jobs) makes it possible to detect the presence of a *dead-end job effect* in the Spanish labour market during the 1990s, since workers who accepted a temporary job in the past were strongly attached to temporary employment in the future. They are somehow trapped in a chain of temporary jobs and unemployment with more risk of developing worse labour careers and of exclusion from the labour market. This issue deserves more attention in order to design adequate policies aimed at preventing unemployment and reducing the proportion of temporary employment.

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APPENDIX

Table A.1. Descriptive statistics for all unemployed, unemployed without labour experience and job losers. EPA linked files, 1992-2004.

	ALL		W/O EXPER.		JOB LOSERS	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Male	0.554	0.497	0.410	0.492	0.587	0.492
Age exit (years)	30.628	11.411	23.067	8.004	32.369	11.369
Age entry (years)	30.628	11.411	23.067	8.004	32.369	11.369
Age (groups)						
16-24 years old	0.393	0.488	0.751	0.433	0.310	0.463
25-34 years old	0.293	0.455	0.151	0.358	0.326	0.469
35-49 years old	0.228	0.419	0.078	0.268	0.263	0.440
50-64 years old	0.087	0.281	0.021	0.143	0.102	0.302
Exit from unemployment						
Employment	0.586	0.493	0.332	0.471	0.645	0.479
Inactivity	0.277	0.447	0.489	0.500	0.228	0.420
Remain unemployed	0.137	0.344	0.179	0.383	0.127	0.334
Marital status						
Single	0.583	0.493	0.853	0.354	0.521	0.500
Married	0.387	0.487	0.132	0.338	0.445	0.497
Divorced or widow	0.030	0.171	0.015	0.122	0.034	0.180
Educational level						
Illiterate	0.086	0.281	0.026	0.160	0.100	0.300
Primary education	0.237	0.425	0.123	0.328	0.263	0.440
Compulsory education	0.329	0.470	0.308	0.462	0.334	0.472
Post-compulsory education	0.095	0.293	0.161	0.368	0.080	0.271
Vocational education	0.150	0.357	0.170	0.376	0.145	0.352
University degree	0.103	0.304	0.212	0.409	0.078	0.268
Job category last job						
No	0.187	0.390	1.000	0.000	0.000	0.000
WCHS	0.072	0.259	0.000	0.000	0.089	0.285
WCLS	0.203	0.402	0.000	0.000	0.250	0.433
BCHS	0.220	0.414	0.000	0.000	0.271	0.444
BCLS	0.317	0.465	0.000	0.000	0.390	0.488
Cause of exit last job						
Without labour experience	0.187	0.390	1.000	0.000	0.000	0.000
End of contract	0.656	0.475	0.000	0.000	0.807	0.395
Layoff	0.059	0.235	0.000	0.000	0.072	0.259
Other involuntary	0.023	0.150	0.000	0.000	0.028	0.166
Voluntary	0.075	0.264	0.000	0.000	0.092	0.290
Unemployment duration(months)	7.341	5.387	7.951	5.866	7.200	5.260
Last job duration (months)	18.104	47.308	0.000	0.000	18.104	47.308
Type of sector						
No	0.187	0.390	1.000	0.000	0.000	0.000
Public	0.115	0.319	0.000	0.000	0.141	0.348
Private	0.676	0.468	0.000	0.000	0.832	0.374
Else	0.022	0.146	0.000	0.000	0.027	0.161
Activity sector						
No	0.187	0.390	1.000	0.000	0.000	0.000
Agriculture	0.133	0.339	0.000	0.000	0.163	0.370
Industry	0.126	0.332	0.000	0.000	0.155	0.362
Building	0.148	0.355	0.000	0.000	0.181	0.385
Service	0.406	0.491	0.000	0.000	0.500	0.500

Continuation Table 1.

Future job contract						
No (unemployed or inactive)	0.414	0.493	0.668	0.471	0.355	0.479
Permanent	0.032	0.176	0.018	0.134	0.035	0.184
Temporary	0.533	0.499	0.297	0.457	0.588	0.492
Self employment	0.021	0.142	0.017	0.129	0.022	0.145
Job search (previous situation)						
Worked	0.742	0.438	0.025	0.156	0.907	0.291
Studied	0.160	0.367	0.717	0.450	0.032	0.176
Military service	0.017	0.130	0.043	0.203	0.011	0.106
Domestic work	0.051	0.220	0.147	0.354	0.029	0.167
Else	0.030	0.170	0.068	0.252	0.021	0.144
Year (entry)	1997.519	3.339	1997.356	3.195	1997.557	3.371
Total sample	14,861		2,782		12,079	

Table A.2. Explanatory variables.

Variables	Definition
Gender	2 categories: man, woman.
Age	4 categories: 16-24 years old, 25-34 years old; 35-49 years old, 50-64 years old.
Marital status	3 categories: single, married, divorced/widow.
Relation with the person of reference	4 categories: reference person, partner, son/daughter, others.
Educational level	6 categories: Illiterate, primary education, compulsory education, post-compulsory education, vocational education, university degree.
Job category last job	4 categories: : WCHS (white collar high skilled); WCLS (white collar low skilled); BCHS (blue collar high skilled); BCLS (blue collar low skilled).
Cause of exit last job	4 categories: end of contract, layoff, other involuntary reasons, voluntary reasons
Type of sector	3 categories: public, private, else.
Industry	4 categories: agriculture, industry, building, service.
Job search previous situation	5 categories: working, studying, military service, domestic work, else.
Unemployment rate	Quarterly unemployment rate.
Region of residence	17 categories: Andalucia, Aragon, Asturias, Baleares, Canarias, Cantabria, Castilla-Mancha, Castilla-León, Catalonia, Comunidad Valenciana, Extremadura, Galicia, Madrid, Murcia, Navarra, Pais Vasco, La Rioja.
Benefits	2 categories: yes, no.
Search for a job of...	5 categories: only full-time, full-time or part-time, only part-time, part-time or full-time, whatever.
Accept a job in a different city?	3 categories: yes, no, I don't know.
Accept a job in different occupation?	3 categories: yes, no, I don't know.
Accept a job with less income?	3 categories: yes, no, I don't know.
Accept a job with lower category?	3 categories: yes, no, I don't know.
Dummies entry quarter	4 categories: 1 st quarter (January to March), 2 nd quarter (April to June), 3 rd (July to September), 4 th quarter (October to December).
Dummies exit quarter	4 categories: 1 st quarter (January to March), 2 nd quarter (April to June), 3 rd (July to September), 4 th quarter (October to December).
Dummy year variables	12 categories: 1992, 1993, 2003.
Previous experience	2 categories: Yes, no.
Previous job duration	Months.

Table A.3. Estimation results for all unemployed, job losers and workers without previous labour experience (U= unemployment, OLF= out of labour force). EPA linked files (1992-2004). Third order polynomial baseline hazard function and two support points.

	ALL						JOB LOSERS						WITHOUT LABOUR EXPERIENCE					
	U→JOB			U→OLF			U→JOB			U→OLF			U→JOB			U→OLF		
	Param	S.E.	Sign.	Param.	S.E.	Sign.	Param.	S.E.	Sign.	Param.	S.E.	Sign.	Param.	S.E.	Sign.	Param.	S.E.	Sign.
Baseline hazard function																		
t	1.824	0.045	***	2.068	0.053	***	1.840	0.051	***	2.031	0.064	***	1.540	0.111	***	2.191	0.108	***
t ²	-0.157	0.005	***	-0.190	0.006	***	-0.161	0.006	***	-0.183	0.008	***	-0.113	0.013	***	-0.203	0.013	***
t ³	0.004	0.000	***	0.005	0.000	***	0.004	0.000	***	0.004	0.000	***	0.002	0.000	***	0.006	0.000	***
Gender (women)	-0.166	0.043	***	-0.188	0.052	***	-0.148	0.049	***	-0.087	0.069		-0.202	0.089	**	-0.285	0.086	***
Age groups																		
16-24	-0.027	0.043		0.382	0.060	***	0.001	0.046		0.453	0.067	***	-0.305	0.126	**	0.039	0.136	
25-34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35-49	-0.279	0.048	***	-0.285	0.065	***	-0.261	0.050	***	-0.265	0.069	***	-0.610	0.260	**	-0.364	0.211	*
50-64	-0.729	0.073	***	0.176	0.087	**	-0.731	0.075	***	0.201	0.092	**	-0.737	0.403	*	-0.126	0.292	
Marital status																		
Married	0.152	0.066	**	-0.598	0.096	***	0.165	0.068	**	-0.509	0.101	***	0.932	0.440	**	-0.395	0.531	
Single, widow or divorced	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Women and married	-0.554	0.103	***	1.053	0.128	***	-0.593	0.108	***	0.899	0.140	***	-1.246	0.502	**	0.985	0.573	*
Type of sector																		
Public	0.133	0.051	***	0.116	0.071	*	0.130	0.051	***	0.130	0.071	*	-	-	-	-	-	-
Private or else	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cause of exit last job																		
End of contract	0.146	0.062	**	-0.276	0.075	***	0.197	0.062	***	-0.347	0.073	***	-	-	-	-	-	-
Layoff	-0.239	0.087	***	-0.330	0.111	***	-0.184	0.088	**	-0.417	0.109	***	-	-	-	-	-	-
Other involuntary	-0.049	0.115		-0.262	0.153	*	0.022	0.116		-0.345	0.152	**	-	-	-	-	-	-
Voluntary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Educational level																		
No studies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Primary	-0.027	0.065		-0.408	0.079	***	-0.024	0.066		-0.390	0.083	***	0.477	0.360		-0.545	0.258	**
EGB	0.034	0.069		-0.421	0.084	***	0.037	0.071		-0.429	0.090	***	0.550	0.353		-0.543	0.259	**
BUP	-0.104	0.086		0.007	0.098		-0.060	0.092		-0.058	0.111		0.296	0.369		-0.036	0.272	

FP	0.112	0.077		-0.485	0.096	***	0.096	0.081		-0.458	0.106	***	0.781	0.359	**	-0.690	0.271	***
University	0.066	0.088		-0.561	0.106	***	0.116	0.097		-0.517	0.127	***	0.506	0.360		-0.873	0.276	***
Job category last job																		
WCHS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WCLS	0.022	0.069		-0.047	0.094		0.083	0.071		-0.175	0.092	*	-	-	-	-	-	-
BCHS	0.196	0.076	***	0.062	0.107		0.294	0.078	***	-0.085	0.104		-	-	-	-	-	-
BCLS	0.171	0.071	**	0.158	0.096	*	0.249	0.074	***	0.051	0.096		-	-	-	-	-	-
Industry																		
Agriculture	0.441	0.067	***	0.538	0.092	***	0.460	0.067	***	0.514	0.092	***	-	-	-	-	-	-
Industry	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Building	0.163	0.058	***	-0.005	0.092		0.197	0.058	***	-0.038	0.090		-	-	-	-	-	-
Service	0.049	0.058		0.126	0.081		0.103	0.058	*	0.003	0.077		-	-	-	-	-	-
GDP rate	0.066	0.017	***	0.030	0.021		0.070	0.018	***	0.024	0.025		0.037	0.047		0.046	0.043	
Reg. Unemployment rate	-0.008	0.003	***	0.004	0.003		-0.006	0.003	*	0.001	0.004		-0.026	0.007	***	0.008	0.007	
Benefits (yes)	-0.105	0.037	***	-0.227	0.054	***	-0.107	0.037	***	-0.220	0.054	***	-	-	-	-	-	-
Previous situation (job search)																		
Working	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Studying	-0.143	0.081	*	0.574	0.088	***	-0.214	0.111	**	0.919	0.114	***	-0.147	0.117		0.506	0.128	***
Domestic work	-0.187	0.099	*	0.200	0.094	**	-0.207	0.124	*	0.243	0.116	**	-0.116	0.213		-0.128	0.211	
Else (military service, etc.)	-0.001	0.079		-0.016	0.102		-0.026	0.094		-0.013	0.133		-	-	-	-	-	-
Search for a job of:																		
Only full-time	0.299	0.044	***	0.200	0.060	***	0.313	0.046	***	0.231	0.068	***	0.252	0.134	*	0.143	0.132	
Full-time or part time	0.047	0.034		-0.043	0.045		0.047	0.037		-0.008	0.052		0.097	0.091		-0.080	0.089	
Part time or full-time	-0.524	0.135	***	0.218	0.111	*	-0.567	0.156	***	0.317	0.136	***	-0.284	0.269		0.066	0.200	
Only part-time	-0.402	0.114	***	0.404	0.091	***	-0.364	0.135	***	0.425	0.118	***	-0.435	0.214	**	0.275	0.155	*
Accept a job in another city, occupation, of less income, with lower category?																		
Yes (all)	-0.472	0.048	***	-0.829	0.065	***	-0.468	0.052	***	-0.804	0.078	***	-0.473	0.124	***	-0.854	0.128	***
At least one	-0.426	0.037	***	-0.564	0.046	***	-0.434	0.040	***	-0.655	0.054	***	-0.397	0.095	***	-0.333	0.089	***
No/I don't know	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dummies exit																		

1 st quarter	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2 nd quarter	0.098	0.038	***	-0.044	0.051		0.094	0.041	**	-0.038	0.060		0.083	0.110		-0.096	0.101	
3 rd quarter	0.145	0.039	***	0.041	0.051		0.136	0.042	***	-0.026	0.061		0.114	0.108		0.116	0.098	
4 th quarter	0.211	0.038	***	0.174	0.050	***	0.208	0.041	***	0.104	0.059	*	0.234	0.108	**	0.296	0.095	***
Previous experience (yes)	0.427	0.116	***	-0.103	0.142		-	-	-	-	-	-	-	-	-	-	-	-
Dummy years																		
1992	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1993	-0.090	0.079		-0.342	0.095	***	-0.091	0.084		-0.379	0.110	***	-0.020	0.227		-0.218	0.199	
1994	0.122	0.091		-0.252	0.112	**	0.134	0.098		-0.305	0.135	**	0.088	0.246		-0.115	0.212	
1995	0.167	0.089	*	-0.312	0.111	***	0.193	0.097	**	-0.386	0.133	***	-0.001	0.241		-0.230	0.210	
1996	0.205	0.094	**	-0.290	0.117	***	0.211	0.101	**	-0.332	0.139	***	0.149	0.256		-0.228	0.227	
1997	0.290	0.108	***	-0.203	0.136		0.302	0.116	***	-0.270	0.162	*	0.242	0.299		-0.038	0.264	
1998	0.445	0.106	***	0.134	0.131		0.448	0.115	***	0.144	0.155		0.418	0.290		0.123	0.259	
1999	0.396	0.112	***	-0.005	0.139		0.392	0.121	***	0.013	0.164		0.399	0.300		-0.069	0.271	
2000	0.662	0.104	***	0.254	0.131	**	0.646	0.112	***	0.206	0.152		0.627	0.287	**	0.281	0.276	
2001	0.556	0.100	***	0.265	0.122	**	0.568	0.108	***	0.266	0.142	*	0.506	0.260	**	0.190	0.242	
2002	0.609	0.091	***	0.660	0.107	***	0.669	0.099	***	0.681	0.125	***	0.224	0.253		0.512	0.220	**
2003	0.629	0.100	***	0.625	0.119	***	0.662	0.107	***	0.581	0.138	***	0.345	0.287		0.605	0.258	**
<u>Mass points and probability</u>																		
ε_1 (s.e.)				-9.068(0.185)						-8.841(0.209)						-9.079(0.506)		
ε_2 (s.e.)				-5.309(0.156)						-5.183(0.175)						-4.843(0.449)		
Pr(ε_1)				0.542						0.540						0.547		
Pr(ε_2)				0.458						0.460						0.453		
Observations (indiv.-spell)				111,155						88,356						22,799		
Likelihood function				-43,896.299						-35,438.002						-8,357.204		

^a These estimations also include the following variables: relation with reference person and third order polynomial for the baseline hazard rates.

^b *** indicates significance at 1 percent; ** indicates significance at 5 percent; * indicates significance at 10 percent.

Table A.4. Estimation results on previous job tenure for all the unemployed and for job losers (U= unemployment, OLF= out of labour force). EPA linked files (1992-2004). Third order polynomial baseline hazard function and two support points.

	ALL						JOB LOSERS					
	U→JOB			U→OLF			U→JOB			U→OLF		
	Param	S.E.	Sign.	Param.	S.E.	Sign.	Param.	S.E.	Sign.	Param.	S.E.	Sign.
Previous job tenure												
0-6 months	-	-	-	-	-	-	-	-	-	-	-	-
6-12 months	-0.065	0.048		-0.173	0.071	**	-0.077	0.048	*	-0.173	0.071	**
12-24 months	-0.191	0.067	***	-0.103	0.095		-0.212	0.067	***	-0.112	0.095	
24-36 months-	-0.235	0.077	***	-0.205	0.109	*	-0.255	0.077	***	-0.219	0.108	**
More than 36 months	-0.613	0.067	***	-0.193	0.083	**	-0.646	0.069	***	-0.200	0.084	**
Mass points and probability												
ε_1 (s.e.)												
ε_2 (s.e.)												
Pr(ε_1)												
Pr(ε_2)												
Observations (indiv.-spell)												
Likelihood function												

^a These estimations also include the whole set of variables included in Table A.3 except the cause of exit from last job and the unemployment benefits variables.

^b *** indicates significance at 1 percent; ** indicates significance at 5 percent; * indicates significance at 10 percent.

Table A.5. Estimation results for workers who entered unemployment due to either the end of contract or layoff (U= unemployment, OLF= out of labour force). EPA linked files (1992-2004). Third order polynomial baseline hazard function and two support points.

	Previous end of contract						Previous Layoff					
	U→JOB			U→OLF			U→JOB			U→OLF		
	Param	S.E.	Sign.	Param.	S.E.	Sign.	Param.	S.E.	Sign.	Param.	S.E.	Sign.
Baseline hazard function												
t	1.916	0.057	***	2.058	0.073	***	1.566	0.174	***	1.472	0.220	***
t ²	-0.169	0.007	***	-0.187	0.009	***	-0.136	0.020	***	-0.111	0.026	***
t ³	0.004	0.000	***	0.005	0.000	***	0.004	0.001	***	0.003	0.001	***
Gender (women)	-0.151	0.054	***	-0.103	0.077		-0.224	0.222		-0.648	0.326	**
Age groups												
16-24	-0.046	0.050		0.444	0.075	***	0.275	0.196		0.492	0.299	*
25-34	-	-	-	-	-	-	-	-	-	-	-	-
35-49	-0.236	0.055	***	-0.258	0.079	***	-0.477	0.205	**	-0.366	0.283	
50-64	-0.640	0.084	***	0.169	0.108		-1.221	0.297	***	0.172	0.350	
Marital status												
Married	0.180	0.076	**	-0.717	0.117	0.000	0.720	0.285	**	-0.336	0.356	
Single, widow or divorced	-	-	-	-	-	-	-	-	-	-	-	-
Women and married	-0.594	0.126	***	0.977	0.171	***	-1.988	0.497	***	0.999	0.553	*
Type of sector												
Public	0.112	0.054	**	0.119	0.075		0.129	0.331		0.750	0.372	**
Private or else	-	-	-	-	-	-	-	-	-	-	-	-
Educational level												
Illiterate	-	-	-	-	-	-	-	-	-	-	-	-
Primary education	-0.016	0.073		-0.415	0.095	***	0.121	0.301		-0.558	0.339	*
Compulsory education	0.062	0.078		-0.430	0.102	***	0.244	0.324		-0.824	0.381	**
Post-compulsory education	-0.028	0.103		-0.080	0.128		0.205	0.362		-0.709	0.444	
Vocational education	0.144	0.089		-0.375	0.120	***	-0.020	0.338		-1.280	0.425	***
University degree	0.129	0.108		-0.487	0.146	***	-0.282	0.453		-1.769	0.578	***
Job category last job												
WCHS	-	-	-	-	-	-	-	-	-	-	-	-
WCLS	0.018	0.083		-0.212	0.111	*	0.060	0.287		-0.560	0.352	
BCHS	0.214	0.092	**	-0.157	0.126		0.483	0.304		-0.439	0.375	
BCLS	0.153	0.087	*	-0.045	0.117		0.417	0.285		-0.482	0.346	
Industry												
Agriculture	0.403	0.073	***	0.534	0.103	***	0.826	0.324	***	0.683	0.424	0.107
Industry	-	-	-	-	-	-	-	-	-	-	-	-
Building	0.137	0.065	**	0.003	0.102		0.389	0.234	*	-0.287	0.361	
Service	0.045	0.065		-0.029	0.092		0.346	0.211		0.015	0.276	
GDP rate	0.066	0.020	***	0.050	0.028	*	0.020	0.066		-0.056	0.097	
Reg. Unemployment rate	-0.006	0.003	*	0.000	0.005		-0.023	0.013	*	0.013	0.017	
Benefits (yes)	-0.051	0.041		-0.208	0.061	***	-0.034	0.143		-0.335	0.193	*
Previous situation (job search)												
Working	-	-	-	-	-	-	-	-	-	-	-	-
Studying	-0.202	0.125		0.996	0.129	***	-0.620	0.893		0.940	0.851	
Domestic work	-0.503	0.188	***	0.349	0.163	**	1.088	0.504	**	0.794	0.502	
Else (military service, etc.)	-0.090	0.124		-0.084	0.179		-0.108	0.481		0.042	0.615	
Search for a job of:												
Only full-time	0.395	0.052	***	0.332	0.078	***	-0.207	0.184		-0.123	0.238	
Full-time or part time	0.077	0.041	*	0.011	0.059		-0.079	0.150		-0.234	0.208	
Part time or full-time	-0.667	0.187	***	0.410	0.160	***	0.018	0.648		0.109	0.547	
Only part-time	-0.221	0.165		0.610	0.148	***	-0.639	0.509		-0.869	0.587	

Accept a job in another city, occupation, of less income , with lower category?												
Yes (all)	-0.443	0.162	***	-0.967	0.279	***	-1.439	1.068		-0.171	1.079	
At least one	-0.537	0.046	***	-0.788	0.065	***	-0.153	0.168		-0.566	0.206	***
No/I don't know	-	-	-	-	-	-	-	-	-	-	-	-
Previous job tenure (months)	-0.004	0.001	***	-0.001	0.001		-0.002	0.001	**	0.002	0.001	*
Dummy years												
1992	-	-	-	-	-	-	-	-	-	-	-	-
1993	-0.024	0.095		-0.402	0.126	***	-0.406	0.318		-0.049	0.465	
1994	0.201	0.111	*	-0.356	0.155	**	-0.185	0.372		-0.136	0.543	
1995	0.326	0.107	***	-0.382	0.150	***	0.014	0.384		-0.344	0.551	
1996	0.310	0.113	***	-0.450	0.156	***	-0.284	0.444		-0.022	0.597	
1997	0.346	0.130	***	-0.462	0.183	***	0.131	0.473		-0.228	0.754	
1998	0.551	0.128	***	0.087	0.173		0.601	0.453		0.707	0.644	
1999	0.445	0.135	***	-0.127	0.184		0.634	0.493		0.943	0.678	
2000	0.707	0.126	***	0.083	0.173		0.312	0.442		0.971	0.614	
2001	0.559	0.122	***	0.059	0.163		1.439	0.446	***	1.617	0.609	***
2002	0.705	0.110	***	0.595	0.141	***	0.716	0.381	*	1.956	0.512	***
2003	0.736	0.120	***	0.444	0.158	***	0.724	0.415	*	1.625	0.555	***

Mass points and probability

ε_1 (s.e.)	-8.785(0.233)***	-8.049(0.814)***
ε_2 (s.e.)	-5.102(0.197)***	-4.341(0.679)***
Pr(ε_1)	0.536	0.611
Pr(ε_2)	0.464	0.389
Observations (indiv.-spell)	69,841	7,812
Log Likelihood function	-28,497.460	-2,485.687

^a These estimations also include the following variables: relation with reference person, dummies of exit and dummies for the baseline hazard rates.

^b *** indicates significance at 1 percent; ** indicates significance at 5 percent; * indicates significance at 10 percent.

Table A.6. Estimation results for transitions from U to permanent job, temporary job, self-employment or OLF (U= unemployment, OLF= out of labour force). EPA linked files (1992-2004). Job losers.

JOB LOSERS												
	U→permanent job			U→temporary job			U→self-employment			U→OLF		
	Param	S.E.	Sign.	Param.	S.E.	Sign.	Param.	S.E.	Sign.	Param.	S.E.	Sign.
Gender (women)	0.136	0.143		-0.124	0.037	***	-0.524	0.215	***	0.011	0.061	
Age groups												
16-24	0.179	0.137		-0.044	0.035		-0.358	0.186	*	0.446	0.060	***
25-34	-	-	-	-	-	-	-	-	-	-	-	-
35-49	-0.443	0.147	***	-0.255	0.038	***	-0.117	0.178		-0.133	0.061	**
50-64	-0.603	0.215	***	-0.671	0.058	***	-1.024	0.300	***	0.432	0.079	***
Marital status												
Married	0.206	0.197		0.132	0.052	***	0.123	0.262		-0.328	0.094	***
Single, widow or divorced	-	-	-	-	-	-	-	-	-	-	-	-
Women and married	-0.211	0.291		-0.563	0.084	***	-0.633	0.522		0.809	0.123	***
Type of sector												
Public	-0.425	0.176	**	0.143	0.039	***	-0.381	0.256		0.082	0.061	
Private or else	-	-	-	-	-	-	-	-	-	-	-	-
Cause of exit last job												
End of contract	-0.356	0.153	**	0.199	0.051	***	-0.985	0.181	***	-0.288	0.063	***
Layoff	-0.170	0.206		-0.200	0.071	***	-1.145	0.281	***	-0.306	0.094	***
Other involuntary	-0.796	0.371	**	-0.074	0.098		0.344	0.249		-0.248	0.134	*
Voluntary	-	-	-	-	-	-	-	-	-	-	-	-
Educational level												
No studies	-	-	-	-	-	-	-	-	-	-	-	-
Primary	-0.137	0.222		-0.087	0.051	*	0.485	0.269	*	-0.206	0.075	***
EGB	0.048	0.231		-0.055	0.054		0.396	0.293		-0.177	0.081	**
BUP	0.346	0.269		-0.183	0.072	**	0.034	0.410		0.224	0.099	**
FP	-0.003	0.259		-0.046	0.062		0.362	0.334		-0.255	0.096	***
University	0.055	0.304		-0.046	0.077		0.423	0.402		-0.192	0.117	*
Job category last job												
WCHS	-	-	-	-	-	-	-	-	-	-	-	-
WCLS	-0.149	0.199		0.055	0.057		-0.591	0.249	**	-0.037	0.084	
BCHS	0.356	0.223		0.188	0.063	***	-0.350	0.262		0.162	0.098	*
BCLS	0.194	0.206		0.153	0.060	***	-0.748	0.259	***	0.194	0.089	**
Industry												
Agriculture	-0.572	0.235	***	0.433	0.051	***	0.295	0.237		0.544	0.081	***
Industry	-	-	-	-	-	-	-	-	-	-	-	-
Building	-0.290	0.176	*	0.189	0.045	***	0.070	0.195		0.053	0.082	
Service	0.271	0.157	*	0.063	0.045		-0.137	0.219		0.162	0.071	**
GDP rate	0.056	0.043		0.026	0.012	**	0.063	0.055		-0.089	0.018	***
Reg. Unemployment rate	-0.013	0.009		-0.009	0.002	***	0.000	0.011		0.008	0.004	**
Benefits (yes)	-0.094	0.114		-0.041	0.029		-0.504	0.149	***	-0.131	0.048	***
Constant	-5.329	0.686	***	-3.475	0.177	***	-3.987	0.765	***	-3.652	0.235	***
Observations (indiv.-spell)	88,356											
Likelihood function	-38,045.524											

^a These estimations also include all the variables included in Table 3.

^b *** indicates significance at 1 percent; ** indicates significance at 5 percent; * indicates significance at 10 percent.

Table 1. Specification tests.

Test for IIA Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives	$\chi^2(P>\chi^2)$
Hausman Omitted: Employment Omitted: OLF	5.109(1.00) 2.504(1.00)
Small-Hsiao Omitted: Employment Omitted: OLF	40.881(0.978) 54.207(0.719)
Wald and LR test for combining outcomes Ho: All coefficients except intercepts associated with given pair of outcomes are 0 (i.e., categories can be collapsed)	
Wald test Comb.employment and OLF Comb.employment and unemployment Comb. OLF and unemployment	2337.950(0.00) 3267.025(0.00) 2461.934 (0.00)
LR test Comb.employment and OLF Comb.employment and unemployment Comb. OLF and unemployment	2646.359(0.00) 4284.823(0.00) 3748.929(0.00)

Table 2. Specification tests for number of mass points (unobserved heterogeneity).

	All sample	Job losers	Workers without previous experience
Test for number of mass points	$\chi^2(P>\chi^2)$	$\chi^2(P>\chi^2)$	$\chi^2(P>\chi^2)$
LR test (H ₀ :unobserved heterogeneity (two mass points) is 0)	1.144(0.564)	0.922(0.631)	1.591(0.451)
Information Criteria	All sample	Job losers	Workers without previous experience
AIC	IC	IC	IC
No mass points	-44195.307	-35695.450	-8483.166
Two mass points	-44194.735	-35694.989	-8483.000
BIC			
No mass points	-44067.830	-35569.923	-8381.345
Two mass points	-44067.258	-35569.462	-8381.179
HIQ			
No mass points	-44066.010	-35568.144	-8379.805
Two mass points	-44065.438	-35567.683	-8379.639

Table 3. Estimation results for the entire sample, job losers and workers without previous labour experience (U= unemploy., OLF= out of labour force). EPA linked files (1992-2004).

	ALL						JOB LOSERS						WITHOUT LABOUR EXPERIENCE					
	U→JOB			U→OLF			U→JOB			U→OLF			U→JOB			U→OLF		
	Param	S.E.	Sign.	Param.	S.E.	Sign.	Param.	S.E.	Sign.	Param.	S.E.	Sign.	Param.	S.E.	Sign.	Param.	S.E.	Sign.
Gender (women)	-0.144	0.032	***	-0.130	0.044	***	-0.122	0.036	***	0.010	0.061		-0.224	0.076	***	-0.244	0.065	***
Age groups																		
16-24	-0.060	0.032	*	0.406	0.052	***	-0.040	0.034		0.460	0.060	***	-0.231	0.105	**	0.186	0.108	*
25-34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35-49	-0.269	0.036	***	-0.110	0.056	**	-0.260	0.036	***	-0.141	0.061	**	-0.427	0.226	*	0.133	0.158	
50-64	-0.691	0.055	***	0.412	0.073	***	-0.680	0.055	***	0.420	0.079	***	-0.825	0.371	***	0.289	0.221	
Marital status																		
Married	0.130	0.049	***	-0.403	0.088	***	0.139	0.050	***	-0.320	0.094	***	0.252	0.411		-0.197	0.434	
Single, widow or divorced	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Women and married	-0.528	0.078	***	0.926	0.111	***	-0.539	0.081	***	0.795	0.122	***	-0.752	0.461	*	0.640	0.455	
Type of sector																		
Public	0.102	0.038	***	0.083	0.061		0.102	0.038	***	0.086	0.061		-	-	-	-	-	-
Private or else	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cause of exit last job																		
End of contract	0.107	0.047	**	-0.292	0.063	***	0.103	0.047	**	-0.290	0.063	***	-	-	-	-	-	-
Layoff	-0.241	0.066	***	-0.311	0.094	***	-0.241	0.066	***	-0.305	0.094	***	-	-	-	-	-	-
Other involuntary	-0.026	0.088		-0.305	0.132	**	-0.035	0.089		-0.238	0.134	*	-	-	-	-	-	-
Voluntary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Educational level																		
Illiterate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Primary education	-0.075	0.048		-0.238	0.069	***	-0.067	0.049		-0.208	0.075	***	-0.160	0.288		-0.422	0.181	**
Compulsory education	-0.042	0.051		-0.216	0.074	***	-0.035	0.052		-0.188	0.082	**	-0.078	0.281		-0.382	0.180	**
Post-compulsory education	-0.180	0.066	***	0.179	0.085	**	-0.137	0.069	**	0.215	0.099	**	-0.402	0.298		0.005	0.189	
Vocational education	-0.019	0.058		-0.365	0.084	***	-0.031	0.060		-0.264	0.096	***	0.061	0.286		-0.629	0.191	***
University degree	-0.037	0.067		-0.361	0.093	***	-0.029	0.074		-0.201	0.117	*	-0.141	0.287		-0.659	0.195	***
Job category last job																		
WCHS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WCLS	0.019	0.053		-0.071	0.081		0.013	0.054		-0.037	0.084		-	-	-	-	-	-
BCHS	0.165	0.058	***	0.067	0.093		0.168	0.060	***	0.167	0.098	*	-	-	-	-	-	-
BCLS	0.120	0.054	**	0.089	0.083		0.117	0.056	**	0.193	0.089	**	-	-	-	-	-	-
Industry																		
Agriculture	0.396	0.048	***	0.467	0.079	***	0.380	0.049	***	0.517	0.081	***	-	-	-	-	-	-
Industry	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Building	0.155	0.043	***	-0.002	0.082		0.156	0.043	***	0.042	0.082		-	-	-	-	-	-
Service	0.069	0.043	*	0.150	0.071	**	0.066	0.043		0.158	0.071	**	-	-	-	-	-	-

GDP rate	0.042	0.013	***	0.002	0.019		0.045	0.014	***	-0.011	0.022		0.027	0.041		0.029	0.034	
Reg. Unemployment rate	-0.010	0.002	***	0.013	0.003	***	-0.008	0.002	***	0.013	0.004	***	-0.030	0.006	***	0.014	0.005	***
Benefits (yes)	-0.059	0.028	**	-0.142	0.047	***	-0.061	0.028	**	-0.135	0.048	***	-	-	-	-	-	-
Previous situation (job search)																		
Working	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Studying	-0.192	0.065	***	0.718	0.073	***	-0.160	0.085	*	0.970	0.091	***	-0.140	0.100		0.479	0.104	***
Domestic work	-0.267	0.082	***	0.294	0.076	***	-0.272	0.101	***	0.236	0.095	***	-0.146	0.187		0.086	0.165	
Else (military service, etc.)	-0.046	0.061		0.085	0.088		-0.025	0.071		0.002	0.119		-	-	-	-	-	-
Search for a job of:																		
Only full-time	0.234	0.033	***	0.174	0.051	***	0.241	0.034	***	0.225	0.060	***	0.179	0.114		0.077	0.103	
Full-time or part time	0.024	0.027		-0.030	0.039		0.022	0.028		0.014	0.047		0.046	0.079		-0.098	0.071	
Part time or full-time	-0.387	0.113	***	0.383	0.088	***	-0.440	0.130	***	0.500	0.113	***	-0.176	0.231		0.208	0.144	
Only part-time	-0.258	0.094	***	0.502	0.070	***	-0.236	0.109	**	0.516	0.097	***	-0.294	0.188		0.417	0.104	***
Accept a job in another city, occupation, of less income, with lower category?																		
Yes (all)	-0.242	0.038	***	-0.514	0.059	***	-0.245	0.041	***	-0.516	0.072	***	-0.230	0.111	**	-0.480	0.106	***
At least one	-0.239	0.031	***	-0.295	0.042	***	-0.244	0.033	***	-0.395	0.051	***	-0.221	0.089	***	-0.100	0.075	
No/I don't know	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Previous experience (yes)	0.316	0.091	***	0.034	0.120		-	-	-	-	-	-	-	-	-	-	-	-
Dummy years																		
1992	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1993	-0.050	0.060		-0.144	0.081	*	-0.049	0.063		-0.178	0.097	*	-0.051	0.188		-0.064	0.148	
1994	0.100	0.070		-0.133	0.098		0.118	0.074		-0.139	0.122		-0.084	0.213		-0.100	0.169	
1995	0.166	0.068	**	-0.171	0.097	*	0.189	0.072	***	-0.237	0.121	**	-0.087	0.209		-0.063	0.167	
1996	0.164	0.071	**	-0.179	0.103	*	0.175	0.075	***	-0.190	0.126		0.034	0.218		-0.159	0.179	
1997	0.283	0.083	***	-0.064	0.121		0.311	0.087	***	-0.056	0.147		0.039	0.257		-0.053	0.215	
1998	0.340	0.082	***	0.221	0.117	*	0.348	0.087	***	0.280	0.142	**	0.214	0.248		0.129	0.207	
1999	0.365	0.087	***	0.225	0.124	*	0.363	0.092	***	0.285	0.151	*	0.286	0.261		0.094	0.220	
2000	0.476	0.083	***	0.374	0.118	***	0.462	0.088	***	0.359	0.141	***	0.468	0.248	*	0.409	0.217	*
2001	0.458	0.076	***	0.484	0.107	***	0.472	0.080	***	0.536	0.129	***	0.300	0.226		0.353	0.195	***
2002	0.458	0.070	***	0.790	0.095	***	0.497	0.073	***	0.838	0.114	***	0.110	0.220		0.695	0.173	***
2003	0.420	0.077	***	0.717	0.104	***	0.448	0.081	***	0.697	0.124	***	0.132	0.246		0.758	0.197	***
Constant	-3.248	0.150	***	-3.776	0.193	***	-3.207	0.169	***	-3.736	0.236	***	-1.770	0.456	***	-3.599	0.406	***
Observations (indiv.-spell)				111,155						88,356						22,799		
Likelihood function				-44,065.307						-35,567.45						-8,379.166		

^a These estimations also include the following variables: relation with reference person, dummies exit and monthly dummies for the baseline hazard rates. ^b *** indicates significance at 1 percent; ** indicates significance at 5 percent; * indicates significance at 10 percent.

Table 4. Estimation results on previous job tenure for all the unemployed and for job losers (U= unemployment, OLF= out of labour force). EPA linked files (1992-2004).

	ALL						JOB LOSERS					
	U→JOB			U→OLF			U→JOB			U→OLF		
	Param	S.E.	Sign.	Param.	S.E.	Sign.	Param.	S.E.	Sign.	Param.	S.E.	Sign.
Previous job tenure												
0-6 months	-	-	-	-	-	-	-	-	-	-	-	-
6-12 months	-0.079	0.036	**	-0.123	0.063	**	-0.097	0.036	***	-0.103	0.064	
12-24 months	-0.187	0.050	***	-0.041	0.082		-0.207	0.051	***	-0.009	0.083	
24-36 months-	-0.220	0.058	***	-0.132	0.096		-0.243	0.058	***	-0.104	0.097	
More than 36 months	-0.491	0.050	***	0.015	0.069		-0.523	0.051	***	0.068	0.071	
Observations (indiv.-spell)	111,155						88,356					
Likelihood function	-44,060.955						-35,544.965					

^a These estimations also include the whole set of variables included in Table 3 except the cause of exit from last job and the unemployment benefits variables.

^b *** indicates significance at 1 percent; ** indicates significance at 5 percent; * indicates significance at 10 percent.

Table 5. Estimation results for workers who entered unemployment due to either the end of contract or layoff (U= unemployment, OLF= out of labour force). EPA linked files (1992-2004).

	Previous end of contract						Previous Layoff					
	U→JOB			U→OLF			U→JOB			U→OLF		
	Param	S.E.	Sign.	Param.	S.E.	Sign.	Param.	S.E.	Sign.	Param.	S.E.	Sign.
Gender (women)	-0.118	0.039	***	0.012	0.069		-0.081	0.156		-0.363	0.285	
Age groups												
16-24	-0.083	0.037	**	0.479	0.068	***	0.257	0.145	*	0.408	0.264	
25-34	-	-	-	-	-	-	-	-	-	-	-	-
35-49	-0.242	0.040	***	-0.117	0.070	*	-0.276	0.139	**	-0.209	0.234	
50-64	-0.628	0.061	***	0.377	0.094	***	-0.915	0.209	***	0.439	0.281	
Marital status												
Married	0.160	0.056	***	-0.456	0.110	***	0.392	0.191	**	-0.404	0.312	
Single, widow or divorced	-	-	-	-	-	-	-	-	-	-	-	-
Women and married	-0.523	0.092	***	0.846	0.150	***	-1.313	0.307	***	1.271	0.417	***
Type of sector												
Public	0.080	0.040	**	0.098	0.066		0.067	0.258		0.863	0.322	***
Private or else	-	-	-	-	-	-	-	-	-	-	-	-
Educational level												
Illiterate	-	-	-	-	-	-	-	-	-	-	-	-
Primary education	-0.058	0.053		-0.196	0.085	**	-0.071	0.216		-0.461	0.280	*
Compulsory education	-0.018	0.057		-0.159	0.093	*	0.147	0.232		-0.542	0.324	*
Post-compulsory education	-0.129	0.077	*	0.225	0.116	**	-0.023	0.269		-0.597	0.384	
Vocational education	-0.006	0.066		-0.151	0.110		-0.187	0.254		-0.970	0.367	***
University degree	-0.053	0.081		-0.106	0.135		-0.044	0.325		-1.318	0.496	***
Job category last job												
WCHS	-	-	-	-	-	-	-	-	-	-	-	-
WCLS	-0.074	0.063		0.003	0.106		0.257	0.211		-0.345	0.271	
BCHS	0.060	0.070		0.200	0.122	*	0.539	0.224	**	-0.089	0.302	
BCLS	0.011	0.066		0.217	0.112	**	0.454	0.216	**	-0.196	0.286	
Industry												
Agriculture	0.329	0.053	***	0.599	0.093	***	0.328	0.237		0.507	0.362	
Industry	-	-	-	-	-	-	-	-	-	-	-	-
Building	0.100	0.048	**	0.123	0.096		0.168	0.160		-0.357	0.308	
Service	0.019	0.048		0.169	0.085	**	0.137	0.150		0.039	0.220	
GDP rate	0.041	0.015	***	0.013	0.026		-0.003	0.054		-0.094	0.085	
Reg. Unemployment rate	-0.009	0.002	***	0.014	0.004	***	-0.019	0.009	**	0.025	0.016	
Benefits (yes)	-0.017	0.031		-0.118	0.054	**	-0.052	0.110		-0.180	0.169	
Previous situation (job search)												
Working	-	-	-	-	-	-	-	-	-	-	-	-
Studying	-0.135	0.099		1.055	0.106	***	-0.519	0.536		0.911	0.556	*
Domestic work	-0.523	0.155	***	0.332	0.130	***	0.491	0.333		0.456	0.409	
Else (military service, etc.)	-0.077	0.091		-0.044	0.158		0.098	0.317		0.248	0.498	
Search for a job of:												
Only full-time	0.266	0.038	***	0.245	0.069	***	-0.043	0.132		0.051	0.202	
Full-time or part time	0.036	0.031		0.007	0.054		-0.071	0.114		-0.221	0.183	
Part time or full-time	-0.562	0.155	***	0.576	0.128	***	0.312	0.546		0.296	0.474	
Only part-time	-0.092	0.128		0.635	0.122	***	-0.631	0.449		-0.946	0.550	*
Accept a job in another city, occupation, of less income, with lower category?												
Yes (all)	-0.287	0.045	***	-0.489	0.082	***	-0.103	0.173		-0.451	0.302	
At least one	-0.278	0.037	***	-0.340	0.060	***	-0.128	0.130		-0.523	0.178	***
No/I don't know	-	-	-	-	-	-	-	-	-	-	-	-
	-0.004	0.001	***	0.001	0.001		-0.002	0.001	***	0.002	0.001	***

Previous job tenure (months)												
Dummies exit												
1 st quarter	-	-	-									
2 nd quarter	0.092	0.038	***	-0.024	0.065		-0.210	0.141		0.181	0.212	
3 rd quarter	0.098	0.038	***	0.041	0.065		0.075	0.134		0.132	0.213	
4 th quarter	0.142	0.038	***	0.106	0.064	*	0.035	0.137		0.120	0.216	
Dummy years												
1992	-	-	-	-	-	-	-	-	-	-	-	-
1993	0.030	0.070		-0.140	0.112		-0.433	0.240	*	-0.139	0.373	
1994	0.178	0.083	**	-0.159	0.141		-0.009	0.280		0.120	0.465	
1995	0.276	0.080	***	-0.220	0.137		0.166	0.279		-0.272	0.482	
1996	0.271	0.083	***	-0.261	0.143	*	-0.201	0.320		0.159	0.536	
1997	0.346	0.097	***	-0.184	0.168		0.367	0.350		0.018	0.633	
1998	0.415	0.097	***	0.252	0.160		0.496	0.355		0.618	0.586	
1999	0.389	0.102	***	0.201	0.170		0.638	0.372	*	0.808	0.615	
2000	0.511	0.097	***	0.306	0.161	*	0.352	0.352		1.035	0.570	*
2001	0.481	0.089	***	0.446	0.148	***	0.898	0.325	***	1.267	0.546	***
2002	0.521	0.081	***	0.825	0.129	***	0.450	0.296		1.749	0.477	***
2003	0.477	0.089	***	0.622	0.142	***	0.537	0.313	*	1.393	0.498	***
Constant	-3.015	0.186	***	-4.189	0.276	***	-2.996	0.593	***	-3.254	0.782	***
Observations (indiv.-spell)	69,841						7,812					
Log Likelihood function	-28,620.486						-2,473.993					

^a These estimations also include the following variables: relation with reference person, and monthly dummies for the baseline hazard rates.

^b *** indicates significance at 1 percent; ** indicates significance at 5 percent; * indicates significance at 10 percent.

Table 6. Estimation results for transitions from U to permanent job, temporary job, self-employment or OLF (U= unemployment, OLF= out of labour force). EPA linked files (1992-2004). All sample.

ALL SAMPLE												
	U→permanent job			U→temporary job			U→ self-employment			U→OLF		
	Param	S.E.	Sign.	Param.	S.E.	Sign.	Param.	S.E.	Sign.	Param.	S.E.	Sign.
Gender (women)	0.074	0.129		-0.142	0.034	***	-0.534	0.180	***	-0.129	0.044	***
Age groups												
16-24	0.037	0.130		-0.060	0.033	*	-0.281	0.172	*	0.395	0.052	***
25-34	-	-	-	-	-	-	-	-	-	-	-	-
35-49	-0.448	0.144	***	-0.267	0.037	***	-0.093	0.176		-0.101	0.056	*
50-64	-0.577	0.209	***	-0.689	0.057	***	-0.968	0.292	***	0.425	0.073	***
Marital status												
Married	0.122	0.190		0.129	0.051	***	0.104	0.249		-0.414	0.088	***
Single, widow or divorced	-	-	-	-	-	-	-	-	-	-	-	-
Women and married	-0.180	0.281		-0.555	0.081	***	-0.587	0.488		0.939	0.111	***
Type of sector												
Public	-0.444	0.176	***	0.146	0.039	***	-0.408	0.255		0.079	0.061	
Private or else	-	-	-	-	-	-	-	-	-	-	-	-
Cause of exit last job												
End of contract	-0.357	0.152	**	0.204	0.051	***	-1.013	0.178	***	-0.292	0.063	***
Layoff	-0.178	0.206		-0.199	0.071	***	-1.154	0.280	***	-0.316	0.094	***
Other involuntary	-0.767	0.368	**	-0.062	0.097		0.299	0.245		-0.321	0.132	***
Voluntary	-	-	-	-	-	-	-	-	-	-	-	-
Job category last job												
WCHS	-	-	-	-	-	-	-	-	-	-	-	-
WCLS	-0.070	0.196		0.052	0.056		-0.547	0.244	**	-0.071	0.081	
BCHS	0.430	0.219	**	0.176	0.061	***	-0.312	0.254		0.057	0.093	
BCLS	0.279	0.201		0.147	0.058	***	-0.692	0.250	***	0.087	0.083	
Industry												
Agriculture	-0.550	0.234	**	0.449	0.050	***	0.271	0.236		0.495	0.079	***
Industry	-	-	-	-	-	-	-	-	-	-	-	-
Building	-0.308	0.175	*	0.189	0.045	***	0.066	0.194		0.008	0.081	
Service	0.279	0.157	*	0.065	0.045		-0.134	0.218		0.155	0.071	**
GDP rate	0.037	0.041		0.029	0.011	***	0.067	0.051		-0.079	0.015	***
Reg. Unemployment rate	-0.015	0.008	*	-0.012	0.002	***	0.000	0.010		0.008	0.003	***
Benefits (yes)	-0.104	0.114		-0.038	0.029		-0.521	0.148	***	-0.14	0.047	***
Previous experience(yes)	0.414	0.336		0.249	0.097	***	1.221	0.405	***	0.044	0.12	
Constant	-5.915	0.675	***	-3.407	0.156	***	-5.306	0.740	***	-3.686	0.192	***
Observations (indiv.-spell)	111,155											
Likelihood function	-46,913.391											

^a These estimations also include all the variables included in Table 3.

^b *** indicates significance at 1 percent; ** indicates significance at 5 percent; * indicates significance at 10 percent.

Figure 1. Inflow (%) into unemployment by origin (EPA linked files, 1992-2003).

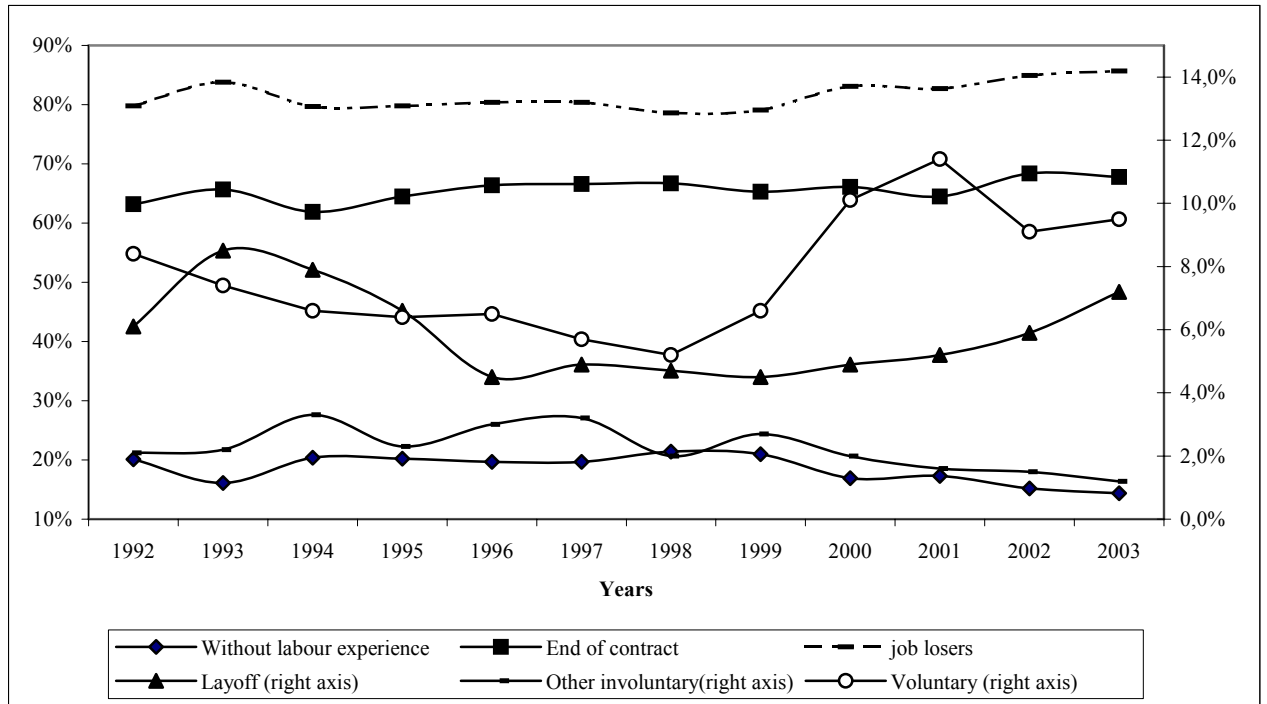


Figure 2. Destinations of outflow (%) of the unemployed after six quarters (EPA linked files, 1992-2003).



Figure 3. Destinations of outflow (%) of the unemployed after six quarters (EPA linked files ,1992-2003) for individuals without labour experience (WE) and job losers (JL).

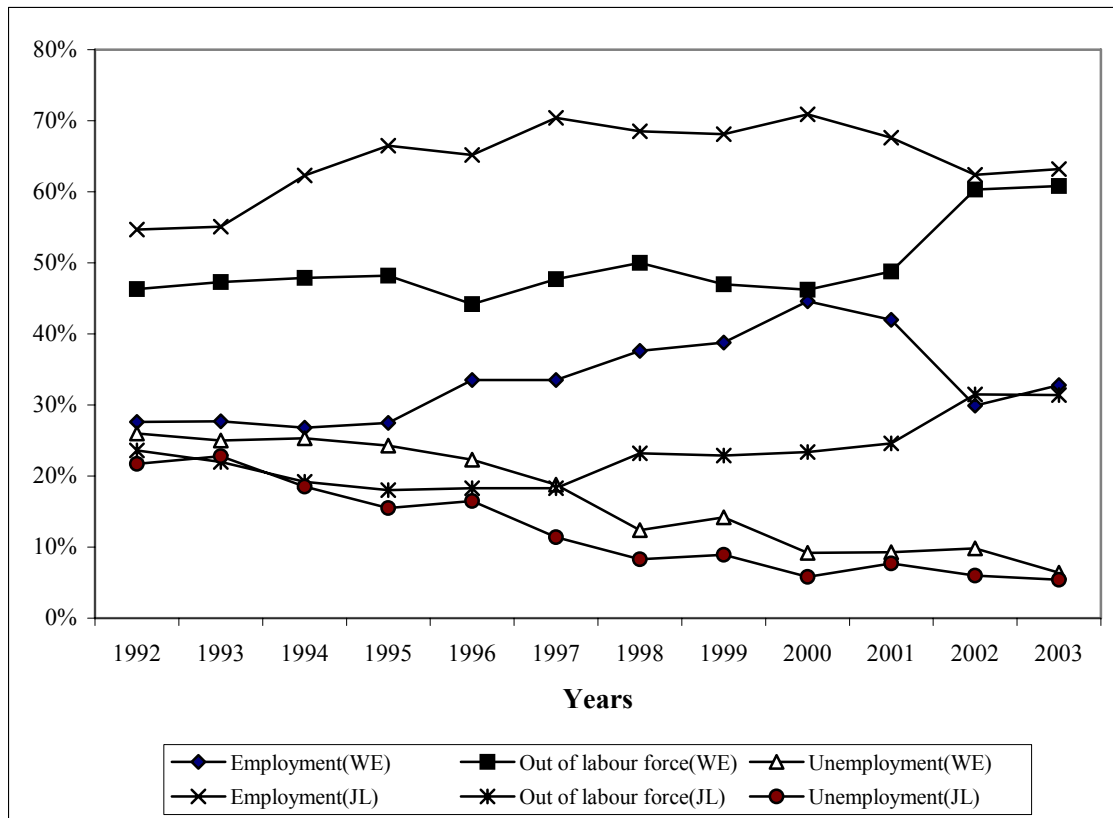


Figure 4. Percentage of unemployed workers who find a job, by cause of exit from last job (EPA linked files, 1992-2003).



Figure 5. Percentage of unemployed workers who exit to out of the labour force, by cause of exit from last job (EPA linked files, 1992-2003).



Figure 6. Percentage of unemployed workers who remain unemployed (censored observations), by cause of exit from last job (EPA linked files, 1992-2003).

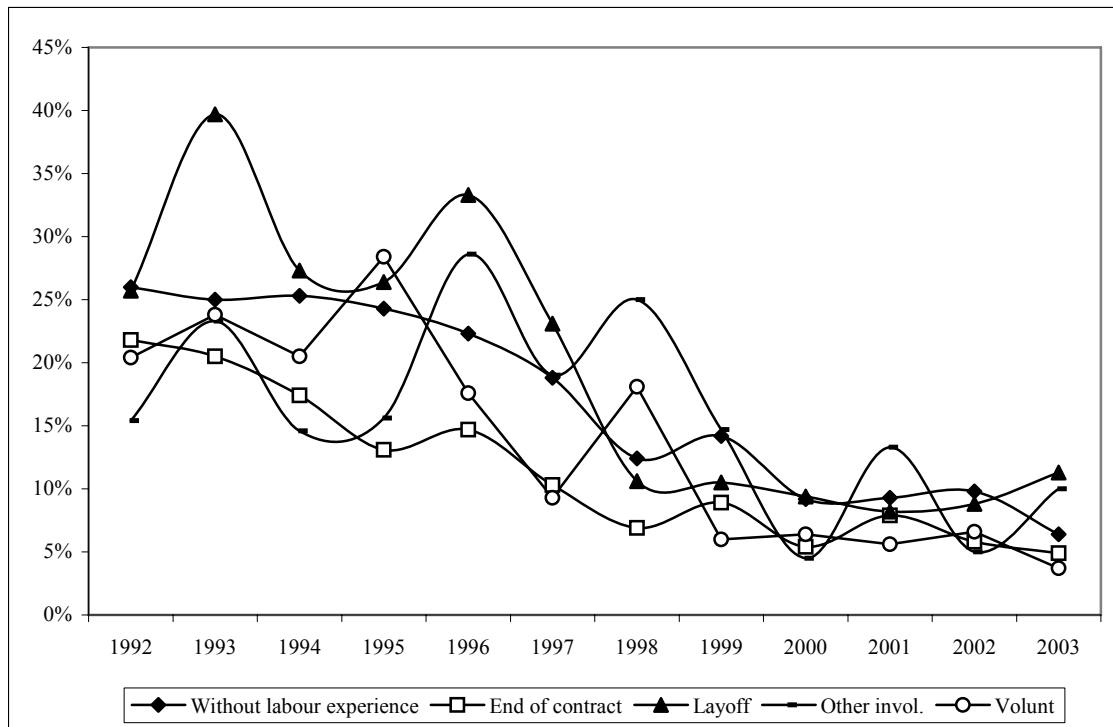


Figure 7. Survival function of exiting from unemployment to a job (JOB) or out of labour force (OLF), for job losers and individuals without job experience (EPA linked files, 1992-2003).

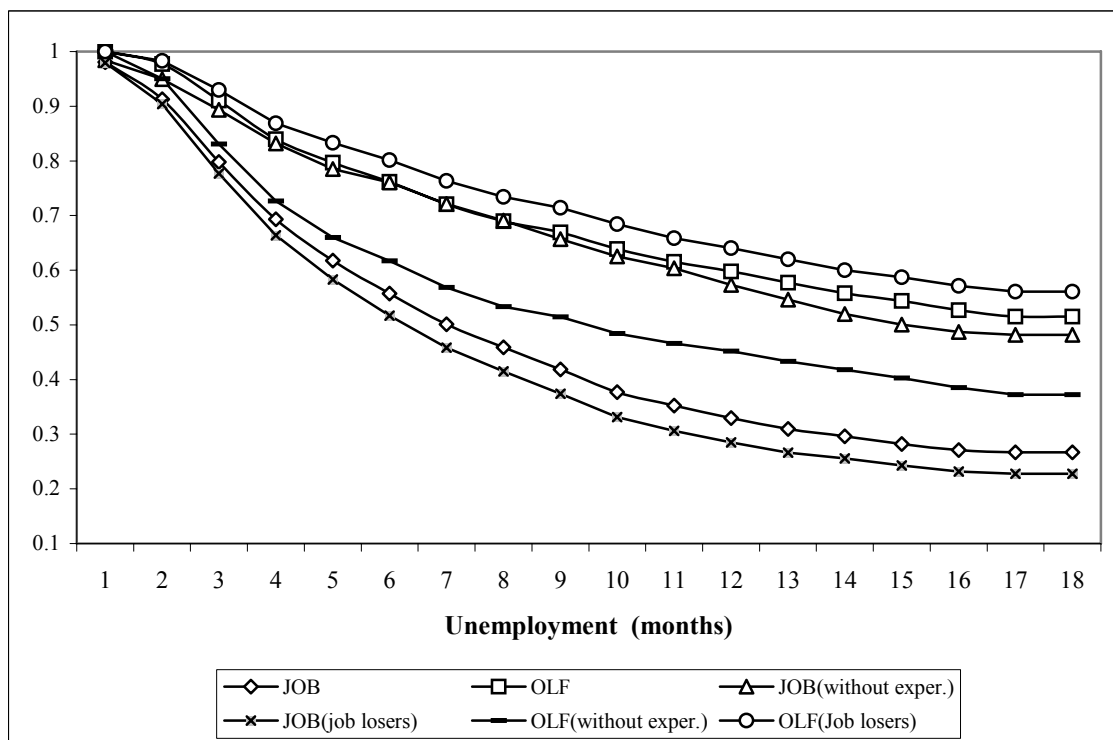


Figure 8. Survival function of exiting from unemployment to a job, by cause of exit from last job (EPA linked files, 1992-2003).

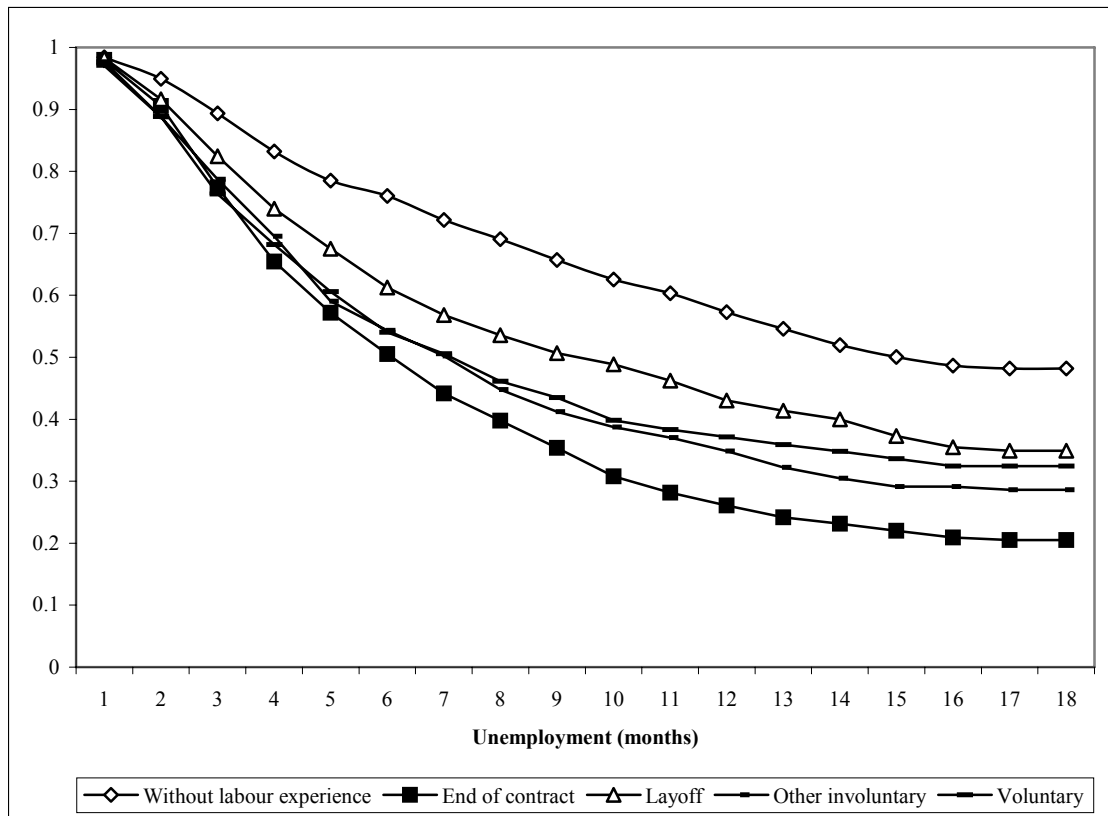


Figure 9. Survival function of exiting from unemployment to out of labour force, by cause of exit in the last job (EPA linked files, 1992-2003).

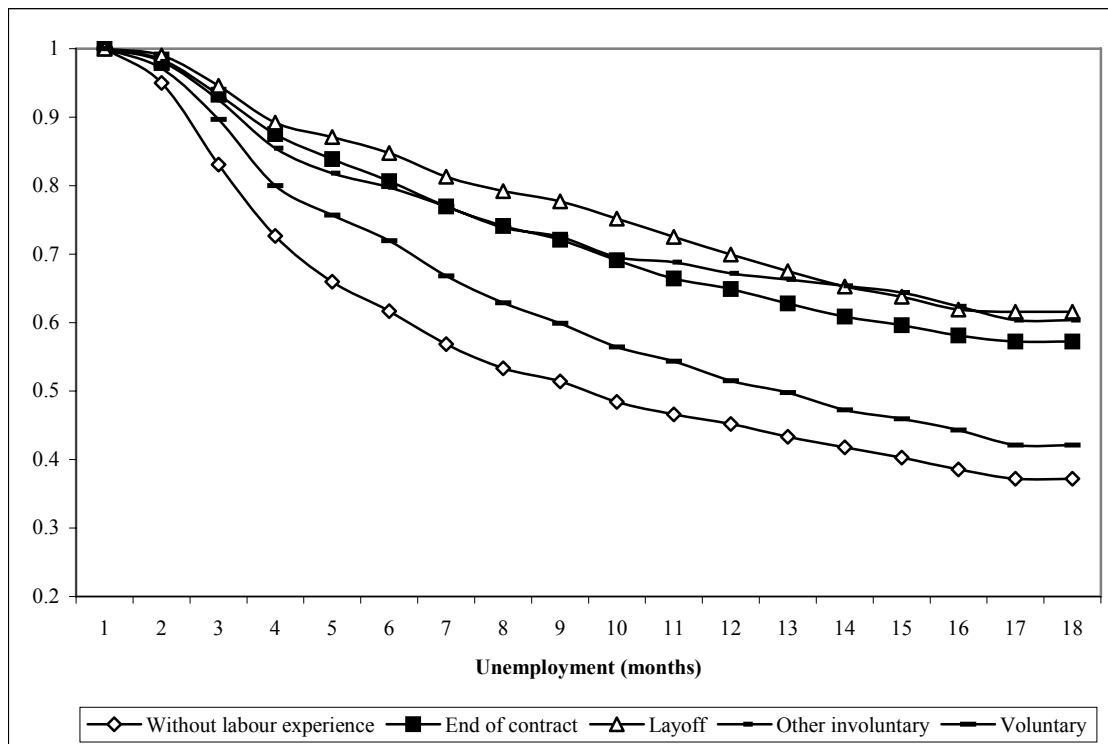
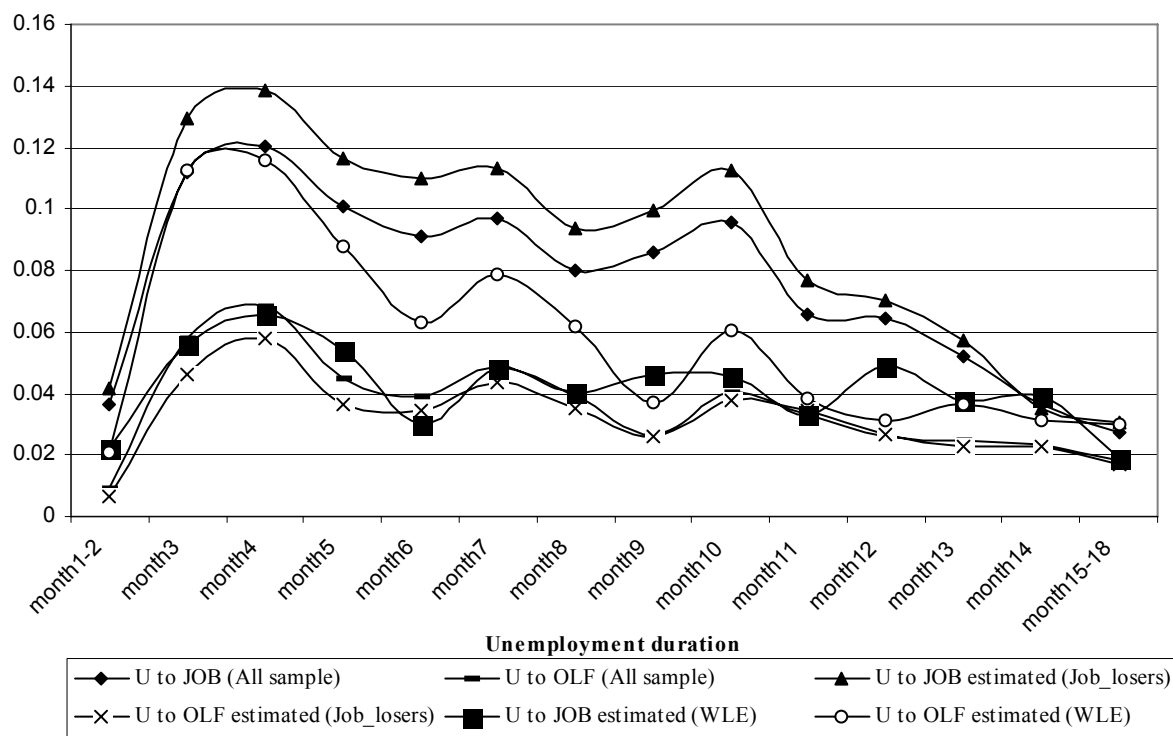


Figure 10. Estimated hazard rate of exiting from U to JOB and OLF for job losers and the unemployed without previous labour experience (WLE).



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