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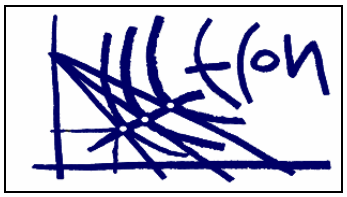

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A Structural Estimation to Evaluate the Wage Penalty after Unemployment in Europe

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JEL Classification numbers: J60, J31, J64.
Keywords: Semi-structural estimation, wage mobility, job mobility, search models.

Department of Economics

A Structural Estimation to Evaluate the Wage Penalty after Unemployment in Europe

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ABSTRACT

We develop a partial equilibrium job search model to analyse wage mobility and its relation to job mobility. The basic job search model is generalized by introducing wage renegotiation at the firm level and on-the-job search. Besides we model the value of leisure as a function of the previous wage. We present a semi-structural estimation using data on employment and wages for men 20 to 60 years old from the European Community Household Panel (Spain, Germany, France and Portugal). The estimated parameters from the model are then used to identify the sources of the wage loss associated with unemployment. German and Spanish workers tend to suffer larger wage penalties than their French and Portuguese counterparts. Wage losses in Germany are mainly related to better wage opportunities when employed. In Spain wage losses tend to remain longer since on the job wage growth is lower. We also evaluate the effect of the Unemployment Benefit system on wage changes after unemployment and find that a sole level for unemployment benefits (dependent on the national average wage level) reduces wage penalties for all workers with the exception of the highly educated.

Keywords: Semi-structural estimation, wage mobility, job mobility, search models
JEL: J60 J64 J31

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1 Introduction

The empirical evidence demonstrates that some unemployed workers may be willing to accept wage cuts after unemployment (Farber, 1997; Rosolia and Saint Paul, 1998; Gregory and Jukes, 1997; Ahn and García-Perez, 2002; Lefranc, 2003; García Pérez and Rebollo, 2005). It has traditionally been argued that these wage cuts after unemployment could be related to reservation wage strategies guided by low unemployment benefits or due to the depreciation of general and specific human capital skills during the unemployment spell. However, reservation wage strategies are also related to expected wages while employed. That is, the worker might accept a wage cut because he expects that being employed increases the probability of access to better-paid jobs.

However, the literature related to the study of wage changes after unemployment is of an eminently empirical character and the majority of studies usually estimate reduced-form wage equations. The main shortcoming of this approach is that it reveals no information about the structural process underlying the observed behaviour. In the present paper we try to overcome the limits imposed by a reduced-form estimation process. Thus, we develop a partial equilibrium job search model and apply a semi-structural approach. That is, we take into account the complete set of restrictions imposed by the theory. The main advantage of this approach is that the econometric specification is fully consistent with the underlying theoretical framework. Thus, it becomes possible to study parameters such as the value of time or the probability of receiving job offers while unemployed not otherwise present in the econometric specification of wage equations. Besides, the information derived from the structural estimation of the model not only describes the probability and magnitude of wage changes but its relation to job mobility. For instance, it is possible that although the change in real wages is not very different among certain workers, the sources of this change may be different: in some cases wage changes may be related to low offered wages or low job offer probability while unemployed, whereas in others they may be related to high future wages while employed. As we will show afterwards, to identify the source of the wage loss it is relevant to value the potential persistence of the observed wage loss.

Various attempts have been made to structurally estimate job search model parameters. One important example that directly relates job and wage mobility is Jovilet, Postel-Vinay and Robin (2004). In this paper a job search model is structurally estimated to analyse job turnover in different European countries. In order to identify job turnover parameters they make two main assumptions. Firstly, they assume that the unemployed income flow is low enough for all job offers to be accepted by the unemployed and, therefore the unemployment exit probability equals the probability of receiving job offers. Additionally, they assume that the only way to scale up in the wage distribution is through changing jobs. With these assumptions, the acceptance behaviour of unemployed workers does not depend on expectations related to on-the-job wage growth.

Since we are interested in measuring the role of future wage expectations on the job acceptance behaviour of unemployed workers, our model must simultaneously encompass the different sources of wage changes while employed. Therefore, we model the job search process of the unemployed and employed worker. That is, we also examine the behaviour of wages while employed and consequently

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allow for on-the-job search and on-the-job wage growth. These two assumptions increase the expected return from accepting an offer and consequently increase the probability of observing negative wage changes after unemployment. Finally, we also assume that the value of time while unemployed is related to the previous wage through the dependence of unemployment benefits to this wage. Thus, the higher the previous wage, the higher the reservation wage and the re-employment wage and thus, the lower the expected wage cut after unemployment. These modifications of the basic search model provide a more realistic picture of the incentives that unemployed workers face in their search process and make the present model original with respect to the existing literature on job search.

The main theoretical result of our model is that re-employment wages are closely related to reservation wage strategies and, subsequently, to labour dynamics while unemployed and employed. The model suggests that unemployed workers expecting that the accepted job is a stepping-stone to better jobs and/or higher wages will tend to have lower reservation wages when unemployed and a higher probability of experiencing wage losses after unemployment. This wage loss will not be permanent, as the individual tends to experience wage growth while employed. Moreover, individuals will also have lower reservation wages when their value of time while unemployed is low. This increases the probability of observing wage losses, which can be permanent if the expected wage change while employed is also low. Hence, with our model we can identify permanent and transitory wage cuts after unemployment and the main sources for these two different wage cuts.

In the empirical part of the paper we present a semi-structural estimation of the model using data on spells of employment and unemployment and wages for men 20 to 60 years old from the European Community Household Panel (ECHP). We focus the analysis on Spain, France, Portugal and Geramny[1]. We divide each national sample into three groups depending on the education level of the worker, since labour market conditions for each group may differ. One novelty of the paper rests on using the reservation wage data available in the ECHP to identify model´s parameters.

Our results indicate that the model is remarkably good at reflecting wage distributions and average wage changes. The main findings of the paper are the following. Firstly, we find that worker´s reservation wage while unemployed to previous wage ratio is a good indicator of the magnitude of the wage penalty. For instance, Germany and Spain have the lowest ratio and the highest wage losses associated with unemployment among the four countries. Secondly, on average terms, wage losses are larger for workers with a lower level of studies because they adjust their reservation wages more than workers with higher skills. The main source of this adjustment comes from the lower value of time while unemployed and, since they are not related to better wage expectations while employed, these wage losses also tend to be more permanent. Thirdly, when we compare wage losses among countries we find that they are larger in Germany and Spain than in France and Portugal. We find that the value of time while unemployed, relative to the worker's previous wage, is not higher for countries with high unemployment rates, such as Spain. The sources of the larger wage loss in Germany and Spain are quite different: wage losses in Germany are larger than in Spain and are mainly related to better

[1] Initially our goal was to analyse all the countries present in the ECHP but we had to omit small countries such as Belgium and Denmark because their sample size are not large enough, along with countries where the available data on wages was unreliable, such as Greece or Italy.

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wage opportunities once employed. On the contrary, wage losses in Spain are lower but tend to remain longer since wage growth while employed and job stability is lower in this country. We find evidence of the scarring effect of unemployment given that job offers for the unemployed are negatively related to previous spells of unemployment.

We also use the estimated parameters to evaluate alternative policy interventions for unemployed workers. We show that different reforms of the Unemployment Insurance (UI) Benefit system may have different effects on workers' reservation wage strategies and therefore on wage changes after unemployment. For example, a sole level for unemployment benefits (dependent on the national average wage level) reduces wage penalties for all workers except for the highly educated.

The rest of the paper is divided as follows. Section 2 introduces the job search model and Section 3 describes the likelihood function used for the structural estimation. Section 4 describes the data used while Section 5 presents our main results. Section 6 presents the results of some policy evaluation exercises and, finally, the main conclusions are reported in Section 7.

2 The Model

The model is an extension of the classical search model of Burdett (1978) with search on the job[2].The additions to the basic structure are the following. While employed, the worker can receive offers from the current job as well as from outside jobs. Also, the non-labor income depends on the worker´s previous wage. With these two assumptions we obtain different wage distribution functions depending on the type of job mobility experienced by the worker.

The rest of the model is standard. Agents are assumed to maximize expected discounted earnings over an infinite time horizon. They can be both working and receiving a wage that may increase while employed or unemployed and looking for a job. The expected value of being unemployed depends on the value of time while unemployed and on the expected future income from employment. The value of time while unemployed, *B*, depends on non-labour income, mainly unemployment benefits.[3] Moreover, we assume that unemployment benefits are a function of the previous wage.[4]

Job offers are fully described by wages. Within each period, an unemployed worker receives job offers with probability λ_u. While employed, the worker receives job offers from other firms (o*utside offers*, hereafter) with probability λ_e. Additionally, the worker may continue employed at the current firm but with a new wage. In this case we assume that the worker has received an offer of wage negotiation[5]

[2] See Mortensen (1986) for a review of this vast literature.

[3] However, in order to maintain the tractability of the model, we are going to assume that this dependence is not considered by the worker when taking into account future unemployment spells. In García-Pérez & Rebollo (2006) we relax this assumption what makes the model highly non-stationary.

[4] It is well known that in many European countries unemployment benefits are a function of previous wages (see OECD, 2000).

[5] This setup does not permit modelling wage renegotiation explicitly because the firms play a passive role in the model. The idea behind the *inside offers* is that employed workers may renegotiate their wages to account for changes in their characteristics such as productivity or their value of time while unemployed.

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(*inside offers*, hereafter) from the current firm[6] and $\lambda_e^{'}$ represents the probability of receiving such offers. Once the inside offer is received the worker will accept it if the expected value of staying at the current job with the new offered wage is higher than the value of rejecting the offer and entering into unemployment. Therefore, in the present model we assume that a transition from employment to unemployment consists of receiving an *inside offer* lower than the worker's reservation wage. We assume that the offer probability is higher for unemployed than for employed individuals[7]. Offered wages are random drawings from distributions with cumulative distribution functions $F(\cdot)$ for the unemployed, $G(\cdot)$ for outside offers and $H(\cdot/w_0)$ for inside offers, respectively. Moreover, inside offers are assumed to be conditional on the current wage, w_0.[8] It is also assumed that $G(\cdot)$ and $H(\cdot/w_0)$ stochastically dominate $F(\cdot)$.

This is the general framework of the model from which we derive the basic equations describing the worker's optimal policy. Consider first an unemployed worker who receives a job offer with probability λ_u and has to decide whether to accept it and forego the possibility of finding a better job or to continue searching in the hope of obtaining a better offer in the future. This scenario is expressed by the value function V_u defined as follows:

$$V_u = B + \frac{\lambda_u}{1+r} E_x Max\left\{V_e(x), V_u\right\} + \frac{(1-\lambda_u)}{1+r} V_u \qquad (1)$$

where $V_e(x)$ describes the value of being employed at wage x and r is the interest rate used to compute the discount factor. The value function V_u represents the present value of the sum of the opportunity cost of accepting the job offer and the option value of searching again next period. If the unemployed worker receives a wage offer, he compares the value of the offer with the value of continuing to search for a better one. On the contrary, he obtains the value of continued unemployment. This option value covers the possibility that the worker might eventually obtain a better wage offer in the future.

The expected value of being employed at wage w is the sum of the current wage and the discounted expected value of future events weighted by their respective probabilities:

$$V_e(w) = w + \frac{1}{(1+r)}\left[\lambda_e E_y Max\left\{V_e(y), V_e(w)\right\} + \lambda_e^{'} E_{\tilde{x}} Max\left\{V_e(\tilde{x}), V_u\right\} + \left(1-\lambda_e-\lambda_e^{'}\right)V_e(w)\right] \qquad (2)$$

The terms in brackets detail the various components of the job value within the next period. Firstly, when the individual receives an outside offer he compares its expected value with the current wage. Secondly, if he receives an inside offer he compares the expected value of accepting that offer with the current wage and the value of entering again into unemployment. Thirdly, he can remain in the same

[6] The reader must note that we do not allow for counter-offers/renegotiation of contracts should a worker receive an outside offer, as in Cahuc *et al* (2003). For example, we could assume that outside offers are not observable by firms, in which case an employer is unable to respond to any of such offers.

[7] In job search models it is common to assume higher search intensity on the part of the unemployed. In Rendon (2001) we can find an empirical test of this hypothesis, which will also be tested in our structural estimation.

[8] A positive cross-section association between the wage and the length of the job is a common observation reported in the empirical literature. When we make inside wage offers conditional on current wages we are trying to reflect this empirical evidence.

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state if he does not receive any of these offers. Equation (2) states that when the worker compares the value of the job with the value of continuing the job search, he considers the expected flow of income from employment, which depends on the expected income from searching while employed and the expected income from staying in the same job. We also derive from equation (2) that the value of being employed is lower when jobs do not last forever but higher when there is on-the-job wage growth and on-the-job search.

Workers optimise given expectations of future events. Once a relationship is established between the two potential labour force states, the optimal behaviour is represented by worker's reservation wages[9]. An unemployed worker who receives an offer x chooses between values V_u and $V_e(x)$ and accepts the offer if and only if $V_u < V_e(x)$. Thus, an optimal policy for unemployed workers is derived from the equality condition:

$$V_u = V_e(w_r) \qquad (3)$$

Using this condition and evaluating equation (2) at the reservation wage, w_r, we obtain the following expression for the reservation wage equation:

$$w_r - B = \lambda_u \int_{w_r}^{\infty} \frac{\overline{F}(x)}{r + \lambda_e' + \lambda_e \overline{G}(x)} dx - \left[\lambda_e \int_{w_r}^{\infty} \frac{\overline{G}(y)}{r + \lambda_e' + \lambda_e \overline{G}(y)} dy + \lambda_e' \int_{w_r}^{\infty} \frac{\overline{H}(\tilde{x}/w_r)}{r + \lambda_e' + \lambda_e \overline{G}(\tilde{x})} d\tilde{x} \right] \qquad (4)$$

The left hand side in equation (4) describes the present net marginal return of accepting the job offer at the reservation wage. The right hand side of equation (4) may be interpreted as the expected net marginal return of continuing to search in the event of receiving an offer equal to the reservation wage. It represents the present value of the expected capital gain attributable to finding an acceptable wage offer next period minus the expected capital gain attributable to accepting the job offer associated with a wage equal to the reservation wage. This last expected capital gain is related to expected returns from on-the-job search and on-the job wage growth. The higher these expected returns, the lower the reservation wage. All these expectations are discounted by the interest rate and the probability of inside and outside wage offers[10].

In this model, unemployed workers decide to accept the job offer by taking into account the expected value of future wages. For instance, higher values of λ_e' or λ_e make the worker more willing to accept a low initial wage in exchange for a steeper wage profile over time. Thus, depending on the value of

[9] It may be argued that job mobility and acceptance behaviour of individuals depend on the value of a job and this value is not completely characterised by wages. Cahuc, Postel-Vinay and Robin (2003) estimate a job search model and test whether unobserved heterogeneity on the value of jobs is relevant to describe job mobility decisions. They estimate the model using the ECHP for 10 European countries and conclude that job mobility decisions are indeed based on simple wage comparisons.

[10] Another way of writing the reservation wage equation is:

$$w_r + \left[\lambda_e \int_{w_r}^{\infty} \frac{\overline{G}(y)}{r + \lambda_e' + \lambda_e \overline{G}(y)} dy + \lambda_e' \int_{w_r}^{\infty} \frac{\overline{H}(\tilde{x}/w_r)}{r + \lambda_e' + \lambda_e \overline{G}(\tilde{x})} d\tilde{x} \right] = B + \lambda_u \int_{w_r}^{\infty} \frac{\overline{F}(x)}{r + \lambda_e' + \lambda_e \overline{G}(x)} dx$$

The left hand side represents the payoff of accepting the current offer at the reservation wage and the right hand side is the payoff of rejecting it and trying again next period.

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the structural parameters, it will be optimal for the worker to accept low wage job offers and to exit rapidly from unemployment or to accept only high wage offers and consequently to stay unemployed longer.

In the basic version of the model (Mortensen, 1986), offered wages are assumed to be independent of the labour status of the worker. In this case, the effects of the interest rate, the turnover rate and the pattern of the wage offer distribution on the reservation wage depend critically on the difference between job offers probabilities while employed and unemployed. For example, given an improvement in the job offer distribution function, the reservation wage increases if the job offer probability when unemployed exceeds that when employed, because in such case the search while unemployed is more efficient. These results hold in our model but we add the possibility that wage offers also depend on the labour state of the worker. In our model the desirability of searching while unemployed depends on the difference between job offer probabilities but also on the difference between expected wages associated with job offers. This implies that the reservation wage in our model may be lower than the reservation wage in Mortensen (1986), because the individual also considers the case that expected wage offers can be higher while employed.

Finally, as we will see afterwards, our data indicate that some job-to-job transitions imply real wage cuts. In order to improve the performance of the model to explain real data, we add this possibility to our model. This fact can be represented by a situation where the worker receives a non-acceptable inside offer and an acceptable outside job offer simultaneously. When we add this possibility to our model, the reservation wage equation is extended slightly with a new term to describe this type of transition:

$$w_r - B = \lambda_u \int_{w_r}^{\infty} \frac{\overline{F}(x)}{r+\lambda_e+\lambda_e \overline{G}(x)+\lambda_e \lambda_e H(x/w_r)\overline{G}(x)} dx - \lambda_e \int_{w_r}^{\infty} \frac{\overline{G}(y)}{r+\lambda_e+\lambda_e \overline{G}(y)+\lambda_e \lambda_e H(y/w_r)\overline{G}(y)} dy$$
$$- \lambda_e \left(\int_{w_r}^{\infty} \frac{\overline{H}(\tilde{x}/w_r)}{r+\lambda_e+\lambda_e \overline{G}(\tilde{x})+\lambda_e \lambda_e H(\tilde{x}/w_r)\overline{G}(\tilde{x})} d\tilde{x} + \lambda_e \int_{w_r}^{\infty} \frac{H(\tilde{x}/w_r)\overline{G}(\tilde{x})}{r+\lambda_e+\lambda_e \overline{G}(\tilde{x})+\lambda_e \lambda_e H(\tilde{x}/w_r)\overline{G}(\tilde{x})} d\tilde{x} \right) \qquad (5)$$

Several insights can be derived from the present model regarding the determinants of wage mobility and its relation to job mobility. Firstly, we obtain that the expected re-employment wage depend on reservation wages and, therefore, on all the model's parameters. We compute the wage change after unemployment as being the difference between the wage earned in the previous job and the estimated re-employment wage. Therefore, by estimating the model's structural parameters, we can determine the different sources of wage changes after unemployment. To compute accepted wages for voluntary job movers we have to remember that the model describes two cases: workers who experience a wage gain and those who have a wage cut. Therefore, the way the accepted wage is defined depends on the sign of the wage change experienced. In the absence of a negative inside offer, the optimal strategy for an employed individual is to accept any inside offer that exceeds his current wage

If the worker simultaneously receives a non-acceptable inside offer and an outside job offer higher than his reservation wage, then he will experience a job-to-job transition. In this situation the acceptance probability depends on the reservation wage and not on the previous wage.

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In our model we also consider the case in which workers experience wage changes in their current job. In this case, the worker's optimal strategy is to accept any inside offer, w_s , with a wage higher than his reservation wage, even though this could imply a wage cut. Comparing the previous wage with the expected accepted wage when employed we can relate wage mobility to voluntary job mobility decisions and job stability. As in the case of unemployed workers, the job mobility decisions of employed workers depend on their reservation wage strategy.

Summing up, in our model we have two main sources of high reservation wages and only one can be directly related to the traditional approach of real wage rigidity. On the one hand, in terms of our model, the argument of real wage rigidity would imply that the value of time while unemployed relative to the previous wage should be higher in countries with larger average wage changes and larger unemployment spells. However, on the other hand, from our model we also know that a higher reservation wage might be the rational outcome of low wage growth expectations while employed and a high probability of exiting again to unemployment. If this is the case, labour policies aimed at reducing the value of time while unemployed by reducing Unemployment Benefits might not be the best means of reducing unemployment levels. In the following analysis we will attempt to disentangle the sources of the differences in the reservation wage observed among workers of different countries and educational levels.

3 The Likelihood Function

The job search model proposed above is estimated using data regarding the duration of employment and unemployment spells and monthly wages for a sample of European workers. The empirical estimation strategy follows directly from our theoretical model. In order to recover the parameters of the model, we impose all the restrictions it implies in the likelihood function.

Our observations identify two main types of worker states: i) Employed workers who are either *stayers*, that is, workers without a job change along a year, or *job movers* without an unemployment spell between two consecutive jobs; and ii) workers with an intermediate period of unemployment between two jobs. Hence, the likelihood function in our estimation procedure contains these two main states:

$$l(D/\Omega) = \prod_{j=1}^{N} \left[\prod_{u=1}^{U} \mathrm{l_u}\left(w_{ju1}, T_{ju}, w_{ju0}, w_{jr} \mid \Omega,\right) \right] \left[\prod_{e=1}^{E} \mathrm{l_e}\left(w_{je1}, T_{je}, w_{je0} \mid \Omega,\right) \right] \qquad (6)$$

where the index j represents the individual, l_u represents the likelihood contribution of workers with unemployment spells (indexed by u); w_{ju1} and w_{ju0} are the current and previous wage respectively and T_{ju} is the duration of the unemployment spell. Additionally, to guarantee the identification of the model's parameters, we use data regarding the worker's self-reported reservation wage w_r –in the following section we will describe this variable in more detail. The term l_e describes the contribution of employed individuals (indexed by e). The information available for this group is basically job tenure, T_{je}, previous wage, w_{je0}, and current wage, w_{je1}.

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From now on we omit individual indexes to simplify the notation The term l_u is specified as in Wolpin (1987) and García-Perez (2006).:

$$\ell_u\left(w_0, w_{u1}, T_u \mid \Omega\right) = \prod_{u=1}^{U}\left[\Pr\left(w_0, w_{u1}, w_r, T_u\right)^{\beta_u} \Pr\left(w_0, w_r, T_u\right)^{(1-\beta_u)}\right]^{\alpha_u} \Pr\left(w_0, w_r, T_u \geq t\right)^{(1-\alpha_u)} \qquad (7)$$

Where α_u is a dummy variable equal to one for completed unemployment spells and β_u is an indicator of individuals with known accepted wages. The first bracket shows the likelihood contribution of uncensored unemployment spells while the second bracket corresponds to those who were still unemployed at the time of the interview[11]. We also distinguish between completed spells depending on whether the accepted wage is known[12].

The likelihood contribution of employment spells is determined from information regarding the job length and the wage earned according to the following expression:

$$\ell_e\left(w_0, w_{s1}, w_{l1}, w_{m1}, T_{e'}, T_e \mid \Omega\right) = \prod_{e=1}^{E}\left[\Pr\left(w_0, w_{s1}, T_{e'}\right)^{\beta_{e'}} \Pr\left(w_0, T_{e'} > t_{e'}\right)^{1-\beta_{e'}}\right]^{1-\alpha_e}\left[\Pr\left(w_0, w_{m1}, T_e\right)^{\beta_e} \Pr\left(w_0, w_{l1}, T_e\right)^{1-\beta_e}\right]^{\alpha_e} \qquad (8)$$

where α_e is equal to one if the individual changes job and zero otherwise, $\beta_{e'}$ is equal to one if he experiences on-the-job wage change, and β_e is equal to one when he experiences job-to-job transitions associated with a wage gain. These two variables are equal to zero in the corresponding opposite case. T_e represents observed job tenure[13]; w_{s1} represents the current wage for stayers with on-the-job wage change, w_{m1} represents the accepted wage for job movers with wage gains and w_{l1} the accepted wage for job movers associated to wage losses. The first term in equation (8) describes the likelihood contribution for individuals that stay in the same job and either experience a wage change (first bracket) or not (second bracket), and the second term shows the likelihood contribution for individuals that move to a new job.

Given this likelihood function, and taking into account the reservation wage, expressed in equation (5), we can estimate the structural parameters of the model provided they are all identified.

3.1 *Some Comments on Identification*

Our data basically consists of wages, unemployment and employment spell durations and information regarding transitions. Traditionally, the joint observation of wage and worker mobility data implies over-identification of the model's transition parameters. However, in the context of this model we do not have over-identification when we study employed workers. For instance, in the case of job-to-job transitions, to identify whether the worker experiences a wage cut or a wage gain, both individual

[11] This type of individual is also relevant in the estimation. If they are still unemployed it is perhaps due to their reservation wage decisions. If we do not consider them we could bias the estimated wage losses.

[12] This is due to the characteristics of the data. In Section 4 we explain how we obtain the information on previous and current wages.

[13] For individuals that change jobs this variable represents tenure in the previous job.

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transitions and wage data are needed. From accepted wages of unemployed workers we can identify the wage offer distribution truncated at the reservation wage $F(w_{u1}/w_u>w_r)$. Flinn and Heckman (1982) showed that unless one imposes certain distributional assumptions on $F(.)$, the tail below the reservation wage cannot be identified without information on wages associated with rejected job offers. This identification problem also arises in the case of outside and inside wage offer distributions. Therefore, as we describe in the Appendix I, we have imposed certain distributional assumptions regarding $F(\cdot)$, $G(\cdot)$ and $H(\cdot/w_0)$. Besides, we also impose the assumption that both inside and outside offer distributions stochastically dominate the offer distribution for the unemployed.

The probability of existing from unemployment can be identified from the moment the individual starts working. As we have observations for accepted inside and outside offers the same applies to the probability of accepting inside and outside job offers.

Finally, we have also used the self-reported reservation wage data provided by the ECHP to guarantee identification of the remaining parameters. We assume that the self-reported reservation wage is a random variable that follows a lognormal distribution:

$$Lnw_r^o = \pi Ln\overline{w_r^e} + \varepsilon_r \qquad (9)$$

where w_r^o is the self-reported reservation wage, ε_r is a random error term, w_r^e is the estimated reservation wage derived from the optimal strategy of the unemployed worker solved from the model, and π measures how far the self-reported reservation wage diverges from the estimated one. If π is positive, then the estimated reservation wage will be lower than the declared one. To identify this parameter we use completed spells of unemployment and we compare the accepted wage with the reservation wage declared by the worker at the moment of the interview. Since one would expect the reservation wage to be equal to or lower than the accepted wage, this comparison offers us an indicator of the reliability of self-reported reservation wages[14].

4 The Data and Some Empirical Facts

The data set we use in this study is the European Community Household Panel, ECHP. We have used eight waves from 1994 to 2001. This survey is the most appropriate one for our purposes because it offers homogeneous information for the different European economies we want to study. Moreover, it offers wide-ranging labour market information which includes variables describing the behaviour of individuals during unemployment and employment spells, thereby allowing us to identify certain fundamental parameters. For instance, at the moment of the interview the individual is asked which wage would make him willing to accept a job offer. This variable can be considered as a proxy for the reservation wage concept and we therefore use it to better identify the parameters of our structural model.

[14] This divergence might also be interpreted in another way. Interviewees are also asked how many hours per month they would be willing to work with the reported reservation wage. Ideally, we should compute the hourly reservation wage and compare it with the accepted hourly- wage. Unfortunately the consideration of working hours restricts our sample size too much. Thus, the observed divergences between the current wage and the reported reservation wage may be due to the fact that the hours implicit in the current job are substantially different to those envisaged when reporting the reservation wage.

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The ECHP is based on a survey carried out annually on a sample of households. This sample is selected for each country considered in the database. It has a panel dimension, thereby enabling the history of individuals to be followed during the period of the survey. Various personal, labour and economic information is obtained regarding each individual, together with certain characteristics of the household. Most of the variables describe the situation at the moment of the interview. However, some variables, such as individual and household earnings, refer to the situation during the year prior to the interview.

Individual labour history is available through a retrospective report of the monthly labour status. The duration of unemployment used in this paper is obtained from this monthly description of the labour situation of individuals. We combine the monthly labour situation and the data on annual earnings to calculate the monthly income and, in particular, the monthly wage. If the individual has one employment spell during the year, the monthly wage is the ratio between the number of months in employment and the annual labour earnings[15]. If the individual has two employment spells we combine the annual earnings with the wage declared at the time of the interview to obtain the monthly wage. This method can introduce measurement errors in wages, but we consider it important to include individuals with more than one employment spell in the sample. However, if a worker has three or more employment spells within the same year, we cannot compute the monthly wage, and we therefore disregard these observations. We use the Consumer Price Index (CPI) of each country to obtain real monthly wages[16].

We have classified workers into three groups: *stayers*, *voluntary movers* and *involuntary movers*. The first group is composed of those workers that remain in the same job between two consecutive interviews. The voluntary character of the job separation is not explicitly reported in the data, so we require an *ad hoc* definition. We consider as voluntary all job changes characterized by the absence of an unemployment spell between two consecutive jobs.[17] Operationally, a job separation occurs every time an individual leaves a particular job. In most of the empirical literature, job separation variables are broadly defined as being any situation where an individual has different employers in two consecutive or non-consecutive interviews[18]. Hence, they cannot identify wages at the moment of moving to another job, that is, accepted wages. However, the point at which wages are measured is very important to correctly measure the costs produced by an unemployment spell, especially because there may be on-the-job wage growth. In our case, given the way we construct the data, we are able to obtain wages at the moment of moving. Thus, we can approximate it to the concept of accepted wages.

Our final sample estimation consists of men aged between 20 and 60 years old, that is, workers with a stronger attachment to the labour force. In addition, we discard observations with missing data on the

[15] Information on hours worked is also available but it restricts the sample considerably. Previous works show that wage losses based on monthly wages are larger than those based on hourly wages (Stern, 1989; Gregory and Jukes, 1997). This is probably due to the change in monthly labour hours.

[16] We take 1993 as the base for deflated wages for each country, which are all expressed in Euros.

[17] Obviously, we are considering as voluntary some cases where the employer induces job changes. For example, if the employer announces in advance to the worker that he will be laid off, forcing him to search on-the-job and possibly find another job before being fired.

[18] This is the most common approach followed by empirical works that use panel data methodology to estimate wage losses after unemployment (Lefranc, 2003).

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wage prior to the unemployment spell or to the current job in the case of job movers. This last restriction has the effect of excluding those who have never been employed[19] during the period of observation and all the observations with left-censored spells of unemployment. Besides we also exclude those observations without known employment length. Since the worker must report the characteristics of his current job, we always condition the analysis on previous wage and tenure. For the purposes of the paper, we assume that different spells involving the same individual are independent events[20]. We show in Table 1 the final sample sizes for each country.

4.1 *Descriptive Statistics for the Estimation Sample*

In Table 2 we show the distribution of job tenure for the whole sample and for completed job spells. Firstly, we observe that long job spells predominate, since more than 50% of those workers who were initially observed in employment were still in the same job after eight years. This ratio is slightly higher in France, around 66%. When we look at completed job spells the distribution changes, since in all countries the conditional probability of exiting from the current job is the highest during the first year of employment. This probability is much larger in Spain 52%, than in the rest of countries where this ratio varies from 29% in Germany to 35% in France. These statistics reflect the fact that, especially in Spain, the rate of temporality is high, which provokes the existence of a dual labour market characterized by stable workers with long job tenures and unstable workers with short job spells[21] and repeated unemployment experiences (Dolado y Jimeno, 1995; García-Pérez and Rebollo, 2005). Finally, in the last two rows of Table 2 we show the percentage of jobs ending in unemployment and job-to-job transitions as an indicator of voluntary[22] and involuntary job mobility conditional on job termination. Clearly, in all countries job-to-unemployment transitions predominate. Nevertheless, if we compare among countries we observe that on average, transitions to unemployment are more common in Spain and Germany than in France and Portugal.

Another way of describing the process of transitions is set out in Figure 1, which shows the employment exit probability for each country. The impression they give is that of a small amount of negative duration dependence, since it seems that workers with longer job tenure are somewhat less likely to have their jobs terminated at a given point in time. Nevertheless, mainly for Spain and France, we find a clear negative duration dependence for workers with a tenure of less than one year[23].

Figure 2 represents the transitions from unemployment to employment by plotting the unemployment exit probability. Flows out of unemployment are higher for short durations and drop afterward to

[19] This restriction reduces the sample size by 22% in Germany and 40% in France. The average unemployment duration of this group of workers is quite long, around 40 months. Being long-term unemployed, it is logical that their age is also above the sample mean (around 40 years in all countries).

[20] The use of multiple-spell data on unemployment and employment duration provides greater variation. However, this also raises the possibility of selection bias, since workers who have multiple employment or unemployment spells may belong to a non-random sample.

[21] These results are not surprising given that the share of temporary contracts in Spain is around 30%, the highest of the European Union.

[22] We are aware that given the way we construct the data, these job-to-job transitions may hide an unemployment spell of less than one month.

[23] This is probably related to the larger share of temporary contracts found in these two countries.

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remain roughly constant for unemployment durations of longer than one year[24]. Figure 2 also shows that there are large peaks at 12 and 24 months of unemployment. Given the way the data on spells of unemployment and employment is collected in the ECPH, they can be related to recall errors.

Once we have described the most relevant empirical facts regarding job turnover we then start analysing wage mobility by distinguishing three types of states: *stayers*, *voluntary movers* and *involuntary job movers*. In Table 3 we present their main sample characteristics. Firstly, we observe that there are marked differences among the three groups in all the variables considered. This supports the need to separately analyse each group of workers. Workers with unemployment transitions are younger. They have lower job tenures, a lower level of studies and have more unemployment experiences. If we compare them among countries, we observe that young workers in Spain and France face a higher probability of having an involuntary job transition than in Germany. This difference among younger workers might partially reflect the greater tendency of young Spanish and French workers to enter into unstable jobs. On the opposite side we have the group of *stayers*, who are older workers with longer job tenure, higher educational attainments and less unemployment experiences before the current job. Finally, in the case of job-to-job transitions we observe certain differences between the countries analysed. In Spain, France and Portugal these workers are more similar to unemployed workers in the sense that their sample characteristics (job tenure and age) are closer to those of an unemployed worker. On the contrary, voluntary job movers in Germany are, on average, more similar to the group of stayers.

One well-documented fact regarding wages is that more senior or more experienced workers tend to earn higher wages (Abraham and Farber, 1987; Abowd and Kang, 2002). This phenomenon may be illustrated by comparing the distribution of wages for *stayers*, who represent more senior workers, to that of involuntary job movers, which should include more job entrants. Firstly, in Table 3 we display the current and previous wage, the average wage growth and the percentage of wage losers for each group. Comparing wages among *stayers* and *movers* we observe that the former generally have higher wages. Given this, one could be tempted to conclude that job mobility is not beneficial in term of wages. But the relevant question is not whether job movers earn lower wages on average, but whether job mobility contributes to increase or decrease their current wage relative to the previous one.

We observe that the mean wage growth declines as we move from the group of *stayers* to the group of voluntary and involuntary movers. Moreover, the probability of having a wage cut is lower for *stayers* -between 5% and 8% - than for the other two groups. One striking fact is that a substantial share of job-to-job transitions is associated with wage cuts. These figures suggest that not all job-to-job transitions are initially a favourable event for workers. We find this last result interesting since it shows that to explain worker's behaviour and its relation with job mobility decisions one must consider that workers may "voluntarily" accept wage cuts as a better option than unemployment.

In Table 3 we also distinguish between censored[25] and completed spells for unemployed workers to ascertain if there are relevant divergences between them. We find that in all countries workers with

[24] In Spain, Germany and Portugal we observe that the exit probability increases abruptly at month twelve. This is due to the way the data is collected, since individuals have to recall their labour market situation prior to the year of the interview. On the contrary, in France individuals have to describe their labour market situation during the twelve months prior to the interview.

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completed unemployment spells face a higher probability of having being unemployed before those spells. This might imply that workers who tend to exit earlier from unemployment also tend to enter into unstable jobs. In almost all cases this probability is relatively high and again Spain stands out as having the highest one, 82% for completed spells and 69% for censored observations. In France these probabilities are slightly lower but still higher than in Germany and Portugal, at 63% and 44% respectively.

Finally, from Table 3 we can also draw the preliminary conclusion that, on average, wage losses after unemployment strongly differ among countries. Interestingly, though we have found that Spain and France have certain labour market similarities related to the larger share of short job spells, they present quite different results in terms of wage losses. German workers face the largest wage penalties around -14%, followed by the Spanish around -4%, the Portuguese, around -3% and the French around 0%. Consequently, the share of wage losers after unemployment is larger in Germany and Spain, around 62% and 53% respectively, than in Portugal and France, around 51% and 44% respectively.

As explained before, we partition each national sample into three groups according to the educational attainment of the worker. We distinguish among *primary*, *secondary* and *tertiary education*, except for Portugal where we can only consider the first two cases[26]. Table 3 displays the main sample characteristics of unemployed workers for each group. It can be seen that the level of studies is an important source of observed heterogeneity. In all countries wages increase as we move from primary to secondary and tertiary education and when we look at average wage changes this relationship also holds, except for Germany where workers with secondary and university education have similar average wage changes after unemployment. We also find that, even when comparing by educational attainments levels, German workers experience the highest wage losses and French workers the lowest ones. Table 4 also demonstrates that the share of wage losers and the average wage loss closely follow the pattern of the average wage change. Again, German workers face the worst ratios in both cases.

The last rows of Table 4 represent the average length of the unemployment spell and the distribution of workers according to the length of unemployment. Under the traditional approach which assumes that real wage rigidity is the main source of high unemployment, one would expect to find that countries with higher unemployment rates and/or workers with a longer mean unemployment duration should also have lower average wage losses. However, when we compare average wage changes with mean unemployment duration this situation does not clearly arise.

4.2 *Implementation and Variables Selected*

We estimate the model separately for each country and for three groups of workers, classified according to their educational attainments (*primary*, *secondary* and *tertiary*)[27]. In this way, we are able to control for observed heterogeneity along the highly important dimension of education. Moreover, to

[25] Apart from the intrinsically censored spells, all unemployed workers with unemployment spells of longer than 24 months are considered as censored because we cannot estimate the exit probability for such durations due to the lack of data variation.

[26] Due to minimum sample size requirements we omit from the analysis the group of Portuguese workers with a university degree.

[27] Except for Portugal.

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reflect the way in which the economic structural parameters vary across individuals, we express them as functions of certain individual characteristics[28]. We use as explanatory variables three age categories ($age_{20\text{-}30}$, $age_{30\text{-}45}$, $age_{45\text{-}60}$), four levels of job tenure ($t_{e<12}$, $t_{e12\text{-}24}$, $t_{e24\text{-}48}$ *and* $t_{e>48}$), the previous wage and an indicator for the presence of previous unemployment experience (u_{exp}). All covariates are coded as dummy variables except the *previous wage* which is a continuous one[29].

In Table 5 we describe the functional form for each model's parameter. The value of time while unemployed depends on the *previous wage*, *job tenure* and *age*. With this specification we try to reflect the effect of Unemployment Benefits on the acceptance behaviour of unemployed workers. Thus, we introduce a dummy variable indicating whether the worker might be entitled to receive such benefits. Though there are differences among countries, all of them have in common that the eligibility condition to receive Unemployment Benefits is related to job tenure. In Spain and Germany workers require a tenure of at least 12 months, 18 months in Portugal and 4 in France[30]. The job offers probability while unemployed and outside wage offers also depends on whether the worker is entitled to receive Unemployment Benefits. Again, we use this specification because we could think that workers who are not eligible for such benefits will search more intensively even when employed[31]. Mean offered wages for movers depend both on age and on previous tenure and mean offered wages for involuntary movers are also made dependent on the dummy variable *previous unemployment experience.* The idea is to confirm whether workers with previous unemployment spells face a penalty in terms of lower offered wages. This *scarring effect* has already been studied in previous papers[32] but the economic mechanism underlying this phenomenon is not clear-cut. In the present analysis we test if this scarring effect is related to lower wage offers while unemployed. Inside wage offers depend on current wages, job tenure and age. With this specification we can analyse whether wage growth increases with tenure and whether job stability is more common for longer tenure workers. Finally, we also introduce heterogeneity through the distribution of previous wages, by relating the previous wage with age, tenure, civil status and year dummies. The remaining parameters to be estimated are the variances of the different wage offer distribution functions, the variance of the measurement error, the variance of the previous wage, the variance of the reservation wage, and the parameter that measures the reliability of the reported reservation wage. All of these are estimated as constant terms.

5 Estimation Results

The results of the structural estimation are presented in Table 6 distinguished according to the educational attainments for each country. We comment now on the most relevant results.

[28] Since the structural model is stationary, all state dependence –mainly observed in the unemployment exit probability-, is attributed to observed heterogeneity.

[29] Since one of the main regressors of our model is the *previous wage*, we compute the reservation wage for each individual in the sample.

[30] In the case of France we have hardly any observations of job tenure of less than five months. Nevertheless we opted to keep the dummy variable of job tenure of less than 12 months in the specification of the value of time while unemployed.

[31] Though we do not use the information on the type of contract in the job, a high percentage of unemployed workers without unemployment benefits come from temporary jobs, especially in Spain.

[32] For instance, Gregory and Jukes (2001) found an important *scarring effect* of previous unemployment on current wages in the United Kingdom. García-Pérez and Rebollo (2005) studied the *scarring effect* for the same four countries and found it relevant in all of them, being stronger in Spain and Portugal.

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Firstly, as expected, the value of time while unemployed is strongly related to the wage obtained in the previous job. Given the selected functional form, the constant term α_0, represents the dependence of the value of time while unemployed relative to the previous wage. In all countries this constant term increases as we move from primary to tertiary education, meaning that the value of time while unemployed is greater the higher the worker's education level. We would expect that short tenure workers, due to the conditions governing entitlement to Unemployment Benefits, would have a lower value of time while unemployed. Interestingly, this is the case in Spain, France and Portugal while in Germany the effect of this dummy variable is not statistically significant. One possible explanation for this difference is that Germany offers Unemployment Assistance (UA) benefits, which are connected to the previous wage[33], whereas in the other three countries these benefits are independent of previous wages[34]. This result is consistent with the idea, already put forward (see OECD, 2000), that unemployed workers who are also eligible or expect to become eligible for social assistance programmes are less concerned about Unemployment Benefits. Finally, we also obtain a positive relationship between the value of time while unemployed and the worker's age in all cases. This result can also be related to Unemployment Benefits since they also tend to be related to worker's age.

The job offers probability while unemployed is higher for workers not entitled to receive Unemployment Benefits, except for French workers with primary and secondary studies. This result might reflect a greater search effort on the part of these workers. Therefore, the stylised fact of lower exit probabilities for workers with such benefits (Meyer, 1990; Crémieux, 1995) can be interpreted within this semi-structural estimation[35]. From our results we expect that workers who receive these benefits have a larger value of time while unemployed and a lower job offers probability. Consequently, the unemployment exit probability will be lower.

We do not find a clear relationship between wage offers for unemployed workers and job tenure in the previous job. In Spain, France and Portugal, receiving lower wage offers does not penalize short-tenure workers. On the contrary, German workers with secondary and university education face lower wage offers, as job tenure is lower. Finally, German workers with primary studies face no penalty at all. When we relate age to wage offers we obtain a non-linear relationship, since middle-aged workers receive the highest wage offers. Finally, the scarring effect of previous spells of unemployment on current wage offers while unemployed exists in Germany and Portugal independently of the education level. In Spain this effect arises only in the case of workers with a university degree while in France this effect arises with respect to workers with secondary and primary education.

The probability of outside offers is higher for short-tenure workers, which supports the idea that they search more intensively because their opportunity cost of becoming unemployed is greater. Our results

[33] The Unemployment Assistance (UA) benefits in Germany are connected to the previous wage and are equivalent to 57% of the wage for workers with at least one child and 53% in other cases. The drop in the benefit level is thus relatively small when the eligibility period of UI benefits expires.

[34] For instance, in Spain, this type of UA benefit is equivalent to only 75% of the minimum legal wage, which represents at the most 50% of the average wage. In France it consists of a daily wage that is also equivalent to less than 50% of the average wage. In Portugal, UA benefits are between 70%-90% of the minimum wage and therefore they also represent at the most 50% of the average wage.

[35] We are aware that these results are based on a reduced form specification built on top of the structural model. In order to explain these results from a structural approach a more comprehensive structure of the model would be required. Concretely, one that includes search efforts and worker accumulation of human capital. But this goes beyond the aim of this paper.

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also indicate that, as we assumed in the theoretical model, the job offer probability is higher when unemployed than when employed.

From the results we cannot establish a clear relationship between outside job offers and their explanatory variables, *age* and *job tenure*. Though one would expect that outside job offers increase with tenure, we find this effect is relevant only in certain cases. Similarly, if we consider that age acts as a proxy for total labour experience we would expect a positive relationship between outside job offers and age. However this is not the result in all cases. It could be that the reduced sample size used to estimate this part of the likelihood is behind this lack of significance.

Inside wage offers depend positively on previous wages and job tenure. Interestingly, these offers are clearly lower for those with a tenure of less than 24 months, with this effect clearly stronger in Spain than in the rest of the countries considered. This result implies that the wage penalty after unemployment seems to be longer in Spain than in the other three countries. Inside wage offers also increase with worker's age. Finally, previous wages were also found to be positively related to job tenure and age. Moreover, they are higher for non-single workers.

In the last rows of Table 6 we display the variances of the different wage distribution functions. As expected, the variance of the wage offer distribution function for unemployed workers and for outside job offers is clearly larger than for inside wage offers. Moreover, in all cases the variance of offered wages for unemployed workers is larger than for outside offers.

Measurement errors exist in our model but they are not especially important since the variance due to measurement error represents only between 10 and 20% of total variance, depending on the education group. Finally, the reported reservation wages are higher than the estimated ones, which represent between 58% and 81% of the self-reported reservation wage.

To obtain an additional insight into the functioning of the model we have simulated a change in each parameter by ±10%, conditional on our estimations[36], computing the effect of these changes on the main outcome variables. In Table 7 we report the corresponding elasticities for each parameter change by country and education level. Most of the signs of these elasticities are familiar from the job search literature (see, for example, Devine and Kiefer, 1991), although we consider it important to highlight one result obtained in our estimation. The parameters relating job and wage mobility while employed strongly affect reservation wages. The higher the probability of experiencing wage growth while employed, either due to job-to-job mobility or internal wage mobility, the lower the reservation wage and subsequently the lower the re-employment wage.

Before going further in the analysis it is worthwhile to ascertain whether the model's predictions are consistent with the data. We use the basic specification of the model to compare sample mean values of re-employment wages, average wage changes, the share of wage losses and the average wage loss to the same figures predicted by the model in the three educational groups and for each country[37]. The results are displayed in Table 8. In all cases our model does a fairly good job at matching re-

[36] We have also simulated the model changing the parameters by ±5% and the results are equivalent.

[37] We compute the predicted values as the expectations of the accepted wages following the specifications provided by the model, evaluated analytically according to the value of the maximum likelihood estimates.

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employment wages. However, we tend to underestimate the average wage change. The average wage loss is notably closed to the observed data while the share of wage losers is estimated with less precision[38].

The predicted values for the main structural parameters in the model are displayed in Table 9. In the first part we report the main outcomes of the basic job search model for unemployed individuals together with different indicators that help us to analyse the source of the differences in the reservation wage adjustment mechanism among the countries analysed. It should be borne in mind that in order to explain observed wage losses two main mechanisms arise from the model just presented. Firstly, the existence of substantial returns from work experience makes the new job a stepping-stone towards better jobs. Therefore, individuals will be less selective in accepting a job when unemployed and consequently reservation wages will be lower. In this case the initial wage loss will shortly turn into a wage gain as workers accumulate job tenure and experience. Secondly, workers may have a low reservation wage due to the low value of the job offer probability, the offer wage or the value of time while unemployed – perhaps because they do not receive Unemployment Benefits. In this case the unemployed worker will possibly experience a wage loss, which will tend to remain while employed for a certain period of time.

The *reservation wage to previous wage ratio* can be related to the observed average wage change after unemployment. One would expect that workers with a higher *reservation wage to previous wage ratio* face larger wage changes after unemployment. For instance, French workers face the largest wage changes and also have the highest *reservation wage to previous wage ratio*. On the contrary, German workers have the largest wage penalties after unemployment and also have the lowest *reservation wage to previous wage ratio*. Moreover, except for Germany, this ratio is also higher for workers with a university degree, who also tend to have lower average wage losses. These differences in the reservation wage strategy may be a consequence of both supply and demand factors. If the observed wage losses were explained by supply factors[39], the *value of time while unemployed to previous wage ratio* would be higher when the average wage change is also higher. However, this result does not generally hold among all the countries analysed. For instance, the *value of time while unemployed to previous wage ratio* tends to be lower in Spain than in Germany while wage losses are greater in the latter country. On the contrary, this result seems to hold when we compare France and Portugal with the other two countries.

Given that the behaviour of the *value of time while unemployed to previous wage ratio* does not completely explain observed wage changes, and in particular why Germany faces larger wage losses, we have to look for other factors. Firstly, we might look into the other structural parameters relating (related?) to the unemployment situation such as job offers probability and the mean offer wage. The first structural parameter varies among countries and types of workers and it is difficult to find a clear pattern. The *unemployed offer wage to previous wage ratio* is the highest for Spain followed by the two countries with higher average wage changes, France and Portugal. In Germany this ratio is

[38] We also checked the model's predictions for job movers and stayers. The model predicts average wage changes for stayers quite well while it tends to overpredict average wage change for job movers.

[39] This argument has been used to explain observed differences in wage losses after unemployment between countries (Esping-Andersen, 1990; Pollman and Buchel, 2003).

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around 50% for workers with a university degree and 57% for workers with primary and secondary studies, while in Spain it ranges from 83% for workers with secondary studies to 76% for workers with primary studies. In fact, this result may explain the lower acceptance probability found in Germany[40]. Therefore, this ratio can help to explain the larger wage losses of German workers but it fails to justify the larger wage losses found for Spanish workers relative to their French and Portuguese counterparts. Moreover, if we look at Table 7 we observe that the elasticity of the reservation wage and the re-employment wage with respect to the unemployed offer wage is lower compared to other structural parameters such as the value of time while unemployed or outside and inside wage offers. Therefore, to understand average wage change differences we need to look into other economic factors related to workers' expectations when employed.

When we examine workers' expectations while employed, represented by the probability and the amount of the wage gain associated with internal wage mobility and job-to-job mobility, we again obtain large differences among countries. The *outside wage offer to unemployed wage offer ratio* tends to be larger in Germany than in the rest of the countries studied, and is also larger in Spain than in France and Portugal. This could be interpreted as a consequence of the fact that expected wage gains from job-to-job transitions are larger in Germany than in the other countries. The *inside wage offer to unemployed wage offer ratio* also indicates that German workers are better rewarded once employed than their Spanish, French and Portuguese counterparts.

In terms of the exit probabilities, excluding the rate applicable to job-to-job transitions involving wage gains, the rest of the exit probabilities are more favourable for German workers than for Spanish and Portuguese workers, while French workers have the best internal wage mobility probability. These results support the idea that French and German workers have better opportunities of getting good job offers when employed than their Spanish and Portuguese counterparts. The higher exit probability for job-to-job mobility involving wage gains found in Spain and France is mainly explained by the higher rate of outside job offers[41]. This result is consistent with the idea put forward previously that in Spain and France job-to-job transitions are more common but they imply lower returns in terms of better wages than in Germany and Portugal.

Some interesting results also arise when comparing the job offers probability and the acceptance probability of outside job offers with the rates for unemployed workers. Firstly, in all countries the job offers probability for such workers is higher than that of outside job offers, with these differences being the main determinant of the corresponding exit probabilities[42]. Secondly, the probability of

[40] In terms of the worker's acceptance behaviour, this probability is greater in Spain (varying between 68% and 76%), than in the rest of countries, (varying between 39% and 57%). On the contrary, Germany has the lowest acceptance probability. These differences could be related to differences in the *value of time while unemployed to previous wage ratio* and in the *wage offer to previous wage ratio*. If we look at Table 7 we observe that the acceptance behaviour is highly sensitive to the value of time while unemployed. Therefore we can relate the stronger acceptance behaviour of Spanish workers to their lower *value of time while unemployed to previous wage ratio*. Moreover, the behaviour of the unemployment exit probability depends on job offers and the acceptance probability. We have computed the elasticity of the unemployment exit probability with respect to the job offers probability and, as expected, it is positive but low. Therefore, the acceptance probability plays a very important role in determining the unemployment exit probability.

[41] In Spain this ratio remains at around 5% while in France it increases with the level of studies from 5% to 9%.

[42] This implies that unemployed search is more effective than employed search. Burdett (1978) argued that if job offers in employment arrive infrequently, then an initial bad choice could not be easily corrected. These views had many advocating

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accepting a job offer while employed is similar to the acceptance probability for the unemployed in Spain and Germany, except for German workers with a university degree, in which case the probability is much higher. In France and Portugal, the probability of accepting a job offer while employed is around 10 percentage points lower than the acceptance probability for the unemployed. These results imply that although the search intensity is higher in unemployment, acceptable job offers occur with a similar frequency when unemployed and when employed, especially in Spain. Consequently, we obtain the interesting result that searching while unemployed does not generate an important efficiency gain through a quicker matching of vacancies and job searches [43]. Moreover, the estimated wage returns to searching when unemployed are clearly lower than when employed, especially in Germany.

Finally, the exit probability for job-to-job mobility associated with wage losses is higher in Spain too. This last result is also related to the fact that the probability of receiving an acceptable inside wage offer is lower in Spain than in the rest of countries. Consequently, the exit probability from employment to unemployment is the highest in Spain.

We are also interested in analysing whether wage losses tend to disappear as the worker continues in employment. To analyse this issue we display in Table 9 the average wage change for wage losers after four years of employment and the average exit probability to unemployment during those four years. If we focus on Spain and Germany, the countries with greater wage losses after unemployment, in both cases the results are more favourable for German workers than for Spanish workers. This result confirms the fact that on-the-job wage growth is higher in Germany than in Spain and, though initial wage losses after unemployment are greater for German workers, they tend to disappear more rapidly as the worker has a higher probability of remaining employed.

The results set out above indicates that the traditional argument of wage rigidity fails to explain the observed divergence found with respect to average wage changes after unemployment. In this line, we should have observed higher *value of time while unemployed to previous wage ratios*. However this argument fails to explain the larger wage penalties found in Germany relative to those found in Spain. Since Spain suffers higher unemployment rates we could initially think that wage rigidity is the right argument to explain this difference. Nevertheless, the above results support the conclusion that wage losses in Germany, compared to those found in Spain, are partly a consequence of better employment opportunities for employed workers.

6 Policy Evaluation Exercises

One of the main advantages of a structural estimation is that it enables a simulation of the effects of different policy interventions on the outcomes of the model that are not always directly observable, such as the worker's reservation wage strategy, the value of time while unemployed, the job offers probability and the acceptance behaviour of workers. The model presented provides interesting

the use of Unemployment Benefits to subsidise unemployed job search as a means of increasing efficiency in the labour market.

[43] Despite the importance of this issue, the empirical evidence supporting this result is limited. Early results in the US suggest that the job offers probability is higher in unemployment although the estimated wage returns to unemployed search are not necessarily higher (see Holzer, 1987; Jackman *et al.*, 1989 and Pissarides and Wadsworth, 1994).

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insights into how certain elements of the economic environment influence the reservation wage strategy of workers and consequently the average wage change after unemployment. We will focus on the analysis of policies related to different unemployment compensation schemes. Our model assumes that Unemployment Benefits and their dependence on previous wages might have a strong causal effect on the acceptance behaviour of workers and consequently on the wage change after unemployment[44]. We will now analyse the effects on the average wage change of some variations in the structure of the Unemployment Benefits system in each of the countries analysed, and consider the reforms that have been proposed in various European countries such as Germany[45] and France[46]. The empirical literature hardly addresses the effect of the level of benefits on wages in post-unemployment jobs. Here, we will evaluate the effect of any policy variation on three outcome variables: the unemployment exit probability, the average wage change and the share of wage losers.

The main results of these policy changes are set out in Tables 9 and 10. The first two policies affect all workers and are shown in Table 10. The third affects only certain groups of workers and is displayed in Table 11.

Firstly, we analyse the consequences of reducing the level of Unemployment Benefits. This is the policy measure most commonly analysed and has often been proposed as a way to reduce structural unemployment (OECD, 2000). We model it assuming that the level of such benefits (represented in our empirical model by α_0) is reduced by 10%. We already know that the reservation wage is quite sensitive to variations in the value of time while unemployed; therefore this policy must have a relevant impact on main outcome variables (as was shown in Table 7). As expected, the exit probability increases in all cases, but the changes are the largest in Portugal and the smallest in Spain. Therefore, as has already been put forward in the literature, if wage rigidity were the cause of the high unemployment rate, one possible solution would be to reduce UI benefits. Nevertheless, the results shown point out that this policy brings about important welfare costs since in all cases wage losses strongly increase and, except for French workers with a university degree, it also results in large negative wage changes after the unemployment spell. These negative effects are more relevant for those cases where wage losses tend to be permanent, as is the case in Spain. Evidently, the share of wage losers also increases in all cases.

Another possibility is to change the manner of computing Unemployment Benefits. Our model assumes an unemployment compensation level dependent on the worker's earnings during his previous job. We may assume that such benefits are the same across individuals and independent of the previous wage. To simulate this policy change we assume that Unemployment Benefits are 70% of the average national wage (a design similar in spirit to the one implemented in the UK). This means

[44] Though the functional form given to the value of time while unemployed attempts to reflect the relation of this function to Unemployment Benefits, we are aware that the specification of the value of time while unemployed used in this paper does not totally reproduce replicate them as there seem to be additional elements influencing the workers' value of time while unemployed. This divergence is larger for French and Portuguese workers and for workers with a university degree.

[45] Recently, the German Government adopted an important reform of the Unemployment Benefits system. Among other things, the reform tries to break the relation between tax-financed unemployment benefits and previous wages. Besides, employment offices will also be able to withdraw benefits if jobless people refuse employment offers (IMF, 2004).

[46] In 2000 the French government adopted reforms that affected the functioning of the Unemployment Benefits system aimed at hardening the eligibility conditions.

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that the dispersion of the value of time while unemployed will mainly depend on the entitlement condition and on the worker's age. The consequences of this policy change are ambiguous since, obviously, they depend on the position of the worker in the wage distribution. This policy clearly decreases Unemployment Benefits for high wage workers –highly skilled workers-, while it may increase them for low wage workers –lowly skilled workers. This is the case of workers with primary and secondary studies in Spain, Germany and France while in Portugal only workers with primary studies benefit from this policy variation. These workers experience a significant drop in the unemployment exit probability and a significant increase in the average wage change. On the contrary, workers with a high level of studies experience the largest drop in Unemployment Benefits and subsequently suffer the greatest negative effects of this policy change. The unemployment exit probability and the share of wage losers among workers with a university degree clearly increase in Spain, Germany and France, and also for workers with secondary studies in Portugal. Since wage losses after unemployment tend to be larger and more permanent for lowly skilled workers, this policy change could be recommended in order to reduce this negative effect. The problem of job stability is stronger among lowly skilled workers and consequently this policy variation might also be justified from this perspective. However, it also decreases the unemployment exit probability for these workers, and consequently it might increase the problem of long-term unemployment, common in all the European countries analysed.

Finally, we consider a third policy change consisting of withdrawing Unemployment Benefits if the worker rejects a job offer. Nowadays sanctions or punitive benefit reductions are increasingly used as a tool to enforce compliance of unemployment insurance claimants with search requirements[47] (see Grubb 1999, for example). To simulate this policy we first compute the probability of rejecting a job offer, and then use this probability to compute the new value of time while unemployed considering the penalty effect of rejecting a job offer. Therefore, unemployed workers with a high probability of rejecting a job offer are penalized by this policy. The higher the probability, the value of time while unemployed drops larger. We can see in Table 11 that these sanctions do not have major effects on the main outcome variables. This result matches with the low elasticity of the reservation wage to the unemployed offer wage function displayed in Table 7. The signs of the effects on the relevant outcome variables are the same as in the previous cases, but the magnitudes are clearly lower. In fact, the unemployment exit probability hardly changes and a small negative change is observed in the average wage change.

7 Conclusions

This paper presents a partial equilibrium job search model with on-the-job search and on-the-job wage growth to account for alternative sources of wage losses after an unemployment spell. The main advantage of this approach is that, within the structural model of job search behaviour, labour market transitions and wages are jointly determined via the acceptance behaviour of workers and thus the interdependence of these variables can be studied. Once the model is derived, we estimate it structurally using data regarding unemployment and employment spells and wages from the ECHP for

[47] This was one of the focuses of the French reform in 2000.

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Spain, Germany, France and Portugal for the period 1994-2001. The model is estimated separately for each country and for three groups of workers classified according to their education levels.

The model does a relatively good job at matching observed outcomes such as the re-employment wage, the average wage change, the average wage loss and the share of wage losers. As can be seen from the data, the wage losses are greater in Germany and Spain than in France and Portugal. One of the main differences between these two groups of countries is that French and Portuguese workers have a higher *value of time while unemployed to previous wage ratio*. If we focus on those countries with greater average wage losses the question arises whether the source of the wage loss is the same. We have found that the *value of time while unemployed to previous wage* ratio tends to be higher in Germany than in Spain while worker's expectations while employed seem to be better for German than for Spanish workers. Though job-to-job mobility is more common in Spain, we have also found that a higher share of job-to-job transitions imply wage cuts. Moreover, wage gains from internal wage mobility and outside wage offers are clearly larger in Germany than in Spain. Finally, we have found that wage losses tend to remain longer once employed in Spain than in Germany and job stability after unemployment is also less common in Spain than in Germany.

We also use the model's structural parameters to evaluate alternative policy interventions for unemployed workers. We demonstrate that different reforms in the UI Benefits system have different effects on worker's reservation wage strategies and therefore on wage changes after unemployment. We have analysed three types of policy measures aimed at reducing the level of UI benefits. Firstly, we assume a linear reduction in UI benefits by 10%. This is the most effective policy in terms of changes generated in the unemployment exit probability, at the cost of sharply increasing average wage cuts. A second policy consists of eliminating the UI benefits when a job offer is rejected. We have seen that this policy change has much lower effects on the main outcome variables. Interestingly, we have also found that a policy which makes unemployment compensation constant for all workers has ambiguous effects on the average wage change. For low wage workers this policy decreases the unemployment exit probability and decreases the probability of experiencing a wage loss, whereas the opposite effect is found for high wage workers. Given these results, this type of policy could be interesting when low wage workers experience low wage growth while employed, and accordingly tend to have permanent wage losses after unemployment.

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Appendix I: Functional Form Specification for Wage Offers

The wages observed in our sample are accepted wages by unemployed or employed individuals after a wage renegotiation or after a job-to-job transition. The accepted wages of the unemployed are drawings from the density function $f(w_{u1}/w_u>w_r)$, the accepted wages for job movers are drawings from $g(w_{m1}/w_m>w_0)$ and, equivalently, the accepted wage for stayers with wage growth are drawings from $h(w_{s1}/w_s>w_r,w_0)$. The distribution function of duration and accepted wages, given that the unemployed individual has found a job is represented by the following expression:

$$f_{w_u}\left(w_{1u}/t_u, w_0\right) = f_{w_u}\left(w_{u1}/w_u \geq w_r\right)$$

where w_{1u} is the observed re-employment wage, w_u is the wage offer to unemployed individuals, and t_u is the length of the unemployment spell. In order to identify the parameters of the model we have to make distributional assumptions on f_{w_u}. Note that this density function is well defined only if the current wage is greater than the reservation wage for the month in which the worker actually finds a job. This can result in extreme sensitivity of the estimates to a few outliers. To prevent this possibility, we make the plausible assumption that wages are lognormal and measured with error[48]. Given both assumptions we arrive at the following expression of the density function of wage offers to unemployed individuals, taking into account that observed wages are truncated from below:

$$f_{w_u}\left(w_{u1}/w_u \geq w_r\right) = \frac{\frac{1}{w_{u1}\sqrt{\sigma_{v_u}^2+\sigma_\varepsilon^2}}\phi\left(\frac{Lnw_{u1}-Ln\overline{w_u}}{\sqrt{\sigma_{v_u}^2+\sigma_\varepsilon^2}}\right)\left(1-\Phi\left(\frac{\left(Lnw_r-Ln\overline{w_u}\right)-\rho_u^2\left(Lnw_{u1}-Ln\overline{w_u}\right)}{\sigma_{v_u}\sqrt{\left(1-\rho_u^2\right)}}\right)\right)}{1-\Phi\left(\frac{Lnw_r-Ln\overline{w_u}}{\sigma_{v_u}}\right)}$$

where σ_ε and σ_v are the standard deviations of the measurement error and the random error of wages respectively. Furthermore, we have that:

$$\rho_u = \frac{\sigma_{v_u}}{\sqrt{\sigma_{v_u}^2+\sigma_\varepsilon^2}} \quad \text{given that } \operatorname{cov}(\sigma_{v_u}, \sigma_\varepsilon^2) = 0.$$

Using the same assumptions, we define the density function of inside and outside wage offers. However, in this case the truncation point is different, since an employed worker will accept an outside job offer if the offered wage is superior to the wage he earns in the current job.

[48] The assumption of measurement error on accepted wages does not affect the solution of the model, but does affect estimation through the likelihood function. Stern (1989) and Christensen and Kiefer (1991) present strong evidence that measurement error is an important empirical event. Stern (1989) argues that there may be two different types of measurement errors in wage data. First, there may be errors in reporting wages or inputting tax rates or price levels. Second, the value of a job may deviate from the observed wage because of others factors such as fringe benefits and working conditions.

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Appendix II: Tables

Table 1: Sample Size

		Spain	Germany	France	Portugal
Unemployment Spells	Total	2381	1533	609	1097
	Primary	68%	22%	48%	86%
	Secondary	19%	61%	33%	10%
	Tertiary	13%	17%	19%	4%
Employment Spells	Total	3991	4358	4705	3558
	Primary	56%	27%	38%	83%
	Secondary	19%	58%	32%	11%
	Tertiary	25%	15%	29%	6%

Table 2: Job Spells Durations

	Months	< 12	12-24	24-36	36-48	48-60	60-72	72-84	>84	Average
All workers	Spain	19%	8%	5%	4%	3%	3%	3%	55%	-
	Germany	7%	10%	8%	7%	6%	5%	4%	51%	-
	France	4%	4%	6%	5%	5%	4%	4%	66%	-
	Portugal	12%	7%	6%	6%	5%	4%	5%	54%	-
Completed Spells	Spain	52%	14%	6%	4%	2%	2%	1%	17%	-
	Germany	29%	20%	9%	6%	5%	4%	2%	24%	-
	France	35%	12%	9%	6%	6%	4%	4%	26%	-
	Portugal	33%	12%	7%	5%	5%	3%	4%	32%	-
Voluntary Job Movers	Spain	25%	27%	29%	30%	35%	24%	32%	18%	18%
	Germany	20%	15%	16%	27%	20%	28%	11%	15%	15%
	France	20%	33%	48%	46%	47%	38%	46%	40%	29%
	Portugal	33%	38%	42%	40%	30%	31%	22%	17%	25%
Involuntary Job Movers	Spain	74%	72%	70%	69%	64%	76%	67%	81%	81%
	Germany	79%	84%	83%	72%	80%	71%	88%	84%	84%
	France	79%	66%	51%	53%	52%	61%	53%	60%	70%
	Portugal	66%	61%	57%	59%	69%	68%	78%	82%	74%

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Figure 1: Employment Exit, All Countries

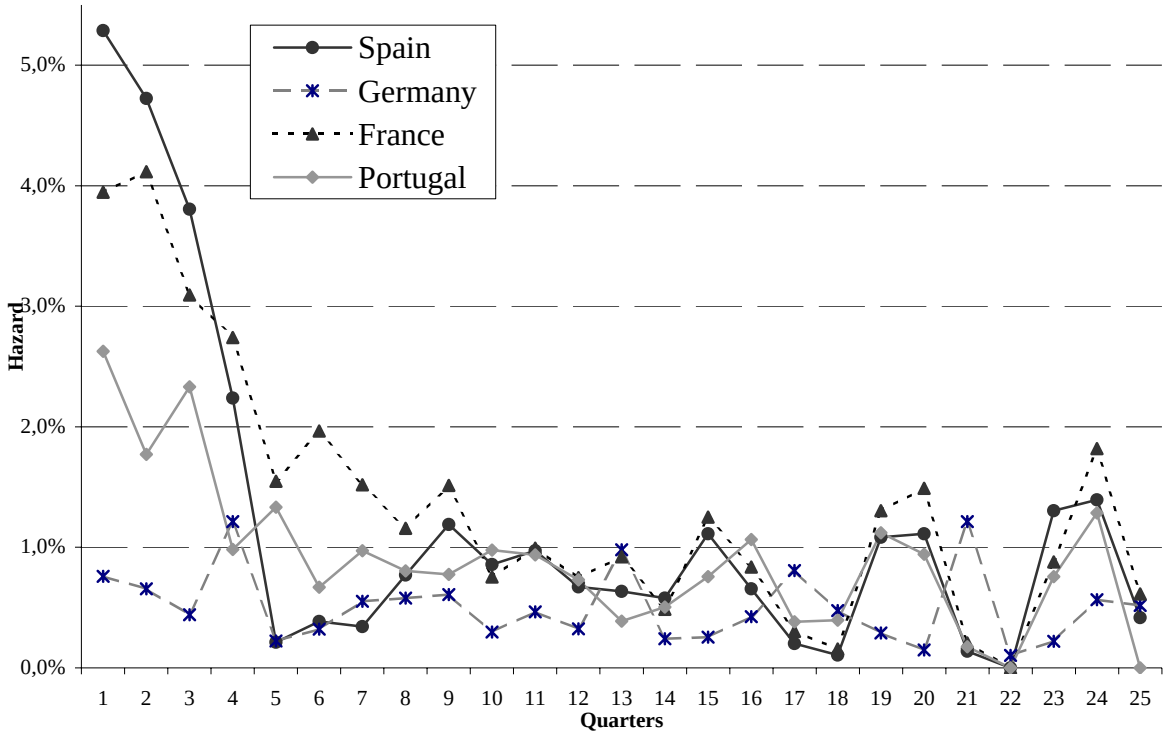

Figure 2: Unemployment Exit, All Countries

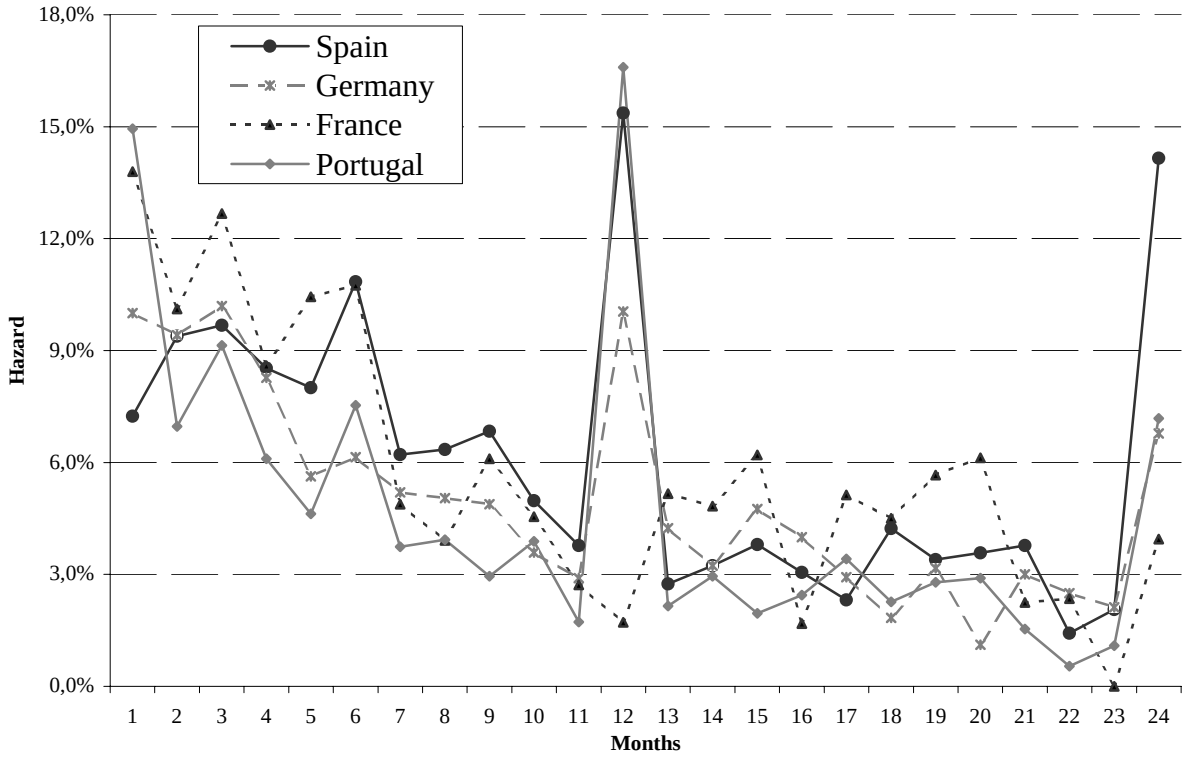

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Table 3: Descriptive Statistics: Total Sample

		Age			Tenure (months)			Education		Unempl Experience	Unempl. Spell*	Previous Wage	Current Wage	Wage change	% of Wage Losers	N
		20-30	30-45	45-60	<12	12-24	24-48	Primary	Secondary							
Spain	**Stayers**	12%	49%	39%	-	5%	9%	49%	20%	8%	-	1823	2062	13.1%	5%	3533
	V. Movers	33%	52%	15%	54%	10%	13%	65%	16%	57%	-	1403	1462	4.2%	43%	458
	I. Movers(Uncensored)	37%	42%	21%	68%	11%	7%	67%	19%	82%	6.6	1244	1199	-3.6%	53%	1575
	I. Movers (Censored)	32%	36%	32%	60%	10%	8%	66%	18%	69%	8.8	1349	-	-	-	806
Germany	**Stayers**	10%	50%	40%	-	8%	16%	14%	57%	3%	-	2358	2546	7.9%	8%	4100
	V. Movers	29%	57%	14%	31%	14%	19%	12%	53%	29%	-	2381	2436	2.3%	48%	258
	I. Movers (Uncensored)	26%	46%	28%	35%	22%	14%	19%	65%	53%	5.6	2104	1802	-14.3%	62%	933
	I. Movers (Censored)	17%	34%	48%	39%	12%	11%	24%	56%	36%	8.6	2102	-	-	-	600
France	**Stayers**	11%	50%	38%	-	3%	11%	38%	32%	3%	-	2348	2525	7.5%	6%	4556
	V. Movers	32%	53%	15%	22%	12%	19%	36%	29%	19%	-	2094	2277	8.7%	32%	249
	I. Movers (Uncensored)	38%	45%	17%	57%	11%	10%	43%	38%	63%	5.7	1632	1683	0.0%	44%	388
	I. Movers (Censored)	24%	38%	38%	50%	7%	9%	55%	23%	44%	8.3	2023	-	-	-	221
Portugal	**Stayers**	26%	41%	33%	-	5%	12%	87%	12%	4%	-	760	812	6.8%	8%	3231
	V. Movers	50%	29%	20%	36%	14%	18%	88%	12%	25%	-	655	634	-3.2%	47%	327
	I. Movers (Uncensored)	40%	36%	24%	41%	9%	8%	91%	8%	53%	6.1	623	604	-3.0%	51%	656
	I. Movers (Censored)	30%	32%	38%	39%	9%	9%	87%	12%	37%	9.6	679	-	-	-	441

*Measured in months.

Table 4: Main Descriptive Statistics of Unemployed Workers by Skill Levels (Sample Means)

	Spain			Germany			France			Portugal	
Level of Studies	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary	Primary	Secondary
Previous Wage	**1188**	**1233**	**1594**	**1976**	**2010**	**2304**	**1501**	**1596**	**1772**	**635**	**714**
Current Wage	**1134**	**1208**	**1533**	**1656**	**1795**	**2058**	**1535**	**1669**	**2040**	**592**	**717**
Wage Change	**-4.5%**	**-2.0%**	**-3.8%**	**-16.2%**	**-10.6%**	**-10.6%**	**0.0%**	**4.5%**	**15.0%**	**-6.7%**	**0.0%**
Share of Wage Losers	**51%**	**48%**	**50%**	**65%**	**58%**	**62%**	**42%**	**45%**	**37%%**	**48%**	**51%**
Wage Loss	**-23.4%**	**-22.1%**	**-25.2%**	**-29.9%**	**-29.1%**	**-29.1%**	**-26.3%**	**-25.0%**	**-20.8%**	**-23.4%**	**-17.3%**
Unemp. Duration (uncensored)	**6.8**	**7.2**	**6.9**	**6.9**	**5.6**	**5.9**	**6.3**	**5.9**	**4.9**	**6.3**	**5.4**
<6 months	**53%**	**55%**	**51%**	**46%**	**58%**	**49%**	**57%**	**64%**	**59%**	**51%**	**48%**
6-12 months	**27%**	**23%**	**25%**	**27%**	**22%**	**26%**	**16%**	**13%**	**13%**	**22%**	**26%**
>12 months	**20%**	**22%**	**23%**	**27%**	**20%**	**24%**	**26%**	**22%**	**28%**	**27%**	**25%**
N	**1596**	**457**	**328**	**333**	**943**	**257**	**290**	**200**	**119**	**983**	**114**

Table 5: Functional Form of the Model's Parameters

Value of time while unemployed		$B = \exp(\alpha_0 + \alpha_1 t_{ei} + \alpha_2 age_{20-30} + \alpha_3 age_{30-45}) * w_0$
Job Offers Probability	**Unemployed**	$\lambda_u = cdfn(\beta_1 + \beta_2 t_{ei})^*$
	Outside Offer	$\lambda_e = cdfn(\chi_1 + \chi_2 t_{ei})$
	Inside Offer	$\lambda_e' = cdfn(\iota)$
Mean Offer Wage	**Unemployed**	$\overline{w}_u = \exp(\kappa_1 + \kappa_2 t_{e<24} + \kappa_3 t_{e24-48} + \kappa_4 age_{20-30} + \kappa_5 age_{30-45} + \kappa_6 u_{\exp})$
	Outside Offer	$\overline{w}_m = \exp(\pi_1 + \pi_2 t_{e<24} + \pi_3 t_{e24-48} + \pi_4 age_{20-30} + \pi_5 age_{30-45})$
	Inside Offer	$\overline{w}_{e'} = \exp(\varsigma_1 + \varsigma_2 \ln w_0 + \varsigma_3 t_{e(<24)} + \varsigma_4 t_{e(24-48)} + \varsigma_5 t_{e(48-60)} + \varsigma_6 age_{20-30} + \varsigma_7 age_{30-45})$
Mean Previous Wage		$\overline{w}_0 = \exp(\tau_1 + \tau_2 t_{e(<12)} + \tau_3 t_{e(12-24)} + \tau_4 t_{e(24-48)} + \tau_5 t_{e(48-60)} + \tau_6 age_{20-30} + \tau_7 age_{30-45} + \tau_8 u_{\exp} + \tau_8 single + \tau_{9-13} year - dummies)$

*Variable t_{ei} represents a dummy variable that takes value 0 if the worker has enough job tenure to be entitled to received UI benefits.

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Table 6: Model's Parameters, Spain and Germany

		Spain			Germany		
Level of Studies		**Primary**	**Secondary**	**Tertiary**	**Primary**	**Secondary**	**Tertiary**
Value of time while unemployed	**Constant term**	-0.15 (0.01)	0.02 (0.01)	0.02 (0.00)	-0.18 (0.00)	-0.22 (0.01)	0.02 (0.00)
	Tenure, (<12)	-0.21 (0.00)	-0.22 (0.01)	-0.12 (0.00)	-0.01 (0.01)	0.00 (0.01)	0.00 (0.00)
	Age (20-30)	-0.13 (0.00)	-0.28 (0.01)	-0.17 (0.00)	-0.20 (0.00)	-0.17 (0.00)	-0.21 (0.00)
	Age (30-45)	-0.15 (0.00)	-0.13 (0.00)	-0.03 (0.00)	-0.10 (0.00)	-0.13 (0.00)	-0.01 (0.00)
Job Offers Probability: Unemployed	**Constant term**	-1.01 (0.04)	-1.30 (0.20)	-1.57 (0.01)	-0.97 (0.35)	-0.94 (0.20)	-1.30(0.35)
	Tenure (<12)	0.00 (0.00)	0.10 (0.01)	0.33 (0.00)	0.01 (0.02)	0.27 (0.10)	0.47 (0.12)
Outside Job Offers Probability	**Constant term**	-2.02 (0.12)	-2.25 (0.21)	-2.16 (0.02)	-2.33 (0.14)	-2.48 (0.21)	-2.16 (0.29)
	Tenure (<12)	0.43 (0.00)	0.70 (0.11)	0.59 (0.04)	0.73 (0.04)	0.67 (0.11)	0.56 (0.18)
Inside Job Offers Probability	**Constant term**	-1.75 (0.01)	-1.67 (0.01)	-1.67 (0.03)	-1.81 (0.03)	-1.78 (0.03)	-1.74 (0.01)
Wage Offers (Unemployed)	**Constant term**	6.66 (0.02)	6.86 (0.40)	7.11 (0.01)	6.90 (0.29)	6.96 (0.40)	6.98 (0.51)
	Tenure (<24)	0.08 (0.00)	0.01 (0.03)	0.18 (0.01)	0.13 (0.00)	-0.09 (0.01)	-0.06 (0.07)
	Tenure (24-48)	0.04 (0.00)	-0.20 (0.03)	0.09 (0.02)	0.05 (0.01)	-0.10 (0.02)	0.06 (0.00)
	Age (20-30)	0.01 (0.01)	-0.01 (0.02)	-0.27 (0.00)	0.05 (0.01)	0.14 (0.02)	0.13 (0.04)
	Age (30-45)	0.08 (0.00)	0.10 (0.01)	-0.02 (0.00)	0.14 (0.00)	0.16 (0.01)	0.17 (0.00)
	Unemp. Exp.	-0.00 (0.00)	0.03 (0.01)	-0.04 (0.00)	-0.13 (0.00)	-0.01 (0.00)	-0.09 (0.00)
Wage Offer (Outside offer)	**Constant term**	6.74 (0.02)	7.09 (0.22)	7.35 (0.01)	7.09 (0.20)	7.35 (0.22)	7.38 (0.37)
	Tenure (<24)	0.26 (0.01)	0.11 (0.00)	0.22 (0.01)	0.16 (0.04)	-0.03 (0.03)	-0.07 (0.15)
	Tenure (24-48)	0.25 (0.02)	0.07 (0.00)	0.21 (0.02)	0.46 (0.04)	0.12 (0.02)	0.16 (0.03)
	Age (20-30)	0.03 (0.02)	-0.15 (0.00)	-0.35 (0.00)	-0.05 (0.00)	0.13 (0.00)	-0.19 (0.04)
	Age (30-45)	0.09 (0.00)	-0.03 (0.00)	-0.08 (0.00)	0.08 (0.00)	0.08 (0.00)	0.15 (0.00)
Wage Offer (Inside Offer)	**Constant term**	2.08 (0.07)	0.90 (0.13)	0.71 (0.08)	1.51 (0.10)	1.57 (0.13)	0.48 (0.00)
	Wage	0.73 (0.01)	0.89 (0.01)	0.93 (0.01)	0.81 (0.01)	0.80 (0.01)	0.95 (0.01)
	Tenure (<24)	-0.39 (0.01)	-0.30 (0.01)	-0.21 (0.02)	-0.13 (0.00)	-0.15 (0.01)	-0.03 (0.00)
	Tenure (24-48)	-0.09 (0.00)	-0.09 (0.00)	-0.08 (0.01)	-0.04 (0.01)	-0.05 (0.00)	0.01 (0.01)
	Tenure (48-60)	-0.05 (0.00)	0.02 (0.00)	-0.10 (0.00)	0.04 (0.02)	-0.02 (0.00)	-0.01 (0.00)
	Age (20-30)	-0.08 (0.00)	-0.08 (0.00)	-0.10 (0.00)	-0.06 (0.00)	-0.03 (0.00)	-0.04 (0.00)
	Age (30-45)	-0.03 (0.00)	-0.02 (0.00)	-0.02 (0.00)	-0.02 (0.00)	0.01 (0.00)	-0.01 (0.00)
Previous Wage*	**Constant term**	7.40 (0.02)	7.65 (0.02)	7.87 (0.02)	7.59 (0.03)	7.69 (0.01)	7.98 (0.01)
	Tenure (<12)	-0.22 (0.08)	-0.27 (0.04)	-0.22 (0.09)	-0.03 (0.03)	-0.13 (0.01)	-0.31 (0.01)
	Tenure (12-24)	-0.20 (0.03)	-0.25 (0.02)	-0.14 (0.03)	-0.10 (0.02)	-0.11 (0.03)	-0.08 (0.03)
	Tenure (24-48)	-0.19 (0.04)	-0.24 (0.02)	-0.10 (0.02)	-0.03 (0.02)	-0.10 (0.01)	-0.10 (0.02)
	Tenure (48-60)	-0.18 (0.05)	-0.18 (0.4)	0.03 (0.03)	0.02 (0.02)	-0.11 (0.01)	-0.09 (0.03)
	Age (20-30)	-0.08 (0.01)	-0.26 (0.01)	-0.49 (0.01)	-0.06 (0.01)	-0.02 (0.03)	-0.16 (0.02)
	Age (30-45)	-0.05 (0.02)	-0.15 (0.01)	-0.21 (0.01)	0.04 (0.01)	0.01 (0.01)	0.01 (0.01)
	Civil status	-0.07 (0.00)	-0.08 (0.00)	-0.11 (0.00)	-0.07 (0.00)	-0.05 (0.00)	-0.06 (0.00)
Variance (Wage Offer Unemployed)		0.16 (0.00)	0.11 (0.00)	0.15 (0.00)	0.17 (0.00)	0.15 (0.00)	0.24 (0.00)
Variance (Outside Wage Offer)		0.11 (0.00)	0.10 (0.00)	0.12 (0.00)	0.09 (0.00)	0.08 (0.00)	0.31 (0.00)
Variance (Inside Wage Offer)		0.03 (0.00)	0.02 (0.00)	0.02 (0.00)	0.02 (0.00)	0.03 (0.00)	0.02 (0.00)
Variance (Measurement Error)		0.04 (0.00)	0.02 (0.00)	0.02 (0.00)	0.03 (0.00)	0.03 (0.00)	0.01 (0.00)
Variance (Previous Wage)		0.10 (0.00)	0.12 (0.00)	0.13 (0.00)	0.09 (0.00)	0.09 (0.00)	0.13 (0.00)
Variance (Reservation Wage)		0.10 (0.00)	0.16 (0.00)	0.13 (0.00)	0.09 (0.00)	0.08 (0.00)	0.14 (0.00)
$e^{-\pi}$		0.71 (0.00)	0.61(0.00)	0.81 (0.00)	0.69 (0.00)	0.72 (0.00)	0.55 (0.00)
ρ **(Unemployed)**		0.80 (0.00)	0.86 (0.00)	0.91 (0.00)	0.85 (0.00)	0.82 (0.00)	0.92 (0.00)
Likelihood Function		1.11372	1.10353	1.05741	0.87543	0.91870	0.94597

* Previous wage also contains time dummy variables.

- In parenthesis we display standard errors

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Table 6 (cont.): Model's Parameters, France and Portugal

		France			Portugal	
Level of Studies		**Primary**	**Secondary**	**Tertiary**	**Primary**	**Secondary**
Value of time while unemployed	**Constant term**	-0.18 (0.01)	-0.03 (0.01)	0.07 (0.00)	-0.11 (0.00)	-0.02 (0.01)
	Tenure, (<12)	-0.07 (0.01)	-0.18 (0.01)	-0.08 (0.00)	-0.11 (0.00)	-0.03 (0.01)
	Age (20-30)	-0.10 (0.04)	-0.27 (0.01)	-0.11 (0.00)	-0.08 (0.00)	-0.06 (0.00)
	Age (30-45)	0.01 (0.01)	0.02 (0.00)	-0.01 (0.00)	-0.07 (0.00)	-0.03 (0.00)
Job Offers Probability (Unemployed)	**Constant term**	-1.13 (0.20)	-1.08 (0.20)	-0.84 (0.01)	-1.38 (0.21)	-1.55 (0.10)
	Tenure (<12)	-0.15 (0.21)	-0.19 (0.01)	0.02 (0.01)	0.26 (0.01)	0.52 (0.10)
Outside Job Offers Probability	**Constant term**	-2.21 (0.07)	-2.01 (0.21)	-1.51 (0.02)	-1.96 (0.01)	-2.09 (0.11)
	Tenure (<12)	0.99 (0.09)	0.67 (0.01)	0.45 (0.04)	0.65 (0.01)	0.63 (0.21)
Intside Job Offers Probability	**Constant term**	-1.75 (0.01)	-1.65 (0.01)	-1.68 (0.03)	-1.77 (0.00)	-1.69 (0.03)
Wage Offers (Unemployed)	**Constant term**	6.72 (0.11)	6.73 (0.14)	6.67 (0.01)	5.89 (0.02)	6.29 (0.40)
	Tenure (<24)	0.34 (0.09)	0.28 (0.00)	0.29 (0.01)	0.08 (0.02)	0.04 (0.03)
	Tenure (24-48)	0.02 (0.03)	0.03 (0.01)	0.07 (0.02)	0.06 (0.01)	-0.07 (0.02)
	Age (20-30)	-0.13 (0.03)	0.18 (0.02)	0.12 (0.00)	0.04 (0.01)	-0.22 (0.02)
	Age (30-45)	0.08 (0.02)	-0.08 (0.01)	0.34 (0.00)	0.09 (0.00)	-0.24 (0.01)
	Unemp. Exp.	-0.06 (0.01)	-0.04 (0.01)	0.01 (0.01)	-0.04 (0.00)	-0.03 (0.00)
Wage Offer (Outside offer)	**Constant term**	6.95 (0.06)	7.16 (0.22)	7.10 (0.01)	6.01 (0.20)	6.46 (0.21)
	Tenure (<24)	0.00 (0.05)	0.03 (0.01)	0.08 (0.01)	0.07 (0.04)	0.11 (0.03)
	Tenure (24-48)	0.20 (0.08)	0.07 (0.00)	-0.02 (0.02)	0.21 (0.04)	0.04 (0.02)
	Age (20-30)	-0.07 (0.04)	-0.12 (0.00)	0.06 (0.00)	0.00 (0.00)	-0.20 (0.00)
	Age (30-45)	0.20 (0.03)	-0.10 (0.00)	0.36 (0.00)	0.07 (0.00)	-0.22 (0.00)
Wage Offer (Inside Offer)	**Constant term**	0.73 (0.09)	0.26 (0.13)	0.36 (0.08)	1.16 (0.10)	0.65 (0.26)
	Wage	0.91 (0.01)	0.97 (0.01)	0.97 (0.01)	0.83 (0.01)	0.91 (0.01)
	Tenure (<24)	-0.14 (0.01)	-0.05 (0.01)	-0.10 (0.02)	-0.08 (0.00)	-0.16 (0.01)
	Tenure (24-48)	-0.04 (0.00)	-0.03 (0.00)	0.01 (0.01)	-0.05 (0.01)	-0.11 (0.00)
	Tenure (48-60)	-0.00 (0.02)	-0.03 (0.00)	0.00 (0.00)	-0.00 (0.02)	0.00 (0.00)
	Age (20-30)	-0.00 (0.01)	0.01 (0.00)	-0.01 (0.00)	-0.05 (0.00)	-0.01 (0.00)
	Age (30-45)	-0.01 (0.00)	0.00 (0.00)	-0.01 (0.00)	-0.02 (0.00)	0.03 (0.00)
Previous Wage*	**Constant term**	7.62 (0.01)	7.94 (0.02)	8.16 (0.02)	6.61 (0.03)	7.07 (0.01)
	Tenure (<12)	-0.22 (0.02)	-0.26 (0.00)	-0.34 (0.12)	-0.16 (0.03)	-0.23 (0.01)
	Tenure (12-24)	-0.18 (0.02)	-0.24 (0.02)	-0.16 (0.02)	-0.15 (0.02)	-0.05 (0.03)
	Tenure (24-48)	-0.20 (0.04)	-0.19 (0.02)	-0.11 (0.02)	-0.13 (0.02)	-0.16 (0.01)
	Tenure (48-60)	-0.13 (0.05)	-0.17 (0.02)	-0.10 (0.03)	-0.07 (0.02)	-0.15 (0.01)
	Age (20-30)	-0.13 (0.01)	-0.22 (0.01)	-0.13 (0.01)	-0.07 (0.01)	-0.32 (0.03)
	Age (30-45)	-0.05 (0.02)	-0.10 (0.01)	-0.13 (0.01)	-0.02 (0.01)	-0.11 (0.01)
	Civil status	-0.08 (0.00)	-0.17 (0.00)	-0.28 (0.00)	-0.12 (0.00)	-0.04 (0.00)
Variance (Wage Offer Unemployed)		0.20 (0.00)	0.19 (0.00)	0.19 (0.00)	0.21 (0.00)	0.23 (0.00)
Variance (Outside Wage Offer)		0.12 (0.00)	0.14 (0.00)	0.16 (0.00)	0.12 (0.00)	0.24 (0.00)
Variance (Inside Wage Offer)		0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.02 (0.00)	0.02 (0.00)
Variance (Measurement Error)		0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.02 (0.00)	0.02 (0.00)
Variance (Previous Wage)		0.09 (0.00)	0.09 (0.00)	0.12 (0.00)	0.12 (0.00)	0.12 (0.00)
Variance (Reservation Wage)		0.20 (0.00)	0.15 (0.00)	0.12 (0.00)	0.13 (0.00)	0.15 (0.00)
$e^{-\pi}$		0.64 (0.00)	0.58 (0.00)	0.61 (0.00)	0.70 (0.00)	0.71 (0.00)
ρ **(Unemployed)**		0.99 (0.00)	0.99 (0.00)	0.99 (0.00)	0.91 (0.00)	0.80 (0.00)
Likelihood Function (mean)		0.87688	1.01963	1.05741	0.83559	0.94063

* Previous wage also contains time dummy variables.

- In parenthesis we display standard errors

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Table 7: Summary of Model's Results by Country and Skill levels (Elasticities)

Variable Description (unemployed)	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary
	Reservation Wage			Accepted Wage			Acceptance Probability			Exit probability		
Spain												
Value of time while unemployed	0.91	1.12	1.91	0.54	0.57	0.97	-1.47	-1.35	-2.29	-1.47	-1.46	-1.99
Job Offers Probability (Unemployed)	0.42	0.5	0.5	0.24	0.21	0.22	-0.76	-0.64	-0.65	0.17	0.3	0.29
Offer Wage (Unemployed)	0.31	0.44	0.46	0.16	0.15	0.18	0.57	0.49	0.53	0.57	0.5	0.56
Outside Job Offers Probability	-0.16	-0.13	-0.13	-0.09	-0.06	-0.07	0.27	0.18	0.18	0.27	0.16	0.13
Outside Offer Wage	-1.49	-1.88	-1.75	-1.27	-1.37	-1.32	0.88	1.06	0.96	0.88	1.08	1.00
Inside Job Offers Probability	-0.9	-1.21	-1.23	-0.48	-0.43	-0.5	1.63	1.3	1.38	1.63	1.33	1.46
Inside Offer Wage	-0.64	-0.83	-1.4	-0.39	-0.42	-0.73	1.03	1.12	1.7	1.03	1.04	1.39
Germany												
Value of time while unemployed	1.33	0.92	3.07	0.86	0.64	2.15	-2.49	-2.41	-6.7	-2.96	-2.44	-6.09
Job Offers Probability (Unemployed)	0.41	0.31	0.34	0.27	0.21	0.23	-0.91	-0.84	-0.84	0.00	0.07	0.05
Offer Wage (Unemployed)	0.18	0.12	0.29	0.11	0.08	0.19	0.45	0.35	0.76	0.45	0.38	0.86
Outside Job Offers Probability	-0.27	-0.22	-0.18	-0.18	-0.15	-0.13	0.59	0.6	0.32	0.59	0.57	0.24
Outside Offer Wage	-1.58	-1.37	-1.25	-1.37	-1.26	-1.16	1.22	0.93	0.82	1.21	0.97	0.95
Inside Job Offers Probability	-0.72	-0.38	-0.7	-0.44	-0.25	-0.48	1.77	1.09	1.77	1.75	1.22	2.01
Inside Offer Wage	-1.27	-0.95	-2.6	-0.83	-0.65	-1.82	2.89	2.51	5.77	2.89	2.48	5.02
France												
Value of time while unemployed	1.61	2.91	3.44	0.85	1.25	2.52	-2.04	1.87	-4.49	-2.38	-2.43	-4.40
Job Offers Probability (Unemployed)	0.64	0.78	0.40	0.33	0.25	0.25	-0.93	-0.58	-1.00	-0.02	0.36	-0.10
Offer Wage (Unemployed)	0.41	0.46	0.42	0.18	0.11	0.25	0.56	0.27	1.09	0.54	0.27	1.09
Outside Job Offers Probability	-0.31	-0.48	-0.09	-0.17	-0.17	-0.07	0.45	0.29	0.09	0.47	0.31	0.09
Outside Offer Wage	-2.08	-2.11	-1.40	-1.56	-1.31	-1.22	1.45	0.84	1.55	1.41	0.82	1.56
Inside Job Offers Probability	-1.42	-1.24	-1.32	-0.61	-0.31	-0.81	1.91	0.69	3.36	1.83	0.70	3.36
Inside Offer Wage	-1.40	-2.65	-2.86	-0.77	-1.04	-2.14	2.09	1.87	3.07	2.16	2.23	2.98
Portugal												
Value of time while unemployed	2.03	2.65	-	1.26	1.84	-	-3.41	-4.79	-	-3.21	-4.56	-
Job Offers Probability (Unemployed)	0.51	0.42	-	0.31	0.27	-	-0.94	-0.87	-	-0.06	0.02	-
Offer Wage (Unemployed)	0.26	0.37	-	0.15	0.23	-	0.52	0.77	-	0.58	0.90	-
Outside Job Offers Probability	-0.32	-0.14	-	-0.20	-0.09	-	0.56	0.28	-	0.52	0.18	-
Outside Offer Wage	-1.67	-1.34	-	-1.40	-1.20	-	1.23	0.94	-	1.34	1.01	-
Inside Job Offers Probability	-0.98	-1.03	-	-0.54	-0.64	-	1.96	2.07	-	2.17	2.41	-
Inside Offer Wage	-1.89	-1.99	-	-1.18	-1.29	-	3.21	3.17	-	2.92	2.64	-

Table 8: Model Prediction Versus Observed Results: Unemployed Workers (average)

	Primary Education		Secondary Education		Tertiary Education	
	Predicted	**Observed**	**Predicted**	**Observed**	**Predicted**	**Observed**
Spain						
Re-employment Wage	1130	1134	1226	1209	1512	1533
Average Wage Change	-2.3%	-4.5	-2.8%	-2.0%	-0.8%	-3.8%
Share of Wage Losers	57%	51%	40%	48%	36%	50%
Average Wage Loss	-12.9%	-23.4%	-16.0%	-22.1%	-22.4%	-25.2%
Germany						
Re-employment Wage	1678	1656	1699	1795	1965	2058
Average Wage Change	-11.3%	-16.2%	-13.1%	-10.6%	-13.1%	-10.6%
Share of Wage Losers	78%	65%	65%	58%	73%	62%
Average Wage Loss	-15.1%	-29.9%	-14.6%	-29.1%	-19.5%	-29.1%
France						
Re-employment Wage	1491	1535	1637	1669	2101	2040
Average Wage Change	1.9%	2.2%	1.4%	4.5%	17.9%	15.0%
Share of Wage Losers	40%	42%	51%	45%	26%	36%
Average Wage Loss	-19.8%	-17.2%	-17.7%	-18.0%	-17.5%	-21.8%
Portugal						
Re-employment Wage	616	592	745	717		
Average Wage Change	-3.1%	-6.7%	0.4%	0.0%		
Share of Wage Losers	50%	48%	47%	51%		
Average Wage Loss	-24.7%	-23.4%	-20.7%	-17.3%		

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Table 9: Structural Parameters: Unemployed Workers (average)

	Spain			Germany			France			Portugal	
Level of Studies	**Primary**	**Secondary**	**Tertiary**	**Primary**	**Secondary**	**Tertiary**	**Primary**	**Secondary**	**Tertiary**	**Primary**	**Secondary**
Reservation Wage	789	832	981	1227	1281	1353	939	1079	1413	405	496
Reservation Wage/Previous Wage	62.8%	64.9%	64.9%	62.8%	66.3%	59.5%	64.2%	66.8%	79.9%	64.6%	66.7%
Value of time while unemployed	724	930	1352	1444	1447	2251	1188	1431	1767	514	657
Value of time while unemployed/Previous Wage	69.9%	73.9%	88.8%	73.1%	74.8%	99.5%	81.2%	88.6%	99.8%	81.9%	88.5%
Job Offers Probability	15.6%	11.3%	9.5%	16.9%	22.2%	15.0%	10.8%	12.5%	21.2%	10.4%	12.2%
Offer Wage (Unemployed)	871	1008	1195	1076	1104	1137	1033	1054	1258	392	443
Offer Wage (Unemployed)/Previous Wage	73.8%	82.9%	78.4%	54.4%	57.1%	50.4%	70.6%	61.4%	70.0%	62.4%	59.7%
Acceptance Probability	68.2%	76.2%	69.8%	38.3%	40.8%	39.3%	58.1%	53.5%	44.7%	48.3%	45.2%
Unemployment Exit	10.6%	8.5%	6.7%	6.5%	9.1%	5.9%	6.1%	7.2%	9.5%	5.2%	5.3%
Offer Wage (Outside Offer)/Offer Wage (Unemployed)	1.27	1.32	1.39	1.42	1.44	1.69	1.27	1.23	1.24	1.30	1.38
Exit job-to-job with wage gains	2.59%	2.81%	2.78%	1.06%	1.02%	1.37%	3.42%	2.13%	6.26%	2.00%	2.24%
Offer Wage (Inside Offer)/Offer Wage (Unemployed)	0.92	0.93	1.01	1.18	1.17	1.19	1.01	1.02	1.01	1.07	0.98
Exit on-the-job wage mobility	2.73%	2.45%	2.98%	3.27%	3.36%	3.93%	3.80%	4.29%	4.50%	3.64%	4.32%
Exit job-to-job with wage losses	0.03%	0.02%	0.00%	0.01%	0.01%	0.00%	0.02%	0.02%	0.02%	0.01%	0.01%
Exit employment to unemployment	1.06%	0.41%	0.16%	0.27%	0.37%	0.12%	0.20%	0.63%	0.15%	0.19%	0.20%
Average Wage Loss (4 years of employment)*	-9.1%	-3.6%	-2.7%	7.4%	3.2%	0.2%	9.0%	7.1%	18.4%	3.4%	3.8%
Prob. of exiting to unemployment (4 years of employment)	1.95%	1.38%	0.87%	0.54%	0.74%	0.24%	0.30%	1.44%	0.13%	0.44%	0.45%

* If positive it means a wage gain.

Table 10: Policy Evaluation: Unemployment Benefit System (by country and level of studies)

		Spain			Germany			France			Portugal	
		Primary	**Secondary**	**Tertiary**	**Primary**	**Secondary**	**Tertiary**	**Primary**	**Secondary**	**Tertiary**	**Primary**	**Secondary**
Baseline Case (whole sample)	**Unemployment Exit probability**	8.3%	7.9%	6.7%	7.8%	9.1%	5.7%	6.1%	5.2%	7.8%	5.1%	4.9%
	Average Wage Change	-1.5%	0.8%	-0.9%	-9.5%	-7.9%	-9.7%	-1.4%	7.5%	27.1%	-3.8%	6.4%
	Share of Wage Losers	48%	31%	37%	78%	65%	73%	45%	55%	26%	57%	44%
UI Benefits (decrease 10%)	**Unemployment Exit probability**	9.4%	8.9%	7.9%	8.3%	11.3%	10.6%	7.5%	6.8%	10.8%	6.6%	6.6%
	Average Wage Change	-11.9%	-5.4%	-8.9%	-11.0%	-12.9%	-22.2%	-9.5%	-4.4%	19.9%	-15.0%	-9.6%
	Share of Wage Losers	71%	45%	62%	86%	76%	83%	75%	59%	40%	66%	57%
UI Benefits depend on the national average wage	**Unemployment Exit probability**	6.6%	5.3%	7.6%	6.5%	7.9%	9.2%	2.1%	1.2%	7.4%	2.8%	4.5%
	Average Wage Change	1.5%	3.1%	-8.5%	-0.8%	-4.5%	-16.7%	21.5%	27.5%	20.5%	13.8%	5.6%
	Share of Wage Losers	36%	29%	50%	53%	37%	80%	11%	14%	28%	19%	36%

Table 11: Policy Evaluation: UI Benefits are eliminated when the worker rejects a job offer (by country and level of studies)

		Spain			Germany			France			Portugal	
		Primary	**Secondary**	**University**	**Primary**	**Secondary**	**University**	**Primary**	**Secondary**	**University**	**Primary**	**Secondary**
Baseline Case	**Unemployment Exit probability**	4.3%	5.9%	2.9%	5.3%	6.4%	5.1%	4.1%	4.6%	4.1%	3.5%	3.5%
	Average Wage Change	-2.7%	-1.4%	-4.8%	-11.1%	-8.1%	-10.7%	-7.7%	-4.5%	34.1%	5.7%	23.6%
Policy variation	**Unemployment Exit probability**	6.1%	7.8%	4.1%	5.4%	6.4%	5.1%	4.8%	5.7%	5.5%	4.6%	3.7%
	Average Wage Change	-4.8%	-3.1%	-17.9%	-12.5%	-8.2%	-10.7%	-10.8%	-39.7%	12.8%	-6.1%	20.1%