

Unemployment Insurance and Social Assistance: interactions and the need for joint policy design*

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Abstract

The literature that explores the effects of unemployment benefit systems on re-employment probabilities is a rather large one. The main results of this strand of literature predict that reforms that lower either the level or the duration of benefits should reduce unemployment by increasing individual exit rates. However, data for Europe do not show any strong nor generalised positive effect of such reforms on unemployment. This paper provides an explanation for these failures by exploring the interactions between unemployment benefit and social assistance programmes. The main argument is based on the idea that 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 exhausted. Consequently, 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. The same holds for those who are likely to become eligible for social assistance in the future. From a more policy oriented perspective, these findings point towards careful joint design of unemployment benefit and social assistance reforms.

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1 Introduction

Numerous papers have already studied the impact of unemployment benefit (UB) on unemployment duration in many respects, resulting in a rather large literature. Two empirical findings are now widely accepted: higher unemployment benefits appear to be associated with longer unemployment spells¹; the duration of payments is also found to be relevant, as exit hazards (the instant probability of exiting unemployment) tend to be higher when exhaustion of unemployment insurance approaches.

The literature also provides a comprehensive theoretical framework for interpreting these findings. A rather standard search model à la Mortensen can easily deliver negative correlation between exit rates and unemployment benefit through search effort and reservation wages being respectively negatively and positively affected by income out of work. When unemployment benefit 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.

On the basis of these findings from the literature, one would expect reforms that reduce the level or the duration of unemployment benefits to have a positive impact on unemployment, and on long term unemployment in particular. However, this prediction does not seem to be confirmed by the macro evidence from Europe. Figure 1 shows long-term unemployment as a fraction of the labour force in the last two decades for selected European countries. The vertical lines indicate years in which reforms that have modified either the level or the duration of unemployment benefit have been implemented. Only Denmark in 1987 and Greece in 1990 increased the level of the benefits, all other reforms in the graphs are reductions either in the level or in the duration of the benefits. Already at first sight one does not recognise any strong and generalised positive effect of such reforms.

More convincing evidence can be produced for those countries where reforms took place during the years covered by the European Community Household Panel (ECHP)². This is possible for four countries only: Germany and Denmark where the duration of unemployment benefits was reduced in 1995 and 1996 respectively, Ireland and Greece where the level of the benefit was reduced in 1995 and 1996 respectively. Table 1 shows the estimated coefficients of the dummy for individuals who entered unemployment after the reform obtained from a hazard model with a very standard set of controls. Results confirm the visual impression one gets 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. If anything, it seems that reducing the duration is probably more effective than reducing the levels.

¹However, the elasticity of the hazard rate to the level of the unemployment benefit is usually estimated to be low (around 0.5-0.8) and Atkinson et al. (1984) show that results are far from robust.

²Data are described in section 4.1.

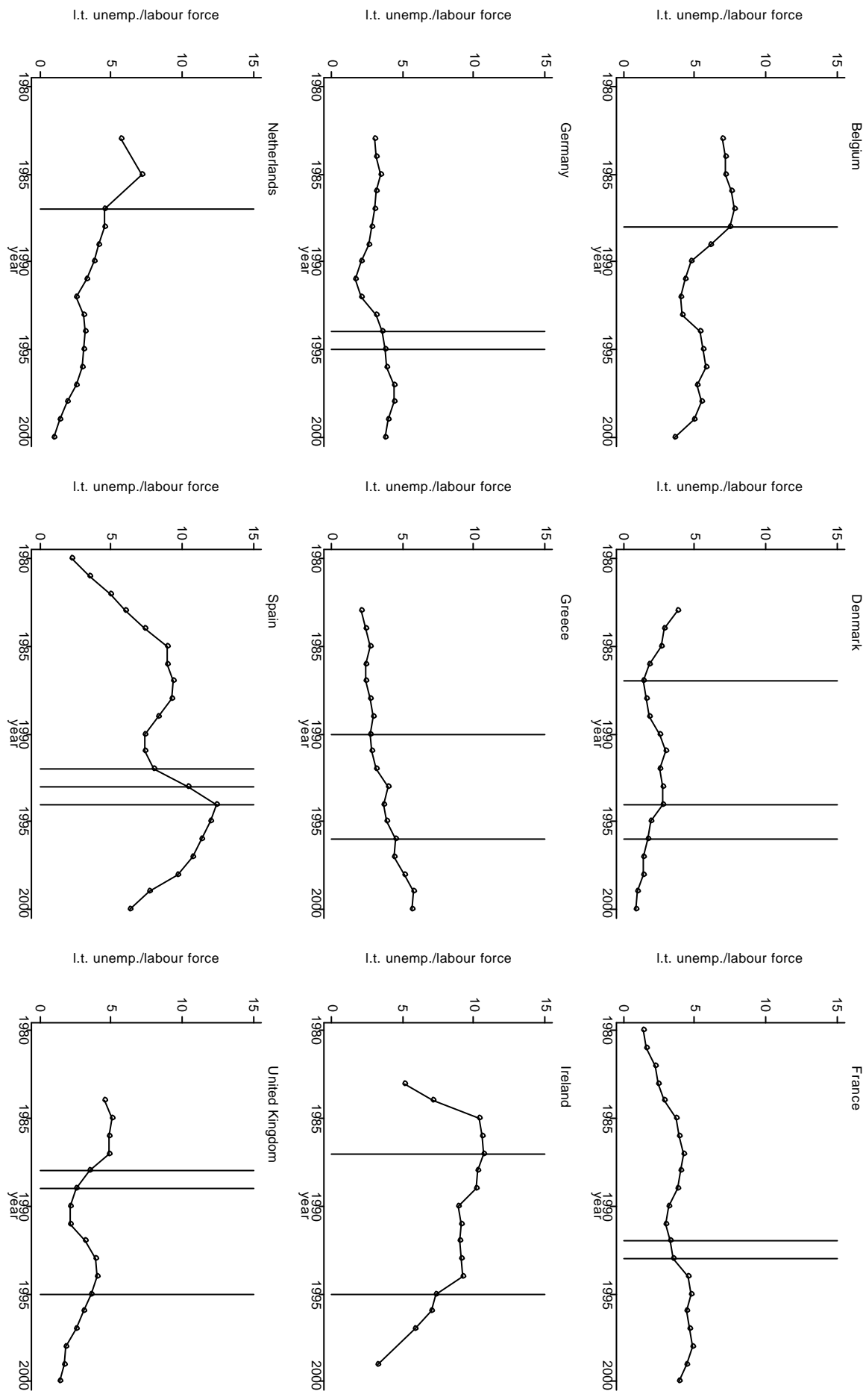


Figure 1: Long-term unemployment as a fraction of total labour force

The effect of UB reforms on the individual hazard rate

	Germany	Denmark	Ireland	Greece
Type of reform	(1995) reduced duration	(1996) reduced duration	1995 reduced benefit	(1996) reduced benefit
1=post reform	0.512 (0.331)	0.135 (0.255)	-0.394 (0.331)	-0.247 (0.256)
Covariates	<i>sex, age, health status, education, marital status, family size, dummy for children in the household, household income, country unemployment rate and rate of long term unemployment, piece-wise duration dependence.</i>			
Observations	1817	3067	2385	1371
Subjects	272	479	388	283
Log-likelihood	-481.50	-1060.11	-747.49	-534.93
% of sample affected by the reform	65	69	69	46

Robust standard errors in parentheses.
ECHP (1994-1997).

Table 1

This paper provides an explanation for the failure of so many reforms of the unemployment compensation systems in reducing unemployment. The main argument will be based on the idea that other welfare programmes may interact with unemployment compensation and generate unexpected and often undesired disincentives for the unemployed to take up jobs. The importance of interactions between welfare programmes has attracted the attention of both academics and policy makers. Recent studies³ have produced some 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.

In particular, this paper focuses on the potential interactions between unemployment benefit systems and other social assistance (SA) programmes⁴. But how can social assistance affect the exit rate from unemployment? In the paper two main channels are considered:

- UB recipients who also receive some social assistance would probably be less concerned about exhaustion of their benefit if, once this has expired, social assistance programmes top up family income⁵. In this case the time profile of total disposable income would appear to be flat even if UB payments decline;
- UB recipients who do not receive any social assistance may still expect to become eligible when their benefits expire. For these workers too reductions or exhaustion of unemployment benefit are less of a concern and do not affect much their search effort nor their reservation wages.

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

³Belot and Van Our (2000), Coe and Snower (1997), Daveri and Tabellini (1998), Elmeskov et al. (1998), Nickell and Van Ours (2000).

⁴family cash benefits, sickness and invalidity benefits, housing benefits, low-income benefits (minimum income schemes).

⁵Many social assistance programmes are typically means-tested. See section 2.

Europe. Section 3 shows how interactions between welfare programmes can be analysed in a standard search model. Section 4 describes the empirical strategy and the results of the estimation exercise. Section 5 concludes.

2 Unemployment Compensation and Social Assistance in European Countries

2.1 Institutional Framework

European countries are known for having very large and well developed welfare states even if there still is large variation in institutional details across countries. The comparison of different types of welfare state in Europe has been widely discussed by both the economic and the political literature⁶ and this section simply aims at providing a very general overview of welfare programmes in the years covered by the empirical analysis that will follow.

Excluding old age pensions (which are still the major component of welfare provision in many countries both in terms of expenditure and beneficiaries), 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 will not be considered here even if they might actually 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 usually a 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. Although unemployment insurance is usually very generous, benefits are typically paid only for a limited period of time (with Belgium, where payments are unlimited, being a notable exception) and various re-eligibility conditions apply for repeated spells of unemployment. Therefore unemployment insurance schemes do not cover the whole population: young workers - and anybody who has not paid enough contributions - and the long term unemployed who have exhausted their benefits are not entitled to receive compensation. 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 these general characteristics, the details of unemployment benefits vary widely across countries.

Invalidity benefits are another important component of welfare systems 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 contribution conditions with

⁶Beauret al. (1998), Bertola et. al (2000), Esping-Andersen (1990), Ferrera (1998).

some exceptions like the Netherlands where no qualifying conditions are required and Finland and Sweden where 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 paid regardless of income to any household with children. These benefits are paid until the child reaches a certain age and amounts vary according to the child's age and to the number of children in the household. Some countries have also introduced 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 households.

Finally, all countries, with the exception of Greece, also provide a general social assistance scheme that aims at preventing poverty for those individuals or families that do not qualify for any of the other "categorical" benefits or that still remain under a variously defined income threshold. Qualifying conditions for this type of assistance usually relate to nationality, residence and age. All countries also requires 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 European countries can be found in the appendix.

2.2 Welfare Reforms in Europe

Table 2 presents a list of reforms that took place in European countries in the last two decades. Apparently policy makers have been listening to economists in this period as many reforms have actually changes the unemployment compensation system by reducing either the level or the duration of benefits. 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 UB reforms is partly due to the lack of coordination in reforming unemployment benefits and other welfare programmes.

By looking at table (2), some notable facts emerge. First, in the effort of reducing 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 improved work requirement for the unemployed. Only few reforms addressed other welfare programmes and even fewer tried to comprehensively change several programmes at a time (Germany in 1998, Ireland in 1993, the United Kingdom in 1995).

<i>COUNTRY</i>	<i>REFORMS</i>
<u>Austria</u>	<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
<u>Belgium</u>	<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.
<u>Denmark</u>	<ul style="list-style-type: none"> • 1987: <i>Unemployment benefit</i> payments are increased. • 1994: Labour Market Reform: <i>unemployment benefit</i> duration is reduced and eligibility conditions are tightened. • 1996: Follow-up of Labour Market Reform: <i>unemployment benefit</i> duration is reduced and eligibility conditions are tightened.
<u>France</u>	<ul style="list-style-type: none"> • 1992: Reform of <i>unemployment benefits</i> that introduces a downward sliding scale for payments. • 1993: <i>Unemployment benefit</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.
<u>Germany</u>	<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.).
<u>Greece</u>	<ul style="list-style-type: none"> • 1990: <i>Unemployment benefit</i> duration is increased. • 1996: <i>Unemployment benefits</i> are reduced.
<u>Ireland</u>	<ul style="list-style-type: none"> • 1987: <i>Unemployment benefits</i> are reduced. • 1993: Labour Market Reform: eligibility for <i>unemployment benefit</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.
<u>Italy</u>	<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.
<u>Netherlands</u>	<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>.
<u>Portugal</u>	<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.
<u>Spain</u>	<ul style="list-style-type: none"> • 1992: Reform of the <i>unemployment benefit</i> (reduced duration and payments). • 1993: <i>Unemployment benefits</i> are reduced. • 1994: <i>Unemployment benefits</i> are subject to taxation.
<u>Sweden</u>	<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 benefit</i>: benefits are reduced and re-qualification through subsidised jobs no longer available.

Table 2: *Welfare Reforms in Europe*

3 Mortensen under Social Assistance

The interaction between unemployment benefit and social assistance can be analysed in the framework of a very standard search model. This section relies heavily on the model presented in Mortensen (1977) where individuals choose their reservation wage (w_t) and search effort (s_t) in order to maximise the value of unemployment ($U(\cdot)$) according to the following first order conditions:

$$V(w_t^*, U_0) = U(t, b_t, U_0) \quad (1)$$

$$u_2(b_t, 1 - s_t^*) = \alpha \int_{w_t^*}^{\bar{w}} \{V(x, U_0) - U(t, b_t, U_0)\} dF(x) \quad (2)$$

where $U(t, b_t, U_0)$ is the value function of unemployment when benefits b_j have been received for t periods, with U_0 representing the value of unemployment in the first period, i.e. with full entitlement to unemployment benefit. $V(w_t, U_0)$ is the value of employment at wage w_t . Equation (1) then shows that the optimal reservation wage is set at a level that equalizes the value of employment and unemployment.

In equation (2) $u_2(b_t, 1 - s_t)$ represents per-period utility with income b_t and leisure $1 - s_t$, where s_t is search time⁷. $F(\cdot)$ is the exogenously given distribution of wage offers with support $(0, \bar{w}]$ and α is a parameter that, together with search effort, determines the instant probability of receiving an offer $\lambda_t = \alpha s_t$. An unemployed worker can allocate time to two different activities, search and leisure, hence optimal search time equalizes marginal utility of search and leisure, as shown in equation (2).

Note that both s_t^* and w_t^* are time-varying: equation (1) holds for all t and identifies a series of reservation wages, $\{w_j^*\}_0^\infty$, for a given known sequence of benefits, $\{b_j\}_0^\infty$. Given this series of reservation wages, equation (2) determines the series of optimal search times, $\{s_j^*\}_0^\infty$.

The instant probability of exiting unemployment - the hazard rate - is therefore calculated as:

$$q_t = \alpha s_t^* \cdot [1 - F(w_t^*)] \quad (3)$$

These results are useful to analyse the implications of different assumptions about the sequence of benefits for the exit rate. Equation (3) shows that the exit

⁷Total endowment of time is normalised to 1 and it is assumed that only one type of contract is available, i.e. workers can either be unemployed or work a fixed number of hours $1 - \bar{l}$. This simplifies the set-up by eliminating any labour-leisure trade-off. The equivalent per-period utility for a worker with wage w_t would then be: $u(w_t, 1 - \bar{l})$. Per-period utility satisfies the standard assumptions: it is twice differentiable with: $u_1(\cdot) > 0$, $u_2(\cdot) > 0$ and $u_{11}(\cdot) \leq 0$, $u_{22}(\cdot) \leq 0$

rate, q_t , is higher when search is more intensive ($s_t \uparrow$) and when the reservation wage decreases, i.e. when unemployed workers are less choosy about wage offers:

$$\begin{pmatrix} s_t \uparrow \\ w_t \downarrow \end{pmatrix} \implies q_t \uparrow$$

Let's then analyse how search time, reservation wages and exit rates look like for different time profiles of benefits.

3.1 Unemployment benefit without social assistance

Consider the standard case of an unemployed worker who receive a flat rate unemployment benefit (b) for a given number of periods, T , and nothing after that (cfr. 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 can only decrease. Equation (1) implies that the reservation wage will also decrease over time. Similarly, the right hand side of equation (2) increases with time (the value of unemployment enters with a negative sign and the derivative with respect to w_t , given equation (1), is zero⁸), 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/effort increases with time.

Note however, that at time T - i.e. when unemployment benefit expires - both equations (1) and (2) change as b_t discontinuously drops to zero. The value of unemployment is increasing in b_t and, given equation (1), this requires the reservation wage to jump down at T . The opposite happens with search time: at T optimal search time jumps up. Note incidentally that for this result 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).

⁸The derivative with respect to w_t of the right hand side of equation (2) is:

$$\frac{\partial RHS}{\partial w_t} = \alpha [V(w_t, U_0) - U(t, b_t, U_0)]$$

which is zero at the optimum, i.e. when $w_t = w_t^*$.

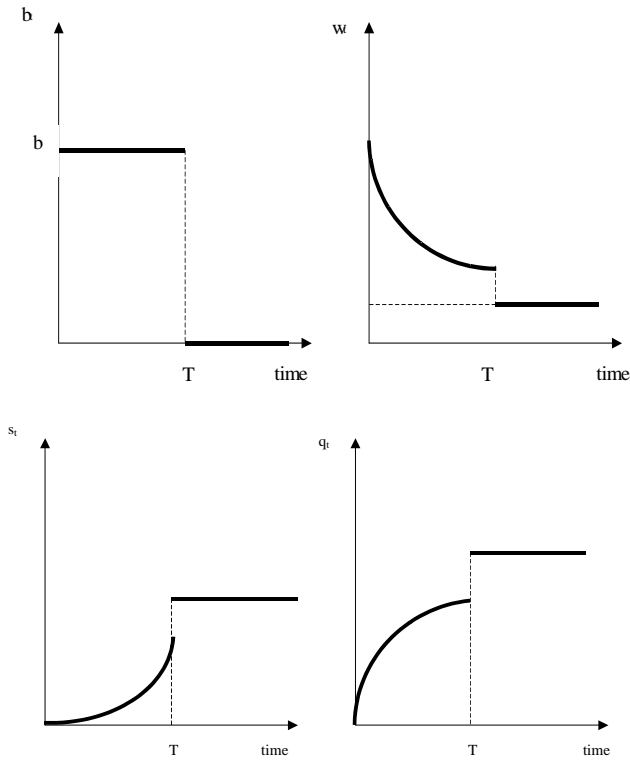


Figure 2: *Time profile of benefit, reservation wage, search effort and exit rate for somebody who only receive unemployment benefit*

3.2 Unemployment Benefit and Social Assistance

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

It may for example be the case that, given the particular rules and the particular family 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 higher than under unemployment insurance. This possibility, although rare, can occur in some countries where social assistance systems are particularly generous (see OECD (1998) and OECD (1999)). 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).

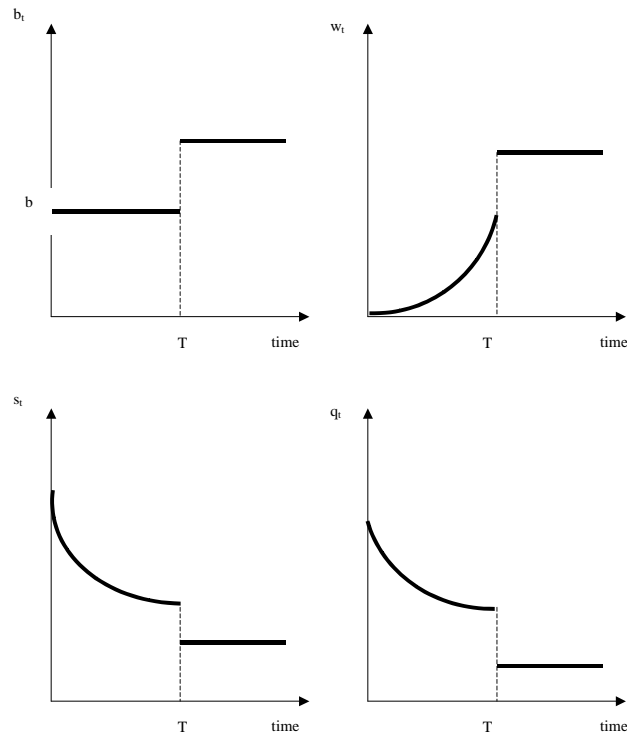


Figure 3: *Time profile of benefit, reservation wage, search effort and exit rate for somebody who receive unemployment benefit and (higher) social assistance afterwards*

4 Evidence from the Europanel

4.1 The data

Most of the existing studies of unemployment insurance and unemployment duration make use of administrative data from the institutional body that administers unemployment benefits⁹. 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. Using administrative data would thus 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 country¹⁰ and for identification purposes it would be helpful to use some cross-country variation as well, but cross-country comparable administrative microdata are simply not available. Alternatively one would like to use some exogenous time variation induced by a reform, but as already mentioned in the introduction, there hasn't been much reforming in social assistance programmes in the last years.

In order to overcome these problems, comparable cross-country survey data are utilized in this paper. 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 member states statistical offices. The dataset covers four years, from 1993 to 1997, and 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 about labour market history allowing the reconstruction of employment/unemployment/inactivity monthly spells. Specifically, individuals are interviewed once per year and at that time they are asked to report their monthly labour market status over the previous calendar year¹¹.

⁹Boeri and Steiner (1998), Katz and Meyer (1990), Lancaster (1979), Meyer (1990), Moffit (1985), Narendranathan and Stewart (1993b).

¹⁰This 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 beneficiaries).

¹¹Data from retrospective questions have often risen concerns about potential measurement error, i.e. people may not remember correctly, be tempted to round numbers, report the same information repeatedly, et. These concerns are thought to be of minor importance in the

One drawback of these data comes from the fact that all the variables are recorded annually and, as we shall see later on, this will make it difficult to attach the correct numbers to each unemployment spell.

For the empirical exercise presented in the following paragraphs 4173 unemployment spells experienced by people aged 18-64 from 13 European countries¹² have been used. Summary statistics are reported in 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	0.41	0.49	0.35	0.48	0.54	0.50
Age	38.18	10.96	38.74	11.50	36.82	9.43
1=bad health	0.05	0.21	0.05	0.21	0.04	0.21
1=primary education	0.51	0.50	0.54	0.50	0.44	0.50
1=secondary education	0.36	0.48	0.33	0.47	0.42	0.49
1=tertiary education	0.13	0.34	0.13	0.33	0.14	0.35
1=married	0.60	0.49	0.60	0.49	0.59	0.49
1=at least one child<15y.o.	0.48	0.50	0.40	0.49	0.67	0.47
Household size	3.64	1.52	3.61	1.52	3.73	1.53
Log Household income (PPP) ⁽¹⁾	9.22	0.98	9.25	0.95	9.14	1.02
1=SA recipient	0.29	0.46	-	-	-	-
UB replacement rate ⁽²⁾	0.71	0.30	0.68	0.28	0.77	0.34
SA replacement rate ⁽²⁾	0.06	0.18	-	-	0.21	0.29
SA+UB replacement rate	0.77	0.38	-	-	0.97	0.48
Maximum entitlement of UB (in months) ⁽³⁾	36.49	14.24	37.91	14.35	30.81	12.24
Regional unemployment rate	13.37	7.03	14.36	7.50	11.00	5.01
Long term unemployment rate ⁽⁴⁾	47.10	12.34	48.69	11.80	43.29	12.77
<i>N</i>	4173		2949		1224	

(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, 94-97).
(3) Imputed on the basis of country regulations and personal characteristics (MISSOC, 94-97). 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 3

Unemployment spells end into employment or inactivity or are right-censored. Left-censored spells, and unemployment spells experienced by new entrants in the labour market have been dropped from the sample.

4.2 The empirical strategy

In order to test the empirical implications presented in section 3, several competing risks hazard models for exits into jobs and inactivity will be estimated.

present context for at least two reasons. First, the retrospective question is a rather simple one: it regards a quite clear status that people are supposed to be aware of (i.e. they know if they are working or not). And secondly, the frequency of the retrospective question is not too high: people don't need to remember the exact day when they've found/lost a job, they only need to remember the month. For these reasons, and also because the data look pretty clean, we are confident that this retrospective information can be used safely.

¹²Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Portugal, Spain, United Kingdom. The Netherland and Sweden have been excluded because there is no information on retrospective employment status for these two countries.

In the main text the focus is on exits into jobs and estimates for exits into inactivity can be found in the appendix¹³. The main difficulty comes from the fact that data do not allow for the identification of the exact time profile of payments: ideally one would like to compare people who face a series of payments as shown in figure (2) with similar individuals who face a sequence like that in figure (3). Benefit payments are recorded annually, therefore there is no time variation in the amounts of payments unless an unemployment spell spans over more than one calendar year. This makes it difficult to identify the sequence of payments satisfactorily. What is possible instead is the identification of individuals who receive unemployment benefit only (i.e. we know for sure they don't receive any other benefit) and individuals who receive unemployment benefit and some social assistance during the same unemployment spell. Comparing these two groups the implications of the theory in section 3 can still be tested. Specifically, individuals who receive both unemployment insurance and social assistance at the same time are very likely to be receiving social assistance (and probably in higher amounts) when their unemployment insurance expires. Similarly, among those who do not receive social assistance, some will expect to become eligible once their entitlement to unemployment insurance expires, others will not expect such payments. These different groups can be identified by estimating the probability of receiving social assistance on the basis of personal and family characteristics.

To summarize, the empirical implications that will be tested against the data in the following paragraphs are:

- comparing individuals who only receive unemployment benefit and individuals who receive both unemployment benefit and social assistance, the latter will exit unemployment less quickly: they will be less concerned about exhaustion of their unemployment benefits (on average they are more likely to get social assistance in the future) and will therefore search less intensively and their reservation wages will drop by less as UB exhaustion approaches.
- among individuals who only receive unemployment insurance, those with a low probability of receiving some social assistance in the future will search more intensively and their reservation wages will drop more as UB exhaustion approaches (relative to those with a high probability of receiving social assistance in the future).

In implementing this strategy a number of technical problems arise.

The first difficulty 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 when they find a job. What really counts in determining the incentives/disincentives to work

¹³Results for exits into inactivity will be discussed in a newer version of the paper.

is the actual difference between income in work and income out of work. This is why the replacement rate (the ratio between the unemployment rate and the previous wage) will be used instead of the level of the benefit itself. 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. Of course 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 these observations but this would reduce the sample size dramatically and, even more worrisome, it would also introduce a potentially large sample bias: the probability of having being unemployed at all interviews is obviously higher for individuals at high risk of long and/or repeated unemployment. Alternatively, one can estimate wages for those whose previous wages are not observed. This is the approach taken in the empirical exercise below: missing previous wages are predicted through a series of year-by-year country-by-country OLS wage regressions¹⁴.

A second problem arises when trying to attach an unemployment benefit to each month of unemployment. The dataset only includes the annual amount received in "unemployment related benefits"¹⁵. To obtain a monthly unemployment benefit one could simply divide the annual amount by the number of months spent in unemployment during that particular year. However, 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 the monthly benefit and the duration of unemployment¹⁶. The duration of a spell is very highly correlated with the number of months spent in unemployment in one 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 and in this framework the dependent variable (unemployment duration) would also appear at the denominator of one of the regressors (monthly unemployment benefit), introducing spurious correlation unless variables are exactly measured (see Borjas (1979))¹⁷. In order to solve this problem the monthly unemployment benefit has been imputed on the basis of country specific rules and regulations. In fact, both the amounts and the

¹⁴the vector of controls used in these regressions includes: *education, age and age squared, experience and experience squared, marital status, health status, household size, number of children in the household, a dummy for public sector, a dummy for having been unemployed in the previous 5 years and for whether any previous unemployment spell has been longer than 12 months*. Estimates are produced for male and female separately.

¹⁵Thus including both unemployment insurance and unemployment assistance (in those countries where both schemes are present).

¹⁶And there is no reason to think that the unemployment benefit would be constant in all months of unemployment in the same calendar year.

¹⁷The 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" would arise in this case.

duration of unemployment benefits in all countries are calculated on the basis of information 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 country specific regulations. Detailed information about unemployment compensation is readily available from the MISSOC¹⁸, a publication of the European Commission that every year reports comparative descriptions of rules and regulations of welfare programmes in the member states. All relevant personal characteristics for this imputation are available from the ECHP with the only exception of contribution records. Employment histories of individuals are perfectly known since the time they joined the survey, however 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, an information available from the data. A second 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. A net-to-gross factor is calculated by Eurostat for ECHP users at the household level and this has been used to obtain gross earnings for those countries where these were necessary for calculating the benefit.

Finally, the probability of receiving social assistance, which will be needed to identify the different subgroups mentioned above, has been estimated with standard country-by-country probits. Details about this estimation can be found in the appendix.

4.3 Estimation results

The empirical implication of the theory suggests that unemployed workers who only receive unemployment benefit 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. In fact, 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.

Figure (4) and (5) show the empirical hazard¹⁹ for the entire sample and for the two subsamples of individuals who only receive unemployment benefit and individuals who receive both UB and SA. In the figures the distribution of

¹⁸ *Mutual Information System on Social Protection in the Member States of the European Union.*

¹⁹ The empirical hazard at time t is computed as the ratio of individuals who actually exit 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 .

imputed duration of unemployment benefit is reported (scaled on the right-hand vertical axis). The figure for the entire sample (4) shows the expected peaks in the hazard around the time of exhaustion, which has mass points at 12 and 15 months. When looking at the same picture for the two subsamples in figure (5), it is already evident that social assistance recipients tend to have lower exit rates, especially in the first months of unemployment. Moreover, at the 12-month mass point SA recipients do not show a particular high peak in the hazard rate, which on the other hand is what is observed for UB-only recipients. However encouraging, evidence from empirical hazards is not fully convincing because the extent to which these graphs are influenced by personal characteristics and duration dependence is not known. Moreover, empirical hazards are less and less precise as unemployment duration increases: as individuals exit the sample size is reduced and standard errors grow larger. This can be seen in figure (4) where confidence intervals are reported and clearly grow larger as duration increases. In figure (5), 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).

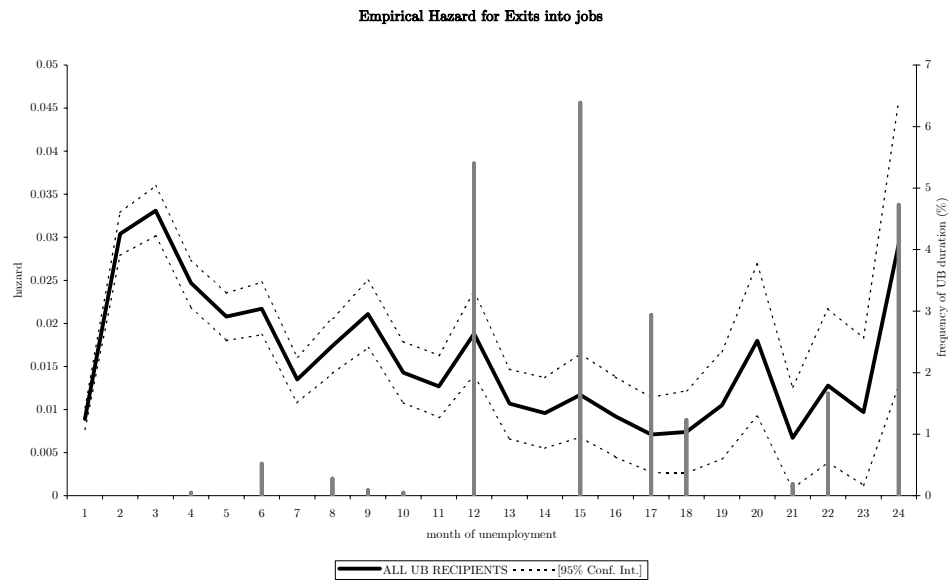


Figure 4

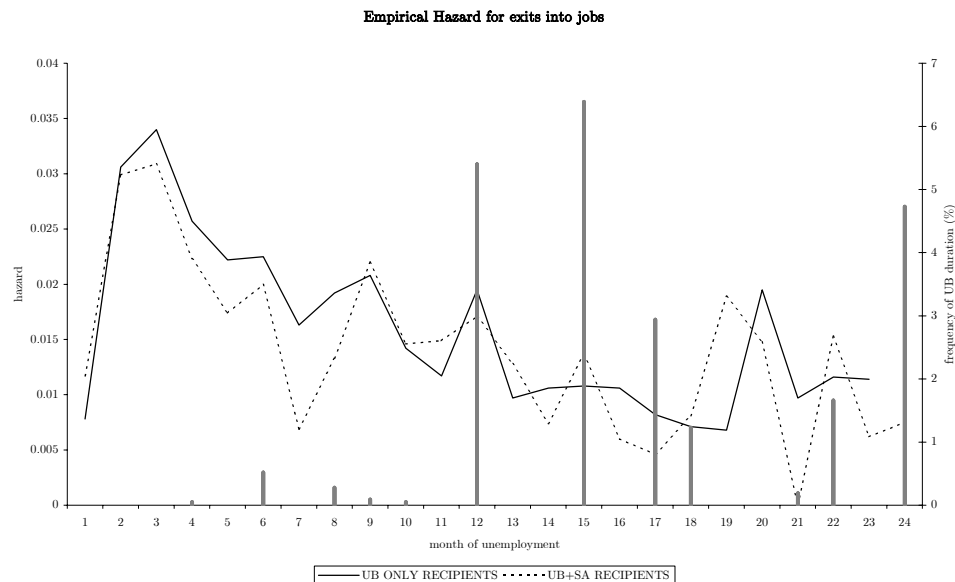


Figure 5

In order to control for personal characteristics and duration dependence, proportional hazard models have been estimated²⁰. Results are reported in table (4).

The set of controls includes personal characteristics and some country and region specific variables. 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 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 local labour markets without washing out the variance due to different benefit schemes.

Results from this first estimation are in line with previous findings. For the entire sample the effect of the UB replacement rate varies with duration: positive in the first months and negative afterwards. This time-varying effect is one of the reasons why estimated coefficients are often found not to be very robust²¹.

²⁰ A piecewise specification of the baseline hazard has been chosen.

²¹ Atkinson et al. (1984).

**Proportional Hazard Model for unemployment duration – Exits into Jobs
Men & Women (echp 1994-1997)**

	All UB recipients [1]	All UB recipients [2]	UB only recipients	UB and SA recipients [1]	UB and SA recipients [2]
<i>Personal and Family characteristics...</i>					
1=female	-0.255*** (0.061)	-0.262*** (0.060)	-0.259*** (0.070)	-0.202* (0.121)	-0.208* (0.119)
Age 16-24	0.520*** (0.125)	0.507*** (0.124)	0.405*** (0.146)	0.879*** (0.228)	0.891*** (0.226)
Age 25-44	0.370*** (0.073)	0.378*** (0.074)	0.365*** (0.083)	0.442*** (0.164)	0.445*** (0.165)
Age 55+	-0.441*** (0.122)	-0.439*** (0.123)	-0.425*** (0.130)	-0.651 (0.422)	-0.653 (0.423)
1=bad health	-0.338** (0.155)	-0.337** (0.148)	-0.451*** (0.165)	-0.142 (0.263)	-0.140 (0.263)
1=primary education	-0.107* (0.064)	-0.104 (0.064)	-0.090 (0.074)	-0.110 (0.120)	-0.109 (0.120)
1=tertiary education	0.089 (0.086)	0.086 (0.086)	0.036 (0.102)	0.178 (0.160)	0.178 (0.160)
1=married	0.178*** (0.066)	0.168** (0.066)	0.143* (0.079)	0.168 (0.124)	0.170 (0.123)
1=at least one child<15y.o.	-0.118* (0.070)	-0.120* (0.070)	-0.133 (0.082)	-0.035 (0.145)	-0.039 (0.145)
Household size	0.024 (0.026)	0.029 (0.025)	0.032 (0.031)	0.034 (0.045)	0.034 (0.044)
1=2 nd quartile household income ⁽¹⁾	0.057 (0.077)	0.068 (0.078)	0.100 (0.094)	-0.066 (0.143)	-0.057 (0.141)
1=3 rd quartile household income ⁽¹⁾	0.044 (0.082)	0.042 (0.082)	0.024 (0.097)	0.034 (0.159)	0.040 (0.158)
1=4 th quartile household income ⁽¹⁾	0.054 (0.086)	0.062 (0.087)	0.015 (0.106)	0.148 (0.152)	0.153 (0.151)
<i>Social Transfers ...</i>					
UB replacement rate ⁽²⁾	-0.572*** (0.148)	-0.493*** (0.178)	-0.489*** (0.177)	-0.690** (0.284)	
UB replacement rate · (1=time<=6)	0.349*** (0.112)	0.398*** (0.137)	0.413*** (0.137)	0.181 (0.193)	
1=SA recipient	-0.189*** (0.068)	-0.646 (0.669)			
SA replacement rate ⁽²⁾				-0.709*** (0.241)	
Total replacement rate ⁽³⁾					-0.631*** (0.168)
<i>"Months to UB exhaustion" dummies...</i>					
1=less than 4 months	0.522** (0.218)	1.009*** (0.232)	1.042*** (0.232)	-0.104 (0.387)	-0.125 (0.368)
1=4 to 6 months	0.204 (0.193)	-0.106 (0.259)	-0.062 (0.259)	0.274 (0.319)	0.265 (0.307)
1=6 to 12 months	0.245*** (0.093)	0.353*** (0.112)	0.374*** (0.112)	0.007 (0.163)	-0.017 (0.149)
<i>Country/Region specific characteristics...</i>					
Regional unemployment rate	0.001 (0.004)	0.001 (0.004)	0.000 (0.005)	-0.000 (0.010)	-0.000 (0.010)
Long-term unemployment rate	-0.017*** (0.003)	-0.016*** (0.003)	-0.014*** (0.003)	-0.024*** (0.005)	-0.024*** (0.005)
<i>Interaction terms..</i>					
(1=SA rec.) · UB Rep. Rate [I1]		-0.200 (0.313)			
(1=SA rec.) · UB Rep. Rate (initial) [I2]		-0.211 (0.238)			
(1=SA rec.) · (1=≤ 4 months) [I3]		-0.975** (0.434)			
(1=SA rec.) · (1=4 to 6 months) [I4]		0.517 (0.398)			
(1=SA rec.) · (1=6 to 12 months) [I5]		-0.319* (0.190)			
Observations	25729	25729	17656	8073	8073
Subjects	4173	4173	2949	1224	1224
Log-likelihood	-8461.54	-8440.90	-6044.12	-2378.04	-2378.75
Tests		H ₀ : ([I3],[I4],[I5])=0 χ ² (3)= 12.23		H ₀ : UBp=SAp χ ² (2)= 0.00	

Standard errors in parentheses

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

Notes:

(1) Income of all other household members.

(2) = UB amount / previous wage

UB amount imputed on the basis of country regulations and personal characteristics (MISSOC, 94-97). Wages Predicted for those observations with no observed previous wage.

(3) = SA amount / previous wage

(4) = UB + SA / previous wage

Wages Predicted for those observations with no observed previous wage.

However, even controlling for this initial positive effect, the replacement rate still has a very limited impact on the probability of finding a job: a 10 point increase reduces the hazard by 5.7%. The coefficients on the "months to exhaustion" dummies confirm that UB recipients are more likely to find a job when their unemployment benefit gets closer to exhaustion, although there seem to be some cyclicity with a dip at 4 to 6 months to exhaustion. The coefficient on the dummy for social assistance recipients already signals that, other things equal, these individuals are less likely to find a job, as one would have expected from figure (5) already. The next estimates explore this fact more thoroughly.

In the second column of table (4) 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 exhaustion dummies are also found to be jointly significant.

If the decision of applying for social assistance transfers is orthogonal to search decisions²², then the sample of all UB recipients can be safely splitted into two sub-samples: UB recipients who do not receive any other benefit and UB recipients who also receive social assistance transfers. Estimates for these two sub-samples are reported in the last columns of table (4) and confirm the effects of the interaction dummies, somehow suggesting that splitting the sample is a safe procedure for the purpose of estimation. Exhaustion dummies are still found significant (and higher) for UB-only recipients while they turn completely insignificant for SA recipients. Moreover, looking at the last two columns, coefficients on the UB and the SA replacement rate are not significantly different confirming the intuition that SA recipients react to the sum of UB and SA rather than to each one of them separately.

As for the elasticity of the replacement rate, the two sub-samples seem to differ, although not significantly, in the time pattern of the replacement rate effect. SA recipients do not react to the benefit in the first months of unemployment while they seem to be more reactive later on. In order to understand more about how the benefit effect varies with unemployment duration one would like to distinguish individuals who receive social assistance since the beginning of their unemployment spell from those who only become eligible at a later stage. This is not possible with the data at hand²³ but some indications will come from the following estimation.

²²The existing literature does not offer clear predictions about this issue. Take-up rates of social assistance programmes are estimated to be rather low in many countries and several explanations have been proposed. The level and duration of benefit payments are observed to be positively correlated with the probability of applying (Blundell et al (1988), Craig (1991), Moffitt (1983), Riphahn (2000)), however to our knowledge there are no studies about the correlation between taking-up behaviour and search decisions.

²³Recall that also for SA transfers only annual amounts are reported and monthly payments are constructed by simply dividing the annual amount by 12.

**Proportional Hazard Model for unemployment duration – Exits into Jobs
Men & Women (echp 1994-1997)**

	all UB only recipients [1]	all UB only recipients [2]	UB only recipients with.. high prob. of receiving SA	low prob. of receiving SA
<i>Personal and Family characteristics...</i>				
1=female	-0.227*** (0.074)	-0.225*** (0.074)	-0.302** (0.134)	-0.236*** (0.079)
Age 16-24	0.385*** (0.149)	0.363** (0.149)	0.146 (0.266)	0.477*** (0.169)
Age 25-44	0.343*** (0.092)	0.323*** (0.091)	-0.023 (0.151)	0.473*** (0.100)
Age 55+	-0.455*** (0.142)	-0.470*** (0.141)	-0.739*** (0.248)	-0.314** (0.153)
1=bad health	-0.437*** (0.164)	-0.443*** (0.163)	-0.280 (0.275)	-0.526*** (0.197)
1=primary education	-0.115 (0.080)	-0.115 (0.079)	-0.241 (0.148)	-0.048 (0.084)
1=tertiary education	0.073 (0.109)	0.074 (0.109)	-0.121 (0.184)	0.042 (0.118)
1=married	0.074 (0.086)	0.050 (0.086)	-0.069 (0.151)	0.183** (0.091)
1=at least one child<15y.o.	-0.074 (0.090)	-0.076 (0.088)	-0.069 (0.155)	-0.153 (0.095)
Household size	0.017 (0.032)	0.021 (0.032)	0.070 (0.045)	0.018 (0.036)
1=2 nd quartile household income ⁽¹⁾	0.124 (0.099)	0.125 (0.099)	0.162 (0.187)	0.064 (0.106)
1=3 rd quartile household income ⁽¹⁾	0.116 (0.104)	0.111 (0.103)	0.145 (0.194)	-0.025 (0.108)
1=4 th quartile household income ⁽¹⁾	-0.007 (0.116)	-0.012 (0.114)	0.136 (0.209)	-0.040 (0.120)
<i>Social Transfers ...</i>				
UB replacement rate ⁽²⁾	-0.437** (0.195)	-0.311 (0.207)	-0.774** (0.338)	-0.404** (0.192)
UB replacement rate · (1=time<=6)	0.387** (0.151)	0.368** (0.164)	0.454 (0.277)	0.410*** (0.156)
Prob. of receiving SA ⁽³⁾	-0.346*** (0.131)			
(1=high Prob. of receiving SA)		0.304 (0.219)		
<i>“Months to UB exhaustion” dummies...</i>				
1=less than 4 months	1.186*** (0.228)	1.665*** (0.211)	0.026 (0.614)	1.363*** (0.248)
1=4 to 6 months	-0.378 (0.333)	-0.605 (0.440)	-0.031 (0.465)	-0.071 (0.304)
1=6 to 12 months	0.430*** (0.120)	0.585*** (0.124)	-0.045 (0.310)	0.487*** (0.118)
<i>Country/Region specific characteristics...</i>				
Regional unemployment rate	0.004 (0.005)	0.004 (0.005)	0.002 (0.008)	-0.001 (0.006)
Long-term unemployment rate	-0.015*** (0.004)	-0.016*** (0.003)	-0.013** (0.006)	-0.013*** (0.004)
<i>Interaction terms..</i>				
(1=high Pr. of SA) · UB rep. rate ⁽⁴⁾ [I1]		-0.459 (0.374)		
(1=high Pr. of SA)·UB rep. rate (initial) [I2]		0.075 (0.262)		
(1=high Pr. of SA) · (1=≤ 3 months) ⁽⁴⁾ [I3]		-1.559** (0.621)		
(1=high Pr. of SA) · (1=4 to 6 months) ⁽⁴⁾ [I4]		0.641 (0.645)		
(1=high Pr. of SA)·(1=6 to 12 months) ⁽⁴⁾ [I5]		-0.552* (0.328)		
Observations	14901	14901	4653	13003
Subjects	2490	2490	829	2120
Log-likelihood	-5031.75	-5021.81	-1486.50	-4534.27
Tests		H ₀ : ([I3],[I4],[I5])=0 $\chi^2(3)= 9.42$		

Robust standard errors in parentheses

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

Notes:

(1) Income of all other household members.

(2) = UB amount / previous wage

UB amount imputed on the basis of country regulations and personal characteristics (MISSOC, 94-97). Wages Predicted for those observations with no observed previous wage.

(3) Probit prediction. See appendix for the probit specification.

(4) High Probability of receiving SA is above 60%.

Table 5

The results of table (4), however, do not explore the fact that unemployed workers who do not receive social assistance transfers can nonetheless be influenced in their search decisions by the possibility of becoming eligible once their unemployment benefit has expired. 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 test this implication table (5) reports the results of the estimation carried out on the sub-sample of workers who do not receive social assistance, again splitted into two subgroups: those with high (>60%) and those with low (<60%) probability of receiving social assistance.

The same approach of table (4) is taken: the probability of receiving social assistance negatively affects reemployment probabilities and this is what emerges from the estimates in the first column. Then, in the second column a dummy for the high-probability group is introduced and interacted with the UB replacement rate and the dummies to exhaustion. Once again, the two groups seem to differ mainly in their behaviour around the time of exhaustion with individuals with high probability of receiving social assistance showing no peaks. In the last two columns estimation is repeated for the two groups separately and results are confirmed.

Once again the benefit effect appears to be small in size and not significantly affected by the expectation of future social assistance eligibility. However, some indications about how the benefit effect changes with duration can be obtained by comparing the two groups. It seems that those who are likely to receive social assistance are less reactive to the benefit in the first months of unemployment and more reactive later on. It is also reasonable to expect actual SA recipients to show a similar pattern.

5 Conclusions

This paper investigates how interactions between unemployment insurance and social assistance affect job search behavior 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.

The effect of UB reforms on the individual hazard rate (2)

	Germany	Denmark	Ireland	Greece
Type of reform	(1995) reduced duration	(1996) reduced duration	1995 reduced benefit	(1996) reduced benefit
1=post reform	0.657** (0.330)	0.219 (0.256)	-0.406 (0.332)	-0.250 (0.255)
SA replacement rate ⁽¹⁾	-1.676*** (0.576)	-1.204*** (0.459)	1.009 (0.795)	-0.241 (1.786)
Covariates	<i>sex, age, health status, education, marital status, family size, dummy for children in the household, household income, country unemployment rate and rate of long term unemployment, piece-wise duration dependence.</i>			
Observations	1817	3067	2385	1371
Subjects	272	479	388	283
Log-likelihood	-481.50	-1060.11	-747.49	-534.93
% of sample affected by the reform	65	69	69	46

(1) = SA amount / previous wage
Robust standard errors in parentheses.
ECHP (1994-1997).

Table 6

In the introduction it has been suggested that this could partly explain the failure of many reforms implemented in European countries in recent years. As an example let us reconsider the four countries where reforms took place during the sample period. Table (6) reports results for the same models estimated in table (1) when the replacement rate for social assistance is added to the set of controls. These new results should then be interpreted as the effect of the reform on individuals who were not able to compensate the reduction in the benefit level or duration with other social assistance transfers and should then conform their behaviour with what is predicted by the standard theory: increase search effort, reduce reservation wages and hence find jobs more rapidly. The effect of the reform - measured by the coefficient on the dummy for those who entered unemployment after the change - becomes significant for Germany and doubles for Denmark. Figures for Ireland and Greece are virtually unchanged. These results suggest that the availability of social assistance actually plays a role in explaining the failure of many reforms in European countries although of course it can only be part of the story. On the other hand it must be said that the negative and insignificant coefficients found for Ireland and Greece confirm the idea that changes in the level of the benefit have only very marginal impact on reemployment probabilities. Estimates presented in the previous section suggest that more effort should be put in understanding how the benefit effect changes with duration (see Narendranathan et al. (1993b) for an attempt in this direction).

Reducing the duration of UB payments appear to be more effective in incentivating reemployment of recipients. However, our estimates show that this does not hold for SA recipients whose probability of finding a job does not peak during the last months of benefit entitlement. Also non-SA recipients,

who are nonetheless likely to become eligible for social assistance in the future, experience lower exit rates around UB exhaustion.

In terms of policy implications, this paper 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 incentivating unemployed workers to search harder if they can easily shift into other social assistance programmes. This result is consistent with some recent papers that have underlined how wide and comprehensive reforms of labour market policies, even though they might be politically harder to implement, are often more effective than piecemeal reforms.

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Appendix 1: Descriptive Tables of Welfare Programmes in European Countries

1. UNEMPLOYMENT BENEFIT IN EUROPEAN COUNTRIES (situation on July 1994)

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 42%-35% as unemployment continues
<i>Denmark</i>	Insurance (optional)	26 weeks in the preceding 3 years	4+3 years	90% of reference earnings
<i>Germany</i>	Insurance Assistance	12 months in the preceding 3 years	Depending on age and contribution history (between 156 and 832 days)	Insurance: 60%-67% of net earnings Assistance: 57%-53% of net earnings
<i>Greece</i>	Insurance	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 contribution history (between 5 and 12 months)	40%-50% of earnings
<i>Spain</i>	Insurance Assistance	12 months in the previous 6 years	Depending on contribution history	Insurance: 70%-60% of reference earnings Assistance: 75% of minimum wage
<i>France</i>	Insurance Assistance	least 4 months insurance in last 8 months.	Depending on age and contribution history (between 4 and 60 months)	Insurance: 40.4%-57.4% of earnings, declining. Assistance: lump sum
<i>Ireland</i>	Insurance Assistance	39 weeks' contributions paid	390 days	Insurance: 12% of earnings + a lump sum Assistance: lump sum
<i>Italy</i>	Insurance	Varies according to the industry	Depending on the industry (180 days or 90 days or 36 months)	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 52 weeks)	Insurance: 56% of earnings + lump sum Assistance: 92% of unemployment insurance
<i>Portugal</i>	Insurance Assistance	540 days during the last 24 months	Depending on age (between 10 and 45 months)	Insurance: 65% of earnings Assistance: 70%-100% of minimum wage
<i>Finland</i>	Insurance Assistance	26 weeks of employment during the last 24 months	500 days	Insurance: lump sum + earning related supplement
<i>Sweden</i>	Insurance Assistance	12 months contributions paid	Depending on age (between 300 and 450 days)	Assistance: lump sum 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	312 days	Insurance: lump sum Assistance: lump sum

(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.

(3) When different rates are specified for the same scheme, the actual rate depends on family characteristics, age, contribution history or duration of unemployment.

Source: European Commission, *Mfssoc 1994*.

2. INVALIDITY BENEFITS IN EUROPEAN COUNTRIES (situation on July 1994)

Country	Type of benefit	Level of incapacity ¹	Qualifying conditions	Duration	Amount of benefit ²
<i>Belgium</i>	Invalidity pension	66.66%	6 months of contributions with 120 days worked	Until retirement	40-65% of last earnings
<i>Denmark</i>	Invalidity pension	50%	3 years of residence	Until retirement	Depends on incapacity
<i>Germany</i>	<ul style="list-style-type: none"> • Occupational benefit • Invalidity pension 	<ul style="list-style-type: none"> • 50% • 100% 	60 months of work with 36 months of contributions in the previous 5 years	Until retirement	Depends on incapacity
<i>Greece</i>	Invalidity 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>	Invalidity pension	33%	Worked ^ of the time between age 20 and the claim	Until retirement	50%-100% of reference earnings
<i>France</i>	Invalidity pension	66.66%	12 months of work with sufficient contributions paid	Until retirement	30%-50% of annual earnings
<i>Ireland</i>	Invalidity pension	Eligible only after 12 months of sickness benefit	260 contributions' weeks	Until retirement	Depends on age
<i>Italy</i>	<ul style="list-style-type: none"> • Invalidity pension • Incapacity benefit 	<ul style="list-style-type: none"> • 66% • 100% 	5 contributions' years	Until retirement	Depends on income and contribution records
<i>Luxembourg</i>	Invalidity pension	Eligible if invalidity 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>	Invalidity pension	25%	None	Until retirement	Depends on incapacity
<i>Austria</i>	Invalidity pension	50%	60 contributions' months in the previous 60 months	Until retirement	Depends on income
<i>Portugal</i>	Invalidity pension	66.66%	5 years	Until retirement	30%-80% of average earnings
<i>Finland</i>	Invalidity pension	40%	3 years of residence with 1 contributions' month	Until retirement	Depends on age and duration of residence in the country
<i>Sweden</i>	Invalidity pension	25%	Residence in Sweden	Until retirement	25%-100% of basic pension
<i>United Kingdom</i>	<ul style="list-style-type: none"> • Short-term invalidity • Long-term invalidity 	100%	<ul style="list-style-type: none"> • Enough contributions paid • Having exhausted short-term invalidity benefit 	<ul style="list-style-type: none"> • 364 days • Until retirement 	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 1994*.

3. FAMILY CASH BENEFITS IN EUROPEAN COUNTRIES (situation on July 1994)

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	16 to 21	Depends on the number of children	Yes
<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 27	Depends on the number of children	No
<i>Portugal</i>	Yes	15 to 25		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 *Missec 1994*.

4. HOUSING BENEFITS IN EUROPE (situation in 1995)

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. 	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 	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)	Vary across regions	Vary 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 (1998)*.

5. LOW-INCOME BENEFITS IN EUROPE (situation on July 1994)

Country	Denomination	Qualifying conditions	Duration	Willingness to work requirement ¹
<i>Belgium</i>	Minimum de Moyens d'Existence (MIMEX)	<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	Vary across towns	Varies across towns	Varies across towns
<i>Luxembourg</i>	Revenu Minimum Garantie	<ul style="list-style-type: none"> Resident in the country Aged 18y.o. and above 	Unlimited	Yes
<i>Netherlands</i>	Sociale 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	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.

(3) Introduced in 1997.

Source: European Commission *Missoc 1994*.

Appendix 2: Probit Estimation of the Probability of Receiving Social Assistance

		Probit regression for Social Assistance recipients (echp 1997)					
		Germany	Denmark	Belgium	France	United Kingdom	Ireland
1=female		-0.263*** (0.029)	0.486*** (0.046)	0.936*** (0.046)	0.168*** (0.030)	0.811*** (0.033)	1.153*** (0.040)
Age		-0.005*** (0.001)	-0.026*** (0.002)	-0.003 (0.002)	-0.015*** (0.001)	-0.007*** (0.001)	0.002* (0.001)
1=primary education		-0.413*** (0.040)	-0.039 (0.055)	-0.254*** (0.057)	-0.021 (0.036)	-0.240*** (0.047)	0.011 (0.044)
1=tertiary education		0.113*** (0.036)	-0.193*** (0.059)	-0.066 (0.056)	-0.190*** (0.040)	-0.191*** (0.047)	-0.219*** (0.065)
1=bad health		0.132*** (0.043)	0.628*** (0.113)	0.426*** (0.116)	0.494*** (0.057)	0.635*** (0.058)	-0.001 (0.120)
Household size		0.043** (0.019)	0.103*** (0.030)	0.138*** (0.027)	0.122*** (0.017)	0.184*** (0.018)	0.047*** (0.015)
Number of children		0.584*** (0.024)	0.049 (0.038)	0.317*** (0.032)	0.481*** (0.022)	0.365*** (0.023)	0.310*** (0.020)
Household total disposable income		-0.051*** (0.011)	-0.330*** (0.020)	-0.003 (0.021)	-0.163*** (0.011)	-0.169*** (0.012)	-0.220*** (0.016)
1=house owner		-0.153*** (0.031)	-0.569*** (0.053)	-0.139** (0.056)	-0.541*** (0.032)	-0.438*** (0.039)	-0.522*** (0.067)
Constant		-0.192 (0.136)	3.474*** (0.221)	-1.345*** (0.240)	1.285*** (0.127)	0.678*** (0.144)	0.939*** (0.173)
Observations		10026	4075	3949	9360	7996	5558
Log-likelihood		-4898.68	-1963.17	-2049.53	-4823.64	-3968.76	-2734.02
	Italy	Greece	Spain	Portugal	Austria	Finland	
1=female	-0.297*** (0.038)	0.308*** (0.045)	-0.115*** (0.035)	-0.572*** (0.030)	0.085** (0.035)	0.713*** (0.035)	
Age	0.004*** (0.001)	0.002* (0.001)	-0.010*** (0.001)	-0.001 (0.001)	0.004*** (0.001)	-0.009*** (0.001)	
1=primary education	0.115*** (0.043)	0.196*** (0.059)	-0.022 (0.046)	-0.069 (0.050)	-0.156*** (0.040)	-0.213*** (0.042)	
1=tertiary education	-0.077 (0.084)	-0.146 (0.089)	-0.328*** (0.070)	0.099 (0.085)	0.183** (0.072)	-0.034 (0.044)	
1=bad health	0.693*** (0.060)	0.816*** (0.067)	0.936*** (0.052)	0.185*** (0.043)	0.507*** (0.071)	0.331*** (0.089)	
Household size	-0.018 (0.016)	0.136*** (0.019)	0.085*** (0.013)	-0.141*** (0.013)	-0.020 (0.015)	0.227*** (0.022)	
Number of children	0.196*** (0.023)	0.119*** (0.027)	-0.006 (0.022)	0.491*** (0.020)	0.430*** (0.024)	0.083*** (0.028)	
Household total disposable income	-0.075*** (0.017)	-0.153*** (0.022)	-0.110*** (0.011)	0.045*** (0.014)	0.012 (0.014)	-0.170*** (0.018)	
1=house owner	-0.043 (0.044)	-0.169*** (0.061)	-0.167*** (0.045)	-0.026 (0.032)	0.020 (0.040)	-0.340*** (0.049)	
Constant	-1.586*** (0.097)	-1.073*** (0.225)	-0.239* (0.127)	-0.606*** (0.152)	-1.095*** (0.149)	1.354*** (0.176)	
Observations	12921	8864	12642	9509	6268	5928	
Log-likelihood	-2656.10	-1926.23	-3127.89	-4800.96	-3532.45	-3534.02	

Standard errors in parentheses

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

Appendix 3: Competing Risk Model Results for Exits into Inactivity

1. Proportional Hazard Model for unemployment duration – Exits into Inactivity Men & Women (echp 1994-1997)

	All UB recipients [1]	All UB recipients [2]	UB only recipients	UB and SA recipients [1]	UB and SA recipients [2]
<i>Personal and Family characteristics...</i>					
1=female	0.263 (0.210)	0.262 (0.208)	0.601** (0.246)	-0.370 (0.312)	-0.329 (0.313)
Age 16-24	0.459 (0.452)	0.434 (0.441)	-0.544 (0.594)	0.976* (0.564)	1.003* (0.549)
Age 25-44	0.185 (0.263)	0.202 (0.265)	0.074 (0.345)	0.438 (0.451)	0.513 (0.432)
Age 55+	0.771*** (0.298)	0.778*** (0.300)	0.671** (0.328)	0.607 (0.664)	0.697 (0.659)
1=bad health	-0.067 (0.356)	-0.056 (0.358)	-0.004 (0.419)	-0.363 (0.713)	-0.384 (0.715)
1=primary education	0.025 (0.192)	0.030 (0.194)	0.230 (0.258)	-0.476 (0.319)	-0.481 (0.323)
1=tertiary education	0.007 (0.293)	0.014 (0.293)	-0.017 (0.476)	0.264 (0.353)	0.225 (0.348)
1=married	0.032 (0.226)	0.021 (0.224)	0.284 (0.313)	-0.631** (0.311)	-0.646** (0.315)
1=at least one child<15y.o.	0.114 (0.223)	0.096 (0.225)	-0.214 (0.288)	0.634* (0.380)	0.618* (0.372)
Household size	-0.076 (0.088)	-0.070 (0.089)	0.142 (0.109)	-0.465*** (0.153)	-0.460*** (0.149)
1=2 nd quartile household income ⁽¹⁾	0.712** (0.296)	0.706** (0.295)	0.273 (0.356)	2.027*** (0.543)	1.946*** (0.508)
1=3 rd quartile household income ⁽¹⁾	0.960*** (0.311)	0.957*** (0.310)	0.424 (0.354)	2.370*** (0.551)	2.329*** (0.534)
1=4 th quartile household income ⁽¹⁾	0.801** (0.315)	0.793** (0.315)	0.184 (0.361)	2.321*** (0.611)	2.287*** (0.595)
<i>Social Transfers ...</i>					
UB replacement rate ⁽²⁾	0.466** (0.186)	0.430** (0.181)	0.416** (0.190)	0.106 (0.622)	
UB replacement rate · (1=time<=6)	-0.398 (0.260)	-1.133** (0.449)	-1.123** (0.460)	0.273 (0.523)	
1=SA recipient	0.434** (0.214)	-10.971*** (1.018)			
SA replacement rate ⁽²⁾				0.909*** (0.286)	
Total replacement rate ⁽³⁾					0.602*** (0.204)
<i>“Months to UB exhaustion” dummies...</i>					
1=less than 4 months	-0.085 (0.548)	-0.347 (0.691)	-0.109 (0.702)	0.022 (0.750)	0.081 (0.750)
1=4 to 6 months	0.126 (0.593)	0.371 (0.718)	0.612 (0.732)	-0.464 (0.996)	-0.393 (0.996)
1=6 to 12 months	-0.078 (0.407)	0.087 (0.450)	0.268 (0.465)	-0.716 (0.582)	-0.655 (0.572)
<i>Country/Region specific characteristics...</i>					
Regional unemployment rate	-0.014 (0.016)	-0.013 (0.016)	-0.017 (0.019)	-0.047 (0.033)	-0.046 (0.034)
Long-term unemployment rate	0.007 (0.009)	0.006 (0.009)	0.010 (0.015)	0.014 (0.011)	0.012 (0.011)
<i>Interaction terms..</i>					
(1=SA rec.) · UB Rep. Rate [I1]		-0.246 (0.621)			
(1=SA rec.) · UB Rep. Rate (initial) [I2]		1.480** (0.705)			
(1=SA rec.) · (1=≤ 4 months) [I3]		0.466 (1.009)			
(1=SA rec.) · (1=4 to 6 months) [I4]		-0.594 (1.210)			
(1=SA rec.) · (1=6 to 12 months) [I5]		-0.454 (0.793)			
Observations	25729	25729	17656	7901	7901
Subjects	4173	4173	2949	1224	1224
Log-likelihood	-1217.29	-1206.92	-759.58	-413.88	-414.92

Standard errors in parentheses

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

Notes:

(1) Income of all other household members.

(2) = UB amount / previous wage

UB amount imputed on the basis of country regulations and personal characteristics (MISSOC, 94-97). Wages Predicted for those observations with no observed previous wage.

(3) = SA amount / previous wage

(4) = UB + SA / previous wage

Wages Predicted for those observations with no observed previous wage.

**2. Proportional Hazard Model for unemployment duration – Exits into Inactivity
Men & Women (echp 1994-1997)**

	All UB recipients [1]	All UB recipients [2]	UB only recipients	UB and SA recipients [1]	UB and SA recipients [2]
<i>Personal and Family characteristics...</i>					
1=female	0.263 (0.210)	0.262 (0.208)	0.601** (0.246)	-0.370 (0.312)	-0.329 (0.313)
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Age 55+	0.771*** (0.298)	0.778*** (0.300)	0.671** (0.328)	0.607 (0.664)	0.697 (0.659)
1=bad health	-0.067 (0.356)	-0.056 (0.358)	-0.004 (0.419)	-0.363 (0.713)	-0.384 (0.715)
1=primary education	0.025 (0.192)	0.030 (0.194)	0.230 (0.258)	-0.476 (0.319)	-0.481 (0.323)
1=tertiary education	0.007 (0.293)	0.014 (0.293)	-0.017 (0.476)	0.264 (0.353)	0.225 (0.348)
1=married	0.032 (0.226)	0.021 (0.224)	0.284 (0.313)	-0.631** (0.311)	-0.646** (0.315)
1=at least one child<15y.o.	0.114 (0.223)	0.096 (0.225)	-0.214 (0.288)	0.634* (0.380)	0.618* (0.372)
Household size	-0.076 (0.088)	-0.070 (0.089)	0.142 (0.109)	-0.465*** (0.153)	-0.460*** (0.149)
1=2 nd quartile household income ⁽¹⁾	0.712** (0.296)	0.706** (0.295)	0.273 (0.356)	2.027*** (0.543)	1.946*** (0.508)
1=3 rd quartile household income ⁽¹⁾	0.960*** (0.311)	0.957*** (0.310)	0.424 (0.354)	2.370*** (0.551)	2.329*** (0.534)
1=4 th quartile household income ⁽¹⁾	0.801** (0.315)	0.793** (0.315)	0.184 (0.361)	2.321*** (0.611)	2.287*** (0.595)
<i>Social Transfers ...</i>					
UB replacement rate ⁽²⁾	0.466** (0.186)	0.430** (0.181)	0.416** (0.190)	0.106 (0.622)	
UB replacement rate · (1=time<=6)	-0.398 (0.260)	-1.133** (0.449)	-1.123** (0.460)	0.273 (0.523)	
1=SA recipient	0.434** (0.214)	-10.971*** (1.018)			
SA replacement rate ⁽²⁾				0.909*** (0.286)	
Total replacement rate ⁽³⁾					0.602*** (0.204)
<i>"Months to UB exhaustion" dummies...</i>					
1=less than 4 months	-0.085 (0.548)	-0.347 (0.691)	-0.109 (0.702)	0.022 (0.750)	0.081 (0.750)
1=4 to 6 months	0.126 (0.593)	0.371 (0.718)	0.612 (0.732)	-0.464 (0.996)	-0.393 (0.996)
1=6 to 12 months	-0.078 (0.407)	0.087 (0.450)	0.268 (0.465)	-0.716 (0.582)	-0.655 (0.572)
<i>Country/Region specific characteristics...</i>					
Regional unemployment rate	-0.014 (0.016)	-0.013 (0.016)	-0.017 (0.019)	-0.047 (0.033)	-0.046 (0.034)
Long-term unemployment rate	0.007 (0.009)	0.006 (0.009)	0.010 (0.015)	0.014 (0.011)	0.012 (0.011)
<i>Interaction terms..</i>					
(1=SA rec.) · UB Rep. Rate [I1]		-0.246 (0.621)			
(1=SA rec.) · UB Rep. Rate (initial) [I2]		1.480** (0.705)			
(1=SA rec.) · (1=≤ 4 months) [I3]		0.466 (1.009)			
(1=SA rec.) · (1=4 to 6 months) [I4]		-0.594 (1.210)			
(1=SA rec.) · (1=6 to 12 months) [I5]		-0.454 (0.793)			
Observations	25729	25729	17656	7901	7901
Subjects	4173	4173	2949	1224	1224
Log-likelihood	-1217.29	-1206.92	-759.58	-413.88	-414.92

Standard errors in parentheses

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

Notes:

(5) Income of all other household members.

(6) = UB amount / previous wage

UB amount imputed on the basis of country regulations and personal characteristics (MISSOC, 94-97). Wages Predicted for those observations with no observed previous wage.

(7) = SA amount / previous wage

(8) = UB + SA / previous wage

Wages Predicted for those observations with no observed previous wage.