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Unemployment Duration and the Interactions Between Unemployment Insurance and Social Assistance*

Michele Pellizzari[†]

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Abstract

The existing studies of unemployment benefit and unemployment duration suggest that reforms that lower either the level or the duration of benefits should reduce unemployment. Despite the large number of such reforms implemented in Europe in the past decades, this paper presents evidence that shows no correlation between the reforms and the evolution of unemployment. This paper also provides an explanation for this fact by exploring the interactions between unemployment benefits and social assistance programmes. Unemployed workers who are also eligible, or expect to become eligible, for some social assistance programmes are less concerned about their benefits being reduced or terminated. They will not search particularly intensively around the time of benefit exhaustion nor will become particularly less choosy about job offers by reducing their reservation wages. Data from the European Community Household Panel (ECHP) are used to provide evidence to support this argument. Results show that, in fact, for social assistance recipients the probability of finding a job is not particularly higher during the last months of entitlement.

Keywords: Unemployment duration, unemployment insurance, social assistance.

JEL Codes: J64, J65

1 Introduction

The effect of unemployment insurance (UI) on unemployment duration is the object of many studies in a rather large literature. Two empirical findings are now widely accepted. First,

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as initially showed by Nickell (1979) and Lancaster (1979), higher benefits are associated with longer unemployment spells. Later, Moffit (1985) and Meyer (1990), having access to information about both the level and the duration of benefit entitlement at the individual level, were able to show a second important empirical finding, that the probability of exiting unemployment increases around the time of benefit exhaustion.

The literature also provides a comprehensive theoretical framework for interpreting these results. Mortensen (1974) develops a simple search model that easily delivers negative correlation between exit rates and unemployment benefits via search effort and reservation wages being respectively negatively and positively affected by income out of work. When UI entitlement expires, income out of work suddenly drops, inducing an instantaneous increase in search effort and a decrease in the reservation wage, thus providing an explanation for the observed higher exits rates around the time of exhaustion. Cahuc et al. (2000) recently extended the model by endogenising wages and allowing the unemployment benefit to gradually decline over time.

On the basis of these findings, one would expect reforms that reduce either the level or the duration of unemployment benefits to have a positive impact on unemployment rates. However, this prediction does not seem to conform with the recent experience of many European countries. Figure 1 plots the time series of the unemployment rate for selected European countries. The vertical lines indicate the implementation years of reforms that have modified either the level or the duration of unemployment benefits. The solid bars refer to changes in the amount of the benefits and the dashed lines to changes in their duration. The colours indicate the direction of the change: red for reductions (either in the amount or duration of benefits) and green for increases.

The first message of figure 1 is that the past 20 years have been constellated by labour market reforms in virtually all European countries. Moreover, despite the coexistence in many countries of reforms of opposite sign, often implemented close to each other (in Finland and France for example), most of the changes (19 out of 29) modified the system towards less generous benefits paid for a shorter time. However, already a simple visual inspection of figure 1 suggests that the correlation between these reforms and the evolution of unemployment is rather weak.

More convincing evidence can be produced for those countries where reforms took place during the years covered by the European Community Household Panel (ECHP)¹. This is possible for seven countries: Austria, Belgium, Finland, Germany, Greece, Ireland and the United Kingdom. Table 1 shows the conditional difference in the probability of leaving unemployment between individuals who entered unemployment before and after the reform. The estimates are produced with a standard hazard model controlling for gender, age, health status, education, marital status, family size, presence of children, household income and regional unemployment². Results confirm the visual impression from figure 1: reforms that reduced the level or the duration of unemployment benefits did not have a significant effect on the probability of finding a job. There are marginally significant effects only in Austria (where the estimate is actually negative) and Ireland.

This paper suggests an explanation for the failure of so many reforms of the unemployment compensation system in reducing unemployment. European countries all have complex welfare states and unemployment compensation is only one element of the system that necessarily interacts in various ways with all the other programmes. In particular, many unemployed persons receive other social assistance benefits together with their unemployment insurance. Most of these other benefits are means-tested, therefore a reduction or an anticipated withdrawal of unemployment insurance is often compensated, at least partly, by higher transfers from other programmes. Moreover, even those unemployed who only receive unemployment insurance may still expect to become eligible for some social assistance programmes when their benefits expire. For these workers, too, reductions or exhaustion of unemployment insurance are less of a concern and do not affect much their search effort nor their reservation wages.

These arguments will be tested empirically using data from the European Community Household Panel, which allow to reconstruct monthly labour market histories for samples of individuals from all EU countries. Contrary to most studies in this literature that use data from administrative sources, this paper exploits survey data which have two main advantages. First, the ECHP contains information on numerous types of social transfers

¹Data are described in section 4.

²A fuller description of the econometric model is provided in section 4.1.

and thus permits to identify UI recipients who are also entitled to other social assistance programmes. Second, by relying on self-reported information about one's labour market status it is possible to reconstruct unemployment spells that end into employment and into inactivity separately. Hence, I will be able to estimate the probability of finding a job rather than that of leaving unemployment or the UI registry. This is an important innovation: in the sample used in this study exits into inactivity represent about 15% of total exits from unemployment.

However, using survey rather than administrative sources necessarily lowers the quality of the data on UI payments and durations. In particular, the total amount of UI benefits received by each individual in the ECHP is only recorded annually (not monthly) and the duration of payments is not known. This is solved by imputing benefit entitlements on the basis of individual characteristics available from the ECHP and institutional information about the functioning of the welfare system in each country and year.

Results indicate that UI recipients who are also entitled to other social assistance programmes are less sensitive to changes in the level of their unemployment benefits and show much less pronounced spikes in the re-employment probability around the time of benefit exhaustion.

The importance of interactions between welfare programmes has lately been recognised by both academicians and policy makers. Belot and van Ours (2000) provide evidence from macro data showing that countries where unemployment has fallen often owe their success to comprehensive rather than piecewise reforms of labour market policies. A theoretical justification for the importance of these interactions is discussed in Coe et al. (1997) within a search and matching framework. Despite the acknowledged importance of potential overlappings between welfare programmes, specific evidence from micro data is still lacking. This paper aims at filling this gap by providing detailed evidence on one specific interaction, that between the unemployment benefit system and other social assistance programmes, namely family cash benefits, sickness and invalidity benefits, housing benefits and low-income benefits (minimum income schemes).

The paper is organized as follows. Section 2 briefly describes the institutional details of unemployment benefits and other social assistance programmes in Europe. Section 3 shows

how interactions between welfare programmes can be analysed in a standard search model. Section 4 describes the data and the empirical strategy used in section 5 for the analysis of re-employment probabilities. Section 6 concludes.

2 Unemployment Compensation and Social Assistance in Europe

2.1 Institutional Framework

European countries all have large and well developed welfare states, nevertheless there still exists a large variation in institutional details across countries. The comparison of different types of welfare states in Europe has been the object of a large number of studies in both the economic and the political literature³. This section simply aims at providing a very general overview of the welfare programmes available in the European countries during the period covered by the empirical analysis that will follow.

Excluding old age pensions (which are still the major component of welfare provision in many countries), welfare benefits are generally grouped into 5 large categories: unemployment related benefits, family cash benefits, invalidity benefits/pensions, housing benefits and general social assistance. In kind benefits are not considered here, even if they might play an important role for some groups of beneficiaries (disabled persons, large families, et.).

Unemployment benefits are generally distinguished into unemployment insurance and unemployment assistance. Unemployment insurance is a rather standard insurance scheme by which workers who have paid sufficient contributions out of their salaries are allowed to receive a compensation if they become unemployed. Unemployment insurance is usually rather generous but benefits are typically paid only for a limited period of time (with Belgium, where the duration of payments is unlimited, being a notable exception) and various re-eligibility conditions apply for repeated spells of unemployment. Clearly then, unemployment insurance does not cover the whole population of jobseekers: young workers - and anybody who has not paid enough contributions - and the long term unemployed - who have exhausted

³Bertola et. al (2000), Esping-Andersen (1990), Ferrera (1998).

their benefits - cannot claim the benefit. For this reason many countries have introduced a parallel unemployment assistance programme that pays a (typically lower) benefit to those who, for any reason, are not entitled to unemployment insurance. Along with these general characteristics, the details of the unemployment benefit schemes vary widely across European countries.

Invalidity benefits are another important component of the welfare system and often take the form of pensions. The typical scheme pays a benefit to individuals whose capacity to work and earn is substantially reduced by some sort of invalidity. Almost all countries also require some kind of contribution conditions. There are few exceptions to this general rule: in the Netherlands there is no qualifying conditions while in Finland and Sweden the main conditions relate to residence in the country rather than to contribution records. The level of the benefit is usually determined on the basis of a measure of "normalised" earnings, i.e. earnings of a similar person who does not suffer from the invalidity. In some countries invalidity benefits also vary with age but payments are always carried over to retirement, at which point an invalidity pension is typically converted into an old age pension.

Family cash benefits are the most important welfare programme that is not related to employment. In the majority of countries (10 out of 15) family benefits are actually paid to any household with children, regardless of their income. These benefits are paid until the child reaches a certain age and the amount varies according to the child's age and to the number of children in the household. Some countries also offer supplements for single parents. Children who undertake higher education or training are often allowed to receive benefits for some additional years above the age limit.

The provision of housing benefits is more varied. Some countries offer a generalised housing benefit available to everyone whose income is sufficiently low (Germany, France, Netherlands, Finland) while others simply provide specific housing supplements for those on low-income benefits (Ireland, Luxembourg, Austria and Portugal). Denmark and Sweden have both. Some countries do not offer any housing benefit but often social housing is available for low income families.

Finally, all countries, with the exception of Greece and Italy⁴, also provide a general

⁴A minimum income scheme was experimented in Italy between 1998 and 2002 (*Reddito Minimo*

social assistance scheme that aims at preventing poverty for those individuals or families who do not qualify for any of the other "categorical" benefit or who still remain under a variously defined income threshold. Qualifying conditions for this type of assistance are usually related to nationality, residence and age. All countries also require those who are able to work to prove that they are actually willing to take up job offers and beneficiaries are often required to participate in training or other active labour market programmes.

Synthetic tables that summarise the details of welfare programmes in the European countries can be found in appendix B.

2.2 Welfare Reforms in Europe

Table 2 presents a more complete description of the reforms indicated in figure 1, including additional details on changes in social assistance programmes as well. In the past two decades policy makers have apparently been listening to economists as many reforms have actually changed the unemployment compensation system in the direction of lower benefits paid for shorter periods.

Much less effort has been put in reforming other welfare programmes and one of the main claims of this paper will be that the scarce success of UI reforms is partly due to the lack of coordination with other parts of the welfare system.

Looking at table 2 some notable facts emerge. First, in the effort to reduce unemployment in the recession of the early 90s, there has been a clustering of reforms between 1992 and 1996. Secondly, the large majority of reforms clearly focused on unemployment benefits and have typically taken the form of reducing either the duration or the level of the benefits. Many countries have also tightened eligibility conditions or increased work requirements for the unemployed. Only few reforms addressed other welfare programmes and even fewer tried to comprehensively change several programmes (Germany in 1998, Ireland in 1993, the United Kingdom in 1996).

d'Inserimento) but was never introduced on a universal basis.

3 A simple theoretical framework

The interaction between unemployment benefits and social assistance can be analysed in the framework of a very standard search model. The theory in this section is a mere revised and simplified version of that in Mortensen (1977).

In each period t , an unemployed worker needs to invest leisure time (s_t) to search for job offers. These arrive with per-period probability αs_t from an exogenous wage distribution $F(\cdot)$ with support $(0, \bar{w}]$. In each period utility is a non-decreasing function of income (y_t) and leisure (l_t), $u(y_t, l_t)$ ⁵. For simplicity, assume that working time is constant and equal to h in all jobs and that the total endowment of leisure is normalised to 1. Then, per-period utility while unemployed with benefit b_t and searching for a job is $u(b_t, 1 - s_t)$, while a job that pays w_t generates a utility flow equal to $u(w_t, 1 - h)$. Unemployed workers also need to choose a reservation wage w_t^* : only wage offers above w_t^* are accepted, all others are turned down.

Under these assumptions the value of unemployment U at time t can be written as:

$$(1 + r)U_t = u(b_t, 1 - s_t) + \alpha s_t [\Pr \{w < w_t^*\} U_{t+1} + \Pr \{w \geq w_t^*\} E \{V(w) | w \geq w_t^*\}] \quad (1)$$

where $V(w)$ is the value of employment at wage w . For simplicity assume that there is no job destruction: once workers enter employment they stay in the job forever at constant wage⁶. Equation (1) can be rewritten as:

$$(1 + r)U_t = u(b_t, 1 - s_t) + [1 - \alpha s_t (1 - F(w_t^*))] U_{t+1} + \alpha s_t \int_{w_t^*}^{\bar{w}} V(w) dF(w) \quad (2)$$

The optimal levels of w_t^* and s_t are then chosen in order to maximise equation (2), according to the following first order conditions:

⁵Per-period utility satisfies the standard assumptions: it is twice differentiable with: $\frac{\partial u(y,l)}{\partial y} > 0$, $\frac{\partial u(y,l)}{\partial l} > 0$ and $\frac{\partial^2 u(y,l)}{\partial y^2} \leq 0$, $\frac{\partial^2 u(y,l)}{\partial l^2} \leq 0$.

⁶In this case:

$$V(w, h) = \sum_{j=t}^{\infty} \frac{u(w, h)}{(1 + r)^j}$$

Introducing exogenous job destruction does not modify the empirical implications of the model.

$$V(w_t^*) = U_{t+1} \quad (3)$$

$$\frac{\partial u(b_t, 1 - s_t)}{\partial s_t} = \alpha \left[\int_{w_t^*}^{\bar{w}} V(w) dF(w) - (1 - F(w_t^*)) U_{t+1} \right] \quad (4)$$

The intuitive interpretation of these two conditions is straightforward. Equation (3) shows that the optimal reservation wage is set at a level that equalises the value of employment and unemployment. An unemployed worker can allocate time to two different activities, search and leisure, hence optimal search time equalises the marginal utilities of search and leisure, as shown in equation (4). Note that both s_t and w_t^* are time-varying: equations (3) and (4) hold for all t and, for any known sequence of benefits, $\{b_t\}_0^\infty$, identify a series of reservation wages, $\{w_t^*\}_0^\infty$, and optimal search times, $\{s_t\}_0^\infty$. The per-period probability of exiting unemployment - the hazard rate - is then calculated as:

$$q_t = \alpha s_t \cdot [1 - F(w_t^*)] \quad (5)$$

These results are useful to analyse the implications of different assumptions about the sequence of benefits for the exit rate. Equation (5) shows that the exit rate is higher when job search is more intense and when the reservation wage is lower, i.e. when unemployed workers are less choosy about wage offers:

$$\left(\begin{array}{c} s_t \uparrow \\ w_t^* \downarrow \end{array} \right) \implies q_t \uparrow$$

Let us now analyse how search time, reservation wages and exit rates look like for different time profiles of the benefit.

Unemployment benefit without social assistance Consider the standard case of an unemployed worker who receives a constant unemployment benefit (b) for a given number of periods, T , and nothing after that (this is the specific case discussed in Mortensen (1977)).

For such worker the value of unemployment decreases over time as periods of positive benefit payments run out and expected future income out of work decreases, i.e. $U_{t+1} < U_t$. Equation (3) implies that the reservation wage also decreases over time. Similarly, the right

hand side of equation (4) increases with time (the value of unemployment enters with a negative sign and the derivative with respect to w_t^* , given equation (3), is zero⁷), therefore in order for the equality to hold the left hand side must increase as well and this can only be achieved with higher s_t , i.e. search time also increases with time.

At time T , when unemployment benefit entitlement expires, b_t discontinuously drops to zero. This requires the reservation wage to jump down and optimal search time to jump up. Note incidentally that for these effects to be non-ambiguous leisure and income must be complements (i.e. $u_{21}(b_t, 1 - s_t) \leq 0$). These results are represented in figure 2.

Unemployment Benefit and Social Assistance The previous analysis can be easily extended to a worker who receives social assistance together with his/her unemployment benefit, or, similarly, to somebody who expects to become eligible for some social assistance programmes once his/her unemployment insurance expires. Eventually all changes from one scheme to another simply generate jumps in the time profile of the benefit and can be analysed within the same framework used for understanding exhaustion of unemployment benefits in the previous paragraph.

It may for example be the case that, given the particular rules and household composition of applicants, social assistance transfers top up family income once unemployment insurance expires leaving the time profile of benefit payments flat. In this case the model predicts no discontinuous jumps in reservation wage, search effort and exit rate, which will all remain constant throughout the entire unemployment spell.

In other instances it might happen that payments under social assistance are actually higher than under unemployment insurance. This possibility, although rare, can occur in some countries where social assistance is particularly generous (see OECD (2002)). In such an extreme case the value of unemployment increases with time and all the effects derived previously are reversed, as shown in figure 3.

⁷The derivative with respect to w_t^* of the right hand side of equation (4) is:

$$\frac{\partial RHS}{\partial w_t} = \alpha [V(w_t^*) - U_{t+1}]$$

which is zero at the optimum.

4 The data and the empirical strategy

Most of the existing studies of unemployment insurance and unemployment duration make use of administrative data obtained from the institutional body that administers the unemployment benefit system⁸. The advantage of these data usually consists in having very detailed information about the amount and sequence of payments as well as about individual eligibility and entitlement conditions.

However, for the purpose of this paper the use of administrative data would be problematic for at least two reasons. First, in many countries unemployment insurance and social assistance programmes are administered by different governmental bodies and, consequently, data available from one body rarely include information about benefits paid by others. Therefore, using administrative data would make it very difficult to look at interactions between different programmes. Secondly, and probably more importantly, even if comprehensive administrative data were available, in order to explore the interactions between different programmes one would need to compare similar individuals facing different unemployment benefits and social transfers: in other words one would need enough variation in the rules and regulations of both unemployment insurance and social assistance. However, there is typically little variation in such rules within one country⁹ and for identification purposes it would be helpful to use some cross-country variation as well. Unfortunately, cross-country comparable administrative microdata are simply not available. Alternatively one would like to use some exogenous time variation induced, for example, by a reform but, as already mentioned in section 2, there hasn't been much reforming in social assistance programmes over the past years.

In order to overcome these problems, comparable cross-country survey data are utilized in this chapter. Data come from the European Community Household Panel (ECHP), a panel of households and individuals from EU countries produced by Eurostat in cooperation with the

⁸Boeri and Steiner (1998), Katz and Meyer (1990), Lancaster (1979), Meyer (1990), Moffit (1985), Narendranathan and Stewart (1993b).

⁹This is especially true for unemployment benefit while social assistance is more varied, being often administered at the local level (but this also makes it more difficult to obtain information about the system as well as about the beneficiaries).

member states statistical offices. The main advantage of this data source is the high level of cross-country comparability. This is guaranteed by standardised sampling procedures, defined by Eurostat and implemented by each country's national statistical office. Moreover, identical questions are asked to households sampled in each country, merely translated into the local language. However, several discrepancies between countries still exist¹⁰.

The dataset is also meant to keep track of changes in the demographic composition of the population over time, by recording and including in the survey all births occurred within sampled households as well as new households created from the split of existing ones. An individual questionnaire exists for all persons living in a sampled household. Sample sizes differ from country to country, with the highest sample-to-population ratios for the largest and the poorest countries.

The ECHP started in 1994 and 8 waves of data have been released so far, covering the period from 1994 to 2001. Not all countries entered the survey at the same time and for three of them - Germany, Luxembourg and the United Kingdom - the original sample has been replaced after the first three waves with harmonised versions of household panels already been produced nationally: the German Socio-Economic Panel (GSOEP), the Luxembourg's Socio-Economic Panel (PSELL) and the British Household Panel Survey (BHPS). When possible data from the existing panels have been provided for the first three years too.

For the purpose of this paper it is important to note that the ECHP includes information about unemployment benefit payments and social assistance transfers received both at the individual and at the household level. Moreover, it also contains retrospective information which allow the reconstruction of employment/unemployment/inactivity monthly spells. In fact, individuals are interviewed once per year and at that time they are asked to report their monthly labour market status over the previous calendar year. One drawback of these data is due to the fact that all the variables are recorded annually and, as we will see later on, this will make it difficult to attach the correct numbers to each unemployment spell.

The sample used for the empirical exercise presented in the following paragraphs consists of 12,460 monthly unemployment spells experienced by people aged between 18 and 64 in 12

¹⁰see Peracchi (2002) for a detailed description of the ECHP.

European countries¹¹ between 1994 and 2001. Unemployment spells end into employment or inactivity or are right-censored. Left-censored spells have been dropped from the sample to avoid stock-sample bias. Spells experienced by new entrants in the labour market are also excluded because these workers are rarely entitled to unemployment benefits.

The ECHP is a collection of country samples which have been drawn from the total population, following common procedures but independently. This means that the sample-to-population ratios differ from country to country and observations have to be weighted accordingly when they are pooled together across countries. The 12,460 observations represent 3,003,192 unemployment spells which are distributed across countries as shown in figure 4. This distribution is obviously influenced by both the relative size of each country and the level of the unemployment rate experienced in each area (plotted in figure 4 along the red line and scaled on the right hand side vertical axis).

As mentioned earlier, information from the ECHP allow to distinguish those unemployed who only receive unemployment benefits from those who also receive some other social assistance transfers. Summary statistics for the entire sample and separately for these two sub-groups are reported in table 3.

4.1 The empirical strategy

In order to test the implications derived from the simple theory of section 3, it is necessary to specify an empirical analog for the theoretical hazard function of equation (5). One difficulty arises because in the ECHP unemployment durations are recorded in months - i.e. in discrete intervals of time - whereas the underlying process of job search occurs essentially in continuous time (workers can find a job at any moment within a month). Following the custom in the literature, let us assume that the hazard rate, $\vartheta(t|X_i, \beta)$, of the underlying continuous process for individual i , i.e. the instant probability that the spell ends at time t , can be written as the product of two parts: a baseline hazard that depends on duration only, $h_0(t)$, and a "proportional shifter", $e^{\beta' X_i}$, that, according to each individual's characteristics

¹¹Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Portugal, Spain, United Kingdom. Luxembourg, the Netherlands and Sweden have been excluded because information on retrospective employment status is lacking for these countries.

X_i , shifts the baseline up or down:

$$\vartheta(t|X_i, \beta) = h_0(t) \cdot e^{\beta' X_i} \quad (6)$$

The discrete time analog of $\vartheta(t|X_i, \beta)$ for spell i that ends between month T_i and $T_i + 1$, is usually written as:

$$\begin{aligned} h(T_i | X_i, \gamma) &= \Pr \{T_i < t < T_i + 1 \mid t > T_i, X_i, \beta\} = \\ &= \frac{S(T_i|X_i, \beta) - S(T_i + 1| X_i, \beta)}{S(T_i| X_i, \beta)} = 1 - \exp \left[e^{\beta' X_i} (H_i - H_{i+1}) \right] \end{aligned} \quad (7)$$

where $H_i = \int_0^{T_i} h_0(u) du$. It is useful to apply to equation (7) the following transformation:

$$\log(-\log[1 - h(T_i | X_i, \beta)]) = \beta' X_i + \tau_i \quad (8)$$

Equation (8) allows to recover for (a transformation of) the discrete time hazard $h(T_i | X_i, \beta)$ the separability property of its continuous-time analog $\vartheta(t|X_i, \beta)$. In fact, this transformation of $h(T_i | X_i, \beta)$, just like $\vartheta(t|X_i, \beta)$, can now be separated into two parts: one, $\tau_i = \log[H(T_i) - H(T_i + 1)]$, that depends on the shape of the baseline hazard only, and another one, $\beta' X_i$, which depends only on individual's characteristics (possibly time-varying).

According to equation (8), the discrete time hazard can be rewritten as:

$$h(T_i | X_i, \gamma) = 1 - \exp \left(-e^{\beta' X_i + \tau_i} \right) \quad (9)$$

Then, it is possible to express the likelihood contributions of completed and uncompleted spells in terms of the discrete-time hazard and apply the transformation of equation (8) for the estimation:

$$\begin{aligned} \text{completed spells} &: \Pr \{T_i < t < T_i + 1 \mid X_i, \beta\} = h(T_j | X_j, \beta) \prod_{k=0}^{T_j-1} [1 - h(k | X_j, \beta)] \\ \text{uncompleted spells} &: \Pr \{t > T_i \mid X_i, \beta\} = \prod_{k=0}^{T_j} [1 - h(k | X_j, \beta)] \end{aligned}$$

In our data, a spell can end either into employment or into inactivity. Assuming that the probabilities of ending in any of these two states are independent, Narendrenathan and

Stewart (1993) showed that, by making the additional, harmless but greatly simplifying assumption, that exits can only occur at the boundaries of the interval (i.e. either at the beginning or at the end of each month), the correct hazard for exits into employment can be estimated by considering as censored all those spells that end into inactivity. This is also the approach taken here and the investigation of the determinants of exits into inactivity is left for future research.

The imputation of monthly unemployment benefit payments The theory of section 3 suggests that unemployment insurance recipients who also receive some social assistance will be less sensitive to both the level and the duration of their benefits. This implies that the effect of being a social assistance recipient on the probability of finding employment should be negative.

Although the ECHP easily allows to identify individuals who receive unemployment benefits only (i.e. we know they don't receive any other benefit) and individuals who receive unemployment benefits and some social assistance during the same unemployment spell, it records the amount received in "unemployment related benefits"¹² only annually and this makes it difficult to identify the monthly sequence of payments satisfactorily. Obviously, the hypothesis that social assistance recipients exit unemployment less easily has to be tested conditioning on the level and duration of unemployment insurance. It is then necessary to construct a good measure for both the level and the duration of monthly unemployment benefits.

The most obvious solution consists in simply dividing the annual amount by the number of months spent in unemployment during that particular year. However, this approach would generate zero variation in individual unemployment benefits over time, unless a spell spans over more than one year. Moreover, unless both the amount of the benefit and the number of months of unemployment are exactly measured, this approach is likely to generate some spurious covariance between monthly benefits and unemployment durations. The duration of a spell is very highly correlated with the number of months spent in unemployment in one

¹²Thus including both unemployment insurance and unemployment assistance (in those countries where both schemes are present).

year (it is actually exactly equal to that number if the unemployment spell begins and ends in the same year). Hazard models can also be seen as regression models where uncompleted spells and duration dependence are correctly taken into account. Viewed in this sense, the dependent variable (unemployment duration) would appear at the denominator of one of the regressors (monthly unemployment benefit), introducing spurious correlation unless variables are exactly measured (see Borjas (1979)).

The amount of social assistance transfers is also reported annually. However, social assistance payments are not necessarily related to unemployment, therefore a sensible monthly amount can be obtained by simply dividing by 12 the annual amount. No "division bias" arises in this case.

In order to solve these problems, monthly unemployment benefits have been imputed on the basis of country specific rules and regulations. In fact, both the amounts and the duration of unemployment benefits in all countries are calculated on the basis of individual characteristics, most of which are easily available from the ECHP: previous employment records, previous wage, age, family composition, et.. Combining these data with the rules of each country's unemployment benefit system, a rather precise imputation of both the levels and the duration of payments can be obtained. In econometric terms, this procedure is equivalent to instrumenting the unemployment benefit with the country's unemployment insurance regulations.

The imputation routine requires two basic ingredients: a detailed description of the unemployment compensation system in all countries and years covered by the ECHP, and all relevant personal characteristics used by each country's system to compute benefit entitlement. The institutional features of all welfare programmes in the member countries of the European Union are systematically collected in the MISSOC¹³, a publication of the European Commission that every year reports comparative descriptions of rules and regulations of welfare programmes in the member states. Additional complementary information can be extracted from institutional databases created by other research institutions, like the Fondazione Rodolfo De Benedetti (www.frdb.org) and the CESifo centre (www.cesifo.de). Most of the relevant personal characteristics necessary for this imputation are available from the

¹³Mutual Information System on Social Protection in the Member States of the European Union.

ECHP, with few exceptions.

Combining these two sources of information - institutional details from the Missoc and other sources and personal characteristics from the ECHP - it is possible to write imputation procedures for each country and year. These procedures consists of computer programmes that for each individual in the sample compute entitlement and payment profiles of unemployment benefits throughout one's unemployment spell. The programmes' outcome is a vector of imputed variables including the duration of benefit entitlement in months and the monthly sequence of payments¹⁴.

In order to test the goodness of these imputations figure 5 compares the cumulated annual amount of imputed benefits with annual income from unemployment related benefits as recorded in the ECHP. The results of figure 5 indicate that the imputation procedure works relatively well for most countries. Generally, the precision of the imputation is higher for low payments while the dispersion increases towards the upper right corner of each panel. Computation of unemployment benefits for high wage earners is likely to be more problematic for a number of reasons. First, these workers are more likely to be subject to benefit ceiling, thus making imputation more complex. Second, in some countries benefits are computed on gross earnings while the ECHP reports only net values. At high earnings levels the discrepancy between gross and net amounts is larger.

The imputation procedure also suffers from a number of problems that make it impossible to be perfectly consistent with reported data. First of all, the imputed measure of benefits is more a measure of entitlement than reciprocity. It is a known fact that the degree of benefit non-take-up (i.e. the fraction of persons who are entitled to a benefit but don't claim it) varies largely across countries due to differences in the complexity of the system and can reach very high levels. The evident clusterings of points along the horizontal axes in all the panels of figure 1 represents individuals who, according to the imputation, are entitled to unemployment benefits but appear not to claim them (for a recent review of the literature on benefit take-up see Hernanz et al. (2004)).

A second problem concerns the timing of the reforms. Changes in the unemployment compensation system could in principle be applied to the newly unemployed only, i.e. those

¹⁴The programmes are written in Stata8.2 and are freely available online from my personal website.

who lose their jobs after the reform, or to all recipients. Information about these details of the reforms is very difficult to obtain. For simplicity, the imputation procedures used here assume that all changes always affect all recipients, regardless of whether they entered unemployment before or after the reform.

Besides, in the ECHP employment histories of individuals are perfectly known since the time they joined the survey but little is known about their previous records and some assumptions need to be made. Specifically, it has been assumed that individuals have always worked and paid contributions since the start of their first job, a piece of information available from the data. A final difficulty, that inevitably introduces measurement error in imputed benefits, arises from the fact that in many countries benefits are calculated on the basis of gross earnings while the ECHP only reports net earnings. Moreover, benefits are also often taxed.

Keeping all these caveats in mind, the results in figure 1 are rather satisfactory: imputed unemployment benefits are strongly correlated with reported annual data. A notable exception is Greece: unemployment benefits in this country, like in many others, are subject to a minimum and a maximum level but here the distribution of annual benefits is highly concentrated around the minimum. It seems like the large majority of the unemployed in Greece receive only the minimum benefit even when our imputation suggests they should be entitled to higher transfers. It was not possible to find a good explanation for this fact.

Italy is another anomalous case: in this country the correlation between imputed and actual benefits is very low. In particular, there are many individuals who appear to be entitled but receive no benefit. This result, however, is more understandable than for Greece. In Italy unemployment benefits are highly differentiated by sector of industrial activity and firm size. Moreover, access to the most generous programmes (*Cassa Integrazione Guadagni*) is often subject to government approval. This particular institutional setting, characterised by a high degree of discretionality, necessarily leads to a poor imputation.

Measuring the earning potential of the unemployed One additional difficulty in defining the correct set of explanatory variables comes from the very nature of the data. One of the crucial controls that needs to be included in the estimation is a measure of the

previous wage, as an indicator of the earning potential of individuals: the same benefit amount affects differently people who can earn different wages on the job. What really counts in determining the incentives/disincentives to work is the actual difference between income in work and income out of work. This is why the replacement rate (the ratio between the unemployment benefit and the previous wage) will be used instead of the level of the benefit itself.

However, in the ECHP unemployed workers do not report their previous wages. Only individuals who are working at the time of the interview are asked about their current monthly wage. In the estimation, the most recent observed current wage from previous interviews has been used as previous wage. Obviously there are many individuals who happen to be unemployed at all interviews, even if they report some employment spells between subsequent interviews. For these individuals no previous wage is observed. One possibility is to drop them from the sample but this would reduce the sample size dramatically and, even more worrisome, it would introduce a potentially large sample bias: the probability of having been unemployed at all interviews is obviously higher for individuals at high risk of long and/or repeated unemployment. Alternatively, one can use the average wage earned by individuals with similar characteristics. This is the approach taken in the empirical exercise below: missing previous wages are replaced by the average wage of full-time workers with the same level of education, age, experience, gender and region of residence¹⁵.

5 Estimation results

The brief theoretical discussion in section 3 suggests that the unemployed who only receive unemployment benefits and no social assistance, being on average less likely to receive high benefits when their unemployment insurance expires, will exit more quickly as exhaustion approaches. SA recipients will be less concerned about exhaustion of unemployment benefit: what really counts to them is the total level of the benefit, i.e. social assistance plus unemployment benefit.

¹⁵This is computed by running a series of year-by-year country-by-country OLS wage regressions including *education, age, experience and regional dummies* and run separately for males and females.

Figures 6 and 7 show the empirical hazards¹⁶ for the entire sample and for the two sub-samples of individuals who only receive unemployment benefit and who receive both UB and SA. A person is classified as SA recipient if he/she receives some social assistance at least once during the unemployment spell. In the figures the distribution of imputed duration of unemployment benefit is reported (scaled on the right-hand vertical axis). The figure for the entire sample (figure 6) shows the expected peaks in the hazard around the time of UB exhaustion, which has mass points at 12, 15, 24 and, later, at 30 and 43 months. Looking at the same picture for the two sub-samples in figure 7, it is already evident that social assistance recipients tend to have lower exit rates, especially in the first months of unemployment.

Evidence from empirical hazards, although already suggestive, is not fully convincing because the extent to which these graphs are influenced by personal characteristics and duration dependence is not taken into account. Moreover, empirical hazards are less and less precise as unemployment duration increases: the size of the sample decreases as individuals exit unemployment and the standard errors grow larger. This can be seen in figure 6 where the confidence intervals clearly grow larger as duration increases. In figure 7, confidence intervals have not been drawn for readability but they are obviously larger as sample sizes are smaller, especially for SA recipients (see table 3 for sample sizes).

Table 4 reports the results of various specifications of the proportional hazard models described earlier. The baseline hazard chosen for these estimates is specified in the most flexible form allowed by the data, i.e. only imposing that it can vary in an unspecified way every two months. This is obtained by introducing a set of τ dummies for every two months of duration ($\tau_1 = 1$ for the first 2 months of unemployment and zero otherwise, $\tau_2 = 1$ for the third and the fourth, and so on).

The results of table 4 are obtained without controlling for unobserved heterogeneity. The role of the unobservables is likely to be particularly important in the sample used here, where about 60% of the individuals experience more than one unemployment spell during the period

¹⁶The empirical hazard at time t is computed as the ratio of individuals who actually exit unemployment at time t over the number of all individuals who have been unemployed at least until t , i.e. all individuals who could have exited at time t .

of observation. In principle, unobserved heterogeneity could be controlled for in at least two different ways. First, as customary in this literature, an arbitrary assumption about the distribution of the unobservables is assumed and the likelihood of the model is estimated by integrating it out. However, Heckman and Singer (1984) showed that, allowing for a flexible baseline hazard, already largely captures the effects of unobserved heterogeneity and that often estimates produced imposing an arbitrarily distributed random term are less robust. For comparison, however, all the estimates are also reproduced assuming the presence of a normally distributed random individual term and the results are reported in appendix A (tables A.1 and A.2). These results are only marginally different from those in the main text and, if anything, they are more precisely estimated.

However, this method of controlling for unobserved heterogeneity does not allow for correlation between the random term and the other observable regressors. An alternative solution consists in introducing individual effects in the model's specification. These effects could in principle be identified by those individuals who experience more than one spell during the period of observation. There are, however, two serious and related problems with this approach: considering only individuals with multiple spells would reduce the sample by almost 50%, introducing bias and making identification of all the other effects more difficult. In fact, when the estimation of such specification was attempted convergence could not be reached.

Let us now move on to the discussion of the estimates of table 4. The set of controls includes all the relevant observable personal characteristics, country and region specific controls for labour market conditions and year dummies. Country (or regional) dummies have not been included because these would have captured too much variance: in fact, in order to identify the effect of different welfare systems on individual search decisions one needs to compare similar individuals subject to different benefit schemes and, since the rules and regulations upon which benefits are calculated vary very little within each country, one eventually needs to exploit some cross country variation. In other words one wants to control for all country/region specific characteristics that are not related to the benefit schemes. The regional unemployment rate and the rate of long-term unemployment (% of unemployed workers who have been unemployed for more than 12 months) are likely to be good controls

for the specific peculiarities of the local labour markets without washing out the variance due to the different benefit schemes.

Results in column 1 of table 4 simply replicate previous findings. The disincentive effect of the unemployment benefit is confirmed, although it is relatively small in size and varies with duration, being less prominent in the first months of unemployment. A 10 point increase in the replacement rate reduces the hazard by only 0.3% during the first 3 months of unemployment and by 2.6% afterwards.

The coefficients on the "months to exhaustion" dummies also confirm that UB recipients are more likely to find a job when their unemployment benefit gets closer to exhaustion. This effect is strong and already detectable at the beginning of the last year of benefit entitlement (for those whose UI lasts more than 12 months) and grows larger. In the last month of entitlement the hazard is almost 50% higher than 12 months before. There also seems to be some cyclicality in this process, with a dip between 3 to 6 months to exhaustion.

In the second column of table 4 this standard specification is augmented by introducing a dummy indicator for individuals who, at some point during the unemployment spell, receive some social assistance benefits. The coefficient on this variable is negative and strongly significant. The hazard for social assistance recipients is on average 34.5% lower than that of a similar person who only receive unemployment benefits. This is a very sizeable effect: it implies that for the average individual in the sample receiving social assistance throughout the spell reduces the probability of finding a job within the first 3 months from 30% to 21%, from 54% to 39% within the first 6 months and from 75% to 59% within the first year.

The third column of table 4 explores this fact more thoroughly. In particular, it is important to understand whether being under social assistance affects one's sensitivity to the unemployment benefit or whether it reduces the incentives to exit unemployment during the last periods of entitlement. To this end, the UB replacement rate and the exhaustion dummies are interacted with the dummy for SA recipients. Results suggest that the two groups mainly differ in how they react to UB exhaustion: the negative coefficients on the interaction dummies support the prediction that, relative to those who only receive unemployment benefit, SA recipients are less likely to exit unemployment during the last months of UB entitlement. The size of these interaction effects indicates that there is no significant

spike in the hazard rates of social assistance recipients around UB exhaustion.

The following two columns introduce first the replacement rate of social assistance (which is obviously zero for those who only receive unemployment insurance) and then (column 5) the total replacement rate, i.e. the ratio between total benefits (unemployment insurance and social assistance) and previous wages. Both these variables enter significantly and with a negative sign. The sizes of their effects are also in line with expectations.

The results presented so far could be biased if social assistance recipients were different from their observationally equivalent UI-only recipients along some unobservable dimensions. In this case, the estimated coefficients on the dummy for social assistance recipients and its interactions would be simply picking up the effects of these unobservables. Note that controlling for unobserved heterogeneity of the type considered in table A.1 is not enough. In fact, the estimates of table A.1 are produced under the assumption that the unobserved random term is uncorrelated with all the covariates.

Moreover, the results of table 4 do not consider the possibility that unemployed workers who do not receive social assistance transfers can nonetheless be influenced in their search decisions by the possibility of becoming eligible when their unemployment benefit expires. The theory predicts that workers who are likely to receive social assistance in the future will search less intensively as exhaustion of their unemployment insurance approaches, just like workers who already receive social assistance.

In order to address these two issues - potential endogeneity of social assistance recipiency and the effect of social assistance on those who are not currently eligible - table 5 reports results obtained by replacing the dummy for social assistance with an estimate of the probability of receiving any of the social transfers considered. This procedure is equivalent to instrumenting the dummy for social assistance with those variables that are included in the estimates of the probability of receiving social transfers and excluded from the main hazard model. This probability is estimated with a simple series of country-by-country and year-by-year probit regressions where the excluded regressors are the number of children aged below 16 in the household, whether the person owns his/her home and the number of rooms per household member in the house. Results are reported in table A.3 in appendix A and show that these variables are strongly significant and their effect move in the expected direction.

Table 5 reports the results of the hazard model when the dummy for social assistance recipients is replaced by the predicted probability of receipt. The standard errors are now computed using bootstrapping methods. The first and the second columns of table 5 replicate column 2 and 3 of table 4 respectively. Results confirm both the direction and the size of the effect estimated in table 5.

6 Conclusions

This paper investigates how interactions between unemployment insurance and social assistance affect the job search behaviour of unemployed workers. The theoretical framework presented in section 3 formalizes the idea that people are eventually interested in total payments (i.e. unemployment benefit and social assistance) and their time profile. Unemployed workers will react differently to changes in the rules of the UB system depending on what alternative or complementary welfare programmes are available.

Estimates of the effect on unemployment duration of being a social assistance recipient are produced exploiting information about monthly labour market histories of European unemployed and variation in welfare programmes across countries and over time. Results show that individuals who receive some social assistance transfers together with their unemployment benefits are less sensitive to changes in the replacement rate as well as in the duration of their UB entitlement. For the average person in the sample the probability of finding a job within the first 12 months of unemployment falls from 75% to 59% if he/she receives social assistance and unemployment benefits together.

This large effect is mostly due to the exit rate for social assistance recipients not increasing significantly around the time of unemployment benefit exhaustion. In the last month of entitlement the hazard rate of unemployment benefit recipients jumps up by almost 50% compared to 12 months before. The same figure for an observationally identical person who also receives social assistance is 12% and it is hardly significant. Also non-SA recipients, who are nonetheless likely to become eligible for social assistance in the future, follow a similar behaviour.

These estimates suggest that reducing the duration of UB payments is likely to be a

much more effective policy to incentivize the re-employment of recipients than reducing the generosity of payments. This paper also highlights the need to design welfare reforms with very careful consideration for the interactions between different programmes in the system: reducing the level or the duration of unemployment benefit may not be very effective in incentivizing unemployed workers to search harder if they can easily shift into other social assistance programmes. This result is consistent with some recent studies that have underlined how wide and comprehensive reforms of labour market policies, even if politically harder to implement, are often more effective than piecewise reforms.

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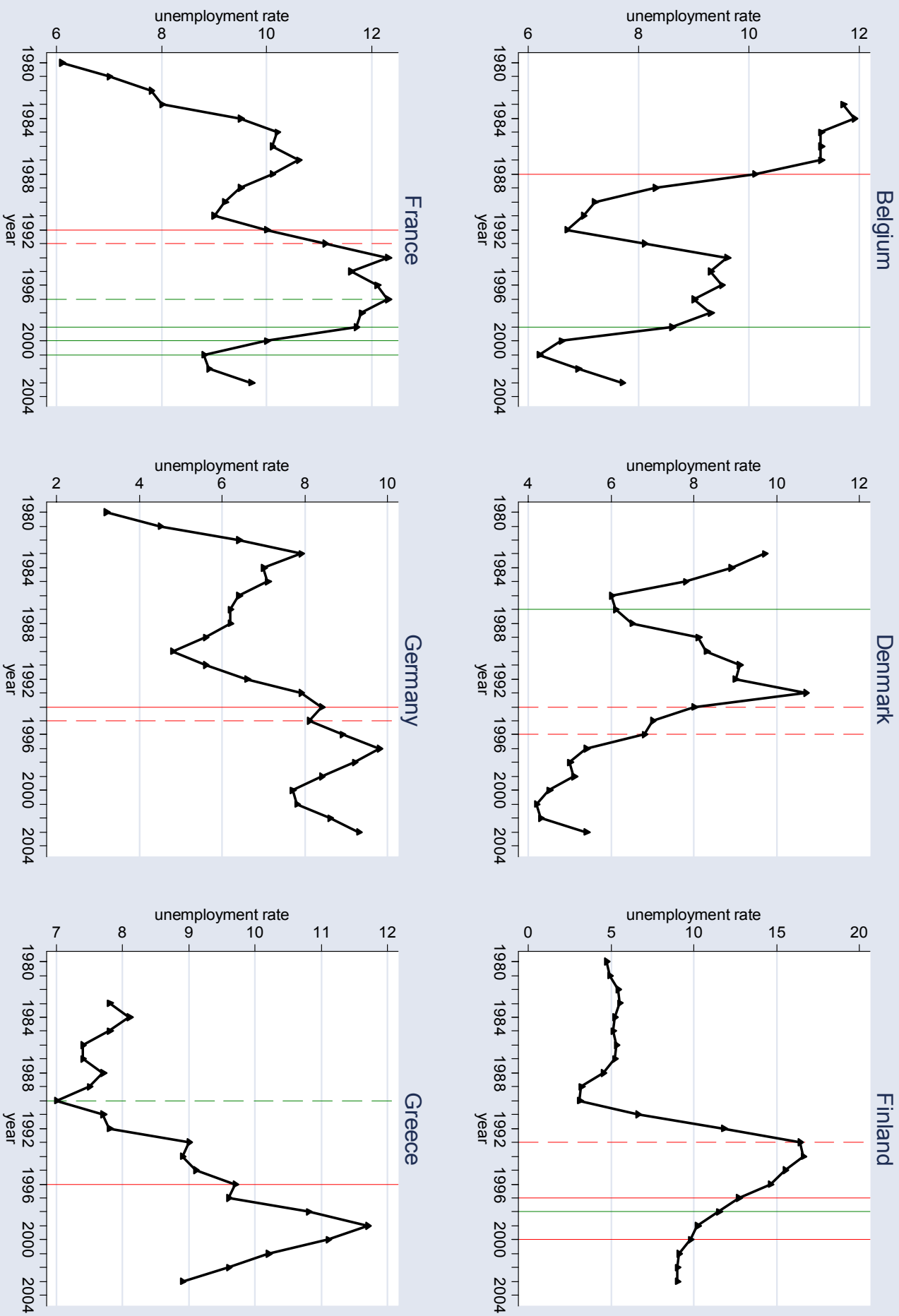
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Figures and Tables

Figure 1: Unemployment and social reforms in Europe



Type of reform:
 — UI benefit
 --- UI duration

Direction of the reform:
 red: less generous (i.e. lower and/or shorter payments)
 green: more generous

Figure 1: Unemployment and social reforms in Europe (continued...)

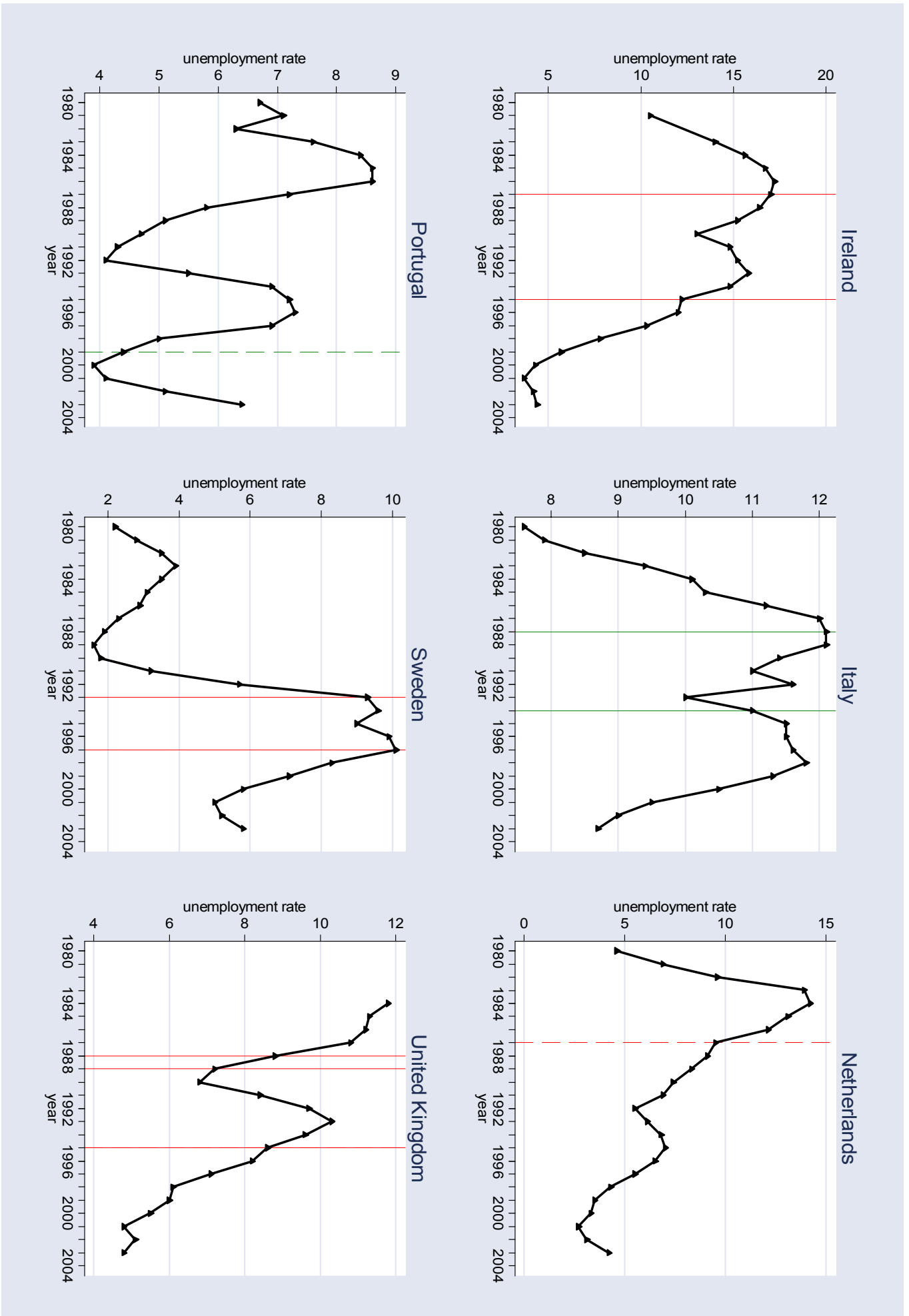


Figure 2: Time profiles of benefit, reservation wage, search time and hazard rate – Case 1

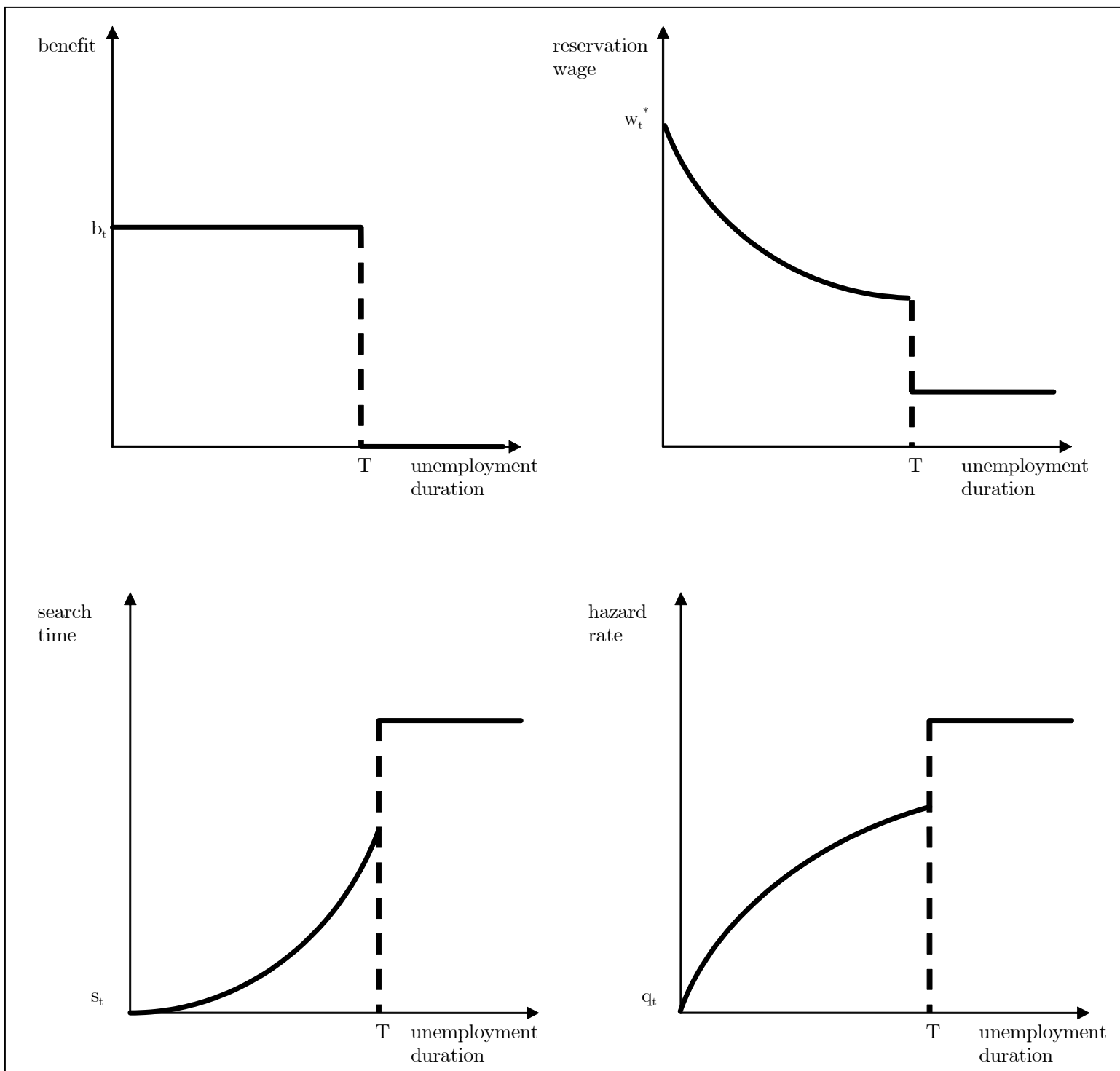


Figure 3: Time profiles of benefit, reservation wage, search time and hazard rate – Case 2

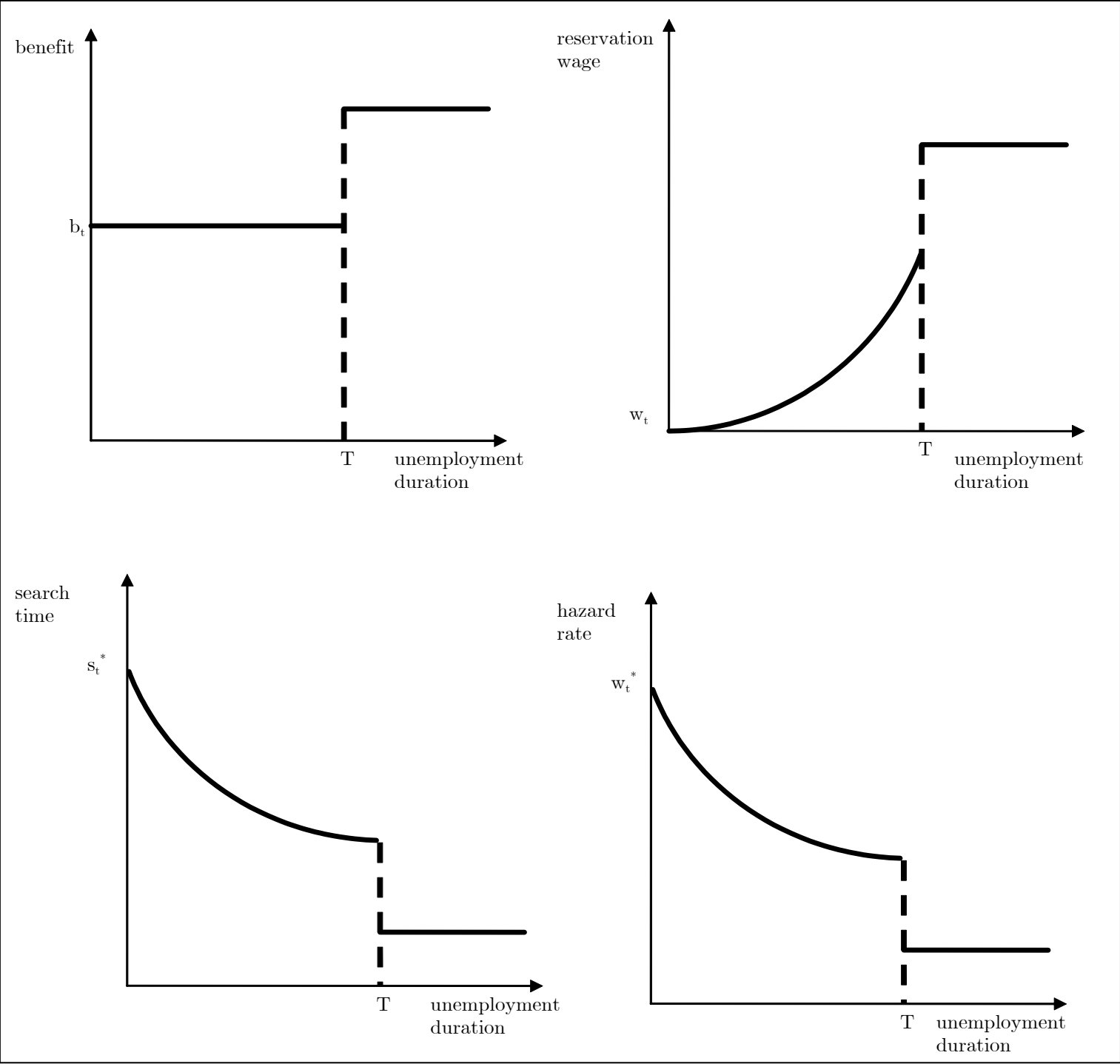


Figure 4: Distribution of spells by country

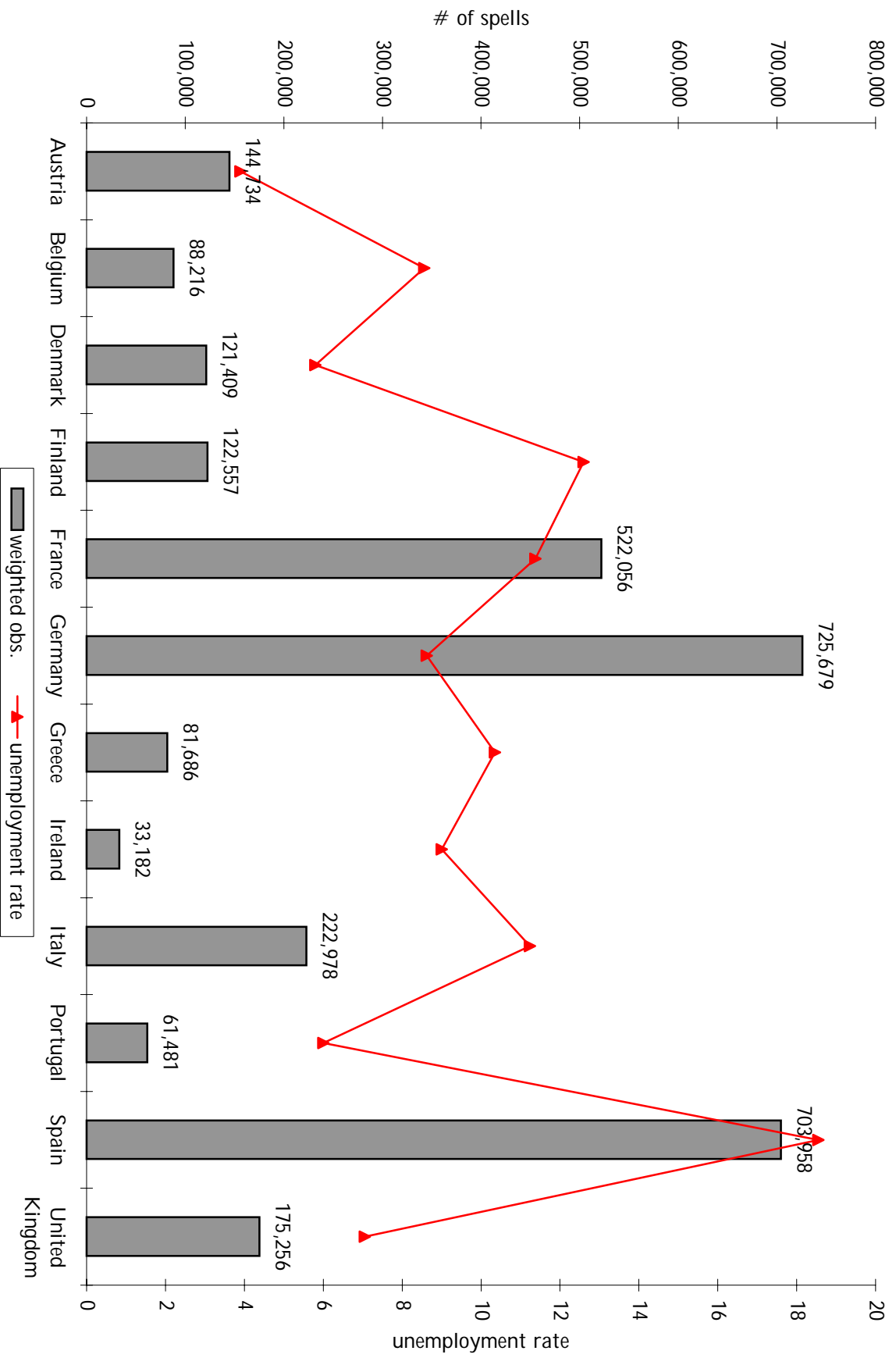


Figure 5: Comparison between imputed and reported annual unemployment benefit (national currencies)

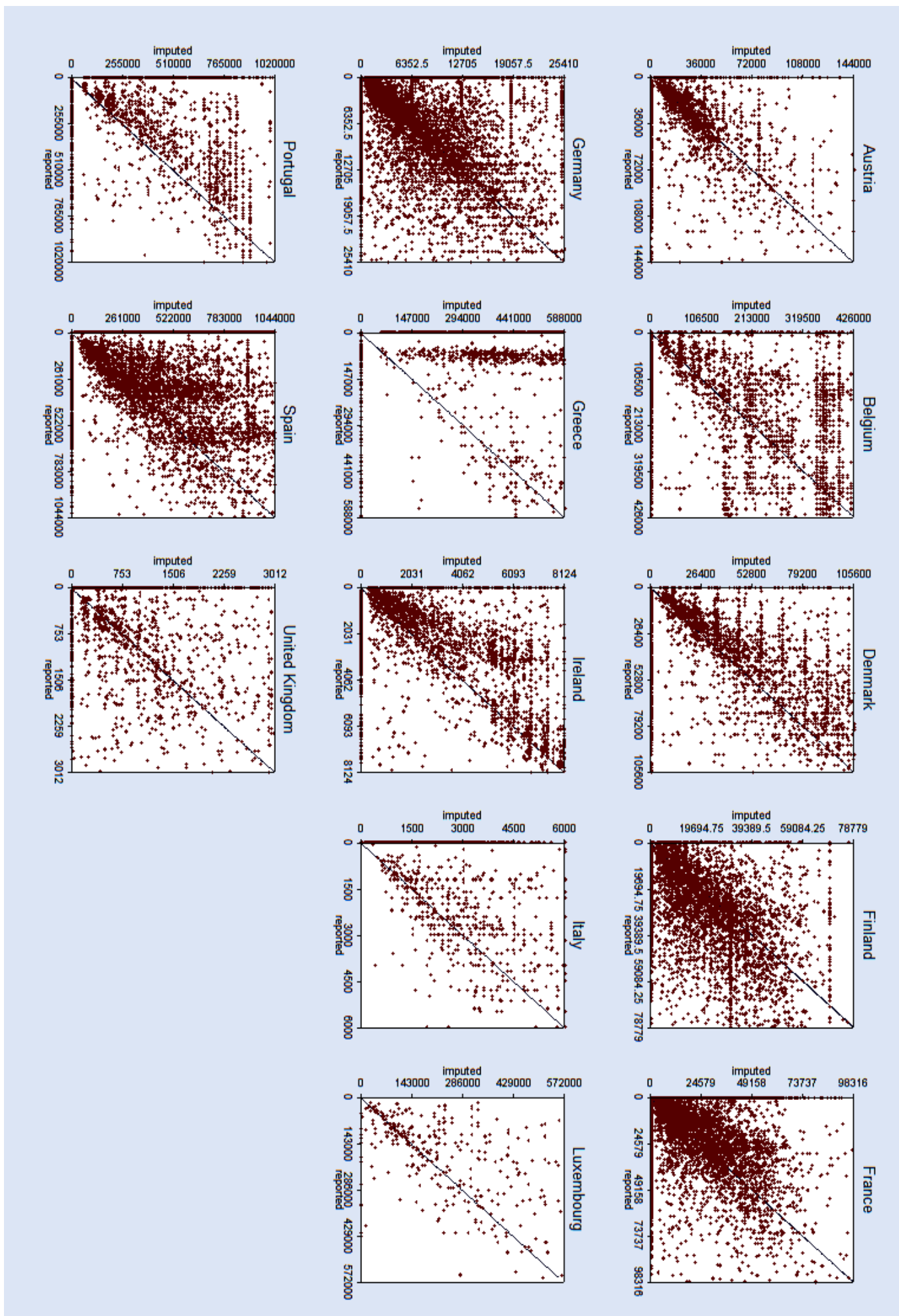


Figure 6: Empirical Hazard for unemployment-to-job transitions

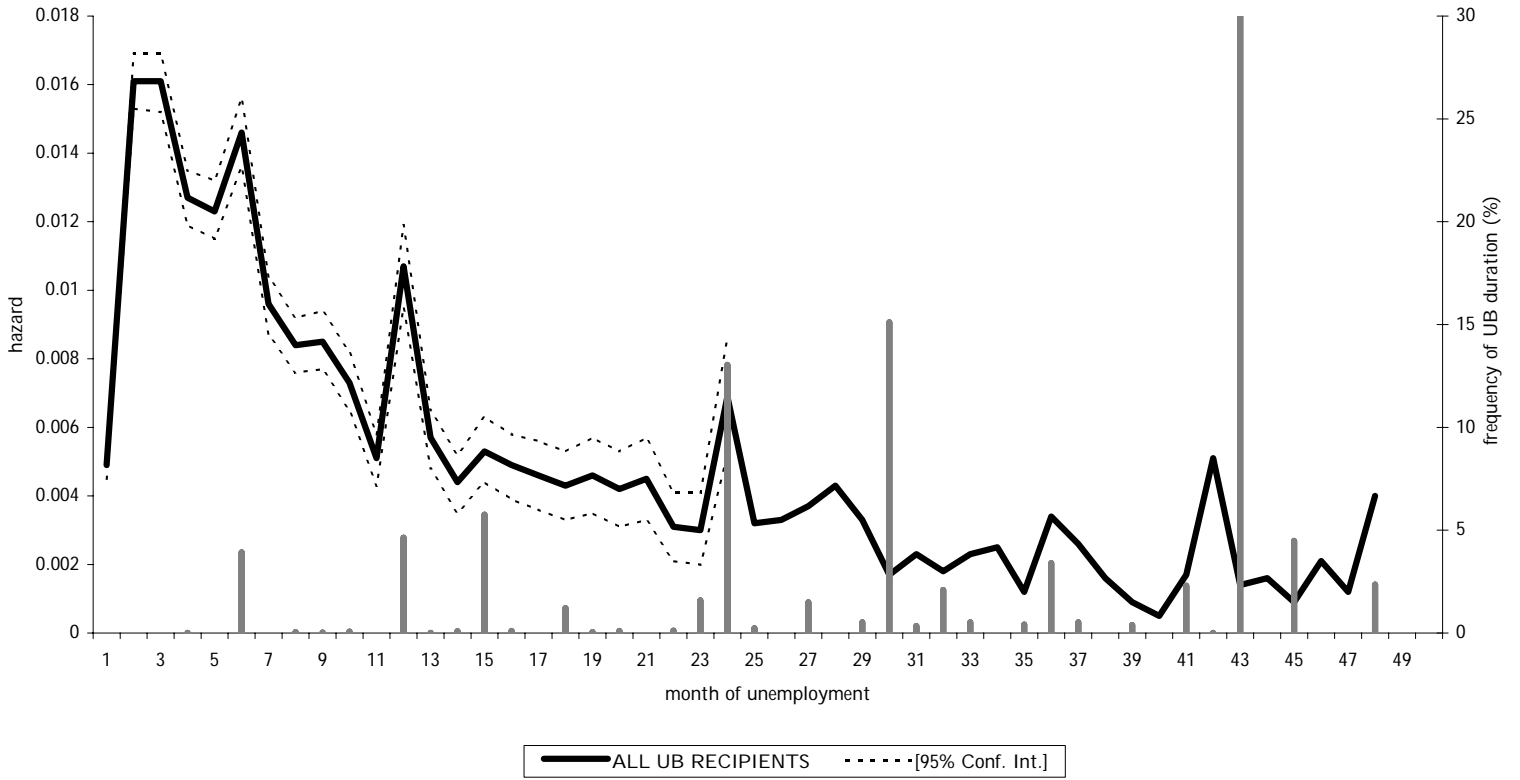


Figure 7: Empirical Hazard for unemployment-to-job transitions by recipient groups

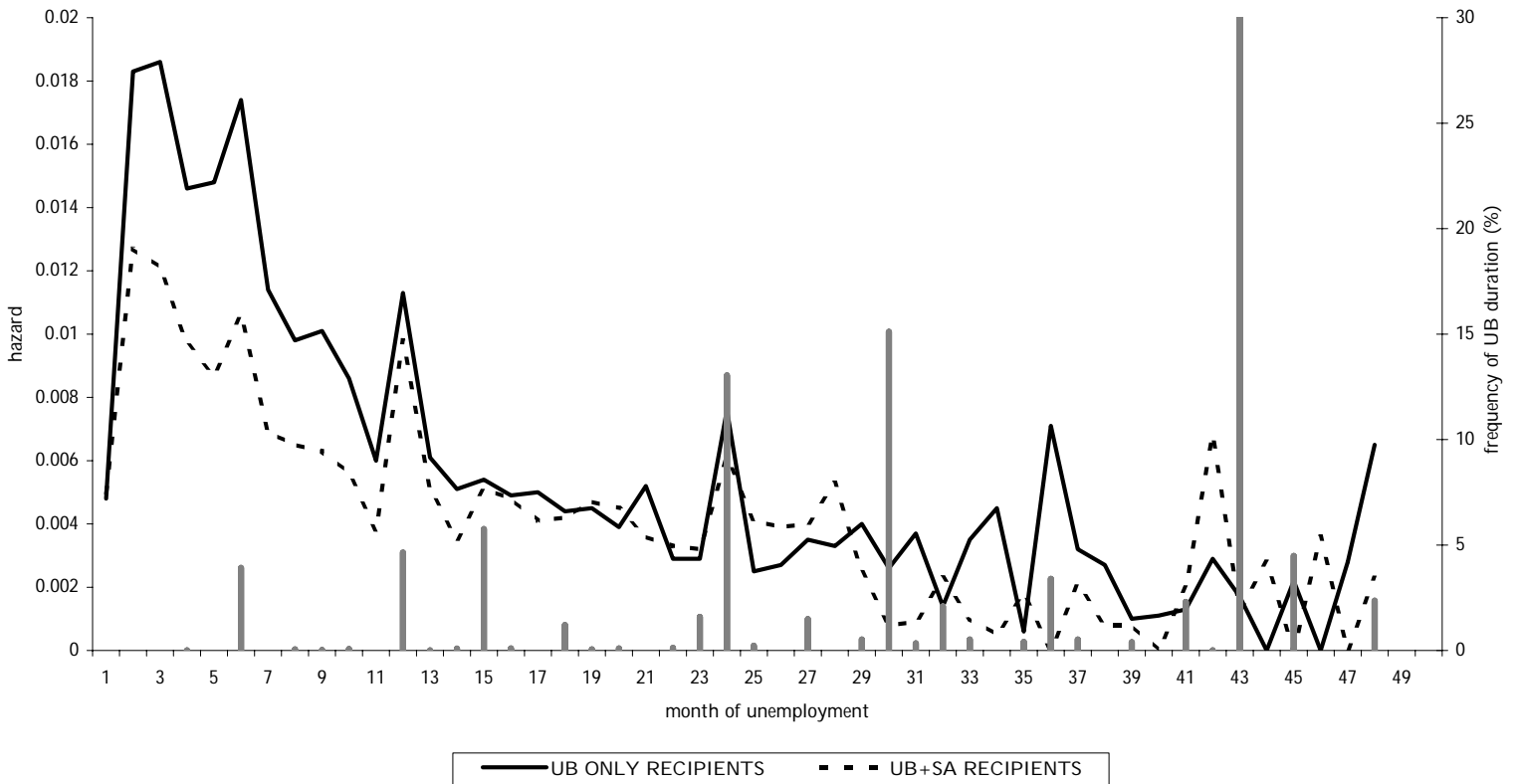


Table 1: The effect of UI reforms on the probability of leaving unemployment

Country	Reform	effect¹
Austria	reduced duration - 2000	-0.459* (0.252)
Belgium	reduced benefit – 1999	-0.292 (0.361)
Finland	reduced benefit – 1997	0.156 (0.142)
	reduced benefit – 2000	0.258 (0.253)
Germany	reduced duration – 1995	-0.031 (0.169)
Greece	reduced benefit - 1996	0.035 (0.184)
Ireland	reduced benefit – 1995	0.486* (0.279)
United Kingdom	reduced duration and benefit – 1995	0.291 (0.334)

1. Coefficient of a dummy for unemployment spells that started after the implementation of the reform.

The estimates are obtained from a proportional hazard model with a fully non-parametric baseline and the following explanatory variables: sex, age (linear and squared), health status, education, marital status, family size, dummy for children in the household, household income, regional unemployment rate and rate of long term unemployment, year dummies.

Source: ECHP 1994-2001

Table 2: Welfare reforms in Europe

COUNTRY	REFORMS
Austria	<ul style="list-style-type: none"> • 1995: <i>Unemployment benefits</i> are cut (particularly for those with high incomes) • 1999-2000: <i>Family Benefits</i> are made more generous • 2000: <i>Unemployment benefits'</i> duration is increased for persons with at least 15 years of contributions. • 2002: <i>Unemployment benefits</i> made more generous. • 2002: <i>Child-care support</i> made more generous.
Belgium	<ul style="list-style-type: none"> • 1988: Replacement rates for <i>unemployment benefits</i> are reduced • 1992: Reform of <i>unemployment benefit</i>: access for those on temporary or part-time jobs; redefinition of "suitable offer"; new rules for early retirement. • 1998: Improved incentive for those on <i>Income Support</i> (Minimex) to take up jobs. • 1999: <i>Unemployment benefits</i> made more generous for single persons • 2001: Introduction of tax deductibility for child-care costs. • 2001: Social assistance made more generous for old people.
Denmark	<ul style="list-style-type: none"> • 1987: <i>Unemployment benefits</i> are increased. • 1994: Labour Market Reform: <i>unemployment benefits'</i> duration is reduced and eligibility conditions are tightened. • 1996: Follow-up of Labour Market Reform: <i>unemployment benefits'</i> duration is shortened and eligibility conditions are tightened.
Finland	<ul style="list-style-type: none"> • 1993: Reform of (flat-rate) <i>Unemployment Assistance</i>: duration is limited and eligibility requirements brought in line with those for the earnings-related supplementary benefit. • 1995: Reform of the <i>unemployment benefits</i> system: stricter conditions for the unemployed to re-qualify for unemployment benefits, shortened duration for older workers • 1997: Reform of the <i>unemployment benefits</i> system: stricter access conditions and lower payments. • 1998: <i>Unemployment benefits</i> are increased. • 1998: Stricter access conditions for <i>minimum income</i> benefits. • 2000: <i>Unemployment benefits</i> are decreased.
France	<ul style="list-style-type: none"> • 1992: Reform of <i>unemployment benefits</i> that introduces a downward sliding scale for payments. • 1993: <i>Unemployment benefits'</i> duration is reduced. • 1993: Increased generosity of <i>general social assistance: housing benefits, family benefits, employment accidents and occupational illness</i> benefits are increased and made easier to access. • 1997: Minimum <i>unemployment benefit</i> is increased and duration of benefits is also extended. • 1998: <i>Minimum income benefit</i> increased. • 1999: <i>Unemployment benefits</i> increased. • 2000: Generalised increases in both <i>unemployment and minimum income benefits</i>. • 2001: Generalised increases in both <i>unemployment and minimum income benefits</i>.
Germany	<ul style="list-style-type: none"> • 1994: <i>Unemployment benefits</i> are reduced. • 1995: <i>Unemployment benefit</i> duration is reduced. • 1998: Several changes: stricter rules for access to the <i>minimum income scheme</i> (RMI); lower payments for <i>sickness benefits</i>; better incentives for <i>unemployment benefit</i> recipients to take up jobs (redefinition of suitable offer; incentive to take part-time jobs, et.). • 1999: Increased <i>sickness benefits</i>.
Greece	<ul style="list-style-type: none"> • 1990: <i>Unemployment benefits'</i> duration is increased. • 1996: <i>Unemployment benefits</i> are reduced.
Ireland	<ul style="list-style-type: none"> • 1987: <i>Unemployment benefits</i> are reduced. • 1993: Labour Market Reform: eligibility for <i>unemployment benefits</i> is made stricter; <i>child benefits</i> are increased, <i>family benefits</i> are increased; <i>income support</i> is increased. • 1995: <i>Unemployment benefits</i> are reduced.

Italy	<ul style="list-style-type: none"> • 1988: Ordinary <i>unemployment benefits</i> are increased. • 1991: New <i>unemployment benefit</i> scheme for long-term unemployment is introduced (only for certain categories) • 1994: <i>Unemployment benefits</i> are increased and coverage is extended. • 1998: <i>Minimum income scheme</i> introduced on an experimental basis. • 1999: introduced new means-tested <i>family cash benefits</i>.
Netherlands	<ul style="list-style-type: none"> • 1987: Revision of the Social Security System Act: duration of <i>unemployment benefits</i> is reduced; stricter rules for <i>invalidity benefits/pensions</i>; conditions for accessing all benefits are tightened. • 1991: Social Insurance Organisational Act: administration of all benefits delegated to a single governmental body. • 1996: General Social Assistance Act: improved incentives for those on <i>income support</i> to take up jobs; privatisation of <i>sickness benefits</i>. • 1997: A new <i>housing benefit</i> is introduced. • 2001: <i>Employment bonus</i> paid to people on unemployment benefit who find job.
Portugal	<ul style="list-style-type: none"> • 1997: Reform of <i>family benefits</i> (completely different structure, cannot say if more/less generous overall); easier access to <i>employment injuries/occupational disease benefits</i>; a new <i>minimum income</i> scheme is introduced. • 1998: Introduction of a “partial” <i>unemployment benefit</i> for part-timers. • 1998: Longer contribution record required for eligibility of <i>unemployment benefits</i>. • 1999: Extended duration of <i>unemployment benefits</i>.
Spain	<ul style="list-style-type: none"> • 1992: Reform of the <i>unemployment benefits</i> (reduced duration and payments). • 1993: <i>Unemployment benefits</i> are reduced. • 1994: <i>Unemployment benefits</i> are subject to taxation. • 2000: Extended <i>unemployment benefits</i> for older workers with children.
Sweden	<ul style="list-style-type: none"> • 1986: Participation in training programmes is considered equivalent to work for the purpose of eligibility for <i>unemployment benefits</i> • 1987: Subsidised jobs are offered to those whose <i>unemployment benefit</i> expires (and the job must, by law, last at least enough to make the worker eligible for unemployment benefits again). • 1993: <i>Unemployment benefits</i> are reduced. • 1997: Reform of <i>unemployment benefits</i>: benefits are reduced and re-qualification through subsidised jobs no longer available. • 1998: Increased <i>sickness benefits</i>. • 1999: <i>Housing benefits</i> made stricter and lower. • 2002: Child-care made more generous.
United Kingdom	<ul style="list-style-type: none"> • 1988: <i>Unemployment benefits</i> are reduced. • 1989: <i>Unemployment benefits</i> are reduced. • 1996: Job Seekers Allowance (JSA) replaces the old <i>unemployment benefit</i>: both payments and duration of benefits are reduced, <i>income support</i> is replaced by a means-tested component of the JSA. • 1997: Introduction of an <i>employment bonus</i> for older workers. • 1998: Welfare-to-Work Programme: training for long-term unemployed, hiring subsidies for employers, sanctions for refusing job offers, etc. • 1999: Introduction of new means-tested <i>child-care</i> tax credit.
Sources: European Commission <i>Missoc (1992-2001)</i> , <i>Missoc-info (1985-2001)</i> ; Fondazione RDB “ <i>Social Policy Reforms Database</i> ”; CESifo “ <i>DICE Database</i> ”.	

Table 3: Descriptive Statistics

Variable	All UB recipients		UB only recipients		UB+SA recipients	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
1=female	0.48	(0.50)	0.44	(0.50)	0.56	(0.50)
Age	38.74	(11.12)	39.49	(11.79)	37.32	(9.57)
1=bad health	0.07	(0.25)	0.06	(0.24)	0.07	(0.26)
1=primary education	0.48	(0.50)	0.52	(0.50)	0.39	(0.49)
1=secondary education	0.38	(0.49)	0.35	(0.48)	0.44	(0.50)
1=tertiary education	0.14	(0.35)	0.13	(0.34)	0.17	(0.38)
Household size	3.72	(1.41)	3.62	(1.40)	3.90	(1.39)
Log Household income (PPP) ⁽¹⁾	9.27	(0.96)	9.32	(0.94)	9.17	(0.98)
1=SA recipient	0.35	(0.48)	-	-	-	-
UB replacement rate ⁽²⁾	0.68	(0.27)	0.66	(0.22)	0.71	(0.33)
SA replacement rate ⁽²⁾	0.08	(0.30)	-	-	0.22	(0.48)
SA+UB replacement rate	0.76	(0.46)	-	-	0.93	(0.69)
Maximum entitlement of UB (in months) ⁽³⁾	39.13	(39.27)	35.89	(38.25)	52.04	(40.64)
Regional unemployment rate	12.39	(6.39)	13.36	(6.95)	10.56	(4.67)
Country long term unemployment rate ⁽⁴⁾	45.93	(12.26)	48.49	(11.53)	41.11	(12.15)
Duration of all unemployment spells	7.59	(7.92)	7.27	(7.38)	8.19	(8.82)
Duration of completed unemployment spells	6.79	(6.69)	6.58	(6.34)	7.21	(7.29)
Fraction of completed spells	0.78		0.78		0.77	
ending into employment	0.65		0.68		0.60	
ending into inactivity	0.13		0.10		0.17	
<i>Number of spells</i>	12460		8146		4314	
<i>Number of individuals</i>	7917		5225		3116	

(1) Income of all other household members

(2) Monthly benefit / previous monthly wage. UB amount imputed on the basis of country regulations and personal characteristics (MISSOC, 1994-2001).

(3) Imputed on the basis of country regulations and personal characteristics (MISSOC, 1994-2001). The numbers refer to individuals whose unemployment benefit entitlement is limited. In some countries unemployment assistance schemes are available and make unemployment benefit duration unlimited.

(4) % of unemployed workers who have been unemployed for more than 12 months. Source: OECD.

Table 4: Proportional Hazard Model for unemployment duration – Exits into Jobs

	[1]	[2]	[3]	[4]	[5]
<i>Personal and Family characteristics...</i>					
1=female	-0.325*** (0.039)	-0.298*** (0.040)	-0.298*** (0.040)	-0.293*** (0.040)	-0.292*** (0.040)
age	0.097*** (0.012)	0.110*** (0.013)	0.110*** (0.013)	0.110*** (0.013)	0.110*** (0.013)
age squared	-0.001*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)
1=bad health	-0.508*** (0.095)	-0.481*** (0.095)	-0.480*** (0.095)	-0.481*** (0.095)	-0.481*** (0.095)
1=primary education	0.043 (0.041)	0.017 (0.041)	0.022 (0.042)	0.022 (0.042)	0.022 (0.042)
1=tertiary education	0.126** (0.056)	0.128** (0.056)	0.132** (0.055)	0.131** (0.055)	0.130** (0.055)
household size	-0.020 (0.015)	0.005 (0.015)	0.005 (0.015)	0.008 (0.015)	0.008 (0.015)
(log) hh income ¹	0.011 (0.017)	-0.026 (0.017)	-0.025 (0.016)	-0.028* (0.017)	-0.028* (0.017)
<i>Social Transfers ...</i>					
UB replacement rate [UBp] ²	-0.259*** (0.085)	-0.219*** (0.083)	-0.230** (0.106)	-0.217** (0.087)	-
UBp·(time<=3)	0.224** (0.096)	0.212** (0.095)	0.210** (0.095)	0.213** (0.097)	-
1=SA recipient	-	-0.345*** (0.042)	-0.312*** (0.106)	-0.286*** (0.046)	-0.289*** (0.044)
SA replacement rate ³	-	-	-	-0.189* (0.106)	-
Total replacement rate ⁴	-	-	-	-	-0.227*** (0.069)
Total rep. rate·(time<=3)	-	-	-	-	0.171** (0.078)
<i>“Months to UB exhaustion” dummies...</i>					
1=less than 1 months [EX1]	0.476*** (0.183)	0.471*** (0.183)	0.584*** (0.216)	0.588*** (0.215)	0.581*** (0.214)
1=1 to 3 months [EX1_3]	0.450*** (0.125)	0.442*** (0.126)	0.549*** (0.138)	0.553*** (0.137)	0.544*** (0.136)
1=3 to 6 months [EX3_6]	0.195* (0.105)	0.185* (0.105)	0.112 (0.119)	0.116 (0.118)	0.107 (0.117)
1=6 to 12 months [EX6_12]	0.304*** (0.074)	0.286*** (0.073)	0.401*** (0.083)	0.403*** (0.083)	0.396*** (0.082)
<i>Interaction terms.</i>					
(1=SA rec.)·UBp [I1]	-	-	-0.006 (0.139)	-	-
(1=SA rec.) (EX1 [I2]	-	-	-0.460 (0.368)	-0.465 (0.359)	-0.456 (0.359)
(1=SA rec.) (EX1_3 [I3]	-	-	-0.631** (0.292)	-0.637** (0.291)	-0.628** (0.291)
(1=SA rec.) (EX3_6 [I4]	-	-	0.234 (0.211)	0.233 (0.209)	0.242 (0.208)
(1=SA rec.) (EX6_12 [I5]	-	-	-0.385** (0.150)	-0.384** (0.149)	-0.392*** (0.149)
<i>Country/Region specific characteristics...</i>					
Regional unemployment rate	0.004 (0.003)	-0.000 (0.003)	-0.000 (0.003)	-0.000 (0.003)	-0.000 (0.003)
National long-term un. rate ⁵	-0.005** (0.002)	-0.009*** (0.002)	-0.009*** (0.002)	-0.009*** (0.002)	-0.009*** (0.002)
Year dummies	yes	yes	yes	yes	yes
Non-parametric baseline	yes	yes	yes	yes	yes
Observations	111900	111900	111900	111900	111900
Subjects	12460	12460	12460	12460	12460
Log-likelihood	-28839.78	-28748.46	-28734.23	-28731.17	-28731.78

1. Income of all other household members.

2. monthly UB amount / previous wage. UB amount imputed on the basis of country regulations and personal characteristics (MISSOC, 1993-2001).

3. monthly SA amount / previous wage

4. UB + SA / previous wage

5. Source: OECD.

Robust standard errors in parentheses (clustered by individual). * significant at 10%; ** significant at 5%; *** significant at 1%

Table 5: Proportional Hazard Model for unemployment duration – Exits into Jobs

	[1]	[3]
<i>Personal and Family characteristics...</i>		
1=female	-0.299*** (0.026)	-0.299*** (0.026)
age	0.109*** (0.009)	0.109*** (0.007)
age squared	-0.002*** (0.000)	-0.002*** (0.000)
1=bad health	-0.481*** (0.053)	-0.479*** (0.053)
1=primary education	0.017 (0.027)	0.022 (0.027)
1=tertiary education	0.127*** (0.034)	0.132*** (0.034)
household size	0.004 (0.010)	0.004 (0.010)
(log) hh income ¹	-0.025* (0.013)	-0.025* (0.013)
<i>Social Transfers ...</i>		
UB replacement rate [UBp] ²	-0.222*** (0.064)	-0.235*** (0.077)
UBp·(time<=3)	0.213*** (0.057)	0.210*** (0.057)
Prob. of receiving SA ³ [PrSA]	-0.357*** (0.028)	-0.326*** (0.083)
<i>"Months to UB exhaustion" dummies...</i>		
1=less than 1 months [EX1]	0.471*** (0.138)	0.586*** (0.166)
1=1 to 3 months [EX1_3]	0.442*** (0.107)	0.577*** (0.120)
1=3 to 6 months [EX3_6]	0.185** (0.082)	0.103 (0.101)
1=6 to 12 months [EX6_12]	0.288*** (0.050)	0.424*** (0.057)
<i>Interaction terms..</i>		
PrSA · UBp [I1]	-	-0.002 (0.111)
PrSA · EX1 [I2]	-	-0.398 (0.319)
PrSA · EX1_3 [I3]	-	-0.649*** (0.245)
PrSA · EX3_6 [I4]	-	0.234 (0.175)
PrSA · EX6_12 [I5]	-	-0.404*** (0.112)
<i>Country/Region specific characteristics...</i>		
Regional unemployment rate	-0.000 (0.002)	-0.000 (0.002)
National long-term un. rate ⁴	-0.009*** (0.001)	-0.009*** (0.001)
Year dummies	yes	yes
Non-parametric baseline	yes	yes
Observations	111900	111900
Subjects	12460	12460
Log-likelihood	-28750.08	-28736.47

1. Income of all other household members.

2. monthly UB amount / previous wage. UB amount imputed on the basis of country regulations and personal characteristics (MISSOC, 1993-2001).

3. Probit prediction. See appendix for full specification.

5. Source: OECD.

Bootstrapped standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

Appendix A:

Additional estimation results

Table A.1 Proportional Hazard Model for unemployment duration – Exits into Jobs

	[1]	[2]	[3]	[4]	[5]
<i>Personal and Family characteristics...</i>					
1=female	-0.456*** (0.034)	-0.427*** (0.034)	-0.426*** (0.034)	-0.418*** (0.034)	-0.418*** (0.034)
age	0.125*** (0.011)	0.141*** (0.011)	0.140*** (0.011)	0.141*** (0.011)	0.140*** (0.011)
age squared	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)
1=bad health	-0.484*** (0.054)	-0.459*** (0.054)	-0.459*** (0.054)	-0.459*** (0.054)	-0.459*** (0.054)
1=primary education	0.046 (0.035)	0.018 (0.035)	0.021 (0.035)	0.020 (0.035)	0.022 (0.035)
1=tertiary education	0.216*** (0.046)	0.219*** (0.046)	0.217*** (0.046)	0.216*** (0.046)	0.215*** (0.046)
household size	-0.029** (0.013)	0.001 (0.013)	0.001 (0.013)	0.006 (0.013)	0.005 (0.013)
(log) hh income ¹	0.018 (0.016)	-0.026 (0.016)	-0.025 (0.016)	-0.029* (0.016)	-0.028* (0.016)
<i>Social Transfers ...</i>					
UB replacement rate [UBp] ²	-0.258*** (0.085)	-0.214** (0.084)	-0.201* (0.107)	-0.196** (0.087)	-
UBp·(time<=3)	0.156** (0.063)	0.146** (0.063)	0.138** (0.063)	0.140** (0.064)	-
1=SA recipient	-	-0.452*** (0.035)	-0.404*** (0.111)	-0.394*** (0.040)	-0.403*** (0.038)
SA replacement rate ³	-	-	-	-0.252** (0.104)	-
Total replacement rate ⁴	-	-	-	-	-0.241*** (0.065)
Total rep. rate·(time<=3)	-	-	-	-	0.135** (0.054)
<i>“Months to UB exhaustion” dummies...</i>					
1=less than 1 months [EX1]	0.493*** (0.121)	0.491*** (0.121)	0.591*** (0.137)	0.592*** (0.136)	0.576*** (0.135)
1=1 to 3 months [EX1_3]	0.421*** (0.091)	0.417*** (0.091)	0.504*** (0.101)	0.505*** (0.099)	0.491*** (0.097)
1=3 to 6 months [EX3_6]	0.228*** (0.084)	0.222*** (0.084)	0.108 (0.101)	0.110 (0.100)	0.098 (0.098)
1=6 to 12 months [EX6_12]	0.380*** (0.062)	0.365*** (0.062)	0.459*** (0.072)	0.459*** (0.072)	0.451*** (0.071)
<i>Interaction terms..</i>					
(1=SA rec.)·UBp [I1]	-	-	-0.043 (0.159)	-	-
(1=SA rec.) (EX1 [I2]	-	-	-0.408 (0.287)	-0.402 (0.282)	-0.393 (0.282)
(1=SA rec.) (EX1_3 [I3]	-	-	-0.525** (0.244)	-0.519** (0.239)	-0.513** (0.239)
(1=SA rec.) (EX3_6 [I4]	-	-	0.379** (0.174)	0.388** (0.167)	0.392** (0.167)
(1=SA rec.) (EX6_12 [I5]	-	-	-0.302** (0.128)	-0.296** (0.123)	-0.301** (0.123)
<i>Country/Region specific characteristics...</i>					
Regional unemployment rate	0.002 (0.003)	-0.003 (0.003)	-0.003 (0.003)	-0.003 (0.003)	-0.003 (0.003)
National long-term un. rate ⁵	-0.009*** (0.002)	-0.014*** (0.002)	-0.014*** (0.002)	-0.014*** (0.002)	-0.014*** (0.002)
Year dummies	yes	yes	yes	yes	yes
Non-parametric baseline	yes	yes	yes	yes	yes
Observations	111900	111900	111900	111900	111900
# of spells	12460	12460	12460	12460	12460
# of individuals	7917	7917	7917	7917	7917
Distribution of heterogeneity (v)	normal	normal	normal	normal	normal
variance of v	0.879*** (0.029)	0.872*** (0.028)	0.870*** (0.029)	0.870*** (0.029)	0.870*** (0.029)
Log-likelihood	-28526.61	-28441.04	-28430.64	-28427.29	-28426.88

1. Income of all other household members.

2. monthly UB amount / previous wage. UB amount imputed on the basis of country regulations and personal characteristics (MISSOC, 1993-2001).

3. monthly SA amount / previous wage

4. UB + SA / previous wage

5. Source: OECD.

Robust standard errors in parentheses (clustered by individual). * significant at 10%; ** significant at 5%; *** significant at 1%

Table A.2: Proportional Hazard Model for unemployment duration – Exits into Jobs

	[1]	[3]
<i>Personal and Family characteristics...</i>		
1=female	-0.435*** (0.034)	-0.425*** (0.034)
age	0.136*** (0.011)	0.141*** (0.011)
age squared	-0.002*** (0.000)	-0.002*** (0.000)
1=bad health	-0.473*** (0.053)	-0.465*** (0.054)
1=primary education	0.030 (0.035)	0.024 (0.035)
1=tertiary education	0.224*** (0.046)	0.222*** (0.046)
household size	-0.014 (0.013)	-0.005 (0.013)
(log) hh income ¹	-0.010 (0.016)	-0.022 (0.016)
<i>Social Transfers ...</i>		
UB replacement rate [UBp] ²	-0.230*** (0.084)	-0.016 (0.093)
UBp·(time<=3)	0.156** (0.064)	0.142** (0.064)
Prob. of receiving SA ³ [PrSA]	-0.393*** (0.038)	-0.116** (0.054)
<i>“Months to UB exhaustion” dummies...</i>		
1=less than 1 months [EX1]	0.514*** (0.121)	0.687*** (0.144)
1=1 to 3 months [EX1_3]	0.417*** (0.092)	0.593*** (0.105)
1=3 to 6 months [EX3_6]	0.204** (0.085)	0.121 (0.107)
1=6 to 12 months [EX6_12]	0.373*** (0.062)	0.517*** (0.075)
<i>Interaction terms..</i>		
PrSA · UBp [I1]	-	-0.500*** (0.076)
PrSA · EX1 [I2]	-	-0.534* (0.288)
PrSA · EX1_3 [I3]	-	-0.692*** (0.247)
PrSA · EX3_6 [I4]	-	0.266 (0.176)
PrSA · EX6_12 [I5]	-	-0.440*** (0.128)
<i>Country/Region specific characteristics...</i>		
Regional unemployment rate	-0.001 (0.003)	-0.002 (0.003)
National long-term un. rate ⁴	-0.012*** (0.002)	-0.013*** (0.002)
Year dummies	yes	yes
Non-parametric baseline	yes	yes
# of observations	111900	111900
# of spells	12460	12460
# of individuals	7917	7917
Distribution of heterogeneity (v)	normal	normal
variance of v	0.855*** (0.029)	0.860*** (0.029)
Log-likelihood	-27986.50	-27951.19

1. Income of all other household members.

2. monthly UB amount / previous wage. UB amount imputed on the basis of country regulations and personal characteristics (MISSOC, 1993-2001).

3. Probit prediction. See appendix for full specification.

5. Source: OECD.

Robust standard errors in parentheses (clustered by individual). * significant at 10%; ** significant at 5%; *** significant at 1%

Table A.3: Probit regressions for the probability of receiving Social Assistance (ECHP 2001) – continues...

	Austria	Belgium	Denmark	Finland	France	Germany
1=female	0.168*** (0.039)	0.744*** (0.047)	1.185*** (0.052)	0.588*** (0.039)	-0.548*** (0.032)	-0.273*** (0.029)
Age	-0.000 (0.001)	-0.002 (0.002)	-0.008*** (0.002)	-0.011*** (0.001)	-0.002 (0.001)	0.000 (0.001)
1=primary education	-0.241*** (0.046)	-0.256*** (0.057)	-0.217*** (0.063)	-0.265*** (0.050)	0.030 (0.051)	-0.361*** (0.037)
1=tertiary education	0.237*** (0.076)	0.114** (0.057)	0.007 (0.062)	-0.011 (0.050)	-0.044 (0.054)	0.273*** (0.037)
1=bad health	0.694*** (0.074)	0.656*** (0.104)	0.605*** (0.109)	0.309*** (0.094)	0.452*** (0.058)	0.154*** (0.040)
Household size	0.058*** (0.021)	0.176*** (0.032)	0.253*** (0.050)	0.435*** (0.033)	0.142*** (0.022)	0.297*** (0.022)
Number of children	0.323*** (0.027)	0.319*** (0.033)	0.307*** (0.053)	-0.005 (0.036)	0.535*** (0.025)	0.355*** (0.023)
Household total disposable income	-0.413*** (0.033)	-0.313*** (0.043)	-0.884*** (0.052)	-0.570*** (0.035)	-0.509*** (0.025)	-0.702*** (0.030)
1=house owner	0.191*** (0.048)	0.011 (0.060)	-0.442*** (0.063)	-0.413*** (0.055)	-0.482*** (0.035)	-0.042 (0.034)
# of rooms per household member	-0.123*** (0.031)	-0.173*** (0.036)	-0.242*** (0.038)	-0.024 (0.031)	-0.084*** (0.025)	-0.050* (0.026)
Constant	4.312*** (0.420)	3.087*** (0.593)	10.247*** (0.597)	6.146*** (0.373)	5.574*** (0.286)	6.219*** (0.311)
Observations	5526	4180	3732	5021	9170	10203
Log-likelihood	-2878.17	-2024.62	-1676.46	-2761.15	-4278.50	-5085.56

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table A.3: Probit regressions for the probability of receiving Social Assistance (ECHP 2001) - continued

	Greece	Ireland	Italy	Luxembourg	Portugal	Spain	United Kingdom
1=female	0.333*** (0.045)	0.972*** (0.047)	-0.227*** (0.035)	-0.871*** (0.046)	-0.410*** (0.029)	-0.017 (0.036)	0.770*** (0.033)
Age	0.004*** (0.001)	0.006*** (0.002)	0.005*** (0.001)	0.003* (0.002)	-0.006*** (0.001)	-0.007*** (0.001)	0.006*** (0.001)
1=primary education	0.286*** (0.061)	0.103* (0.055)	0.008 (0.043)	-0.107*** (0.052)	0.002 (0.047)	0.031 (0.053)	0.032 (0.047)
1=tertiary education	0.029 (0.093)	0.057 (0.071)	-0.201** (0.083)	0.305*** (0.069)	0.248*** (0.068)	-0.023 (0.063)	0.084* (0.045)
1=bad health	0.813*** (0.062)	0.445*** (0.144)	0.709*** (0.051)		0.291*** (0.041)	0.693*** (0.053)	0.555*** (0.056)
Household size	0.212*** (0.022)	0.041 (0.026)	0.029 (0.019)	0.177*** (0.028)	-0.048*** (0.015)	0.085*** (0.019)	-0.011 (0.024)
Number of children	0.090*** (0.029)	0.282*** (0.027)	0.178*** (0.024)	0.367*** (0.034)	0.450*** (0.021)	-0.018 (0.025)	0.570*** (0.028)
Household total disposable income	-0.245*** (0.034)	-0.661*** (0.043)	-0.181*** (0.027)	-0.700*** (0.049)	-0.152*** (0.022)	-0.338*** (0.019)	-0.448*** (0.027)
1=house owner	-0.304*** (0.059)	-0.153*** (0.076)	-0.063 (0.043)	0.136** (0.057)	0.057* (0.034)	-0.128** (0.051)	-0.426*** (0.042)
# of rooms per household member	0.131*** (0.042)	-0.202*** (0.038)	-0.097*** (0.033)	-0.132*** (0.034)	-0.229*** (0.027)	-0.143*** (0.035)	-0.114*** (0.023)
Constant	0.796 (0.516)	5.519*** (0.432)	0.139 (0.283)	9.099*** (0.676)	2.056*** (0.320)	3.801*** (0.297)	3.522*** (0.258)
Observations	9172	3948	13170	4561	10850	11893	8023
Log-likelihood	-2044.10	-2005.10	-2982.76	-2114.99	-5070.99	-2849.02	-4080.77

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Appendix B:

Descriptive tables of Welfare programmes
in European countries

TABLE B1. UNEMPLOYMENT BENEFIT IN EUROPEAN COUNTRIES (situation on January 2001)

Country	Existing schemes	Qualifying period ¹	Duration of payment ²	Rate ³
<i>Belgium</i>	Insurance	Variable according to age	No limit	60% to 55% initially declining to 44%-35% as unemployment continues 90% of reference earnings
<i>Denmark</i>	Insurance (optional) Insurance Assistance	52 weeks in the preceding 3 years 12 months in the preceding 3 years	1+3 years	Insurance: 60%-67% of net earnings Assistance: 57%-53% of net earnings
<i>Germany</i>	Insurance Assistance	125 days of work during the 14 months preceding job loss or, at least, 200 days of work during the 2 years preceding job loss.	Depending on age and contribution history (between 12 and 64 months) Depending on contribution history (between 5 and 12 months)	40%-50% of earnings
<i>Greece</i>	Insurance	12 months in the previous 6 years	Depending on contribution history	Insurance: 70%-60% of reference earnings
<i>France</i>	Insurance Assistance	least 4 months insurance in last 18 months.	Depending on age and contribution history (between 4 and 60 months)	Assistance: 75% of minimum wage Insurance: 40.4%-57.4% of earnings, declining.
<i>Ireland</i>	Insurance Assistance	39 weeks' contributions paid	390 days	Assistance: lump sum Insurance: 98€ per week
<i>Italy</i>	Insurance	Varies according to the industry	Depending on the industry (180 days or 90 days or 36 months)	Assistance: 97-98€ per week 30%-80% of earnings
<i>Luxembourg</i>	Insurance	26 weeks of employment during the last year	365+182 days	80% of earnings
<i>Netherlands</i>	Insurance Assistance	26 weeks of employment during the last 39 months	6 months+ 9 months to 5 years depending on age and employment history.	Insurance: 70% of earnings Assistance: 70% of minimum wage
<i>Austria</i>	Insurance Assistance	52 weeks during the last 24 months	Depending on age and contribution history (between 20 to 78 weeks)	Insurance: 55% of earnings + lump sum Assistance: 92-95% of unemployment insurance
<i>Portugal</i>	Insurance Assistance	540 days during the last 24 months	Depending on age (between 12 and 30 months)	Insurance: 65% of earnings Assistance: 70%-100% of minimum wage
<i>Finland</i>	Insurance Assistance	43 weeks of employment during the last 24 months	500 days	Insurance: lump sum (21€ per day) + earning related supplement Assistance: lump sum (21€ per day)
<i>Sweden</i>	Insurance	6 months of employment	Depending on age (between 300 and 450 days)	Insurance: 80% of earnings
<i>United Kingdom</i>	Insurance Assistance	Contributions paid in one of the 2 tax years on which the claim is based amounting to at least 25 times the minimum contribution for that year	182 days	Insurance: lump sum (65-83€ per week) Assistance: lump sum (99-130€ per week for a couple)

(1) Qualifying periods refer to working periods during which contributions are paid unless otherwise specified.

(2) When duration is expressed in days these usually refer to a 5 or 6 day weekly payments. Duration usually refers only to insurance schemes, unemployment assistance is typically unlimited.

(3) When different rates are specified for the same scheme, the actual rate depends on family characteristics, age, contribution history or duration of unemployment. Only basic rates are reported, excluding any supplement (family, old age, etc.)

Source: European Commission *Missoc 2001*.

TABLE B2. INVALIDITY BENEFITS IN EUROPEAN COUNTRIES (situation on January 2001)

Country	Type of benefit	minimum level of incapacity ¹	Qualifying conditions	Duration	Amount of benefit ²
<i>Belgium</i>	Incapacity benefit	66.66%	6 months of contributions with 120 days worked	Until retirement	40-65% of last earnings
<i>Denmark</i>	Incapacity pension	50%	3 years of residence	Until retirement	Depends on incapacity (from 6,856€ to 18,012€ per year)
<i>Germany</i>	Incapacity benefit	50%	60 months of work with 36 months of contributions in the previous 5 years	Until retirement	Depends on incapacity
<i>Greece</i>	Incapacity pension	50%	Between 5 and 15 years of work with 300 to 1500 contributions' days (depending on age)	Until retirement	Depends on incapacity
<i>Spain</i>	Incapacity pension	33%	Worked 1/2 of the time between age 20 and the claim	Until retirement	50%-100% of reference earnings
<i>France</i>	Incapacity pension	66.66%	12 months of work with sufficient contributions paid	Until retirement	30%-50% of annual earnings
<i>Ireland</i>	Incapacity pension	Eligible only after 12 months of sickness benefit	260 contributions' weeks	Until retirement	Depends on age (103-128€ per week)
<i>Italy</i>	<ul style="list-style-type: none"> • Incapacity pension • Incapacity benefit 	<ul style="list-style-type: none"> • 66% • 100% 	5 years of contributions	Until retirement	Depends on income and contribution records
<i>Luxembourg</i>	Incapacity pension	Eligible if incapacity prevents the beneficiary from doing his last job (or a similar one)	12 months in the previous 3 years	Until retirement	Depends on contribution records
<i>Netherlands</i>	Incapacity pension	25%	None	Until retirement	Depends on incapacity
<i>Austria</i>	Incapacity pension	50%	60 contributions' months in the previous 120 months	Until retirement	Depends on income
<i>Portugal</i>	Incapacity pension	66.66%	5 years	Until retirement	Depends on contribution records
<i>Finland</i>	Incapacity pension	40%	3 years of residence	Until retirement	Depends on age
<i>Sweden</i>	Incapacity pension	25%	Residence in Sweden	Until retirement	25%-100% of basic pension
<i>United Kingdom</i>	<ul style="list-style-type: none"> • Short-term incapacity • Long-term incapacity 	100%	<ul style="list-style-type: none"> • Enough contributions paid • Having exhausted short-term incapacity benefit 	<ul style="list-style-type: none"> • 364 days • Until retirement 	<ul style="list-style-type: none"> Lump sum Depends on age.

(1) Reduced capacity of earning or work unless otherwise specified.

(2) When a range is specified this usually varies with age and contribution records.

Source: European Commission *Missec 2001*.

TABLE B3. FAMILY CASH BENEFITS IN EUROPEAN COUNTRIES (situation on January 2001)

Country	Income Test	Age Limit ⁽¹⁾	Calculation of benefit	Supplement for single parents
<i>Belgium</i>	No	18 to 25	Depends on the age of the child	No
<i>Denmark</i>	No	18	Depends on the age of the child	Yes
<i>Germany</i>	Yes	18	Depends on the number of children	No
<i>Greece</i>	Yes	18 to 22	Depends on the number of children	Only for widows
<i>Spain</i>	Yes	18	Depends on the age of the child	No
<i>France</i>	No	18 to 20	Depends on the number of children	Yes
<i>Ireland</i>	No	16 to 19	Depends on the number and age of the children	Yes
<i>Italy</i>	Yes	18	Depends on family and number of children	Yes
<i>Luxembourg</i>	No	18 to 27	Depends on the number and age of the children	No
<i>Netherlands</i>	No	17 to 24	Depends on the number and age of the children	No
<i>Austria</i>	No	19 to 26	Depends on the number of children	No
<i>Portugal</i>	Yes	15 to 24	Depends on the number of children	No
<i>Finland</i>	No	16	Depends on the number of children	Yes
<i>Sweden</i>	No	16	Depends on the number of children	Yes
<i>United Kingdom</i>	No	16 to 19	Depends on the number of children	Yes

(1) Benefits are paid until the child reaches this age limit, which is extended for children in training or higher education.

Source: European Commission *Miscoc 2001*.

TABLE B4. HOUSING BENEFITS IN EUROPE (situation in 1999)

Country	Type of Benefit	Qualifying conditions	Calculation of benefit
<i>Belgium</i>	No direct benefit but social housing is available	-	-
<i>Denmark</i>	<ul style="list-style-type: none"> • General housing benefit (open to everybody) • Special housing benefit (for those receiving income support) Housing benefit	<ul style="list-style-type: none"> • Means test • Occurrence of a negative "social event" that affects housing. Means test	Depending on income, family composition and rent
<i>Germany</i>	Housing benefit	Means test	Income related
<i>Greece</i>	No direct benefit but a tax allowance for house rents is available.	-	-
<i>Spain</i>	No general housing benefit but some regions have introduced one.	-	-
<i>France</i>	Housing benefit	<ul style="list-style-type: none"> • Means test • Children in the household • Married for less than 5 years 	Depending on income, rent and family composition
<i>Ireland</i>	Housing Supplement for those under Social Welfare Allowance	<ul style="list-style-type: none"> • Means test • Receiving Social Welfare Allowance 	Depending on Income
<i>Italy</i>	No direct benefit but social housing is available	-	-
<i>Luxembourg</i>	Housing Supplement for those under RMI	<ul style="list-style-type: none"> • Means test • Receiving RMI Means tested	Depending on Income
<i>Netherlands</i>	Housing benefit	Means tested	Depending on income and rent
<i>Austria</i>	Housing Supplement for those under Social Assistance (but it varies across regions)	Varies across regions	Varies across regions
<i>Portugal</i>	Housing Supplement for those under RMI	Means tested	Depending on income
<i>Finland</i>	<ul style="list-style-type: none"> • Housing benefit for low income households • Housing benefit for pensioners • Housing benefit for students 	Means tested	Depending on income, family composition and town of residence
<i>Sweden</i>	<ul style="list-style-type: none"> • Housing benefit for low income households • Housing supplement for social assistance recipients • Housing benefit for pensioners 	Means tested	Depending on income, rent and family composition
<i>United Kingdom</i>	Housing benefit	Means tested	Depending on income and rent. Special supplements for those under Income Support, young and old households.

Source: OECD, *Benefit System and Work Incentives (2002)*.

TABLE B5. LOW-INCOME BENEFITS IN EUROPE (situation on January 2001)

Country	Denomination	Qualifying conditions	Duration	Willingness to work requirement ¹
<i>Belgium</i>	Minimum de Moyens d'Existence (MINEX)	<ul style="list-style-type: none"> • Nationals and refugees • Resident in the country • Aged 18y.o. and above 	Unlimited	Yes
<i>Denmark</i>	Sozial Bistand	All persons	Unlimited	Yes
<i>Germany</i>	Sozialhilfe	<ul style="list-style-type: none"> • National and refugees • Resident in the country 	Unlimited	
<i>Greece</i>	-	-	-	-
<i>Spain</i>	Renta Minima	<ul style="list-style-type: none"> • Resident in the country • Aged between 25 and 65y.o. • Resident in the country • Aged 25y.o. and above 	12 months	Yes
<i>France</i>	Revenu Minimum d'Insertion (RMI)	<ul style="list-style-type: none"> • Resident in the country • Aged 25y.o. and above 	3 to 12 months	Yes
<i>Ireland</i>	Supplementary Welfare Allowance	<ul style="list-style-type: none"> • Nationals and refugees • Resident in the country • Aged 18y.o. and above 	Unlimited	Yes
<i>Italy²</i>	Minimo Vitale/Reddito Minimo	<ul style="list-style-type: none"> • Resident in the country • Aged 18y.o. and above 	Varies across towns	Varies across towns
<i>Luxembourg</i>	Revenu Minimum Garanti	<ul style="list-style-type: none"> • Resident in the country • Aged 18y.o. and above 	Unlimited	Yes
<i>Netherlands</i>	Algemene Bijstand	<ul style="list-style-type: none"> • Nationals and refugees • Resident in the country • Aged 18y.o. and above • Resident in the country 	Unlimited	Yes
<i>Austria</i>	Sozialhilfe	<ul style="list-style-type: none"> • Resident in the country 	Unlimited	Yes
<i>Portugal³</i>	Rendimento Minimo Garantido	<ul style="list-style-type: none"> • Resident in the country • Aged 18y.o. and above 	12 months, extendible	Yes
<i>Finland</i>	Toimeentulotuki	None	Unlimited	Yes
<i>Sweden</i>	Social Bidrag	None	Unlimited	Yes
<i>United Kingdom</i>	Income Support	<ul style="list-style-type: none"> • Nationals • Resident in the country • Aged 18y.o. and above 	Unlimited	Yes

(1) For those who are able to work.

(2) There is no national legal framework for income support. Many towns, however, have introduced a minimum income scheme but rules vary widely across the nation. In 1998 an experiment was run in 39 towns with the objective of introducing a national minimum income scheme by the year 2000. The experiment has been extended to 2002 and then abandoned.

(3) Introduced in 1997.
Source: European Commission *Misoc 2001*.