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THE NINETIES IN SPAIN: TOO MUCH FLEXIBILITY IN THE YOUTH LABOUR MARKET?*

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Abstract

This paper examines movements into and out of employment in the Spanish youth labour market throughout the nineties. We analyze how differences in personal and economic circumstances influence such movements. In addition, we consider the importance of duration dependence in determining them. Our main findings are that: (i) Very young workers, women and those with lower qualification levels are more likely to be affected by high labour turnover; (ii) The existence of unobserved heterogeneity has important consequences in the unemployment hazard rate; (iii) In the 90's, employment hazard rates were substantially affected by the extensive use of fixed-term contracts, although the 1997 labour market reform seems to have reduced this hazard rate; (iv) The intervention of temporary help agencies has a positive impact on the likelihood of leaving unemployment, although only for short-term unemployed individuals; at the same time, however, the employment hazard rate is substantially higher within these agencies.

Keywords: employment and unemployment hazard rates; duration dependence; unobserved heterogeneity; temporary help agencies.

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1 Introduction

The Spanish labour market has traditionally been perceived as a very rigid one for two principal reasons. Firstly, unemployment rates are persistent at very high levels: whilst unemployment increases in recessions, it does not reduce sufficiently in periods of economic growth. Secondly, the length of time that an individual tends to be unemployed for is also very long. Subsequently, the proportion of long–term unemployment has become more important, even in periods of intense economic growth. For instance, from 1987 to 1991, around 57.4 percent of those who were unemployed in Spain were so for more than one year. Throughout the nineties, this percentage has been around 52.7 percent.

In spite of this, we may wonder if the Spanish labour market is, indeed, so rigid. In 1984, the Spanish government implemented a huge liberalization of employment protection regulation by allowing the extensive use of fixed-term or temporary labour contracts. Following this reform, employment in Spain has grown principally due to temporary contracts (they represent more than 90% of new hires). In the nineties, the proportion of temporary workers has always remained above 30%, the highest level in Europe. Moreover, the duration of these temporary contracts has typically been very short. In 1999, more than 58% of the total number of temporary contracts were for less than one year (31% were for less than one month). These facts are totally at odds with the previous impression of a rigid labour market.

In order to investigate the degree of flexibility in the Spanish labour market, it is essential to study how many individuals are changing their situation at a given moment[1]. This paper focuses upon this issue by examining mobility patterns in Spain over the last decade. In particular, we investigate the determinants of employment and unemployment hazard rates, using a sample of over 19,000 individuals affiliated to the Social Security system. This sample consists of the whole labour history of workers who were, at the end of 1995, either employed through a Temporary Help Agency (THA) or non-employed in this month. Hence, given that these agencies hires mainly young workers (83.6% of the labour contracts signed by THAs were with workers under 35 years-old), the data set is only representative of young workers in the Spanish labour market. Thus, our analysis is intended to provide information on mobility rates for young individuals over a long time period (1990 to 1999). These individuals constitute a group of much concern for policy in Spain, given that 59.19% of the unemployed and 80.81% of

[1] Such an analysis is of considerable importance, because the existence of high rates of unemployment in Spain may be hiding important inflows and outflows from unemployment to employment. See, for instance, García–Pérez (1997).

temporary contracts belonged to workers under 40 years-old in this period.

We use duration models applied to a longitudinal data set on individuals' work history by taking into account the e¤ects of both duration and individual heterogeneity in the hazard or exit rates. Our estimation technique allows us to take account of concurrent events via time–dependent variables, similar to the ones used in Bover, Arellano and Bentolila (2002) and García–Pérez (1997). In addition, given that some variables which may a¤ect both employment and unemployment duration (e.g., family income, skills or unemployment bene…ts) are unobserved in our data set, it becomes necessary to control for the presence of unobserved heterogeneity. The use of Social Security records presents certain advantages for the analysis of turnover with respect to other sources of information[2]. Firstly, it collects information on all jobs held. Secondly, it allows us to determine employment and non–employment durations precisely. Di¤erent statistical sources have also been used to study the determinants of employment transitions; in particular, we can mention the use of the 1985 Encuesta de Condiciones de Vida y Trabajo by Alba–Ramirez (1991), Andrés et al. (1989), Sánchez Moreno and Peraita (1996) or García–Serrano and Malo (1996), and the use of the Spanish Labour Force Survey by Toharia (1996, 1997), and Bover et al. (2002). With regards to ‡exibility, we can conclude from these studies that, during the time-periods analyzed, there has been an increase in in‡ows and out‡ows between unemployment and employment.

However, to our knowledge, there is no research on mobility patterns in Spain for the period 1990–99, where we observe two moments of equal expansion, 1990 and 1997, and a big depression in the middle, 1993. This time period is also of considerable importance, since, throughout the nineties, the observed bad functioning of …xed-term contracts, along with the unemployment rate —at over 20 percent of the labour force— triggered the implementation of two main labour market reforms in 1994 and 1997.[3] The 1994 reform put forward speci…c limits on the use of …xed–term contracts: the minimum and maximum duration of temporary contracts for young people were changed to 6 months and 2 years, respectively. It also extended the subsidies and incentives to promote the conversion of …xed–term contracts into permanent ones which were introduced in 1992. The 1997 reform implemented again new measures that attempted to rectify the excessive precariousness present after 1984: more subsidies to promote the transition from temporary to permanent contracts were agreed upon and a new typology of permanent contract with lower …ring costs targeted at "protected categories" of workers —young people under 30 years–old, long–term

[2] A di¤erent extraction from Social Security records was previously used to study employment and unemployment spells through the use of duration models in García–Fontes and Hopenhayn (1996) and García–Pérez (1997).

[3] See, for example, Güell and Petrongolo (2000) or Segura(2001) for a deep description of these reforms.

unemployed, people above 45 years–old and disabled individuals— was introduced. Given this new institutional context, we consider the analysis of both in‡ows and out‡ows from employment in this decade essential in the assessment of whether di¤erent mobility patterns. In particular, we make use of well-known econometric models for duration analysis in order to evaluate these Government policy changes that have occurred along the nineties.

From our results we …nd that the exit rates from both employment and unemployment are very high. This leads us to the conclusion that there has been a high level of ‡exibility in the Spanish youth labour market throughout the 90's. The use of …xed-term labour contracts is widespread. Moreover, very few of these contracts are renewed as permanent ones, which leads again to the persistence of turnover rates, especially for very young, low quali…ed individuals and during recession periods. These facts are likely to be the reasons why the exit rate from employment presents a very important peak exactly at the thirty-sixth month, the maximum duration of a …xed-term contract in Spain. We have also obtained evidence that supports the argument that the 1997 labour market reform reduced the high turnover rates observed in the central years of this decade. From information on the type of contract held by individuals, we are able to conclude that the new type of permanent contract introduced with the 1997 reform has substantially improved the probability of …nding and maintaining employment.

The paper is organized as follows. Firstly, we summarize the factors underlying the duration of both employment and unemployment spells. Secondly, we show the econometric models for duration analysis that we use in our estimations. We then describe the data in detail and subsequently present the empirical results. The last section o¤ers our conclusions.

2 Framework of analysis

2.1 The duration of unemployment spells

The theoretical analysis of unemployment duration is based on job search models (see extensive surveys in Mortensen, 1986 or Devine and Kiefer, 1991). The basic outcome of these models is the unemployment hazard rate. This hazard rate is the product of the probability ®(t) of receiving a job o¤er and the probability that the non–working individual will accept the o¤er. The latter is the probability that the arriving wage o¤er is higher than a critical value, called the reservation wage, $w_R(t)$.

The job o¤er probability, ®(t); is a function of both the level of demand and the search activity of job seekers. In this sense, an individual's level of quali…cation can be expected to have a positive e¤ect on ®(t); a negative impact of age is expected as well. As regards the intensity of search, it is evident that it must have a positive impact on ®(t). Finally, employment demand conditions —measured either through the unemployment rate or

through the number of vacancies— may be having some in‡uence on ®(t) in the sense that the better those conditions are, the higher the expected job o¤er probability. Apart from these main e¤ects, we can expect this o¤er arrival rate to vary with the duration of the unemployment spell. Di¤erent theoretical models predict a negative duration-dependence of this arrival rate based, for instance, on human capital depreciation or stigma e¤ects appearing as unemployment lengthens.[4]

The other component of the unemployment hazard rate is the acceptance probability which is equal to the probability that the o¤ered wage is equal or higher than the reservation wage. Therefore, any variable which increases (or reduces) the reservation wage will reduce (or increase) the job acceptance probability and, in addition, will reduce (or increase) the probability of exiting from unemployment, given all other things equal. Hence, the e¤ect of variables that increase income while unemployed, for example the receipt of unemployment bene…ts, will clearly raise the reservation wage, reducing the unemployment hazard rate.

Finally, as well as the arrival rate, and in part because of it, the reservation wage is also a function of unemployment duration. For instance, the amount of unemployment bene…ts received is not constant along time, but depends on its duration; moreover, search intensity may be attenuated as unemployment goes on. All these factors make the reservation wage decrease with unemployment duration. But this also causes the acceptance probability to increase and, hence, no clear prediction arises for the e¤ect of unemployment duration on the unemployment hazard rate. However, available empirical evidence indicates that, in general, the net e¤ect is negative[5] or positive at the beginning of the unemployment spell and decreasing afterwards (See García-Pérez, 1997, 2001b).

2.2 The duration of employment spells

The duration of employment spells has usually been analyzed using the models of e¢cient labour turnover developed by Jovanovic (1979a,b). These are incomplete information models in which (i) workers' abilities are not fully known at hiring; (ii) the employer would like to produce at a desired level but deviation from this level is acceptable so long as it does not fall below a minimum threshold; and (iii) the …rm monitors workers until su¢cient information is collected in order to make a judgement with the acceptable degree of accuracy. In this context of incomplete information, the actual contract goes on as long as the individual's expected productivity keeps above a threshold …ring level (called the reservation productivity). Thus, the hazard rate out of employment is equal to the probability that this expected productivity falls below the reservation productivity.

[4] See, for instance, Vishwanath (1989) or Pissarides (1992).

[5] See Narendranatham et al. (1985), and Nickell (1979).

Jovanovic's model was designed for homogeneous workers. However, when estimating the hazard rate from employment, we must take into account the observed di¤erences among workers. Those di¤erences may be due to both individual or job position characteristics. With respect to the former ones, workers with the most valued features for the …rm will have longer employment spells. Secondly, some job position characteristics (such as the required quali…cation level for the job) may a¤ect the employment hazard rates: a higher quali…cation can be associated to longer tenure in the …rm if employers consider that workers complying with higher quali…cation levels are more ‡exible and have a higher ability of adaptation; In addition, the reservation productivity de…ned for worker–…rm matching may also depend on the economic cycle and on local labour market conditions.

Once we have taken into account the fact that di¤erent individuals have di¤erent probabilities of exiting from employment (i.e., the heterogeneity effect), we must also consider the possibility that these probabilities depend on the actual length of the employment spell (i.e., the duration e¤ect). According to Jovanovic's model (1979b) the likelihood of job ending is expected to be shorter the longer the duration of the spell; the reason being that those individuals who are "good matches" dedicate less time to …nd alternative o¤ers and are less likely to accept any such potential o¤er. In addition, we would also expect that, the longer the spell, the more important the investments in speci…c human capital will be; the greater the speci…city of this investment, the more likely the continuation of the worker–…rm match in the future will be, so that the employment hazard rate diminishes. Another important factor is that the longer the employment spell, the higher the …ring costs. Hence the …rm will have less incentives to get rid of the worker.

3 Duration analysis: econometric proceedings

In order to study the hazard rate for both employment and unemployment spells, a discrete-time duration model will be used. The estimation technique is similar to the one exploited in the works of Narendranathan and Stewart (1993), Sueyoshi (1995), Jenkins (1995), García–Pérez (1997) and Bover et al. (2002). The reason for using discrete–time techniques is not only that data are observed in discrete intervals (namely, in months) but also that these techniques are much more ‡exible for estimating the time–dependence of the hazard rate (see Meyer, 1990).

Moreover, the technique used in this paper helps us to circumvent the usual assumption of proportionality between the e¤ects of duration and other covariates over the hazard rate. There are cases in which the impact of explanatory variables changes with duration in a determined state (for example, in our case, the e¤ect of having been a THA-worker over the exit rate from unemployment may not be the same for the short as for the long-

term unemployed). Because of this, it becomes necessary to model the hazard rate in a non-proportional way and, for this purpose, discrete time helps considerably.

Therefore, our hazard rate will be the following conditional probability:

$$\mu(t) = Pr(T = t | T \geq t) \tag{1}$$

where, given that we are modelling a dichotomous variable, we can consider its dependence on duration and other explanatory variables through a known distribution function. As in other papers, for example García-Pérez (1997) or Bover et al. (2002), we will use the logistic distribution. Hence, considering the duration in employment and unemployment states as our discrete random variables, and taking also into account the effect of personal characteristics, our two conditional exit rates will be as follows:

$$\mu(t) = F(\mu_0(t) + \mu_1(t)x(t)) \tag{2}$$

where $x(t)$ is a vector of personal characteristics —which do not vary over time— and of aggregated characteristics which do vary over time t; $\mu_0(t)$ is the additive term of the duration-dependence in the hazard rates that we will estimate in the most general way; and $\mu_1(t)$ represents the coefficients for the explanatory variables which in general depend on duration —that is, interactions between these variables and duration are allowed for.

Due to the absence in our data set of important determinants of both hazards —some of them being, e.g., family income, characteristics of the job and whether or not the individual is receiving unemployment benefits— and, given the known result of unobserved heterogeneity generating spurious duration-dependence in the hazard rate (see, for example, Flinn & Heckman, 1982), it becomes necessary to control for this problem. Hence, in the presence of unobserved heterogeneity, our hazard rates will have the following form:

$$\mu(t; \varepsilon) = F(\mu_0(t) + \mu_1(t)x(t) + \varepsilon) \tag{3}$$

We do not wish to impose more structure upon our estimation. Thus, we will follow a semi-parametric approach based on Heckman and Singer (1984) where we are assuming that unobserved heterogeneity follows a discrete distribution function with different mass points. In particular, our results are based on a two–mass–point distribution function.[6]

[6] In addition, an alternative estimation with three different mass points was undertaken; however, one of them always converges to zero. Therefore, we believe that the distribution function with two mass points properly accounts for the unobserved heterogeneity in our data.

The estimation technique of the model is maximum likelihood. Given the likelihood contribution of each individual i in the sample, $L_i(\cdot)$;[7] conditional on $\cdot$, we obtain that with unobserved heterogeneity, $\cdot$; the log-likelihood function takes the form:

$$\ln \$_h = \sum_{i=1}^{N} \ln \int L_i(\cdot) dF(\cdot) \qquad (4)$$

where $F(\cdot)$ is the cumulative distribution function of $\cdot$; which is a discrete function with two mass points, $\cdot_1$ and $\cdot_2$: These mass points are selected in order to verify the assumption of $E(\cdot) = 0$ which is necessary given the presence of a constant term in the hazard rates. Besides, it is estimated the probability p for the variable $\cdot$ to be equal to its value $\cdot_1$: Hence, we will estimate all the parameters of the hazard rates, along with p and $\cdot_1$:

4 Data

The data source are work histories of a sample of 19,778 individuals collected from administrative data belonging to Social Security records. It includes information on all individuals' employment (and non-employment) spells from 1990 to 1999 of a sample of mainly young workers.[8] In fact, our data set is only representative of young workers in the Spanish labour market. In particular, workers from 20 to 35 years-old account for 49% of the total sample, while, according to the Labour Force Survey, those individuals represented 32% of the active population in Spain at the end of 1995. Therefore, our estimates can not be generalized to provide insights about the overall level of job mobility in the economy. On the contrary, our analysis is intended to provide information on mobility rates for young individuals over a ten-year period, who constitute a group of much concern for policy in the Spanish labour market.

The work history data provided includes information about worker age and gender, professional category of the worker contribution to the Social Security[9], dates at which employment spells start and end, type of Social

[7] See García-Pérez (1997) or Bover et al. (2002) for an expression of this likelihood function.

[8] This is due to the way the sample were obtained. It was selected 10.000 workers hired through a Temporary Help Agency (THA) at the end of 1995 and the same number of individuals who were non-employed at this same date.

[9] We must underscore that the eleven professional categories of worker contribution to the Social Security in the database do not reveal the workers' level of quali…cation, but rather the required level of quali…cation for the job. For instance, an individual working in the lowest category, "peón", may well be in possession of an academic degree. In any case, we will refer to contribution categories from here onwards as "quali…cation", although this remark should be taken into account for the subsequent analysis. As in previous studies using data from the Social Security records, we group those eleven categories in four groups from maximum to minimum quali…cation required for the job.

Security system for the worker, the reasons for the termination of the spell (voluntary quit, dismissal or retirement), the Spanish province where the employment spell took place, an identi…er indicating whether or not each employment spell is accomplished through a THA, another one if it is accomplished through a public …rm, and, …nally, the type of contract held by the worker (temporary or permanent). We eliminate incomplete records, and also spells of individuals above 52 years-old in order to avoid the bias that early retirement programs may create in both exit rates, and keep only workers a¢liated to the General System (Régimen General) so as to avoid the bias in the estimations that special systems like Agriculture, Fisheries, and so on would provoke. In addition, given that mobility patterns arising from quits are likely to substantially di¤er from involuntary separations, in order to achieve greater homogeneity, we also eliminate records destroyed for reasons other than dismissals or end of contracts.[10] Finally, given that we want to use information about the following employer in each employment or unemployment spells, we keep only individuals with at least two observed employment spells[11].

Our database contains an important number of individuals presenting subsequent employment spells through the same …rm, with particularly short unemployment spells in-between these jobs. Evidence for this is shown in Table 1. This table shows average employment and unemployment durations for individuals who present no subsequent spells through the same …rm, and for individuals who, on the contrary, have from two to twelve consecutive spells through the same employer along their work history. Average employment duration for the former equals 199.43 days. On the contrary, for those workers with the same employer in the following spell, the average employment duration is just 76.07 days. Moreover, job durations reduce quickly as the number of spells through the same employer increases (from an average duration of 136 days with only two spells with the same …rm to less than 16 days when the number of consecutive spells is 12). Something similar occurs for unemployment spells: while the average stay in unemployment for those individuals who have no spell through the same …rm in their work history is 71.37 days, the average duration of these unemployment spells reduces as the number of unemployment spells in-between employment spells with

[10] In this database we cannot distinguish between these two di¤erent reasons for termination of the spell and, therefore, we consider both as involuntary turnover. Moreover, we will not consider voluntary turnover. As both reasons of terminating the employment spell are totally di¤erent, we think they have to be studied separately. Hence, future research will compare the results in this paper to the results arising from an analysis of the subsample of records ending in quits.

[11] Given that the data set is mainly constituted by young workers, the percentage of individuals who do not hold at least two employment spells is insigni…cant. That is, when we keep individuals for whom only a single spell of employment is observed, the …nal sample is very similar to the one …nally used in the analysis. Statistics are available from the authors upon request.

the same …rm increases (so that on average, individuals who do have spells through the same …rm only su¤er on average 20.71 days in unemployment). Therefore, the more likely the individual is to be employed through the same employer, the shorter the intermediate unemployment spells he must confront with. This fact is re‡ecting the new hiring policies adopted by …rms which consist on using intensively very short temporary contracts in order to avoid uncertainty and also, of course, to reduce labour costs.

Given this high turnover rate observed in our data —with mainly short unemployment spells— and in order to avoid estimating transitions between two di¤erent employment spells without passing through a real state of unemployment, we decided not to use either unemployment and employment experiences shorter than 15 days.[12] The basic change these spells provoke over the employment hazard rate is that this is much higher at duration 1. In addition, estimations implemented with these spells show no special differences compared to the ones presented here. The only remarkable change is that the THA e¤ect over the hazard rate becomes even stronger, given that many short–term jobs are implemented through these …rms.

As regards employment spells, our sample consists of 49,322 spells[13], whose characteristics can be observed in Table 2. Our sample of estimation is composed mainly of relatively young males, with a reduced quali…cation level, and with very short durations in employment (indeed, more than half of the observations in our database present durations of less than 3 months). Given that there is a very small number of observations for long durations (>46 months) and in order to avoid noise in the results, we have considered these observations as arti…cially right-censored, that is, as employment spells that do not …nish in the observed period. This is the reason why there are no observations with employment durations beyond 46 months. In addition, there are individuals who continued being employed at the moment in which the data were downloaded (December 1999); these observations are also right–censored, because their spell was not complete at that moment. However, most of jobs (95.75%) terminate during the sample period. As opposed to the sub-sample of non–THA individuals, workers who …nd employment through these intermediaries are more likely to be younger, female and to be in possession of a reduced quali…cation level. In addition, THA workers enjoy shorter employment durations than non–THA individuals (the average tenure is 3.65 months, as opposed to 6.09 months for non–THA workers).

[12] It is unknown whether very short spells are either true unemployment spells or just represent a delay in registering the worker at the Administration after a job–to–job movement.

[13] This is a sub–sample of the initial sample (of 180,010 records); it was necessary to take this random sample due to the techniques of estimation implemented. In the estimation, each (non)employment spell is broken down into so many monthly observations as the duration of the corresponding spell (See Jenkins, 1995).

We have a sample of 34,137 unemployment spells. Their main characteristics can be observed in Table 3. For the same reason as in the employment analysis, we consider unemployment durations beyond 30 months and the ones that have not …nished before December 1999 as right-censored unemployment experiences. Again, in this sample of unemployment records, men are the majority; most of observations show low quali…cation levels; young individuals (under 25 years–old) represent almost half of the total sample size, and only 15.42 percent of complete unemployment experiences lasted beyond 6 months. As regards THA individuals when compared to non–THA ones, we …nd that agency workers are more likely to be younger, in possession of reduced quali…cation levels and to have shorter unemployment spells (the average stay in unemployment is of 2.81 months for agency workers, but 4.29 months for non–THA individuals).

Given the estimation technique used, which consists of breaking down the event into monthly observations in which the individual is at risk of failure in employment or unemployment (see Jenkins, 1995), the …nal length of the database on employment and unemployment is of 311,156 and 146,071 registers, respectively.

5 Estimation results

As explained in the previous section, a discrete-time duration model will be estimated for both employment and unemployment spells using a sample of Spanish workers. The estimation results will be …rstly presented based on the model without controlling for unobserved heterogeneity. Then, these results will be compared to the ones obtained when controlling for the presence of unobserved heterogeneity in both hazard rates.

The speci…cation of the hazard rates will be the following. Apart from the variables on individual and job characteristics, the business cycle and local economic conditions (which collect the observed heterogeneity e¤ect), the duration-dependence has been taken into account through the inclusion of a polynomial in log(t). In addition, dummy variables indicating whether or not the individual is on–the–job in his sixth, twelfth, eighteenth, twenty–fourth, thirtieth or thirty–sixth month have been included in the employment hazard rate. We do this because, as explained below, evidence indicates that the likelihood of exiting from employment is signi…cantly higher in these months. Finally, interactions between duration (in employment or unemployment) and some of the explanatory variables have also been speci…ed[14].

[14] The …nal speci…cation of the estimated models only presents the interactions that are obtained to be signi…cant. The initial speci…cation included all the possible interactions between duration and the explanatory variables. Moreover, the shown polynomials in log(t) are the ones which obtain the best results in terms of signi…cance and likelihood values.

5.1 Hazard rate from employment

Let us …rst examine the e¤ect of employment duration on the likelihood of exiting from the job. Monthly Kaplan–Meier estimates for the total sample are plotted in Figure 1. This empirical hazard function collects the proportion of individuals leaving employment at each moment in time, given that they have been employed until that moment (Lancaster, 1990).

As can be observed, this hazard rate is declining with employment duration, so that the probability of job ending declines with tenure on the job. The exit rate is clearly very high early in the job, reaching 32.62% in the …rst month; it falls to 5.61% at the end of the …rst year, and then remains at around 3% from then on. However, the most interesting result in Figure 1 is the fact that the hazard rate actually rises to peaks in months 6 (32.34%), 12 (19.07%), 18 (12.27%), 24 (16.70%), 30 (12.46%) and 36 (32.47%). These peaks show that job contracts are very likely to …nish at each of these particular months. This fact can be explained, basically, by the extensive use of …xed-term contracts which are usually for these speci…c durations.

In Table 4, we present the results of the maximum likelihood estimation of the hazard rate out of employment assuming a logistic distribution for F (equation 3), under the two assumptions of no unobserved heterogeneity and a two–mass–point distribution function for this heterogeneity. As expected from the shape of the empirical hazard rate previously presented, tenure on the job presents a negative impact on the exit rate. That is, individuals who have been employed for longer are less likely to exit from the job. Moreover, the dummies describing employment durations which are multiples of six (i.e., durations of 6, 12, 18, 24, 30 and 36 months) present a positive and very signi…cant e¤ect on the hazard rate. Since in this database it is not possible to distinguish as a reason for termination of the spell, between the end of a temporary contract and a dismissal, and, given that no special reason can be adduced to explain why individuals should be dismissed at those months multiple of six, we can then deduce that the positive e¤ect of these dummy variables must be very likely due to temporary contract terminations. These e¤ects can be quali…ed by taking into account these dummies' interactions with some of the factors collecting the heterogeneity e¤ect. Hence, for instance, we obtain that higher rates of economic growth reduce the likelihood of exiting from employment at those peak months, presumably re‡ecting that better economic conditions encourage the signing of permanent contracts (instead of temporary contracts). Moreover, younger individuals and those not working in public …rms are the most likely to su¤er from contract termination at those months.

Let us examine the e¤ects of other factors (apart from the actual duration of the spell) on the likelihood of exiting from employment. We will begin by considering the e¤ect of individual's job position. The …rst result is that those individuals who are working through a THA are more likely to

experiment shorter employment spells[15]. This THA e¤ect can be observed in Figure 2, where it can be noted that THA workers also show stronger peak-month e¤ects. These results are sensible when considering both the demand and supply–side motivations for addressing to THAs[16]. From the demand–side, those intermediaries are often used as a "bu¤er" for client …rms in order to meet changes in the product demand in a context where …rms are reluctant to hire permanent sta¤ until the economic outlook becomes more stable. From the supply–side, workers addressing to THAs often appreciate the limited work hours or the greater ‡exibility in scheduling that can typically be found in these …rms. Therefore, THA workers are expected to show shorter durations in employment (see Table 2).

In Table 5, we have the predicted average durations in employment for di¤erent groups of individuals distinguishing between their age, sex and quali…cation level. We can see that the whole sample's predicted employment duration is 6.35 months and that this predicted duration is much larger for no-THA workers. However, we …nd that both male and female skilled workers with less than 25 years of age present larger expected employment durations under THAs. Hence, it seems that THAs could be doing a good job with very young skilled workers.

A positive impact on the employment hazard rate appears when the employer in the following employment spell is the same as the present one (so-called equal employer). One of the reasons why individuals who are contracted by the same employer are more likely to enter into unemployment might be due to the hiring policy adopted by …rms; the latter may resort to former employees in order to …ll vacancies. Thus, employers may be temporarily …ring workers —with whom they have no permanent commitments— during periods of low demand or in order to avoid having to pay fringe bene…ts (such as, for instance, holiday pay); then, once two weeks have passed after the …ring decision, those same former workers are then actually rehired. Finally, a positive impact on the hazard is also obtained when the individual has been employed through a public …rm, although the impact is lower as experience in the job lengthens.

With respect to the e¤ects of worker's characteristics on the probability of leaving employment, at the beginning of the employment spell, men are less likely to exit from employment than their female counterparts, although this di¤erential gender impact is reversed the longer the duration of the spell.

The employment hazard rate is higher for the young (people under 26 years–old). They also show substantially higher exit rates especially at peak-months. This result presumably indicates lower …rm costs when laying o¤ these workers, given the temporary nature of many of the contracts that

[15] There might exist selection by workers into THAs. This bias can be taken into account by jointly estimating a process for the decision of whether or not to work for a THA. This analysis is being undertaken by the authors in a companion paper.

[16] See Muñoz–Bullón, 2002.

they hold. Finally, as expected, very low levels of quali…cation increase substantially the probability of exiting employment (see Figure 3).

The e¤ect of economic conditions on the probability of entering into unemployment is showed in Figure 4. This …gure plots the combined e¤ect of the local unemployment rate and that of the GDP growth rate at the moments where the GDP attains its maximum and minimum values for our 10–year period of observation; the average values of unemployment rates are also taken into account at the two extreme cyclical points. The employment hazard rate is counter-cyclical only for short employment spells, those of less than 5 months. This result makes sense, since, when things are getting worse, …rms are dismissing workers whose on–the–job experience is shorter.

Finally, we have included two additional dummies in our estimation to allow for the speci…c impact of three distinctive periods throughout the nineties. In order to capture the potential e¤ect of the two labour market reforms in this decade, we make distinctions between the spells observed before 1995, then those between 1995 and 1996 —that is, under the e¤ect of the 1994 reform— and, …nally, those spells from 1997 onwards —which may show a di¤erent behavior on the hazard rate as a result of the 1997 labour market reform. Net of the business cycle e¤ect, we …nd that both periods show higher employment hazard rates than those at the beginning of the nineties. However, the e¤ect changes with tenure and with the impact of individual variables. As regards tenure, for both the period from 1995-1996 and the period after 1997, this positive e¤ect is reduced the longer tenures are. Hazard rates in both periods are also reduced the higher the GDP growth rates are. As regards the impact of individual variables, the high employment hazard rates obtained for the period 1995-96 are even larger for the low-quali…ed youngest individuals (under 36 years-old) and for those working through a public …rm. As for the speci…c e¤ect of the period 1997-onwards, the hazard is specially higher for low quali…ed individuals and those above 36 years-old. This e¤ect may well show the reduction of turnover for young people after the 1997 labour market reform. The complete e¤ect of these two dummies can be better understood in Figure 5. The employment hazard rate is the highest in the period 1995-1996. Initially, the estimated hazard rate for 1990-94 is the lowest one; however, note that for tenure on the job above nine months, the lowest hazard rates are always obtained for the period 1997-99. We may, therefore, conclude that, in spite of the fact that …ring rates increased after the 1994 reform, they were inferior to their initial levels after the implementation of the 1997 reform. In addition, the especially high …ring rates characteristic of peak–months clearly decreased from 1997 onwards.[17] While exercising caution with these dummies —which might be in‡uenced by other potential e¤ects— it seems that the labour

[17] Of course, we have no data for employment spells larger than 24 months in the period 1997-1999, so the estimations for the duration dependence after that month are obtained solely with the spells terminated before 1996.

market reform in 1997 slightly reduced the large turnover rates characteristic of the mid-nineties.[18]

In Table 5 we observed that the average employment durations predicted by our estimation are much lower after the 1994 labour market reform but they recovered a bit after the 1997 one. In fact all age groups of skilled males and very young skilled women were the mostly bene…ciated by this labour market reform.

The last two columns of Table 4 show the estimation of a similar speci…cation for the employment hazard rate but, this time, controlling for the presence of unobserved heterogeneity. We obtain no evidence in favor of the presence of unobserved heterogeneity in our data. Although the likelihood function is a bit higher when controlling for unobserved heterogeneity, we estimate almost one point in its distribution function (its value is not signi…cant and has a probability of 0.9925). Hence, we can conclude that the employment hazard rate may be accurately estimated without taking into account the control for unobserved heterogeneity.

5.2 Hazard rate from unemployment

Empirical hazard rates from unemployment are shown in Figure 6. As previously outlined, the maximum duration is of 30 months due to the scarcity of observations beyond this duration. The hazard rate begins an increasing trend from the very beginning of the unemployment experience, reaching levels above 35 percent for the second month.[19] However, it falls very quickly until the eighth month, then shows another peak at the tenth month, and, from then on, remains at levels slightly above 5 percent.

Table 6 collects the results of the maximum likelihood estimation of the unemployment hazard rate assuming a logistic distribution for F (equation 3). As before, we …rstly present the duration-dependence of the hazard rate in a polynomial for the logarithm of unemployment duration, and with interaction terms between the remainder explanatory variables and unemployment duration. In particular, the additive term of the hazard rate collects a fourth–grade polynomial which replicates quite well the form of the empirical hazard rates.

Let us examine the e¤ect of di¤erent factors on the likelihood of exiting from unemployment. We shall begin by considering the e¤ects of worker characteristics. Although the gender e¤ect is attenuated as length in unemployment increases, women are expected to su¤er longer durations in unemployment; this gender e¤ect may be justi…ed by recognizing that, in

[18] We will later present a di¤erent estimation with a sub-sample of workers who gave information about the type of contract held on the job in order to investigate more about the new contracts introduced in this reform.

[19] The smaller hazard rate at one month is simply a consequence of obviating unemployment spells shorter than 14 days.

spite of the fact that the participation of women in the labour force has been increasing from the 80's on, it is still basically men who support their families. If this is the case, then, women —specially those with a working spouse— may presumably be less likely to accept job o¤ers (See Ahn and García-Pérez, 2002). As regards quali…cation, it is the individuals in the lowest group who are the least likely to exit from unemployment, while the ones in the Medium-Low group are the most likely, followed by the most quali…ed workers. Finally, workers in the medium age range (from 26 to 35 years–old) are the ones who confront the shortest expected unemployment durations, though at a decreasing rate.

As regards the e¤ect of individual job position on the probability of leaving unemployment, having worked through a THA in the last employment experience represents a positive impact on the hazard rate, although the impact is attenuated as unemployment lengthens. Why do previous employment experiences through THAs represent an opportunity for quickly leaving unemployment? There are at least two explanations for this result. Firstly, it could be that these intermediaries provide workers a better connection to the labour force and, thus, greater access to information. Secondly, positions covered by client …rms through THAs are typically "assessment positions" in which performance is visible to a number of higher–level persons in the organization and in which performance largely determines future career mobility; therefore, these observations and skill development characteristics of the THA positions increase the probability that capable people will be engaged in permanent positions[20]. It makes sense then that those individuals who stay unemployed for longer after a THA employment experience become less attractive for potential employers (they may emit a negative signal to the latter). These e¤ects are re‡ected in Figure 7 where we …nd that the positive impact of having worked through a THA is only present for those unemployed for less than four months.

In Table 7 we present the corresponding predicted unemployment durations deduced from our estimations. Mean unemployment duration is 3.08 months being a bit larger this duration for no-THA workers. However, it seems that skilled workers previously working through THAs su¤er longer unemployment spells than no-THA ones. Hence, although they are more time in the job (remember Table 5), once they are unemployed, if they do not exit quickly from this state, they could be sending a bad signal to employers, thus having longer unemployment spells.

Experience in the previous employment positively a¤ects the probability of exiting from unemployment, though at a decreasing rate. This result indicates that longer previous labour experiences raise the probability of receiving a job o¤er, especially at the beginning of the unemployment spell,

[20] As Muñoz–Bullón (2002) indicates, hiring THA workers to monitor them and then to o¤er permanent positions only to those who perform well seems to have become a common strategy of employers.

in spite of the fact that longer experiences are likely to be correlated with higher unemployment bene…ts, which will probably reduce the likelihood of accepting any job o¤er. Finally, if the …rm that hires the unemployed worker is the same as in the previous job, equal employer, the probability of exiting from unemployment is much greater. This "recall" phenomenon previously described is common in the labour market transitions re‡ected in our empirical analysis. In addition, those individuals who have been previously employed by a public …rm are more likely to stay for longer in unemployment.

As regards the e¤ect of economic conditions, the unemployment hazard rate is clearly pro-cyclical: higher levels of national economic activity show a positive e¤ect on the likelihood of exiting from unemployment. The combined e¤ect of the provincial unemployment rates and the GDP growth rate are shown in Figure 8 where we show the predicted hazard rate evaluated at the moments of maximum and minimum GDP growth along with the average values of unemployment rates at those two extreme cyclical points.

Finally, and as in the case of the employment hazard rate, we have included two dummies in our unemployment estimation to allow for the speci…c impact of three di¤erent periods during the nineties: 1990-94, 1995-96, 1997-99. Net of the business cycle e¤ect, the impact of the dummies indicates that the e¤ect of the two labour market reforms is positive. Therefore the likelihood of exiting from unemployment is higher in the second half than in the …rst half of the nineties. However, the e¤ect changes when we take into consideration unemployment duration and the impact of individual variables. The di¤erential impact of the period 1995-96 increases the longer the unemployment spell is; a contrary impact of unemployment duration is obtained for the period 1997-99. The complete e¤ect of these two dummies can be better understood in Figure 9 where we can see that the probability of leaving unemployment is maximum after 1997 only for those who stayed unemployed for less than 3 months. The e¤ects of GDP growth rate is not so pro-cyclical in the periods 1995-96 and 1997-onwards. As regards the impact of individual variables, the e¤ects of those two periods are also attenuated for individuals in the Medium-Low quali…cation group; on the contrary, the impact is larger for the youngest (under 25 years-old). As for speci…c e¤ects, we …nd that the impact of the 1995-96 period is lower for individuals who have been previously employed for longer and if they have worked through a THA. As regards the 1997-99 period, the e¤ect is increased for men and is reduced if they …nd employment with the same previous employer.

In Table 6, we can see that average unemployment duration clearly reduced after the 1994 reform, specially for very young skilled workers. After the 1997 reform, the average unemployment duration reduced a bit more but only for unskilled workers under 25 years old and also for women between 26 and 35 years old.

The presence of unobserved heterogeneity calls for an adequate control,

especially due to the absence of important determinants of the unemployment hazard rate: apart from information about the household and the labour market in which the unemployed worker is searching, the receipt of unemployment bene…ts is another important variable missing from our data.[21] In order to control for this problem, we will use the same technique as before: we will assume that unobserved heterogeneity can be summarized by a discrete two–mass–point distribution function.

Results from this estimation are shown in the last two columns of Table 5. The estimated distribution function shows the existence of two di¤erent types of workers: with 22.56 percent probability, there exists a group of workers with a much higher unemployment hazard rate. The two estimated types, in terms of hazard rates, are shown in Figure 10. Even though it is not possible to identify which speci…c characteristics lead to this result, unemployment bene…ts are likely to represent an important determinant. The e¤ects of unobserved heterogeneity over the remainder estimated parameters are not very relevant since the estimated coe¢cients remain very similar. The only remarkable di¤erence is that under the control of unobserved heterogeneity, the duration-dependence of the unemployment hazard rate is less negative.

To sum up, medium–aged workers, males, relatively quali…ed workers and those working through a Temporary Help Agency —although the latter only for very short durations in unemployment— enjoy higher chances of exiting from unemployment. Moreover, given the previous result of contracyclical employment hazard rates for short employment durations, we can o¤er an explanation for the strong growth of the unemployment rate in the last recession period of the Spanish economy: the extension of job destruction, specially of short-term jobs, coupled with a very low exit rate from unemployment in recession years make up two important factors for the sharp increase in this aggregate …gure.

6 Conclusion

The present paper has provided a basis for assessing the employment mobility patterns throughout the youth Spanish labour market in the nineties, a decade so far characterized by the lack of information about these labour market outcomes. We have set out the empirical results for the determinants of employment and unemployment exit rates compiled from a representative sample of over 19,000 individuals a¢liated to Social Security. The time-span of our analysis is of considerable importance, since the limits imposed during

[21] In spite of this lack of information as regards this variable, given that the proportion of young workers that we have in our database is very high (as we will see below), and that these individuals are less likely to be entitled to unemployment bene…ts, given their shorter accumulated tenure. We think this lack of information is not so serious. In any case, we have no means of contrasting this hypothesis.

the 90's on the use of …xed–term contracts might have changed the picture of transitions patterns sustained through previous empirical studies.

Our principal …nding is that employment and unemployment hazard rates are much higher in the 90's than in the 80's. In other words, throughout the nineties, the Spanish labour market has been even more ‡exible than in the eighties. Temporary work through …xed–term contracts rather than permanent employment is responsive for these high turnover rates.

Within this overall picture of the labour market, there are many …ner additional results which are encountered with our empirical analysis. Firstly, we …nd that the probability of exiting from employment is negatively a¤ected by job tenure and is largely determined by the duration of …xed–term contracts. Moreover, those with relatively low quali…cation levels and younger women working through THAs are more likely to become unemployed. Secondly, we …nd that a long duration of unemployment reduces the likelihood of …nding a job, even when unobserved heterogeneity is controlled for. In addition, this hazard rate di¤ers according to the individuals considered: middle-aged men who have a intermediate quali…cation level and are at the beginning of their unemployment spells are the most likely to re-enter employment. Finally, and not surprisingly, the better the general economic conditions, the more successful individuals are in leaving unemployment.

We …nd that the existence of certain employment practices are also highlighted by our results. For instance, employers are frequently resorting to layo¤s and recalls. These are arrangements whereby workers are required to stop working for a temporary period —during which unemployment bene…ts could be received— and after which they are re-employed by the same …rm. In addition, the practice of hiring workers through private employment agencies seems to imply a trade–o¤ for the employee: For although this form of intermediated work implies enhanced opportunities of employment, these workers are only recruited for very short periods of time.

Finally, in spite of the fact that turnover rates in the nineties are exceptionally high, some evidence is found to support the idea that the Government measures of 1997 —intended to tighten regulations governing temporary work— have had some in‡uence on labour mobility patterns. For, the likelihood of exiting from employment has reduced since 1997, and is particularly lower in the months when temporary contracts …nish when compared to the years 1990-1994 and 1995-1996. But at the same time, the likelihood of exiting from unemployment is comparatively higher from the year 1997 onwards when compared to the …rst decade of the nineties, although this is only true for very short unemployment durations.

Additional evidence on the e¤ect of this labour market reform can be deduced from Table 8. This table shows (both for the employment and the unemployment hazard rates) the odds–ratios of the impact of four variables related to the type of employment contract held, namely: permanent contracts, part-time contracts, the new, post-1997, permanent contracts, and

others resulting from the conversion of temporary contracts into permanent ones.[22] The most important results from this table are as follows.[23] With regard to the employment hazard rate, those individuals in possession of a permanent contract enjoy a 60.33% lower probability of losing their job. Furthermore, those holding a part–time contract su¤er a 41.12% higher probability of exiting from employment than those holding a full-time temporary contract. With regard to the unemployment hazard rate, those individuals who had held a permanent or part–time contract prior to their being unemployed …nd it comparatively more di¢cult to …nd a new job. Conversely, the unemployed who have previously been contracted through the new 1997 permanent contracts show a 53.91% lower employment hazard rate at the same time that it is found a much higher probability of leaving unemployment. Hence, we think this is evidence showing that workers with these new permanent contracts have largely escaped the e¤ects of high turnover rates in the nineties and they also maintain better chances of quickly leaving unemployment. Finally, we …nd no clear evidence on the e¤ect of the conversion of …xed-term contracts into permanent ones over both hazard rates. Hence, we can conclude that the principal bene…t of the 1997 reform comes from the introduction of the new permanent contract. Whether this is due to the reduction in …ring costs or the important subsidies received by employers is a question that remains as yet unanswered.[24]

[22] See the introduction for a more detailed explanation of this reform.

[23] The size of each subsample is lower due to the fact that some observations lack information regarding contract type.

[24] We have estimated a speci…c model for only permanent workers, distinguishing those with the new 1997 permanent contract from those under the former one. We …nd clear evidence that, under the new contract, the employment hazard rate is much lower than for those with the old permanent contract in the …rst year of tenure. Hence, we think that it is not only the subsidies both contracts are receiving. It seems that the reduction in …ring costs could be under the fact that …rms are changing their …ring decisions early in the job given its associated cost is lower under the new permanent contract.

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Table 1
Employment and unemployment duration by spells with the same …rm (in days)

Nr. SPELLS with = …rm:	Avg. empl. duration.	Avg. unempl. duration
0	199.43	71.37
2	136.04	28.79
3	83.07	23.86
4	54.56	20.29
5	39.89	17.20
6	31.89	15.25
7	27.85	14.08
8	21.79	14.19
9	22.11	11.55
10	17.86	10.52
11	17.33	11.24
12	15.97	10.72

Table 2
Main sample characteristics for employment duration analysis

	Total Sample		THA workers		No-THA workers	
	Total	%	Total	%	Total	%
Total	49,322		13,614		35,708	
Censored	2,098	4.25	98	0.72	2,000	5.60
Gender: Male	30,113	61.05	7,489	55.01	22,624	63.36
Equal employer	15,759	31.95	7,177	52.72	8,582	24.03
High Qual.	1,931	3.92	336	2.47	1,595	4.47
Med.–High Qual.	5,074	10.29	1,012	7.43	4,062	11.38
Med.–Low Qual.	17,792	36.07	5,154	37.86	12,638	35.39
Low Qual.	24,525	49.72	7,112	52.24	17,413	48.76
Age 16–25	16,955	34.38	5,557	40.82	11,398	31.92
Age 26–35	20,085	40.72	4,747	34.87	15,338	42.95
Age 36–52	12,282	24.90	3,310	24.31	8,972	25.13
Duration (months)[¤]:						
1-3	26,360	55.82	9,448	69.90	16,912	50.17
3-6	10,822	22.92	2,419	17.90	8,403	24.93
6-12	5,670	12.01	960	7.10	4,710	13.97
12-24	2,923	6.19	508	3.76	2,415	7.16
24-36	1,197	2.53	146	1.08	1,051	3.12
36-46	252	0.53	252	0.53	252	0.53
Statistics[¤]:						
Average Duration	5.39		3.65		6.09	
Median Duration	3		2		3	

*Without taking into account censored observations

Table 3
Main sample characteristics for unemployment duration analysis

	Total Sample		THA workers		No-THA workers	
	Total	%	Total	%	Total	%
Total	34,137		13,033		21,104	
Censored	714	2.09	250	1.92	464	2.20
Gender: Male	18,642	54.61	6,421	49.27	12,221	57.91
Equal employer	16,994	49.78	8,432	64.70	8,562	40.57
High Qual.	1,022	2.99	81	0.62	941	4.46
Med.–High Qual.	2,987	8.75	751	5.76	2,236	10.60
Med.–Low Qual.	12,602	36.92	5,136	39.41	7,466	35.38
Low Qual.	17,526	51.34	7,065	54.21	10,461	49.57
Age 16–25	16,483	48.28	7,080	54.32	9,403	44.56
Age 26–35	11,102	32.52	3,673	28.18	7,429	35.20
Age 36–52	6,552	19.19	2,280	17.49	4,272	20.24
Duration (months)[¤]:						
1-3	23,629	70.70	10,316	80.70	13,313	64.50
3-6	4,640	13.88	1,396	10.92	3,244	15.72
6-12	3,527	10.55	738	5.77	2,789	13.51
12-24	1,356	4.06	288	2.25	1,068	5.17
24-30	271	0.81	45	0.35	226	1.09
Statistics[¤]:						
Average Duration	3.73		2.81		4.29	
Median Duration	2		2		2	

*Without taking into account censored observations

Table 4
Logit Regression for Employment Hazard Rate

	Without Unobs. Heter.		With Unobs. Heter.	
Variables	Coe¢cient	t-statistic	Coe¢cient	t-statistic
Log(t)	-2.0714	-27.59	-2.0835	-27.63
$Log(t)^2$	1.8568	17.69	1.8682	17.75
$Log(t)^3$	-.80704	-16.36	-.81238	-16.41
$Log(t)^4$	.1100	15.23	.1111	15.31
THA	.5238	33.96	.53513	31.75
Gender	-.1130	-5.78	-.1126	-5.75
Gender*Log(t)	.0910	8.02	.0908	7.93
High Qual.	-.7432	-11.52	-.7358	-11.33
High Qual.*Log(t)	.1389	5.18	.1315	4.81
Med.-High Qual.	-.2531	-6.40	-.2476	-6.20
Med.-High Qual.*Log(t)	-.0250	-1.39	-.0297	-1.62
Med.-Low Qual.	-.0893	-4.50	-.09024	-4.48
Age 26-35	-.1165	-5.67	-.1167	-5.66
Age 26-35*Log(t)	.0728	5.81	.0717	5.67
Age 36-52	.0431	1.24	.0485	1.37
Equal employer	.5217	42.35	.5267	40.26
Public …rm	.4157	11.48	.4153	11.38
Public …rm*Log(t)	-.0567	-2.90	-.0544	-2.73
GDP growth rate	-.0982	-10.69	-.0982	-10.65
GDP growth rate*Log(t)	.0766	14.78	.0774	14.84
Unemployment rate	.0211	14.18	.0211	14.12
Unempl. rate*Log(t)	-.0042	-4.36	-.0039	-4.04

Table 4 (cont.)
Logit regression for employment hazard rate

	Without Unobs. Heter.		With Unobs. Heter.	
Duration dependence	Coe¢cient	t-statistic	Coe¢cient	t-statistic
Period 6	1.7613	38.83	1.7644	38.75
Period 6*GDP growth rate	-0.0642	-4.49	-0.0646	-4.51
Period 6*Age 26–35	-0.1528	-3.70	-0.1527	-3.69
Period 6*Age 36-52	-0.2591	-5.37	-0.2602	-5.38
Period 6*Public Firm	-0.2423	-3.81	-0.2437	-3.82
Period 12	1.5491	12.67	1.5537	12.69
Period 12*GDP growth rate	-0.1206	-5.37	-0.1210	-5.38
Period 12*Unempl. rate	0.0154	3.02	0.0154	3.00
Period 12*Age 26–35	-0.3069	-4.45	-0.3073	-4.45
Period 12*Age 36–52	-0.4872	-5.55	-0.4899	-5.57
Period 12*Public Firm	-0.2371	-2.09	-0.2355	-2.07
Period 18	1.7466	18.73	1.7482	18.73
Period 18*GDP growth rate	-0.1007	-3.16	-0.1009	-3.16
Period 18*Age 26–35	-0.2452	-2.36	-0.3073	-4.45
Period 18*Age 36–52	-0.4057	-2.93	-0.4091	-2.95
Period 18*Public Firm	-0.6004	-2.86	-0.5947	-2.83
Period 24	1.9985	10.38	1.9916	10.32
Period 24*Unempl. rate	0.0196	2.34	0.0200	2.37
Period 24*Age 26–35	-0.5578	-4.92	-0.5612	-4.94
Period 24*Age 36–52	-1.1895	-6.86	-1.1963	-6.88
Period 24*Public Firm	-0.7390	-3.27	-0.7310	-3.23
Period 30	2.4294	18.97	2.4275	18.91
Period 30*GDP growth rate	-0.2447	-5.42	-0.2473	-5.38
Period 30*Age 26–35	-0.6408	-4.13	-0.6468	-4.15
Period 30*Age 36–52	-0.9256	-3.99	-0.9334	-4.01
Period 30*Public Firm	-0.7533	-2.19	-0.7438	-2.16
Period 36	2.5423	9.85	2.5341	9.72
Period 36*Unempl. rate	0.0542	4.89	0.0551	4.92
Period 36*Age 26–35	-0.8963	-6.14	-0.9172	-6.21
Period 36*Age 36–52	-1.1409	-5.48	-1.1613	-5.52
Period 36*Public Firm	-1.9360	-5.78	-1.9311	-5.74

Table 4 (Cont.)
Logit Regression for Employment Hazard Rate

	Without Unobs. Heter.		With Unobs. Heter.	
Variables	Coe¢cient	t-statistic	Coe¢cient	t-statistic
period 1995-1996	.6835	13.01	.6777	12.81
* Log(t)	-.1532	-10.59	-.1494	-9.80
* GDP growth rate	-.0883	-4.66	-.0883	-4.63
* High Qual.	-.1154	-1.75	-.1250	-1.86
* Med.- High Qual.	-.1925	-4.44	-.1987	-4.49
* Med.- Low Qual.	-.0806	-2.90	-.0798	-2.83
* Age 36-52	-.0710	-1.84	-.0796	-2.01
* Public …rm	.0667	1.56	.0764	1.74
period 1997-1999	.8307	12.27	.8361	12.28
* Log(t)	-.2813	-16.99	-.2814	-16.86
* GDP growth rate	-.0695	-3.66	-.0723	-3.78
* High Qual.	-.0905	-1.33	-.0944	-1.37
* Med.- High Qual.	-.2777	-6.11	-.2811	-6.10
* Med.- Low Qual.	-.1012	-3.44	-.1016	-3.41
* Age 26-35	.0241	0.80	.0252	0.83
* Age 36-52	.0703	1.64	.0654	1.50
* Sex	-.0778	-3.08	-.0779	-3.06
* Public …rm	.1772	4.17	.1828	4.23
Constant	-1.3300	-31.36	-1.334	-31.11
Unobserved Heterogeneity:				
p			0.9925	74.62
π_1			0.0091	0.53
Log Likelihood	-115,284.7		-115281.81	
Size	311,156		311,156	

Notes: Reference category is: Female, non–THA worker, Low quali…-cation, Age 16–25, Non-equal employer, Private Employer, Fourth Quarter, Years 1990-94.

The coe¢cients for the interactions between duration dummies and other explanatory variables are not presented for space considerations.

Table 5
Predicted Employment Average Duration for di¤erent Individual Groups (in months)

	Avg.	THA	no-THA	1990-94	1995-96	1997-99
Full Sample	6.35	3.50	7.14	7.19	5.63	5.72
Men						
Age 16-25						
Unskilled	5.43	2.51	6.32	6.06	4.62	4.80
Skilled	7.87	9.80	7.44	9.15	5.71	7.32
Age 26-35						
Unskilled	6.41	2.70	7.08	6.73	5.73	6.02
Skilled	11.52	11.34	11.55	12.22	9.63	11.30
Age 36-52						
Unskilled	5.31	2.67	6.04	6.54	5.16	5.06
Skilled	11.01	9.07	11.43	12.15	9.65	11.89
Women						
Age 16-25						
Unskilled	5.39	2.90	6.27	6.34	4.63	4.01
Skilled	7.52	8.64	7.18	8.34	5.05	8.36
Age 26-35						
Unskilled	5.95	3.12	6.82	6.60	5.31	5.29
Skilled	5.93	3.14	6.95	6.64	5.34	5.32
Age 36-52						
Unskilled	4.31	2.51	5.21	6.49	4.69	3.32
Skilled	8.81	8.50	8.91	9.99	8.48	8.68

Table 6
Logit Regression for Unemployment Hazard Rate

	Without Unobs. Heter.		With Unobs. Heter.	
Variables	Coe¢cient	t-statistic	Coe¢cient	t-statistic
Log(t)	2.2687	24.93	2.6735	20.78
$Log(t)^2$	-3.4392	-23.49	-3.4868	-22.37
$Log(t)^3$	1.5429	20.10	1.5234	19.04
$Log(t)^4$	-.2265	-18.05	-.2222	-17.13
THA	.6550	14.53	.7492	13.66
THA*Log(t)	-.3259	-17.40	-.3559	-16.91
Gender	.1062	4.723	.1256	4.84
Gender*Log(t)	-.0269	-1.80	-.0327	-2.06
High Qual.	.0381	0.937	.0491	1.08
Med.-High Qual.	.0145	0.481	.0158	0.47
Med.-Low Qual.	.1550	6.06	.1712	5.84
Age 26-35	.4949	15.67	.5652	14.55
Age 26-35*Log(t)	-.0794	-4.58	-.0918	-4.89
Age 36-52	.4581	8.27	.5213	8.12
Age 36-52*Log(t)	-.1558	-6.87	-.1682	-6.96
Employment Duration	.0153	7.08	.0174	7.04
Empl. Durat*Log(t)	-.0069	-4.85	-.0073	-4.84
Equal Employer	.8726	51.03	.9845	32.84
Public …rm	-.4214	-9.546	-.4969	-9.36
Public …rm*Log(t)	.0840	3.206	.0964	3.41
Unemployment rate	-.0194	-6.25	-.0210	-5.93
GDP growth rate	.0497	4.16	.0610	4.38
GDP growth rate*Log(t)	.0172	2.19	.0162	1.93

Table 6 (cont.)
Logit Regression for Unemployment Hazard Rate

	Without Unobs. Heter.		With Unobs. Heter.	
Variables	Coe¢cient	t-statistic	Coe¢cient	t-statistic
period 1995-1996	1.2126	12.23	1.4379	12.01
* Log(t)	.1334	5.51	.1259	4.77
* THA	-.3907	-8.03	-.4448	-8.02
* Age 26-35	-.3235	-9.02	-.3636	-8.90
* Age 36-52	-.2438	-4.10	-.2740	-4.08
* Med-High Qual.	-.0707	-1.40	-.0705	-1.26
* Med-Low Qual.	-.0744	-2.19	-.0745	-1.96
* Empl. Durat.	-.0003	-4.33	-.0004	-4.37
* GDP growth rate	-.1186	-4.92	-.1584	-5.63
* Unemploym. rate	-.0114	-3.75	-.0130	-3.79
period 1997-1999	2.0714	18.97	2.3310	17.79
* Log(t)	-.2171	-8.07	-.2540	-8.42
* THA	-.1350	-2.64	-.1515	-2.66
* Gender	.1634	5.27	.1725	5.06
* Age 26-35	-.5220	-12.83	-.5796	-12.54
* Age 36-52	-.4356	-7.21	-.4840	-7.09
* Med-Low Qual.	-.0744	-2.04	-.0861	-2.12
* Public Firm	.1413	2.79	.1696	3.00
* Equal Employer	-.2485	-7.76	-.2908	-8.04
* Unemploym. rate	-.0215	-7.10	-.0235	-6.90
* GDP growth rate	-.2368	-8.31	-.2620	-8.36
Constant	-1.7098	-24.41	-1.9427	-20.74
Unobserved Heterogeneity:				
$\acute{}_1$			1.3610	10.04
p			0.2256	5.57
Log Likelihood	-69,211.994		-69,203.179	
Size	146,071		146,071	

Notes: Reference category is: Female, non–THA worker,
Low quali…cation, Age 16–25, Non-equal employer, Madrid, Fourth quarter

Table 7
Predicted Unemployment Average Duration for di¤erent Individual Groups (in months)

	Avg.	THA	no-THA	1990-94	1995-96	1997-99
Full Sample	3.08	2.72	3.21	4.97	2.31	2.06
Men						
Age 16-25						
Unskilled	3.69	2.89	3.99	6.27	2.37	1.79
Skilled	4.73	6.27	4.53	8.38	1.57	3.06
Age 26-35						
Unskilled	2.51	2.13	2.64	3.02	2.13	2.21
Skilled	3.12	2.96	3.14	4.24	1.94	2.46
Age 36-52						
Unskilled	2.41	2.51	2.37	4.05	1.97	2.46
Skilled	8.09	11.32	6.88	7.67	7.23	8.63
Women						
Age 16-25						
Unskilled	3.43	3.20	3.53	6.07	2.19	1.74
Skilled	4.45	4.34	4.45	6.91	2.05	2.78
Age 26-35						
Unskilled	3.21	3.07	3.26	4.17	2.88	2.79
Skilled	3.29	3.35	3.27	4.17	3.01	2.38
Age 36-52						
Unskilled	2.92	2.76	3.03	4.05	2.65	2.85
Skilled	5.34	5.99	5.04	6.81	3.62	6.22

Table 8
Estimations for the Sub-samples with Information on Type of Contracts

	Employment Hazard		Unemployment Hazard	
Variables	Odds Ratio	t-statistic	Odds Ratio	t-statistic
Permanent contract	.3967	-23.35	.8374	-2.26
Part-time contract	1.4117	16.65	.8998	-4.35
New permanent contract	.4609	-7.29	1.5637	1.31
Change to perm. contract	.7510	-2.19	.9952	-0.01
Log Likelihood	-52,636.562		-31,401.992	
Size	148,347		62,895	

Notes: Reference category is: Female, non–THA worker, Low quali…cation, Age 16–29, Non-equal employer, Fourth quarter.

The rest of regressors are omitted for space consideration.

Figure 1: Kaplan-Meier Estimates of the Employment Hazard Rate

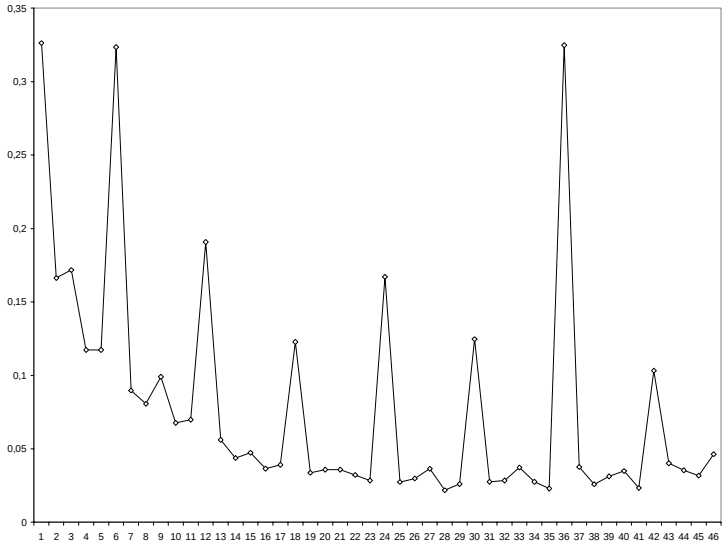

Figure 2: Employment Hazard Rates for THA and non-THA workers

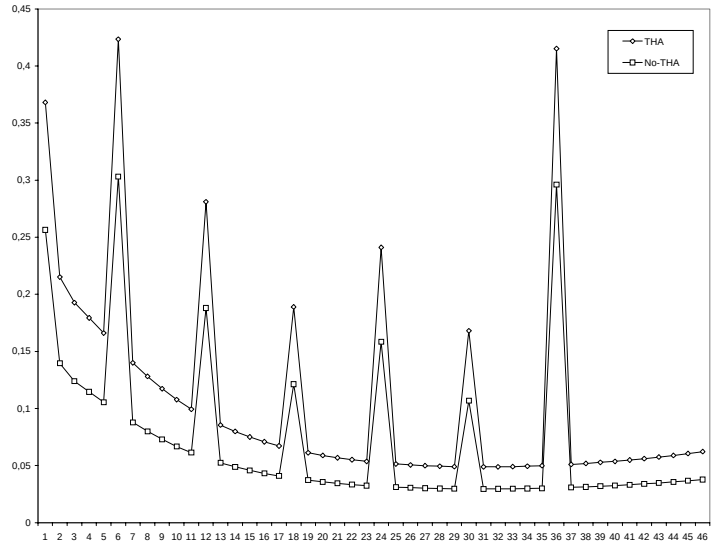

Figure 3: Employment Hazard Rates: the e¤ect of quali…cation

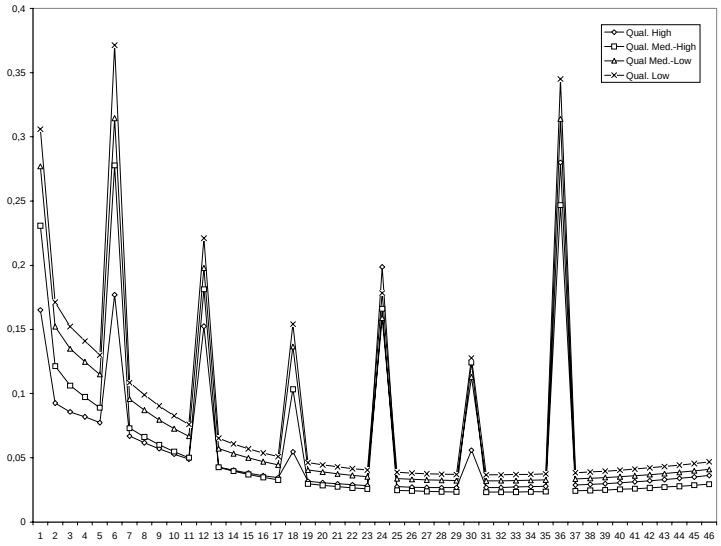

Figure 4: Employment Hazard Rates and the business cycle

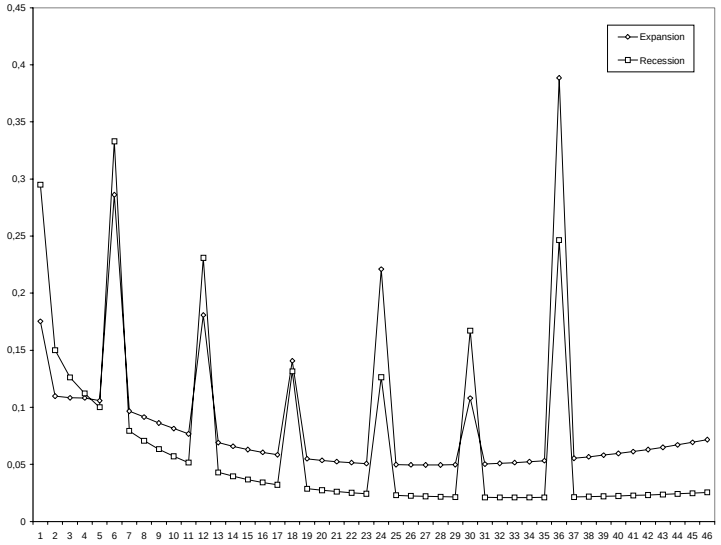

Figure 5: Employment Hazard Rates in three di¤erent periods

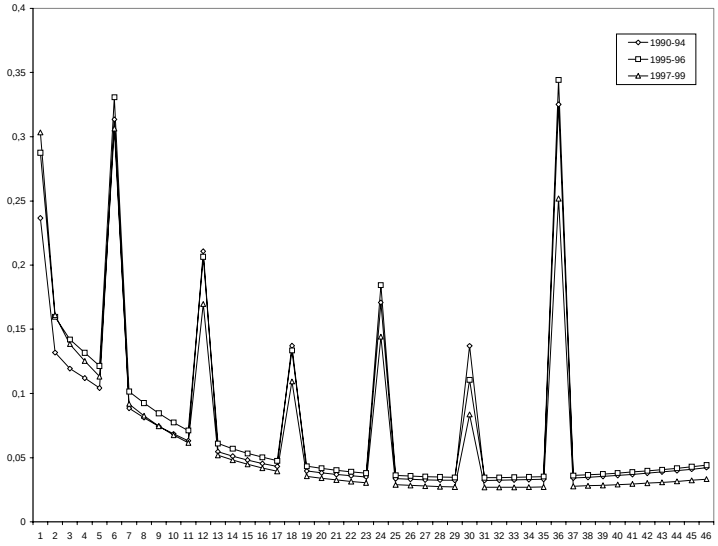

Figure 6: Kaplan-Meier Estimates of the Unemployment Hazard Rate

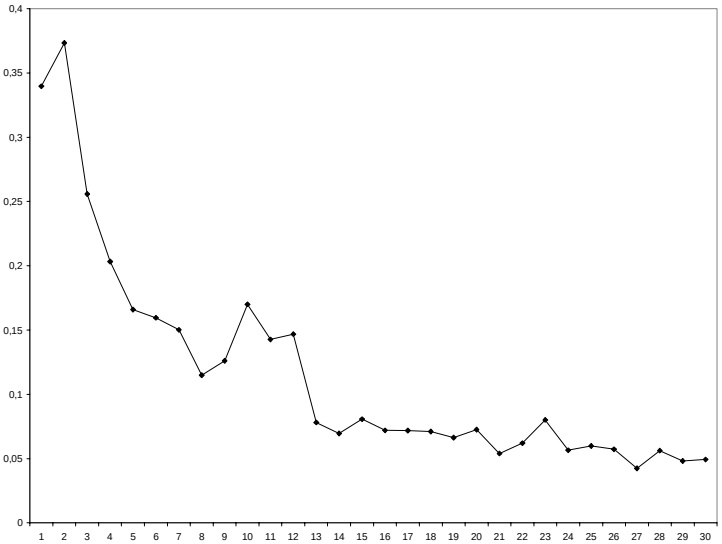

Figure 7: Unemployment Hazard Rate for THA and non-THA workers

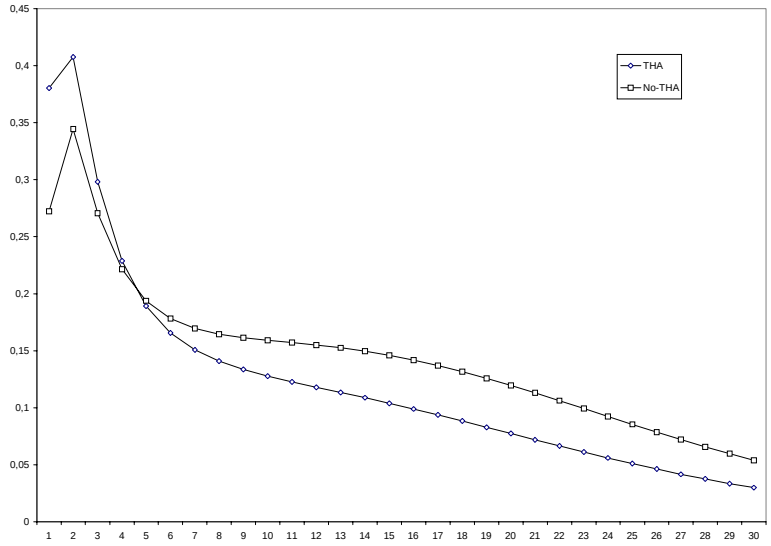

Figure 8: Unemployment Hazard Rate and the Business Cycle

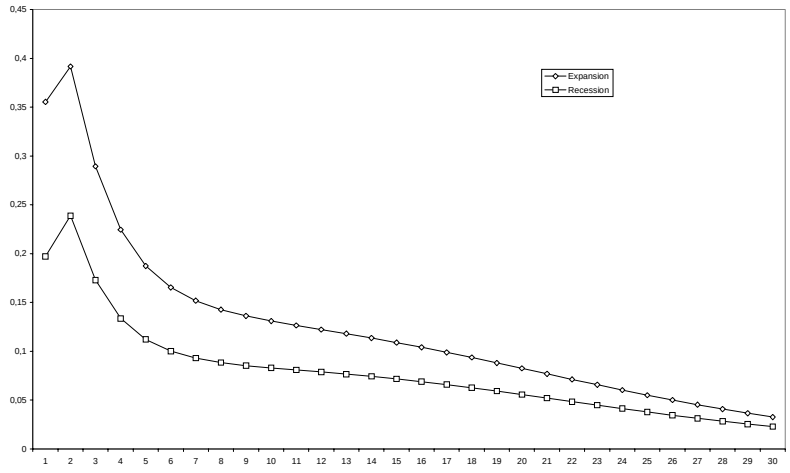

Figure 9: Unemployment Hazard Rate in three di¤erent periods

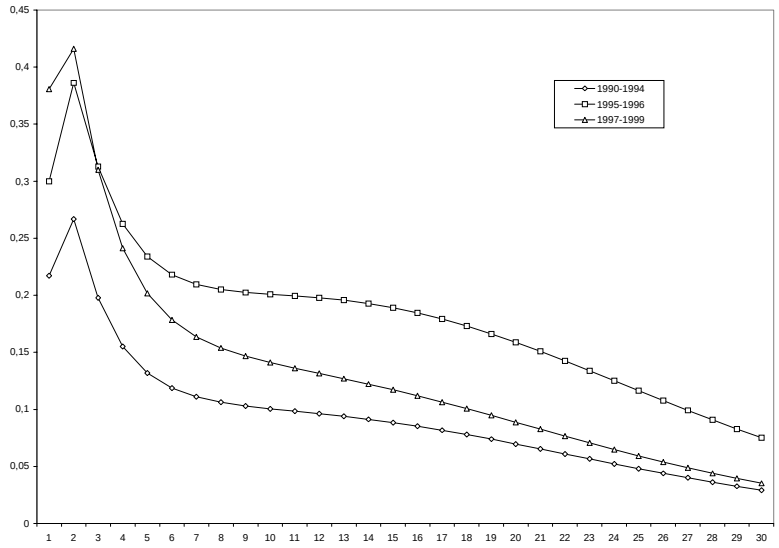

Figure 10: Unemployment Hazard Rates: the e¤ect of unobserved heterogeneity