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Sección de Organización de Empresas de Getafe
Universidad Carlos III de Madrid
Calle Madrid, 126
28903 Getafe (Madrid)
Spain
Fax (34) 91 624 5707

ARE TEMPORARY HELP AGENCIES CHANGING MOBILITY PATTERNS IN THE SPANISH LABOUR MARKET?*

J.I. García-Pérez[1] and Fernando Muñoz-Bullón[2]

Abstract

This paper examines to what extent Temporary Help Agency intermediation in the labour market affects workers' transitions into and out of employment in the Spanish youth labour market throughout the nineties. Results obtained show that this intermediation presents 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 for agency workers. We also find that employment hazard rates were substantially affected in the 90's by the extensive use of fixed-term contracts, although the 1997 labour market reform is found to reduce this hazard rate. Finally, very young workers, women and those with lower qualification levels are more likely to be affected by higher labour turnover.

Keywords: Employment and unemployment hazard rates, duration dependence, unobserved heterogeneity, Temporary Help Agencies.

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[1]CentrA, C/ Bailen, 50 - 41001 Seville (Spain); jigarcia@fundacion-centra.org

[2] Universidad Carlos III, C/Madrid, 126-Getafe (Madrid), 28903 (Spain); fmunoz@emp.uc3m.es

1 Introduction

Temporary Help Agencies (THAs, for short) offer employment contracts of a limited duration to jobseekers and assign them to client firms wishing to hire them to perform jobs of a temporary nature. In Spain, those labor market intermediaries were allowed to operate for the first time under regulation provided for by the 1994 labour market reform. From then on, THA contracting has become a growing area, actually accounting for almost 16% of the total number of temporary contracts (see Table 1). Given that this proportion has almost multiplied by three between 1995 and 1999, an empirical assessment of how successful these agencies are in assigning workers to jobs could have important policy implications.

Although attempts to analyze this form of labor contracting are by no means lacking, a recurring trend in the literature is to consider that the existence of these agencies exacerbates the inherent insecurities of the labour market.[1] Nonetheless, up to our knowledge, there are still no empirical findings on the determinants of job transition patterns among THA workers in Spain. For instance, do workers who use a THA have longer spells of unemployment than their counterparts who contact employers directly? Similarly, on what basis might it be asserted that THA workers only receive brief assignments in client firms interspersed with relatively long periods of unemployment? In this paper, we will give an answer to these questions for the Spanish labour market, therefore offering an analysis of the effectiveness of this specific job search method.

In particular, we investigate the determinants of employment and unemployment hazard rates of a sample of over 19,000 individuals affiliated to the Social Security system. This sample consists of the labour history from 1990 to 1999 of workers who were, by the end of 1995, either employed through a Temporary Help Agency (THA) or non-employed at that time[2]. Our data set is only representative of young workers in the Spanish labour market. If we compare the structure of the labour force survey throughout the nineties to our data set, workers under 30 years-old account for 47% among those under 50 years-old in the former, whereas in our sample this figure is 49%. Hence, we can confirm that we have only a representative sample for workers

[1] Common criticisms are that (1) not only are THA workers paid less than core workers for working at similar types of jobs, but also that their chances of obtaining employee benefits are less than those for traditional core workers (Emerson, 1988; Moberly, 1987); (2) that such a situation may create uncertainty and greater economic risk for these workers (Blank, 1998); and (3) that extensive reliance on THA workers may create two classes of employees: permanent workers with relatively secure, high–paying employment and THA workers (along with temporary workers in general) who have only sporadic, low–paid work (Mangum *et al.*, 1985).

[2] This means that all workers were working through a THA or were unemployed at the moment of the sample selection. Nevertheless, as the data set includes the complete labour history of those two groups along the nineties, we have, as is shown in Table 3, THA and non-THA employment spells.

under 52 years-old.[3] Thus, our analysis is focused on providing information on mobility rates for young individuals along the nineties, placing a special focus on the development of THA workers relative to no-THA ones.[4] Young individuals constitute a group of much concern for policy in Spain, given that, according to the Spanish Labour Force Survey, 59.19% of the unemployed and 80.81% of temporary contracts belonged to workers under 40 years-old in this period.

We will use duration models applied to a longitudinal data set on individuals' work history by taking into account the effects of both duration and individual heterogeneity in the hazard 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). The use of Social Security records presents important advantages for the analysis of turnover with respect to other sources of information.[5] Firstly, it collects information on all jobs held during a quite long period. Secondly, it allows us to determine employment and non–employment durations precisely because of its detailed duration information. Different statistical sources have also been used to study the determinants of employment transitions; in particular, we can mention the use of the *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 (1997), Bover *et al.* (2002), Güell (2002) and Güell and Petrongolo (2000).

Apart from the effect of Temporary Help Agencies, a second motivation for this article is to analyze the impact of the two main labour market reforms undertaken in Spain throughout the nineties.[6] The 1994 reform put forward specific limits on the use of fixed–term contracts: the minimum and maximum duration of temporary contracts for young people were changed to 6 months and 2 years, respectively.[7] It also extended the subsidies and incentives to promote the conversion of fixed–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

[3] However, workers between 20 and 29 years old and those between 35 and 39 years old are pretty overrepresented in our database.

[4] These agencies mainly hire young workers (83.6% of the labour contracts signed by THAs are with workers under 35 years-old).

[5] A different 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), but they only have data up to the year 1993.

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

[7] Nevertheless, the use of even shorter contracts was quite frequent under the type of contract named as "por obra y servicio".

permanent contracts were agreed upon and a new typology of permanent contract with lower firing costs targeted at "protected categories" of workers —young people under 30 years–old, long–term unemployed, people above 45 years–old and disabled individuals— was introduced. Given this new institutional context, we consider the analysis of both inflows and outflows from employment in this decade essential in the assessment of mobility patterns.

Our results indicate that although job tenure through THAs is lower than without these intermediaries, the main advantage offered by those agencies is that their workers' unemployment spells are shorter than for no-THA workers (although only for short-term unemployed individuals). Therefore, working as a THA worker implies a trade-off for the individual. We also find that the exit rates from both employment and unemployment are very high in the time period analyzed. This leads us to the conclusion that there has been a high level of turnover in the Spanish youth labour market throughout the 90's. Indeed, the use of fixed-term labour contracts is not only widespread, but, in addition is becoming a structural characteristic of the labour market given that very few of these contracts are renewed as permanent ones (see Dolado *et al.*, 2002). This fact offers an explanation for the observed persistence of turnover rates, especially for very young, low qualified individuals and during recession periods. These findings 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 fixed-term contract in Spain. We have also obtained evidence supporting the argument that the 1997 labour market reform slightly reduced this high turnover rate observed in the central years of this decade.

The paper is organized as follows. Firstly, we briefly 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 offers 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 $\alpha(t)$ of receiving a job offer and the probability that the non–working individual will accept the offer. The latter is the probability that the arriving wage offer is higher than a critical value, called the reservation wage, $w_R(t)$.

The job offer probability, $\alpha(t)$, is a function of both the level of demand and the search activity of job seekers. In this sense, an individual's level of

qualification can be expected to have a positive effect on $\alpha(t)$; 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 $\alpha(t)$. Finally, employment demand conditions —measured either through the unemployment rate or through the number of vacancies— may be having some influence on $\alpha(t)$ in the sense that the better those conditions are, the higher the expected job offer probability. Apart from these main effects, we can expect this offer arrival rate to vary with the duration of the unemployment spell because of human capital depreciation or stigma effects appearing as unemployment lengthens.[8] THA intermediation can be thought of as a tool to increase search intensity and search effectiveness. However, as time passes, working through a THA may be considered as a bad signal for unemployed workers.

The other component of the unemployment hazard rate is the acceptance probability which is equal to the probability that the offered 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.

Finally, as well as the arrival rate, and in part because of it, the reservation wage is also a negative function of unemployment duration. For instance, the amount of unemployment benefits received is not constant along time, but is usually decreasing with time. All these factors make the acceptance probability to increase with unemployment duration and, hence, no clear prediction arises for the effect of unemployment duration on the unemployment hazard rate. However, available empirical evidence indicates that, in general, the net effect is negative[9] or positive at the beginning of the spell and decreasing afterwards (See García-Pérez, 1997, 2001).

2.2 The duration of employment spells

The duration of employment spells has usually been analyzed using the models of efficient 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 firm monitors workers until sufficient 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 firing 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.

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

[9] 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 differences among workers. Those differences may be due to both individual or job position characteristics. For example, workers with the most valued features for the firm will have longer employment spells. Secondly, a higher qualification can be associated to longer tenure in the firm if employers consider that workers complying with higher qualification levels are more flexible and have a higher ability of adaptation. In addition, the reservation productivity defined for the worker–firm matching may also depend on the economic cycle and on local labour market conditions.

Once we have taken into account the fact that different individuals have different 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 effect*). 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 find alternative offers and are less likely to accept any such potential offer. In addition, we would also expect that, the longer the spell, the more important the investments in specific human capital will be, and the greater the specificity of this investment, so that the employment hazard rate diminishes. Another important factor is that the longer the employment spell, the higher the firing costs. Hence the firm 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 that 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 flexible 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 effects 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 instance, the effect of being a THA-worker over the exit rate from unemployment may not be the same for short and for long-term unemployed. Because of this, it is necessary to model the hazard rate in a non-proportional way and, for this purpose, discrete time helps considerably.

Therefore, our hazard rate is a conditional probability whose dependence on duration and other explanatory variables can be considered 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:

$$\theta(t) = F(\theta_0(t) + \theta_1(t)x(t)) \tag{1}$$

where $x(t)$ is a vector of personal characteristics —one of which is whether the individual is working throughout a THA or not[10]— and of aggregated characteristics which do vary over time t; $\theta_0(t)$ is the additive term of the duration-dependence in the hazard rates that we will estimate in the most general way; and $\theta_1(t)$ 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 —*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 is necessary to control for this problem. Hence, in the presence of unobserved heterogeneity, our hazard rates will have the following form:

$$\theta(t,\eta) = F(\theta_0(t) + \theta_1(t)x(t) + \eta) \tag{2}$$

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.[11]

The estimation technique of the model is maximum likelihood. Given the likelihood contribution of each individual i in the sample, $L_i(\eta)$,[12] conditional on η, we obtain that with unobserved heterogeneity, η, the log-likelihood function takes the form:

$$\ln \pounds_h = \sum_{i=1} \ln \int L_i(\eta) dF(\eta) \tag{3}$$

[10] We know from García-Pérez and Muñoz-Bullón (2001) that this binary variable could be affected by the self-selection of workers into THAs. This bias can be taken into account by jointly estimating a process for this variable (see García-Pérez and Muñoz-Bullón, 2003)

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

[12] See García-Pérez (1997) for an expression of this likelihood function.

where $F(\eta)$ is the cumulative distribution function of η, which is a discrete function with two mass points, η_1 and η_2. These mass points are selected in order to verify the assumption of $E(\eta) = 0$ which is necessary given the presence of a constant term in the hazard rates. Besides, it is estimated the probability p for the variable η to be equal to its value η_1.

4 Data

The data we use are based on 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. The fact that some employed workers were hired through THAs provides us with a comparative advantage for casting new light on the development of those intermediaries in the labour market.

The work history data provided includes information about worker age and gender, professional category of the worker contribution to the Social Security[13], dates at which employment spells start and end, type of Social 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 identifier of whether each employment spell is accomplished through a THA or not, another one if it is accomplished through a public firm, and, finally, 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 affiliated 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 we are not studying job-to-job movements, in order to achieve greater homogeneity, we also eliminate records destroyed for reasons other than dismissals or end of contracts.[14] Finally, given that we want to use information about the following employer

[13] We must underscore that the eleven professional categories of worker contribution to Social Security in the database do not reveal the workers' level of qualification, but rather the required level of qualification 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 "qualification", although this remark should be taken into account. As in previous studies using data from the Social Security records, we group those eleven categories into four groups.

[14] In this database we cannot distinguish between these two different reasons for termination of the spell and, therefore, we consider both of them as involuntary turnover. Moreover, we will not consider voluntary turnover. As voluntary and involuntary reasons for job ending are completely different, we consider that they have to be studied separately. Future research will compare the results in this paper to the results arising from an analysis of the subsample of quits.

in each employment or unemployment spells, we keep only individuals with at least two observed employment spells.[15]

Our database contains an important number of individuals presenting subsequent employment spells through the same firm, with particularly short unemployment spells in-between these jobs. Evidence for this is shown in Table 2. This table shows average employment and unemployment durations for individuals who present no subsequent spells through the same firm, and for individuals who, on the contrary, have from two to twelve consecutive spells through the same employer along their work history. As can be observed, job duration quickly reduce as the number of spells through the same employer increases. Something similar occurs for unemployment spells: the more likely the individual is to be employed through the same employer, the shorter the intermediate unemployment spells he must confront with. This behaviour is even more pronounced when we distinguish between THA and no-THA workers. This fact highlights the main characteristic of those intermediaries: they are used for very short employment spells but they seem to optimize the time the worker is unemployed. Moreover, these figures are also reflecting the new hiring policies adopted by firms which consist of using very short temporary contracts intensively in order to avoid uncertainty and, in addition, to reduce labour costs.

Given the turnover observed in our data —with mainly short unemployment spells— and in order to avoid estimating transitions between two different employment spells without passing through a *real* state of unemployment, we decided to use neither unemployment nor employment experiences shorter than 15 days.[16] The basic change these spells provoke over the employment hazard rate is that the latter is much higher at one-month duration. Apart from this, estimations implemented with these spells show no special differences compared to the ones presented here. The only remarkable change is that the THA effect over the hazard rate becomes even stronger, given that many short–term jobs are implemented through these firms.

As regards employment spells, our sample consists of 49,322 spells,[17] whose characteristics can be observed in Table 3. Our sample of estimation is composed mainly of relatively young males, with a reduced qualification 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).

[15] 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 insignificant. That is, when we keep individuals for whom only a single spell of employment is observed, the final sample is very similar to the one finally used in the analysis. Statistics are available from the authors upon request.

[16] It is likely than this very short unemployment spells are representing just a delay in registering the worker at the Administration after a job–to–job movement.

[17] 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.

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 artificially right-censored, that is, as employment spells that do not finish 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 keep on as employed at the moment where data were downloaded (December 1999); these observations are also right–censored, because their spells are 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 find employment through these intermediaries are more likely to be younger, women and to be in possession of a reduced qualification 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).

On the other hand, we have a sample of 34,137 unemployment spells. Their main characteristics are shown in Table 4. For the same reason as in the employment analysis, we consider unemployment durations beyond 30 months and the ones that have not finished before December 1999 as right-censored unemployment experiences. Again, in this sample of unemployment records, men are the majority; most of observations show low qualification levels; young individuals (under 25 years–old) represent almost half of the total sample size, and only 15.42 percent of complete unemployment experiences go on beyond 6 months. As regards THA individuals when compared to non–THA ones, we find that agency workers are more likely to be younger, to be in possession of reduced qualification levels and to have shorter unemployment spells (the average stay in unemployment is 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 final length of the database on employment and unemployment is of 311,156 and 146,071 registers, respectively.

5 Estimation results

The specification 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 effect), 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 significantly higher in these months. Finally, interactions between duration (in employment or unemployment) and some of the explanatory variables have also been specified[18].

5.1 Hazard rate from employment

Let us first examine the effect 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 very high early in the job, reaching 32.62% in the first month; it falls to 5.61% at the end of the first 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 finish at each of these particular months. This fact can be basically explained by the extensive use of fixed-term contracts which are usually signed for these specific durations.

In Table 5, we present the results of the maximum likelihood estimation of the hazard rate out of employment assuming a logistic distribution for F (equation 2), 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. 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 significant effect 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 effect of these dummy variables must be very likely due to temporary contract terminations. These effects can be qualified by taking into account these dummies' interactions with some of the factors collecting the heterogeneity effect. Hence, for instance, we obtain that higher rates of economic growth reduce the likelihood of exiting from employment at those peak months, presumably reflecting that better economic conditions encourage the signing of permanent instead of temporary contracts. Moreover, younger individuals and those not working

[18] The final specification of the estimated models only presents the interactions that are obtained to be significant. Moreover, the shown polynomials in $log(t)$ are the ones which offer the best results in terms of significance and likelihood values.

in public firms are the most likely to suffer from contract termination at those months.

With respect to our main interest, individuals working as agency temps are more likely to experiment shorter employment spells than individuals hired directly. This THA effect is plotted in Figure 2, where it can be noted that THA workers also show stronger peak-month effects. These results are sensible if we take into account both the demand and supply–side motivations for addressing to THAs (See Muñoz–Bullón, 2002). From the demand–side, those intermediaries are often used as a "buffer" for client firms in order to meet changes in product demand in a context where firms are reluctant to hire permanent staff until the economic outlook becomes more stable. From the supply–side, workers addressing to THAs often appreciate the limited work hours or the greater flexibility in scheduling that can typically be found in these firms. Therefore, THA workers are expected to show shorter durations in employment (see Table 3).

Table 6 shows the predicted average durations in employment for different groups of individuals distinguishing between their age, sex and qualification level. The whole sample's predicted employment duration is 6.35 months, and this predicted duration is much larger for no-THA workers. However, we find that both male and female skilled workers under 25 years-old present larger expected employment durations under THAs. Hence, THAs seem to be doing a good job with those very young skilled workers.

Higher employment hazard rates are found 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 firms; the latter may resort to former employees in order to fill vacancies. Thus, employers may be temporarily firing workers —with whom they have no permanent commitments— during periods of low demand or in order to avoid having to pay fringe benefits (such as, for instance, holiday pay); then, once two weeks have passed after the firing 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 firm, although the impact is lower as experience in the job lengthens.

With respect to the effects 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 differential gender impact is reversed the longer the duration of the spell.

The employment hazard rate is higher for young workers (people under 26 years–old). They also show substantially higher exit rates especially at peak-months. This result presumably indicates lower firm costs when laying off these workers, given the temporary nature of many of the contracts that they hold. Finally, as expected, very low levels of qualification substantially

increase the probability of exiting from employment.

The effect of *economic conditions* is measured by the combined impact of the local unemployment rate and the GDP growth rate. The employment hazard rate is counter-cyclical only for short employment spells, those under 5 months. This result makes sense, since, when things are getting worse, firms are dismissing workers whose on–the–job experience is shorter.

Finally, we have included two additional dummies in our estimation to allow for the specific impact of three distinctive periods throughout the nineties (Table 5). In order to capture the potential effect 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 effect of the 1994 reform— and, finally, those spells from 1997 onwards — which may show a different behavior on the hazard rate as a result of the 1997 labour market reform. Net of the business cycle effect, we find that both periods show higher employment hazard rates than those at the beginning of the nineties. However, the effect 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 effect is reduced the longer the tenure. 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-qualified youngest individuals (under 36 years-old) and for those working through a public firm. As for the specific effect of the period 1997-onwards, the hazard is specially higher for low qualified individuals and those above 36 years-old. This effect may well show the reduction of turnover for young people after the 1997 labour market reform. In Table 6 we observe that the average employment durations predicted by our estimation are much lower after the 1994 labour market reform, but they slightly recovered after the 1997 one. In fact all age groups of skilled males and very young skilled women benefited from this labour market reform.

The last two columns of Table 5 show the estimation of the employment hazard rate but controlling for the presence of unobserved heterogeneity. We obtain no evidence in favor of this being present 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 non-significant and has a probability of 0.9925). Hence, we conclude that the employment hazard rate is 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 3. As previously outlined, the maximum duration is 30 months due to the scarcity of observations beyond this duration. The hazard rate is initially at a rather

high level at the beginning of the unemployment experience, reaching levels above 35 percent in 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 7 collects the results of the maximum likelihood estimation of the unemployment hazard rate assuming a logistic distribution for F (equation 2). As before, the additive term of the hazard rate collects a fourth–grade polynomial which replicates quite well the form of the empirical hazard rates.

As regards the effect 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 (see Table 4). 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 with a better connection to the labour force and, thus, greater access to information. Secondly, positions covered by client firms through THAs are typically "assessment positions" in which performance —which is visible to a number of higher–level persons in the organization— 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 (the former may be emitting a negative signal for the latter). These effects are reflected in Figure 4 where we find that the positive impact of having worked through a THA is only present for those unemployed for less than four months. Moreover, we may wonder whether or not this THA effect is also present at the destination state or not. That is, exiting from unemployment into a new THA spell or into a direct contract with an employer may imply two clearly different situations. We have estimated also a competing risk model for these two alternative exits from unemployment. Results indicate that for previous THA workers, the exit into a new THA job is much quicker, especially if the unemployment spell between the two jobs considered is short enough.[21]

With respect to worker characteristics, Table 7 shows that males exit sooner from unemployment than females, although this gender effect is attenuated as length in unemployment increases. As regards qualification, it

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

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

[21] The results of this competing risk models are not presented in the paper for saving space. They are available from the authors upon request.

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 highest qualified workers. Finally, workers in the medium age range (from 26 to 35 years–old) enjoy the shortest expected unemployment durations, though at a decreasing rate.

In Table 8 we present the predicted unemployment durations deduced from our estimations. Mean unemployment duration is 3.08 months; THA workers enjoy slightly shorter unemployment durations. However, skilled workers who were previously working through THAs suffer longer unemployment spells than no-THA ones. Hence, although they are more time on-the-job (Table 6), once they are unemployed, if they do not exit quickly from this state, they tend to stay longer in unemployment (therefore, they may be sending a negative signal for potential employers).

Experience in the previous employment positively affects the probability of exiting from unemployment, though at a decreasing rate. This result indicates that longer previous labour experiences raises the probability of receiving a job offer, especially at the beginning of the unemployment spell. Finally, if the firm 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 reflected in our empirical analysis. In addition, those individuals who have been previously employed by a public firm are more likely to stay for longer in unemployment. As regards the effect of *economic conditions,* the unemployment hazard rate is clearly pro-cyclical: higher levels of national economic activity show a positive effect on the likelihood of exiting from unemployment.

Finally, we have included two dummies in our unemployment estimation to allow for the specific impact of three different periods during the nineties: 1990-94, 1995-96, 1997-99. Net of the business cycle effect, the impact of the two labour market reforms is positive. However, the effect changes when we take into consideration unemployment duration and the impact of individual variables. The differential 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 effect of these two dummies can be better understood in Figure 5 where it is shown that the probability of leaving from unemployment attains its maximum after 1997 only for those who stayed unemployed for less than 3 months. The effect of the GDP growth rate is not so pro-cyclical in the periods 1995-96 and 1997-onwards. As regards the impact of individual variables, the effects of those two periods are also attenuated for individuals in the Medium-Low qualification group; on the contrary, the impact is larger for the youngest (under 25 years-old). As for specific effects, we find that the impact of the 1995-96 period is lower for individuals who have been previously employed for longer and if they have been working through a THA. As regards the

1997-99 period, the effect is increased for men and is reduced if they work with the same employer.

From Table 8 we find 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 even more but only for specific workers groups.

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 benefits is another important variable missing from our data.[22] For this purpose, we have assumed 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 7. The estimated distribution function shows the existence of two different types of workers: with 22.56 percent probability, there exists a group of workers with a much higher unemployment hazard rate. These two estimated types, in terms of hazard rates, are shown in Figure 6. Even though it is not possible to identify which specific characteristics lead to this result, unemployment benefits are likely to represent an important determinant.[23] The effects of unobserved heterogeneity over the remainder estimated parameters are not very relevant since the estimated coefficients remain very similar. The only remarkable difference is that under the control of unobserved heterogeneity as it is usually predicted (see Lancaster, 1990), the duration-dependence of the unemployment hazard rate is less negative.

6 Conclusion

The present paper has provided a basis for assessing to what extent workers hired temporarily by a THA exhibit different job transition patterns from those who, in contrast, have not been hired by those intermediaries. For this purpose, we have set out the empirical results for the determinants of employment and unemployment exit rates compiled from a representative

[22] In spite of lacking information on this variable, since the proportion of young workers in the database is very high, these individuals are less likely to be entitled to unemployment benefits, given their shorter accumulated tenure.

[23] We have tried to control for the absence of data on unemployment benefits, by calculating accumulated tenure for the subsample of those individuals with high probability of being entrants in the labor force in their first observation in our data set (i.e., those under 25 years-old in their first observed job). Using the rules for entitlement to unemployment benefits in Spain, we have imputed to each of these workers whether or not they are entitled to benefits. In estimating this model, the presence of unobserved heterogeneity is rejected. Hence, we do have some confidence that our model with unobserved heterogeneity constitutes a proper way to control for the absence of data on unemployment benefits.

sample of over 19,000 individuals affiliated to Social Security.

Our principal finding on the success of THAs as a recruitment method by client firms is, however, two-fold. On the one hand, the results of our analysis indicate that those intermediaries are very effective in helping unemployed find a new job, especially for short-term unemployed individuals since, for the latter, it takes considerable less time to exit from unemployment. At the same time, however, job tenure through those intermediaries is lower than for the remainder of workers. Given that this form of intermediated work implies enhanced opportunities of employment while, at the same time, agency workers are only recruited for very short time periods, the practice of agency hiring seems to imply a trade-off for the employee.

Apart from a comparative evaluation of THA and no-THA individuals, several finer additional results must be pointed out from the empirical analysis. Firstly, the probability of exiting from employment is negatively affected by job tenure and is largely determined by the duration of fixed–term contracts. Moreover, those with relatively low qualification levels and younger women are more likely to become unemployed. Secondly, we find that a long unemployment duration reduces the likelihood of finding a job, even when unobserved heterogeneity is controlled for. In addition, this hazard rate differs according to the individuals considered: middle-aged men who have an intermediate qualification level and are at the beginning of their unemployment spells are the most likely to re-enter employment. Thirdly, the existence of certain employment practices are also highlighted by our results. In particular, employers are frequently resorting to layoffs and recalls. These are arrangements whereby workers are required to stop working for a temporary period —during which unemployment benefits might be received— and after which they are re-employed by the same firm.

Finally, in spite of the fact that turnover rates in the nineties are exceptionally high, evidence is found supporting the idea that the 1997 Government measures —intended to tighten regulations governing temporary work— have had some influence on labour mobility patterns.[24] Specifically, the likelihood of exiting from employment has reduced since 1997, and is particularly lower at the peak months when compared to the periods 1990-1994 and 1995-1996. However, at the same time, the likelihood of exiting from unemployment is comparatively higher from the year 1997 onwards when compared to the first decade of the nineties, although only for very short unemployment durations.

[24] Similar results are obtained in Kugler *et al* (2003) using the Spanish Labour Force Survey.

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Table 1
Temporary contracts managed by THAs in Spain

Year	**Temporary contracts (1)**	**Temporary contracts managed by THAs (2)**	**Proportion [(2)/(1)]*100**
1995	5,519,350	361,633	6.55%
1996	8,273,175	748,601	9.05%
1997	9,386,084	1,260,524	13.43%
1998	10,692,315	1,707,842	15.97%
1999	12,017,063	1,892,284	15.75%

Source: Spanish Ministry of Labor

Table 2
Employment and unemployment duration by spells with the same firm (in days)

Nr. SPELLS	Avg. empl. duration.		Avg. unempl. duration	
with = firm:	THA workers	no-THA workers	THA workers	no-THA workers
0	157,30	221.93	80.60	90.25
2	116.87	147.25	74.83	98.44
3	104.61	112.91	69.42	96.25
4	83.10	106.54	66.38	92.44
5	73.08	91.48	60.16	87.74
6	56.05	76.09	68.33	75.15
7	45.84	60.14	51.61	79.40
8	39.29	55.43	52.08	82.81
9	37.90	39.92	53.45	82.13
10	39.72	50.30	59.34	68.13
11	42.82	30.05	54.40	52.90
12	33.44	41.80	43.13	50.73

Source: Social Security records and authors' own calculations.

Table 3
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
Source: Social Security records.

Table 4
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
Source: Social Security records.

Table 5
Logit Regression for Employment Hazard Rate

	Without Unobs. Heter.		**With Unobs. Heter.**	
Variables	**Coefficient**	**t-statistic**	**Coefficient**	**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 firm	.4157	11.48	.4153	11.38
Public firm*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 5 (cont.)
Logit regression for employment hazard rate

	Without Unobs. Heter.		With Unobs. Heter.	
Duration dependence	**Coefficient**	**t-statistic**	**Coefficient**	**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 5 (Cont.)
Logit Regression for Employment Hazard Rate

	Without Unobs. Heter.		With Unobs. Heter.	
Variables	**Coefficient**	**t-statistic**	**Coefficient**	**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 firm	.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 firm	.1772	4.17	.1828	4.23
Constant	-1.3300	-31.36	-1.334	-31.11
Unobserved Heterogeneity:				
p			0.9925	74.62
η_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 qualification, Age 16–25, Non-equal employer, Private Employer, Fourth Quarter, Years 1990-94.

The coefficients for the interactions between duration dummies and other explanatory variables are not presented for space considerations. Source: Social Security records.

Table 6
Predicted Employment Average Duration for different 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

Source: Social Security records.

Table 7
Logit Regression for Unemployment Hazard Rate

	Without Unobs. Heter.		**With Unobs. Heter.**	
Variables	**Coefficient**	**t-statistic**	**Coefficient**	**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. Durac*Log(t)	-.0069	-4.85	-.0073	-4.84
Equal Employer	.8726	51.03	.9845	32.84
Public firm	-.4214	-9.546	-.4969	-9.36
Public firm*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 7 (cont.)
Logit Regression for Unemployment Hazard Rate

	Without Unobs. Heter.		**With Unobs. Heter.**	
Variables	**Coefficient**	**t-statistic**	**Coefficient**	**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:				
η_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 qualification, Age 16–25, Non-equal employer, Madrid, Fourth quarter.
Source: Social Security records.

Table 8
Predicted Unemployment Average Duration for different 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

Source: Social Security records.

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

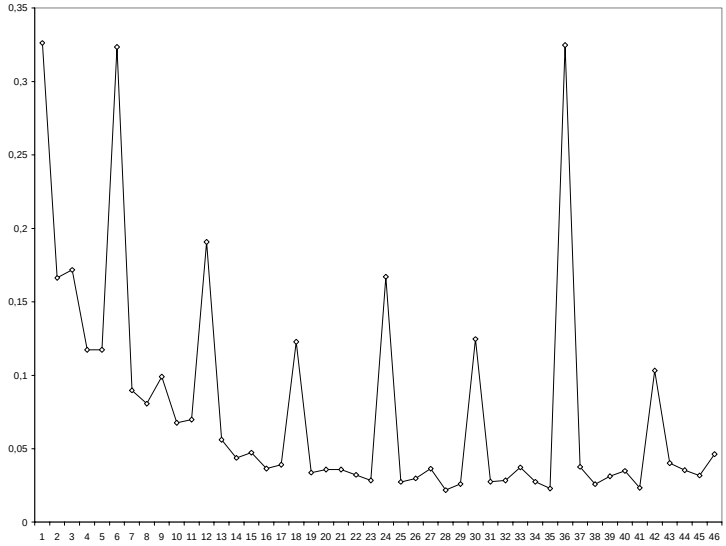

Figure 2: Employment Hazard Rates for THA and no-THA workers

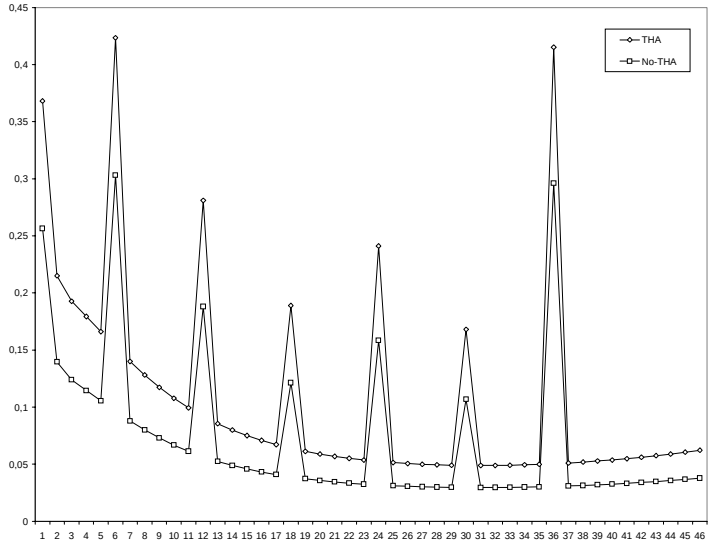

Figure 3: Kaplan-Meier Estimates of the Unemployment Hazard Rate

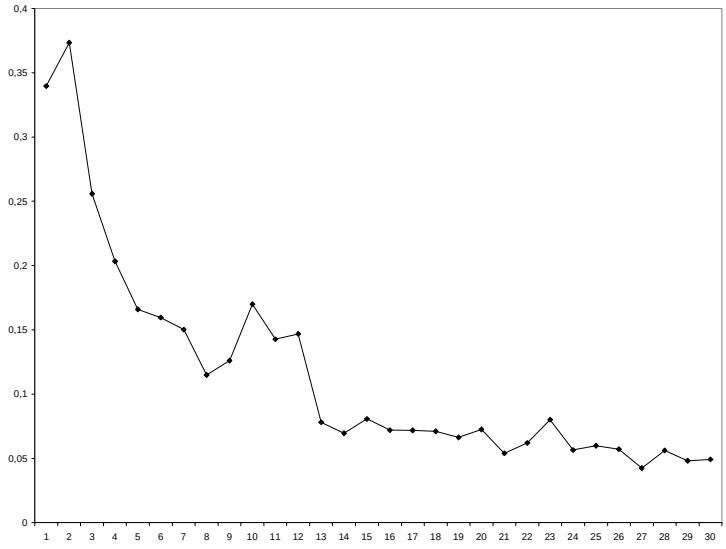

Figure 4: Unemployment Hazard Rate for THA and no-THA workers

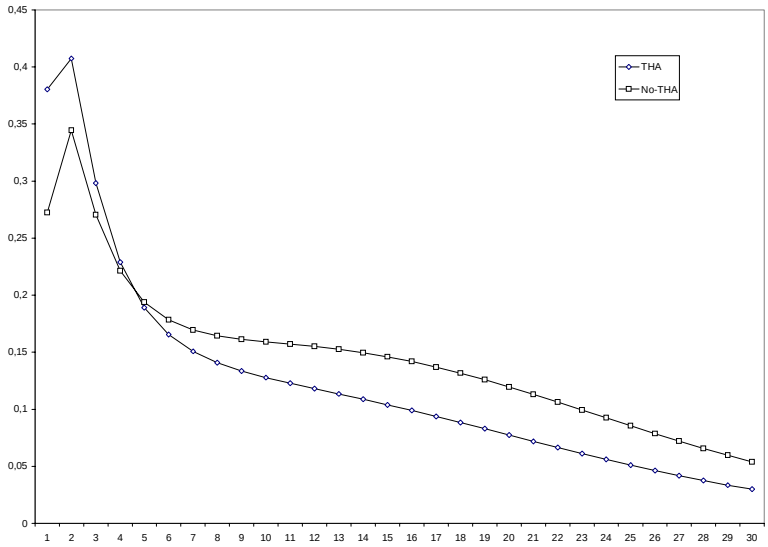

Figure 5: Unemployment Hazard Rate in three different periods

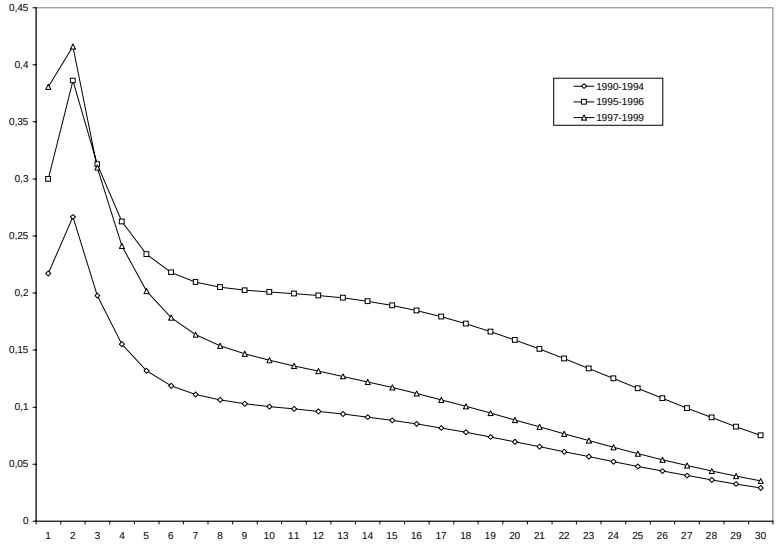

Figure 6: Unemployment Hazard Rates: the effect of unobserved heterogeneity