Estadística Española • Volumen 54, número 178 / 2012, pp. 221-201

Matching the supply of and demand for young people graduating from the vocational track in Spain

Oscar Marcenaro-Gutierrez
Departamento de Economía Aplicada Universidad de Málaga

Anna Vignoles
Centre for the Economics of Education at the Institute of Education

Abstract

There is particular policy interest in the extent to which education and training can affect the length of time take by young people to find a job and the quality of the job that the person can secure. We analyze the time taken by Spanish graduates from the different vocational tracks available to find a job and also estimate the wage differential earned by young people graduating from these different vocational tracks. To do this we use various quantitative models and make use of the first survey specifically designed to conduct this type of analysis (ETEFIL, 2005).

Keywords: Vocational education, job search, interval earnings regression

AMS Classification: 97B, 62G, 62H, 62J.

Ajuste de la oferta y la demanda laboral de los jóvenes que finalizan la Formación Profesional en España

Resumen

Existe gran interés, tanto desde la perspectiva social como política, por conocer en qué medida la inversión en capital humano puede afectar a la facilidad de los jóvenes para encontrar un trabajo de calidad. En esta aportación se analizan los factores que condicionan la probabilidad, y retardo en el tiempo, de encontrar trabajo y el salario diferencial que obtienen los jóvenes procedentes de diferentes ramas de la formación profesional. A tal fin se emplean diferentes métodos de estimación de modelos que se aplican sobre la primera base de datos diseñada específicamente para llevar a cabo este tipo de análisis (ETEFIL, 2005).

Palabras clave: Formación profesional, búsqueda de empleo, funciones de ganancias por intervalos.

Clasificación AMS: 97B, 62G, 62H, 62J.

1. Introduction

There is widespread concern in many countries, including Spain, about the difficulties faced by young people in securing a good quality job and fears that young people lack the appropriate mix of skills required for the labour market. Given the high cost of the education investments made by families, firms and the government, there is particular policy interest in the extent to which different types of education and training can affect the length of time take by young people to find a job and the quality of the job that the person can secure. Commentators in Spain have been particularly concerned about whether the vocational supply of skills adequately matches demand. This is particularly relevant if we bear in mind that vocational training in Spain has not functioned as a genuine option for students who had completed primary education. To address this apparent deficiency in the Spanish labour market recent policy developments have focused on making more appealing the vocational pathways available to Spanish youth, with the aim of increasing the supply of workers with vocational skills. For example, the Vocational Education Act of 2002[1] aimed to improve the match between the supply of and demand for vocational qualifications and also strengthen apprenticeship and training initiatives. Yet despite various policy efforts, enrolment in vocational education remains low in Spain in recent years. In this paper we aim to shed light on this issue by investigating the labour market value of different vocational pathways, assessing first, the extent to which the different vocational paths available to young people are associated with more or less rapid exit from unemployment, and particularly with more or less rapid transition into permanent employment, and second, analysing the earnings differentials earned by graduates from the different vocational tracks. (see Appendix A for a brief description of the Spanish educational system).

The policy background to this work is the fact that youth unemployment specifically is a major problem in the Spanish labour market. By the second quarter of 2001, 26.34% of women under the age of 25 were unemployed and roughly one in six men of that age. On average one in five young people were unemployed at any one point in time between 2001 and 2005 (despite being of high economic growth). What is more recently (first quarter of 2012) it rose till 49.75% for women and 54.04% for men (source: EPA, INE); this represent the worst ever figures in Spain. Even if young people do "secure" employment, their jobs are often short term[2] and insecure. In Spain, the incidence of temporary employment is the highest in Europe (amongst those aged 16-24), with 2 out of 3 jobs deemed to be temporary by 2005 (double the average for OECD and EU countries).

Additionally in Spain, as in many Southern European countries, there are particular problems with the transition into employment, linked to the fact that school-based vocational pathways dominate (likewise Italy and Greece). The implication being that

[1] National System of Professional Qualifications (Organic Law 5/2002 from 19th June) and Professional Certificates RD 1506/2003).

[2] As stated by D'Addio and Rosholm (2005) "very short contracts provide higher chances of labour market exclusion".

such school based provision does not effectively grant the skills needed in the labour market. Certainly the numbers taking vocational routes has remained low in recent years.

As well as providing empirical evidence on transitions into work in the Spanish labour market, this paper aims to contribute to the substantial literature on transitions from education to employment. Most of the previous literature on the Spanish labour market has focused on the effect of young people's socio-economic background on their unemployment hazard rate[3], and on the impact of the amount and entitlement duration of the benefit system on unemployment duration (see Alba-Ramírez, 1999; Bover *et al*., 2002; Jenkins & García-Serrano, 2004; Arranz & Muro, 2007, Davia & Marcenaro, 2008). Several Spanish researchers have recently analysed the transition from school to work in Spain, trying to explain the poor performance of the Spanish youth labour market over the last two decades (see, e.g., Ahn & Ugidos (1995), Dolado *et al*. (2000), Mora *et al*. (2000), Lassibille *et al*. (2001), Blazquez (2005) and Albert *et al*. (2008)). Summarizing these contributions, Dolado *et al.* (2000) and Mora *et al.* (2000) focus on the transitions of university graduates. Ahn & Ugidos (1995), conducted a more general survival analysis using data from the *Encuesta de Condiciones de Vida y Trabajo* (ECVT, 1985); they found significant differences by gender in terms of unemployment duration (see also Lassibille *et al*. 2001) but, at least in the case of men, education level achieved was not a significant determinant of the likelihood of employment. Similarly, Blazquez (2005) analyses the transition into work for a 90s cohort using the Spanish LFS but does not focus specifically on vocational students. Likewise Blazquez (2005), the paper by Albert *et al*. (2008) uses the Spanish section of the European Union Labour Force Survey, and take also into account, as we do, the distinction between "significant" and "non-significant" jobs[4]; their evidence shows that educational investment enhances access to a first significant job, especially in the case of women. Nevertheless neither Blazquez (2005) nor Albert *et al*. (2008) focus on vocational qualification or analyse the quality of the job matching in terms of wage levels (the Spanish LFS does not contain information on earnings). Additionally we control for unobserved heterogeneity by using the Heckman-Singer procedure (semi-parametric distribution for heterogeneity), rather than in the parametric[5] (less flexible) way undertaken by Albert *et al.* (2008).

With regard to the international literature on the transition from school to work, a useful summary is presented by Ryan (2001), who points out the need to develop nationally appropriate institutions in order to improve school to work transitions. Kogan & Müller (2002) provides cross-country analyses using the European Union Labour Force Survey (EULFS) 2000 *ad hoc* module on transitions from school-to-work. More precisely, these papers evaluate the effects of social background on educational and occupational careers, the relationship between field of education and gender inequality in the labor

[3] The duration of an unemployment spell is modelled by specifying the conditional probability of leaving that spell; the hazard rate.

[4] Due to data constraints they are not able to run competing duration models distinguishing between access to significant and non-significant jobs. They use information on those who left education between 1991 and 1999.

[5] This may suffer from estimation bias as the choice of the shape of the distribution is unknown.

market, the incidence and consequences of job mismatches, job search and mobility behavior in the early work career, and ethnic inequalities in the transition process.

This paper adds to the above literature in a number of ways. Firstly, we examine the outcomes and transitions from vocational educational pathways specifically. Secondly, we distinguish between the time taken for a young person to secure his or her *First Significant Job* (FSJ)[6], and other job types, rather than simply unemployment durations. We do this because when young people attempt to enter the Spanish labour market for the first time, a high proportion of jobs potentially available to them are likely to be temporary and low quality (generally poorly paid). Likewise, moving jobs in early career and taking short periods of inactivity may not be unusual and in essence may represent a hidden form of unemployment (Layard & Nickell, 1999). If we simply analyse unemployment durations, we may well get a misleading picture of how long it takes a young person to really obtain a more stable longer term job. Consequently we use two different definitions of the transition time. On the one hand, a broader definition of the time taken to secure a FSJ, which includes periods of inactivity, unemployment and time spent in very short term poor quality jobs. On the other hand we will distinguish between time taken to find a FSJ, a 'full time job' (more than 20 hours per week) non-significant and a part-time job. Obviously this is just one of the possible indicators we can use for job quality, and we complement this measure with other indicators of job quality, namely wage levels and whether the individual is over qualified for their job. We undertake the analysis on a sample of vocational graduates who finished their studies in 2001.

The rest of the paper is organized as follows. The data, definitions of the variables analysed and some descriptive statistics are presented in Section 2. In Section 3, we show a very brief description of the econometric approaches used and, in section four, we report the main results. Section 5 concludes and discusses the main implications of our results from a policy perspective.

2. Data and variables

The data used in this paper come largely from the Spanish Survey on the Transition from Education/Training to the Labour Market ("*Encuesta de Transición Educativo Formativa e Inserción Laboral*"), ETEFIL (2005)[7]. This is a nationally representative survey of Spanish youth, designed to shed light on the mechanisms that young people use to find a job. It is also the first major survey that specifically addresses the problematic transitions into work faced by Spanish vocational graduates. The sample includes individuals who finished their studies during the academic year 2000-2001, and respondents were interviewed in mid 2005. The full sample includes individuals who left secondary education with academic or vocational qualifications, as well as those who left without any qualifications at all (they may have continued studying in a

[6] The Spanish National Institute of Statistics (INE) define a FSJ as a job of at least 20 working hours (or more) per week lasting 6 months (or more) in the same firm.

[7] Commissioned by the Ministries of Education and Science, Work and Social Affairs and INE.

different type of education though) and those who finished any "special" vocational training programmes (i.e. programmes that exceed 100 hours in duration and are not taken alongside a university degree). Although it is not a panel survey, the data contain a rich set of information on students' pathways.

The survey was conducted during the period April-July 2005, and the sample comprises 45620 observations. Only people under 25 by the end of 2001 (31st December) were surveyed, which means that the oldest respondent in 2005 was 29. The observations are stratified by educational routes.

We restrict the sample to those completing a vocational programme, either a school-based vocational programme[8] or an apprenticeship-type vocational programme. Within the former there are two main subgroups of individuals: intermediate vocational students and higher vocational students. Within the apprenticeship pathways, which are funded by the Spanish Department of Employment (INEM) and the European Social Fund we may distinguish between those programmes included in the National Plan for Vocational Training and Integration (FIP) and those in the so called *Escuelas Taller* and *Casas de Oficios* (ETCO) programme[9]. Both programmes are aimed at easing the transition of young people and particularly the unemployed into a job; however, the latter is specifically designed to help very low skilled workers.

When we restrict the sample to young people following a vocational pathway, we are left with a total sample of 27794 youths. We further restrict the sample, excluding from the group of intermediate and higher vocational graduates those who then also undertook a FIP or an ETCO programme between 2002 and 2005. This latter restriction is necessary since we cannot determine the time since completing education to finding a FSJ for these individuals as they essentially return to full time education. It is also likely that individuals who enrol in a FIP or an ETCO programme having already completed an intermediate or higher level vocational qualification do so because they face difficulties in the labour market or because they feel that they lack particular skills. If we are eliminating a lower productivity group from our sample, and if these individuals are unevenly distributed across the different vocational pathways, we may generate some biases in our estimates of the differential effectiveness of different vocational pathways. After this restriction, our final sample comprises 24481 respondents.

In general, we also need to add a word of caution about interpreting the results in this paper. We are able to explore the labour market experiences of graduates from the different vocational pathways. The analysis is necessarily descriptive however, since individuals' choice of pathway is likely to be endogenous. In the absence of experimental data or a natural experiment that produces exogenous differences in the vocational pathway chosen, we are unable to undertake a causal analysis. Despite this,

[8] These occupationally oriented vocational programmes include practical work experience as part of a student's programme of study. However, this training often occurs at the person's place of study, rather than a workplace.

[9] This may be translated as Apprentice and Craft schools.

our work can usefully inform policy-makers of the current situation in the labour market *vis a vis* the labour market success of different types of vocational graduate.

The key advantage of the data we use is that it contains detailed information on labour market events and job search activities that have occurred since the individual left full-time education, as well as information on the individual's current and previous job characteristics[10]. Thus we have information on the incidence of job search periods, job search duration, duration of first job, occupation of first job and whether the person considers themselves over qualified for their job and earnings. The data also includes full information on the level and type of education obtained by the individual before leaving full time education and the particular field of study of the individual's vocational programme. The vocational track has been sub-divided into 26 different fields of study which, to make them manageable, we have grouped into thirteen categories.

We estimate three different sets of models. Firstly, following the literature described earlier, we estimate a duration model of job search to explore the time taken to get into stable employment by individuals following different vocational pathways. Our distinctive contribution here is not only that we focus on vocational graduates, but also that we control in a flexible way for unobserved heterogeneity. The second estimated model goes further as it distinguishes FSJ from other 'permanent" jobs and part-time (less than 20 hours per week) jobs, i.e. we estimate a competing risk model. Our third model is a wage equation, where earnings (banded) in the person's FSJ are regressed against a number of individual characteristics, including their vocational field of study.

In the models we include a range of individual characteristics, namely gender, age at completion of education (in 2001), nationality and parental education level. Regional labour market characteristics are also taken into account in our estimates, via the inclusion of dummy variables for the seventeen Spanish Autonomous Communities, as well as a measure of the quarterly regional unemployment rate (by gender), which is included as a time varying covariate. These gender specific regional unemployment rates should be taken as a proxy for aggregate demand conditions.

In the first and second models, the time until the respondent found a FSJ (or other type of contract, in the second model case) may be right-censored due to the data sampling design, i.e. if the individual did not find a FSJ before mid 2005 we will treat the observation as right censored. For these observations the contribution to the likelihood function is the probability of not finding a FSJ within observed sample period[11].

For the wage equation model, the dependent variable is the person's wage in their FSJ and we will make use of an additional set of controls: namely, nationality, the number of training courses undertaken after graduation but before entering FSJ, working hours, job tenure, whether the worker's contract is permanent or not, firm size and the way in

[10] Tables containing the main descriptive statistics for the variables used in the estimation of the models not reported to save space (available from the authors upon request).

[11] It is assumed that this censoring is independent of the hazard rate, after controlling for other factors.

which their job search was conducted as a proxy for the person's social capital (e.g. their networks, role of family etc.). Variables indicating whether the individual is over qualified are also included, based on a subjective measure of over/under qualification (i.e. the individual's opinion about whether their qualifications match or are above (below) what is required to do their job),

3. FSJ and other labour market outcomes: econometric framework

3.1 Hazard risks model: single and competing risk models

Discrete time models have been chosen for our estimates because the data are available in discrete time intervals (monthly data). More precisely the main econometric tool that we rely on to estimate our job search model is a discrete time mixed proportional hazard model (mph), which is the most modern[12] setting for application of duration data models (see Heckman & Singer (1984a,b) and Lindsay (1995)). The advantage of Heckman and Singer (1984a) procedure is its flexibility, as they do not impose any parametric distribution for heterogeneity. This approach has been followed by recent papers (e.g. D'Addio & Rosholmn (2005), Lauer (2003) and Steiner (2001)), which conducted their analysis following in a discrete time competing risks model controlling non parametrically baseline risk and unobserved heterogeneity.

Our first model will focus on a discrete time single risk model, using a logit model to evaluate the duration till finding a FSJ. We follow Petersen (1995) and Jenkins (1995), among others, approach who proposes a discrete time formulation for single risk models which has the advantage of being estimable as a logit model.

It is important to highlight that unobservable characteristic, such as motivation, family pressure to find a job may influence duration into unemployment. So, by ignoring this potential unobserved heterogeneity we assume that all relevant covariates for explaining variation in the hazard rate have been observed and measured, what would be usually non realistic. This could take us to estimate *spurious* or misleading duration dependence due to the potentially biased parameter estimates (Flinn and Heckman, 1983; Lancaster, 1990; Heckman, 1991).

As a second stage we estimate the transitions into four possible destinations simultaneously, allowing each of them to have different time patterns and to be differently affected by covariates[13].In each period, the individual can either remain unemployed (the reference case), become employed in a significant job, having experienced at least one 'full-time' non-significant job, having experienced a part-time job and no having any job experience. More precisely we present two different specifications, the first does not account for potential unobserved heterogeneity, so we use a multinomial logit where we estimate the probability of reporting the four above

[12] See, for example, Cleves *et al*. (2004) for a discussion.

[13] In other words, we assume the factors influencing the transition into one specific state might differ from those affecting the transition to another state.

mentioned states; the second accounts for unobserved heterogeneity, which is assumed to follow a discrete probability distribution (Heckman and Singer, 1984b) with three points of support. In this way we avoid the IIA (Independence of Irrelevant Alternatives) assumption implicit in the standard multinomial logit model[14].

This type of models enable us to analyse the likelihood or hazard probability of finding a FSJ job at a given point in time, conditional on the fact that the event has not occurred up to that point. Consequently the time-to-event is the length of the episode until the individual finds their FSJ (in months). In other words we analyse the probability of exit from unemployment/inactivity conditional on the time elapsed since accomplishing education and a set of other variables. In terms of the duration models literature we refer to a hazard function (h(t)), which is just an estimate of the *relative risk of the terminal event*: the probability of the terminal event per unit of time for a case that has survived up to that time. The greater the value of h(t) the greater the rate of the terminal event. So, the probability of finding a FSJ by time t+1, given the covariate value $\boldsymbol{x}$, assuming that it was still continuing by time t is of the form:

$$h(t) = \Pr[T=t/T\geq t,\ x(t)] = F(\alpha+\beta(t)x(t)+\delta(t)) \qquad [1]$$

where *x(t)* is a vector of exogenous variables; *β(t)* , and *δ(t))* represents the potential duration dependence, which is a function of the periods out of a FSJ. We treat the hazard rate as coming from a logit function. Analogously we can formulate the competing risk model, where the main difference is that the exit is to, in our case, three possible states (part-time job –PT-, full-time non-significant job –FTNS-, and significant job –FTS-). Thus, there are duration (T) associated to the three possible destinations: T_{PT}, T_{FTNS} y T_{FTS}; but we observe only the shorter of these three durations, i.e. T=min (T_{PT}, T_{FTNS}, T_{FTS}).

These models are estimated by Maximum Likelihood (ML). As above highlighted we should control for unobserved heterogeneity to avoid spurious results. Plugging in the hazard rate function the effect of unobserved heterogeneity we face the following specification:

$$h(t,\mu) = \Pr[T=t/T\geq t,\ x(t)] = F(\alpha+\beta(t)x(t)+\delta(t)+\mu) \qquad [2]$$

where μ represents unobserved heterogeneity.

We are assuming a multinomial logit model where the hazard for exit into state "j" is denoted by $h_j(t)= \dfrac{\exp(Z_j(t))}{\sum_{i=1}^{4}\exp(Z(t))}$, with $Z_j(t)$ is a time-varying index function which accounts for the effect of the baseline hazard, observed and/or unobserved variables. Therefore the probability that a person makes a transition intro state "j" in period "t",

[14] The IIA means that the odds ratio for a subset of alternatives is independent of the remaining alternatives.

i.e. $P_j(t)$, could be denoted as the probability of survival till time "t" times the conditional probability of exiting to state "j" at time "t":

$$P_j(t) = h_j(t)S(t) = \frac{\exp(Z_j(t))}{\sum_{i=1}^{4}\exp(Z(t))}S(t) \quad [3]$$

Where S(t) is the survivor function at an arbitrary "t".

Bearing in mind expression (2) the destination specific hazard function is as follows:

$$h_j(x(t),\mu^j) = \frac{\exp(\alpha^j + \beta^j(t)x(t) + \delta^j(t) + \mu^j)}{\sum_{i=1}^{4}\exp(\alpha^j + \beta^j(t)x(t) + \delta^j(t) + \mu^j)} \quad [4]$$

We measure the parameter vector relative to the departure state (unemployment –base case-), which implies a normalization to zero. Then the likelihood contribution of a temporary job spell, conditional on unobserved variables is (5):

$$L(\beta,\delta,\mu) = \prod_{k=1}^{j}\frac{\exp[(\alpha^j + \beta^j(t)x(t) + \delta^j(t) + \mu^j)d_k^1 + (\alpha^j + \beta^j(t)x(t) + \delta^j(t) + \mu^j)d_k^2 + (\alpha^j + \beta^j(t)x(t) + \delta^j(t) + \mu^j)d_k^3]}{1 + \sum_{i=1}^{3}\exp(\alpha^j + \beta^j(t)x(t) + \delta^j(t) + \mu^j)} \quad [5]$$

being d_k^1, d_k^1 y d_k^1 indicators for making the transition of each of the two possible destination states.

Our final expression for the likelihood contribution for and individual can be obtained by integrating the conditional likelihood distribution:

$$L(\beta,\delta,\mu,p) = \sum_{m=1}^{3} L(\beta,\delta,\mu_m)p_m \quad [6]$$

Where m is the number of location points, being the location points the intercept for the baseline hazard function, and *p* the associated probability to those points.

3.2 Returns to vocational qualifications

This third stage of our analysis consists of analysing the effects of the different vocational tracks on workers' earnings in their FSJ. This provides another indicator of the labour market value of different vocational tracks. A limitation of our data is that it reports the individual's net wage in levels only. Thus, although ideally we would like to use a linear regression model to compute wage differentials across different qualifications, we have to make use of a regression model for categorical dependent variables. Usually ordered probit (or logit) models are reported when the dependent variable is of discrete ordered type. However here we are going to use an ordered probit

slightly modified. Since our dependent variable (wages) are grouped into intervals, we only observe whether wages fall into a particular group (interval), thus, following Wooldridge (2002), we estimate through an interval regression procedure. This is very similar to an ordered probit model but fixing the cut points and estimating by maximum likelihood. The main advantage as compared to ordered probit (logit) is that the coefficients estimated by interval regression are easier to interpret since they are the partial effect of the regressor expressed in terms of the dependent variable units (instead of an odd ratio). Bearing in mind that we are interested in estimating the wage equation in a way that takes the dependence between wages and unemployment duration into consideration, we undertook two different econometric strategies. First, we included among the regressors the total previous –to FSJ- unemployment period. Alternatively, we estimated a simultaneous equations model. The results from both strategies are reported in section 4.2.

4. Main results: empirical approach

4.1 Duration models

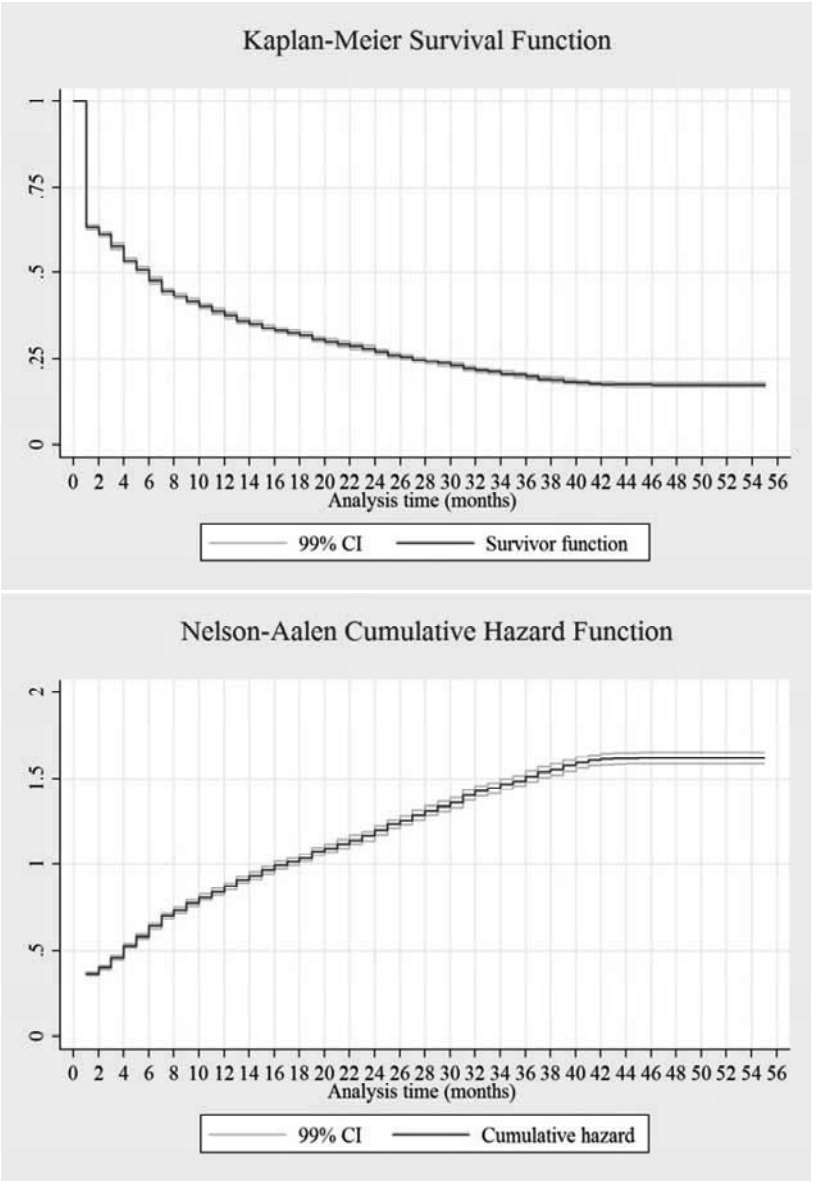
4.1.1 Non-parametric analysis

We start by presenting a non-parametric unconditional analysis of duration (transition into FSJ). The median survival time before exit to a FSJ is 1.5 years (this figure is computed including those who find a FSJ immediately after finishing education, i.e. within the next month), however when we restrict the sample focusing only on those who obtained a vocational qualification (before the end of 2001), the median survival time is just 6 months. In other words, 50% of those graduating from the vocational route find a FSJ within 6 months.

This is supported by Figure 1 which shows the path of the Kaplan-Meier survivor function and Nelson-Aalen cumulative hazard function for the period (and plots 99% confidence intervals at each point estimate; the Greenwood-type confidence intervals are very close to the survivor function which makes them difficult to observe). The left hand panel of Figure 1 illustrates the probability of remaining not in a FSJ through time (t); in this context, continued survival implies a negative situation where the individual remains unable to secure a FSJ. The right hand panel of Figure 1 shows the cumulative likelihood of a worker finding a FSJ given that he/she has not found one up to time (t). The hazard shows a peak just after graduation, which is consistent with findings in the previous literature that the hazard of finding a job is very high during the first few periods after leaving the educational system. This implies that the value of the cumulative *survival* function falls rapidly during the first months after leaving vocational education (left panel), reflecting the fact that many graduates find jobs immediately. Subsequently, the cumulative *hazard* increases at a decreasing rate up to approximately three and half years after leaving school (convex shape of the curve), holding constant from than point onwards.

Figure 1

Estimated non-parametric survivor and (cumulative) hazard function



A priori we expect some differences in the duration to FSJ by gender, particularly given the large gap in the unemployment rates for female and male young adults. We also anticipate potential differences in the duration to FSJ by type of vocational programme

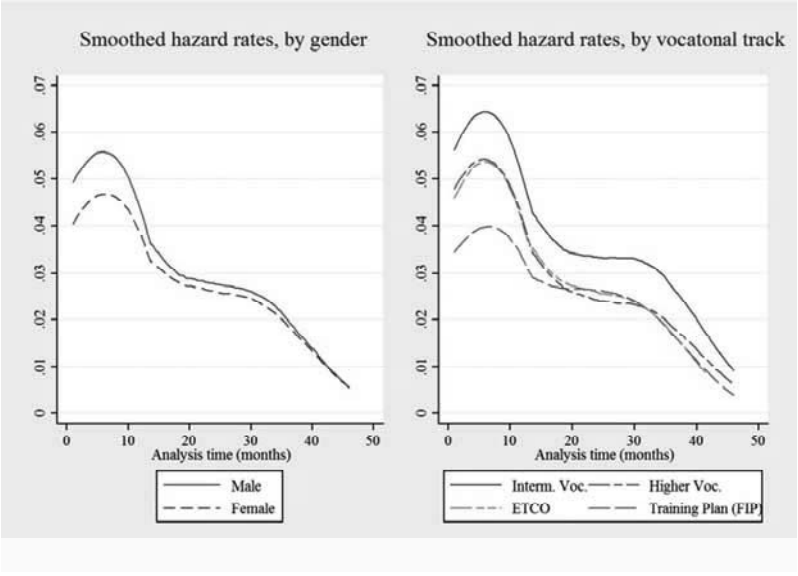
completed. In Figure 2, we show the (Kernel-smoothed) hazard function by gender and by vocational track.

Figure 2 suggests that men progress more rapidly into a FSJ than women: in particular, men have a much higher probability of securing a FSJ in their first year after graduation. Nevertheless men and women's hazard rates converge by the end of the period, particularly from the third year onwards. The hazard rate for both genders is non-linear and does not exceed 6% at any time. This indicates that, at the peak of the hazard, there is a 6% chance of the youth exiting to a FSJ in any particular month, which is consistent with the results for other OECD countries (Serneels, 2001, suggested it stays mostly below 7%)[15].

The right hand panel of Figure 2 suggests that youths graduating from the intermediate vocational programme have the highest probability of finding a FSJ. By contrast, higher vocational graduates and those who completed ETCO-apprenticeship programmes have a somewhat lower risk of exiting to a FSJ. Young adults who have completed a FIP-training programme have the lowest probability of exit to a FSJ at any point in time. Although these results are purely descriptive, it is of note that the FIP programme graduates do not exit quickly to a FSJ (partly reflecting issues around the selectivity of this group of young people).

Figure 2

Kernel smoothed hazard rates, by gender and vocational track



Source: Authors' own calculations from ETEFIL (2005)

[15] Nonetheless comparisons are constrained as our definition of FSJ is more restrictive that the commonly used definition of employment (namely finding any job).

We undertook tests[16] of whether the survival functions are equal for men and women, and across the different vocational tracks. Not surprisingly the tests suggested that we can reject the null hypothesis of equality.

Third, there is some evidence of negative duration dependence. The non-stratified kernel smoothed hazard rates show the same overall pattern as Figure 3. This is not presented for space reasons. This negative duration dependence, meaning that the probability of leaving unemployment falls as one remains longer in unemployment, is especially relevant between months 6-12. It might be a sign that individuals who have not found a FSJ within 6 months may suffer from the stigma of not having exited to a FSJ. Alternatively, this could be capturing a negative selection effect with respect to unobserved characteristics (e.g. unobserved skills), that is, the negative duration dependence may be bogus, see Lancaster (1990). There is substantial evidence of negative duration dependence in the transition to employment (see for example, Abbring *et al*. (2001), for USA, Andrews *et al*. (2002), for UK, Alba-Ramirez (1998), Cañada *et al*. (1998) and Gonzalez-Betancor *et al*. (2004), for Spain).

4.1.2 Semi-parametric analyses: single risk model

In our semi-parametric analyses[17], we seek to take account of personal characteristics and duration dependence. Specifically, we use the mixed proportional hazard (mph) model[18], as briefly presented in section 3.1. In this subsection we will focus our attention on the probability of finding a FSJ as compared to any other exit. Next section will go further by analysing a competing risk model.

Table 1a displays the estimated coefficients for two different specifications of the model[19], where we investigate the probability of finding a FSJ and how this depends on time elapsed to that exit (towards a FSJ). The model controls for age at completion of education when left education, nationality, father and mother educational level, tenure in previous jobs (working less than 20 hours/week or more than 20 hours but at a non-significant job) and qualification completed by 2001. Although we also present estimates separately by gender, we start with a combined male/female sample, which allows us to look at the relationship between gender and probability of getting a FSJ. Gender is significantly related to the probability to secure a FSJ. Consistent with previous work, females has lower hazard of leaving unemployment (or any job different from a FSJ), and therefore to find their first significant job, than males (which is

[16] We performed the Wilcoxon-Breslow test, the log-rank, Tarone-Ware and Peto-Peto.

[17] In a previous version of this paper we undertook parametric estimates relying on Cox-proportional hazard models. However due to the restrictive assumptions of the Cox models we turned to the more flexible semi-parametric estimates. The results are available from the authors upon request.

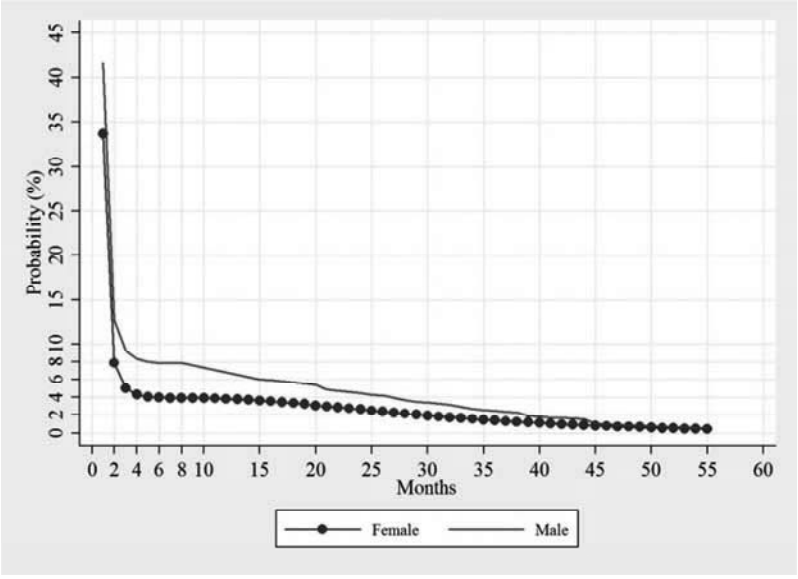
[18] Van den Berg (2001) stressed the risk of obtaining bias estimates if wrong parametric assumptions are imposed to estimate duration models. Nevertheless we run different parametric models that may be obtained from the authors on request. The results of these parametric models do not vary substantially from the ones reported here.

[19] Several alternative specifications were undertaken before choosing the presented estimates. They are not shown to conserve space but may be obtained from the authors upon request.

consistent with the results by Genda & Kurosawa, 2000, Lassibille *et al*. 2001 and Albert *et al*. 2008).The second group or regressors (log time, [log time]^2 and [log time]^3) capture duration dependence, by using a polynomial shape (of third order)[20] on the log duration. The main conclusion we can withdraw from the coefficients of this set of regressors is the existence of duration dependence (the three coefficients are statistically significant), which is clearly non-monotonic. What is more this dependence holds regardless of the specification we look at (as will be highlighted when we analyse table 1b). This non-monotonic duration dependence may be well observed in Figure 3 (which distinguish between women and men), where the predicted hazards have been drawn[21]. This figure states how the probability of finding a job is slightly higher for men than for women till approximately the 24th month and becomes akin from that period onwards. As an example to interpret this figure, we observe that the probability to find a FSJ after 6 months is almost 8% for men and 4% for women.

Figure 3

Predicted hazards for women and men



Turning to the individual characteristics, older youth find 'easily' a FSJ, this could be related to higher preferences of employers for slightly more mature workers or higher search intensity. Nationality is insignificantly related to the hazard of finding a FSJ for female youngsters, however male immigrants seems to face higher difficulties to find a

[20] We also estimate a fifth order polynomial (estimates available from the authors upon request), finally deciding to present a more parsimonious specification.

[21] We use the mean value of all the variables included in table 1a to obtain the predicted hazards.

significant job than natives[22]. The influence of family background is somewhat perverse: youth with more highly educated parents take longer to exit into a FSJ as compared to parents with less than primary school education (the previous literature on this has not been conclusive, see Nielsen *et al*. 2001, Andrews *et al*. 2002, and Corrales, 2005). This could be because greater parental wealth enables young people to take longer to enter their FSJ (they may undertake more protracted searches to maximise the quality of their job match, for example), although we are unable to verify this. Certainly young people in Spain (as in other Southern European countries) are now leaving the parental home at a later age than was previously the case (Aassve *et al*, 2002, and Chiuri & Del Boca, 2007). In fact by 2005 more than 70% of the population aged 15-29 was living at their parents' home. Lastly, the results indicate that region of domicile is also significantly related to the probability of getting into a FSJ, as expected given the difference in regional labour markets. More precisely young people from Andalusia (the reference region) face more difficulties to find a FSJ than richer (in terms of GDP/head) autonomous communities like Madrid, Catalunya or Basque Country.

Our main focus however is on the relationship between the type of vocational education acquired and the probability of finding a FSJ[23]. Those who completed higher vocational training (the reference group) show lower probability, holding everything else constant, to find a FSJ than those who graduate with an intermediate vocational qualification. This is of course counter-intuitive given that the latter requires (at least) two fewer years of education and training. Graduates with a higher vocational training qualification do however have an advantage over those who complete an ETCO-apprenticeship programme: the latter take significantly longer to secure a FSJ. Males and females who take the FIP training route present the same probability to find a FSJ.

[22] Despite the fact that by 2001 the immigration rate was still very low in Spain as compared to other EU countries.

[23] The relationship between the vocational qualification acquired and time to a FSJ could be blurred if significant numbers of youth return to do further study or training in the intervening period. To control for this, we limited the sample to those who did not increase their education level over the period. Results did not change substantially.

Table 1a

Estimates for logit hazard single risk model (finding FSJ vs non-finding FSJ); controlling for unobserved heterogeneity (Heckman-Singer)

	Specification I		
	All	**Female**	**Male**
Gender (Male=1)	0.074***		
	(0.029)		
Log (time elapsed)	-3.796***	-3.696***	-3.902***
	(0.055)	(0.079)	(0.077)
[Log (time elapsed)]^2	1.881***	1.833***	1.937***
	(0.040)	(0.057)	(0.057)
[Log (time elapsed)]^3	-0.319***	-0.308***	-0.334***
	(0.008)	(0.011)	(0.011)
Age at completion of education	0.043***	0.058***	0.035***
	(0.005)	(0.007)	(0.007)
Nationality (Non-Spanish=1)	-0.396***	0.058	-0.595***
	(0.136)	(0.208)	(0.180)
Cumulative tenure (jobs less 20 hours/week)	0.007	-0.010	0.029***
	(0.005)	(0.007)	(0.007)
Cumulative tenure (jobs more 20 hours/week)	0.096***	0.096***	0.099***
	(0.002)	(0.003)	(0.003)
Mother highest level of education:			
Primary	0.065**	0.065	0.069
	(0.031)	(0.045)	(0.044)
Secondary (academic track)	-0.018	0.034	-0.061
	(0.042)	(0.061)	(0.058)
Vocational Intermediate	0.029	0.015	0.045
	(0.053)	(0.077)	(0.074)
Vocational Higher	-0.074	0.005	-0.150
	(0.074)	(0.105)	(0.104)
University degree (short)	-0.293***	-0.206	-0.367***
	(0.093)	(0.145)	(0.123)
University degree (long/PH/Master)	-0.539***	-0.696***	-0.487***
	(0.106)	(0.186)	(0.131)
*University degree (short) *Log (time)*	0.066	0.007	0.113*
	(0.043)	(0.067)	(0.058)
*University degree (long/PH/Master) *Log (time)*	0.088*	0.128	0.092
	(0.047)	(0.079)	(0.060)

Estimates for logit hazard single risk model (finding FSJ vs non-finding FSJ); controlling for unobserved heterogeneity (Heckman-Singer) (Continued)

	Specification I		
	All	**Female**	**Male**
Father highest level of education:			
Primary	-0.037	0.008	-0.081*
	(0.033)	(0.046)	(0.046)
Secondary (academic track)	-0.121***	0.034	-0.238***
	(0.042)	(0.060)	(0.058)
Vocational Intermediate	-0.100*	-0.007	-0.177**
	(0.052)	(0.076)	(0.073)
Vocational Higher	-0.069	0.039	-0.142**
	(0.053)	(0.081)	(0.071)
University degree (short)	-0.168**	-0.111	-0.246**
	(0.086)	(0.137)	(0.110)
University degree (long/PH/Master)	-0.248***	-0.241*	-0.302***
	(0.076)	(0.124)	(0.097)
*University degree (short) *Log (time)*	-0.082**	-0.039	-0.090*
	(0.040)	(0.063)	(0.052)
*University degree (long/PH/Master) *Log (time)*	0.017	0.031	0.028
	(0.034)	(0.054)	(0.044)
Qualification completed in 2001:			
Intermediate Voc	0.349***	0.281***	0.403***
	(0.032)	(0.046)	(0.044)
FIP – training programme	0.003	0.009	0.005
	(0.016)	(0.023)	(0.023)
ETCO-apprenticeship programmes	-0.154***	-0.198***	-0.131***
	(0.035)	(0.050)	(0.048)
Regional unemployment rate (by gender)	-0.012***	-0.003	0.011
	(0.002)	(0.005)	(0.009)
Regions (Autonomous Communities):	√	√	√
Constant	-1.404***	-2.190***	-1.512***
	(0.138)	(0.262)	(0.245)
Observations	314481	170735	143746
Log-likelihood	-56514.36	-28600.30	-27791.90
Wald Test	25490.96***	11387.40***	13866.26***

Data source: ETEFIL (2005). Dependent variable: takes value 1 when a significant job was found and 0 when a significant job was not found. Logit estimates (maximum likelihood estimates).

Baseline case: Spanish woman, mother and father lower than Primary education, with Higher Vocational completed in 2001, living in Andalusia. Standard errors in brackets. *** significant at 1%, ** significant at 5%, * significant at 10%

The fact that intermediate vocational qualifications appear to be associated with higher probability of transition into a FSJ than higher vocational qualifications, might suggest some problem with the nature of higher vocational training in Spain. To go deeper into this we analysed the main reason why those unemployed rejected an employment offer. Among those with any intermediate vocational qualification 7,3% asserted that they feel more qualified than the work involved by the job offered. However the proportion among those from Higher Vocational qualification the proportion rise to 12,7%. Additionally when we computed the proportion who declare as main priority to find a job according to his/her formal qualification represent 26,3%, on the contrary the proportion goes down 21,0%) for those from Intermediate Vocational qualification

It is also possible that higher vocational qualifications simply include a different mix of fields of study as compared to intermediate qualifications. If higher vocational training tends to be in subject areas that are less in demand in the labour market, this may explain why individuals with higher vocational qualifications take longer to integrate properly into the labour market. We therefore investigate further the relationship between field of study and time to a FSJ, allowing for the level of qualification acquired (Table 1b).

Table 1b compares the hazard of finding a FSJ for each combination of field of study and level of qualification by gender, with the base case being a worker with a higher level vocational qualification in the field of administration. Table 1b indicates that there are large significant differences across subject areas and qualification levels, in terms of the hazard to secure a FSJ. Almost without exception, males with intermediate qualifications present higher hazards of finding a FSJ regardless of field of study as compared to males with higher level vocational qualifications in administration (the coefficient on arts and entertainment is insignificant, thus is not reported). Females with intermediate qualifications in wholesale and retail trade also find easier to secure a FSJ compared to those with higher vocational qualifications in administration. By contrast females with intermediate qualifications in agriculture, forestry and fishing have higher difficulties to secure a FSJ.

For females, those with higher level vocational qualifications in most fields (other than accommodation and food service, other services or water and energy) face lower probabilities to secure a FSJ, as compared to those with higher level vocational qualifications in administration. For males, the pattern is more mixed. Males with higher level vocational qualifications in accommodation and food, manufacturing, water and energy, and wholesale and retail trade, present lower hazard to secure a FSJ than males with higher level qualifications in administration.

Table 1b

Estimates for logit hazard single risk model (finding FSJ vs non-finding FSJ); controlling for unobserved heterogeneity (Heckman-Singer)

	Specification II		Specification III	
	Female	**Male**	**Female**	**Male**
Log (time elapsed)	-3.745***	-3.876***	-3.747***	-3.876***
	(0.084)	(0.081)	(0.084)	(0.081)
[Log (time elapsed)]^2	1.896***	1.940***	1.899***	1.940***
	(0.062)	(0.061)	(0.062)	(0.061)
[Log (time elapsed)]^3	-0.323***	-0.337***	-0.324***	-0.336***
	(0.012)	(0.012)	(0.012)	(0.012)
Age at completion of education	0.061***	0.042***	0.063***	0.044***
	(0.008)	(0.007)	(0.008)	(0.007)
Nationality (Non-Spanish=1)	-0.046	-0.651***	-0.039	-0.651***
	(0.222)	(0.190)	(0.223)	(0.190)
Cumulative tenure (jobs less 20 hours/week)	-0.009	0.039***	-0.010	0.039***
	(0.007)	(0.007)	(0.007)	(0.007)
Cumulative tenure (jobs more 20 hours/week)	0.097***	0.099***	0.097***	0.099***
	(0.003)	(0.003)	(0.003)	(0.003)
Mother highest level of education:				
Primary	0.079	0.095**	0.085*	0.093**
	(0.048)	(0.047)	(0.048)	(0.047)
Secondary (academic track)	0.092	-0.001	0.112*	-0.002
	(0.066)	(0.062)	(0.066)	(0.062)
Vocational Intermediate	√	√	√	√
Vocational Higher	√	√	√	√
University degree (short)	-0.191	-0.306**	-0.154	-0.304**
	(0.155)	(0.131)	(0.155)	(0.131)
University degree (long/PH/Master)	-0.723***	-0.459***	-0.709***	-0.451***
	(0.196)	(0.139)	(0.197)	(0.139)
*University degree (short) *Log (time)*	0.007	0.136**	0.009	0.134**
	(0.073)	(0.062)	(0.073)	(0.062)
*University degree (long/PH/Master) *Log (time)*	0.161*	0.104	0.171**	0.108*
	(0.083)	(0.064)	(0.083)	(0.064)
Father highest level of education:				
Primary	0.004	-0.090*	0.002	-0.083*
	(0.049)	(0.049)	(0.049)	(0.049)
Secondary (academic track)	0.009	-0.249***	0.017	-0.241***
	(0.065)	(0.061)	(0.065)	(0.061)
Vocational Intermediate	-0.030	-0.218***	-0.024	-0.214***
	(0.083)	(0.078)	(0.083)	(0.078)
Vocational Higher	-0.014	-0.203***	-0.022	-0.190**
	(0.089)	(0.077)	(0.089)	(0.077)
University degree (short)	√	√	√	√
University degree (long/PH/Master)	-0.207	-0.295***	-0.199	-0.277***
	(0.132)	(0.103)	(0.132)	(0.103)
*University degree (short) *Log (time)*	-0.001	-0.107*	-0.004	-0.108*
	(0.068)	(0.057)	(0.067)	(0.057)
*University degree (long/PH/Master) *Log (time)*	0.037	0.012	0.037	0.014
	(0.058)	(0.047)	(0.058)	(0.047)

Estimates for logit hazard single risk model (finding FSJ vs non-finding FSJ); controlling for unobserved heterogeneity (Heckman-Singer) (Continued)

	Specification II		Specification III	
	Female	**Male**	**Female**	**Male**
Access via for those with FIP:				
Primary or Lower Secondary			√	√
Upper Secondary			-0.393***	-0.306***
			(0.068)	(0.086)
Intermediate Vocational			√	√
Higher Vocational			-0.219*	0.056
			(0.113)	(0.124)
Access via for those with ETCO:				
Primary or Lower Secondary			√	√
Upper Secondary			√	√
Intermediate Vocational			0.374**	0.014
			(0.159)	(0.177)
Higher Vocational			√	√
Vocational fields:				
Intermediate Voc.:				
Accommodation and food service activities	0.193*	0.475***	0.114	0.435***
	(0.111)	(0.122)	(0.113)	(0.124)
Administrative and support service activities	0.297***	0.392***	0.218***	0.353***
	(0.058)	(0.097)	(0.062)	(0.099)
Agriculture, forestry and fishing	-0.555*	0.519***	-0.637**	0.476***
	(0.284)	(0.127)	(0.285)	(0.129)
Human health and social work activities	0.141**	0.541***	0.062	0.500***
	(0.060)	(0.164)	(0.063)	(0.166)
Information and communication	0.170	0.512***	0.091	0.471***
	(0.124)	(0.118)	(0.126)	(0.121)
Manufacturing	0.086	0.662***	0.000	0.624***
	(0.111)	(0.075)	(0.112)	(0.078)
Other service activities	0.315***	1.318**	0.235***	1.272**
	(0.078)	(0.532)	(0.081)	(0.532)
Professional, scientific and technical activities	0.491***	0.563***	0.403***	0.520***
	(0.151)	(0.179)	(0.152)	(0.181)
Water and energy supply	0.039	0.689***	-0.041	0.652***
	(0.496)	(0.078)	(0.496)	(0.082)
Wholesale and retail trade; repair of vehicles	0.303***	0.787***	0.223**	0.749***
	(0.087)	(0.080)	(0.089)	(0.083)

Estimates for logit hazard single risk model (finding FSJ vs non-finding FSJ); controlling for unobserved heterogeneity (Heckman-Singer) (Continued)

	Specification II		Specification III	
	Female	**Male**	**Female**	**Male**
Higher Voc.:				
Accommodation and food service activities	0.003	0.285**	-0.080	0.243*
	(0.082)	(0.127)	(0.085)	(0.129)
Agriculture, forestry and fishing	-0.461*	-0.298**	-0.556**	-0.345***
	(0.239)	(0.132)	(0.240)	(0.134)
Arts, entertainment and recreation	-0.464***	-0.589***	-0.548***	-0.631***
	(0.147)	(0.118)	(0.149)	(0.121)
Construction	-0.324***	-0.145	-0.408***	-0.188*
	(0.122)	(0.103)	(0.123)	(0.106)
Human health and social work activities	-0.213***	-0.276**	-0.295***	-0.319**
	(0.050)	(0.124)	(0.054)	(0.127)
Information and communication	-0.031	0.154**	-0.114	0.111
	(0.072)	(0.070)	(0.075)	(0.074)
Manufacturing	-0.096	0.352***	-0.185**	0.309***
	(0.081)	(0.075)	(0.084)	(0.079)
Water and energy supply	-0.211	0.220***	-0.286	0.178**
	(0.318)	(0.076)	(0.318)	(0.079)
Wholesale and retail trade; repair of vehicles	-0.237***	0.356***	-0.319***	0.314***
	(0.087)	(0.081)	(0.089)	(0.084)
FIP :				
Accommodation and food service activities	-0.257**	-0.064	-0.155	-0.065
	(0.105)	(0.153)	(0.111)	(0.160)
Agriculture, forestry and fishing	-0.358**	-0.025	-0.314*	-0.049
	(0.180)	(0.140)	(0.182)	(0.145)
Arts, entertainment and recreation	-0.443**	-0.453***	-0.292	-0.376**
	(0.202)	(0.171)	(0.205)	(0.179)
Construction	-1.239***	0.035	-1.196***	-0.011
	(0.364)	(0.104)	(0.364)	(0.113)
Human health and social work activities	-0.293***	-0.124	-0.242***	-0.094
	(0.078)	(0.160)	(0.086)	(0.167)
Information and communication	-0.410***	-0.249***	-0.254***	-0.196**
	(0.070)	(0.080)	(0.078)	(0.094)
Manufacturing	-0.234***	0.234***	-0.202**	0.191**
	(0.077)	(0.077)	(0.083)	(0.088)
Professional, scientific and technical activities	-0.337*	0.646***	-0.150	0.717***
	(0.183)	(0.194)	(0.188)	(0.204)
Water and energy supply	-0.633	0.257***	-0.506	0.240**
	(0.399)	(0.096)	(0.401)	(0.106)
Wholesale and retail trade; repair of vehicles	-0.142*	0.362***	-0.070	0.334***
	(0.086)	(0.089)	(0.092)	(0.099)

Estimates for logit hazard single risk model (finding FSJ vs non-finding FSJ); controlling for unobserved heterogeneity (Heckman-Singer) (Continued)

	Specification II		Specification III	
	Female	**Male**	**Female**	**Male**
ETCO :				
Accommodation and food service activities	-0.213	-0.493	-0.482**	-0.613
	(0.149)	(0.379)	(0.190)	(0.388)
Agriculture, forestry and fishing	-0.226**	0.050	-0.428***	-0.039
	(0.104)	(0.127)	(0.144)	(0.140)
Construction	-0.293**	0.210**	-0.486***	0.121
	(0.116)	(0.082)	(0.151)	(0.103)
Human health and social work activities	-0.301***	0.248	-0.557***	0.108
	(0.091)	(0.235)	(0.143)	(0.252)
Information and communication	0.036	0.354**	-0.238	0.241
	(0.172)	(0.172)	(0.210)	(0.194)
Manufacturing	-0.255***	0.352***	-0.449***	0.262**
	(0.096)	(0.085)	(0.139)	(0.105)
Other service activities	-0.166	0.508***	-0.401**	0.398*
	(0.139)	(0.188)	(0.178)	(0.205)
Professional, scientific and technical activities	-0.865	1.605**	-1.147**	1.472**
	(0.528)	(0.644)	(0.548)	(0.655)
Water and energy supply	-0.244	0.451***	-0.450	0.354**
	(0.262)	(0.132)	(0.282)	(0.152)
Regional unemployment rate (by gender)	√	√	√	√
Regions (Autonomous Communities):	√	√	√	√
Constant	-2.134***	-1.837***	-2.056***	-1.851***
	(0.283)	(0.266)	(0.288)	(0.269)
Observations	145658	127658	145658	127658
Log-likelihood	-24460.41	-24393.70	-24434.34	-24374.79
Wald Test	18925.31***	12703.95***	18997.73***	12719.95***

Data source: ETEFIL (2005). Dependent variable: takes value "1" when a significant job was found and "0" when a significant job was not found. Only fields with significant coefficients are reported (to conserve space). Logit estimates (maximum likelihood estimates). Baseline case: Spanish woman, mother and father lower than Primary education, with Higher Vocational completed in 2001, living in Andalusia. Standard errors in brackets. *** significant at 1%, ** significant at 5%, * significant at 10%.

Moving down the table, we consider those with FIP training. For females, FIP training in all fields is associated with harder transitions to a FSJ, with the exception of the field of water and energy supply (for which the coefficients are insignificant, largely due to the very few females who take this type of training). Broadly, females who undertake FIP get more difficulties to match into FSJ, regardless of their field of study. The pattern is again more mixed for males. In many fields, such as arts, and information, FIP training is associated with higher complications to find a suitable FSJ. Unlike males with FIP training in manufacturing, professional and scientific fields, water and energy supply and wholesale and retail trades.

Generally, for women, undertaking an ETCO apprenticeship is associated with lower FSJ prospects, particularly in the fields of agriculture, construction and health. For males, usually ETCO apprenticeships appear to be associated with higher probabilities of finding a FSJ, at least in construction, information, manufacturing, other services, professional and scientific and the energy and water fields.

Additionally we do some research on the access via for those with FIP or ETCO programmes. Those who take FIP training or ETCO training can also have other types of vocational and academic training. In the final two columns in Table 1b we split out the FIP and ETCO workers according to their previous level of education and training, namely below primary, primary, upper secondary, intermediate vocational or higher vocational. This allows for the fact that someone with ETCO training may also have an intermediate or higher level vocational qualification. The results suggest that FIP students with intermediate vocational qualifications have the same 'risk' of finding a FSJ as compared to the base case of workers with higher vocational qualifications. Interestingly however, FIP female students who already have a higher vocational (or upper secondary) qualification find more difficult to get access to a FSJ as compared to those with just a higher vocational qualification. We suspect this is caused by the negative selection process into FIP specially affecting women, i.e. individuals with higher level vocational qualifications who then enrol in FIP have probably experienced problems integrating into the labour market already.

4.1.3 Semi-parametric analyses: competing risks model.

Further to our previous results, we decided to estimate a competing risks model, to reflect possible alternatives after completing a vocational education level by 2001. To be sure about the need of this type of models, we ran Wald tests (Judge et al. 1985) which help to check whether the outcome categories should be (or not) combined; the results rejected the equality of the outcomes, i.e. the parameter estimates differ significantly across them, thus it is worthy to estimate a competing risk model.

Further, allowing for correlation between the three destinations, the specification with unobservables no longer imposes the IIA property, which is implicit in the standard multinomial logit model. This is the reason why we focus our attention only on the model accounting for unobserved heterogeneity[24].

In table 2 we present the results of the estimates of the multinomial logit model, where the dependent variable takes value '0' if the young remains unemployed/inactive, '1' if the person enter a part-time job (less than 20 hours a week), '2' for a full-time (more than 20 hours) non-significant job, and '3' if the young enter into a significant job. The first result that brings our attention is the difference in patterns followed by the duration dependence parameters depending on the exit evaluated, especially for young females who present significative and non-monotonic duration dependence particularly high when finding a job of less than 20 hours/week. Similarly to the results observed in table

[24] The validity of the IIA assumption has been tested using the Hausman test (Hausman and McFadden, 1984) and the Small-Hsiao test (Small and Hsiao, 1985).

1b, we find that higher parental education level make not easier to leave unemployment/inactivity regardless of the destination.

Table 2

Estimates for multinomial logit competing risks model

	Female			**Male**		
	Finding a job (<20 hours/week)	**Finding a job (>=20 hours/week) non-signif.**	**Finding a significant job**	**Finding a job (<20 hours/week)**	**Finding a job (>=20 hours/week) non-signif.**	**Finding a significant job**
Log (time elapsed)	-4.137***	-2.170***	-3.367***	-3.410***	-2.995***	-3.855***
	(0.671)	(0.162)	(0.132)	(0.846)	(0.181)	(0.144)
[Log (time elapsed)]^2	1.944***	0.389***	1.330***	0.618	0.805***	1.667***
	(0.671)	(0.140)	(0.112)	(0.733)	(0.163)	(0.130)
[Log (time elapsed)]^3	-0.315*	0.018	-0.168***	0.044	-0.045	-0.246***
	(0.161)	(0.029)	(0.023)	(0.150)	(0.034)	(0.029)
Age at completion of education	0.068*	0.000	0.062***	0.094**	0.026*	0.040***
	(0.040)	(0.015)	(0.011)	(0.041)	(0.014)	(0.012)
Nationality (Non-Spanish=1)	0.686	-0.314	0.150	-13.424***	-0.238	-0.047
	(0.719)	(0.469)	(0.281)	(0.339)	(0.430)	(0.292)
Mother highest level of education:						
Primary	-0.026	-0.048	-0.015	0.045	0.032	-0.016
	(0.279)	(0.092)	(0.070)	(0.376)	(0.097)	(0.074)
Secondary (academic track)	0.061	-0.140	-0.014	0.140	-0.219*	-0.121
	(0.380)	(0.135)	(0.097)	(0.443)	(0.130)	(0.100)
Vocational Intermediate	-0.188	-0.265	-0.073	-1.487	-0.004	0.023
	(0.500)	(0.171)	(0.126)	(1.046)	(0.165)	(0.126)
Vocational Higher	0.734	0.191	0.006	-0.795	0.218	-0.153
	(0.551)	(0.232)	(0.186)	(1.045)	(0.229)	(0.184)
University degree (short)	0.210	0.008	-0.161	0.849	0.154	-0.159
	(0.647)	(0.213)	(0.179)	(0.551)	(0.178)	(0.150)
University degree (long/PH/Master)	-0.053	-0.007	-0.681***	-1.599	-0.122	-0.495***
	(0.766)	(0.216)	(0.200)	(1.153)	(0.175)	(0.147)
*University degree (short) *Log (time)*	√	√	√	√	√	√
*University degree (long/PH/Master) *Log (time)*	√	√	√	√	√	√

Estimates for multinomial logit competing risks model (Continued)

	Female			Male		
	Finding a job (<20 hours/week)	**Finding a job (>=20 hours/week) non-signif.**	**Finding a significant job**	**Finding a job (<20 hours/week)**	**Finding a job (>=20 hours/week) non-signif.**	**Finding a significant job**
Father highest level of education:						
Primary	√	√	√	√	√	√
Secondary (academic track)	0.159	-0.201	0.011	0.229	0.034	-0.317***
	(0.356)	(0.131)	(0.097)	(0.458)	(0.125)	(0.099)
Vocational Intermediate	-0.253	-0.037	-0.224*	-0.677	-0.195	-0.287**
	(0.477)	(0.159)	(0.134)	(0.799)	(0.162)	(0.125)
Vocational Higher	-0.400	-0.420**	-0.136	0.389	-0.146	-0.288**
	(0.533)	(0.178)	(0.131)	(0.518)	(0.158)	(0.123)
University degree (short)	-0.714	-0.332	-0.153	-0.367	-0.224	-0.470***
	(0.704)	(0.207)	(0.161)	(0.656)	(0.168)	(0.138)
University degree (long/PH/Master)	-1.518*	-0.367**	-0.235*	0.264	-0.279*	-0.398***
	(0.839)	(0.181)	(0.139)	(0.589)	(0.153)	(0.121)
*University degree (short) *Log (time)*	√	√	√	√	√	√
*University degree (long/PH/Master) *Log (time)*	√	√	√	√	√	√
Qualification completed in 2001:						
Intermediate Voc	0.491**	0.049	0.147***	0.631**	0.251***	0.426***
	(0.230)	(0.070)	(0.053)	(0.300)	(0.073)	(0.059)
FIP – training programme	0.967***	-0.301***	-0.376***	0.976***	-0.247***	-0.176***
	(0.241)	(0.082)	(0.063)	(0.307)	(0.083)	(0.065)
ETCO-apprenticeship programmes	0.852***	-0.238***	-0.325***	0.996***	0.248***	-0.077
	(0.262)	(0.088)	(0.075)	(0.325)	(0.088)	(0.073)
Work placement (yes=1)	0.357	-0.081	-0.204***	-0.240	-0.280***	-0.259***
	(0.241)	(0.087)	(0.065)	(0.281)	(0.084)	(0.067)
Interaction (Work placement*Work placement was useful)	0.174	0.288***	0.639***	0.148	0.388***	0.772***
	(0.176)	(0.058)	(0.046)	(0.221)	(0.059)	(0.048)

Estimates for multinomial logit competing risks model (Continued)

	Female			Male		
	Finding a job (<20 hours/week)	**Finding a job (>=20 hours/week) non-signif.**	**Finding a significant job**	**Finding a job (<20 hours/week)**	**Finding a job (>=20 hours/week) non-signif.**	**Finding a significant job**
Regional unemployment rate (by gender)	0.030	0.011	-0.005	-0.144*	0.009	0.044***
	(0.027)	(0.010)	(0.008)	(0.080)	(0.020)	(0.017)
Regions (Autonomous Communities):	√	√	√	√	√	√
Constant	-6.453***	-1.338**	-1.344***	-2.232	-1.063**	-1.477***
	(1.465)	(0.532)	(0.409)	(1.976)	(0.537)	(0.455)
Observations		34578			29163	
Log-likelihood		-21247.67			-19375.88	
μ^{PT}		4.853***			4.978***	
		(0.235)			(0.276)	
μ^{FTNS}		5.170***			5.140***	
		(0.243)			(0.268)	
μ^{FTS}		5.321***			5.213***	
		(0.271)			(0.259)	
p^1		0.153**			0.094*	
		(0.083)			(0.056)	
p^1		0.125*			0.082*	
		(0.076)			(0.050)	

Data source: ETEFIL (2005). Dependent variable: finding a FSJ==3, find a job (more 20 hours/week) non significant=2, find a job (less 20 hours/week) =1, staying unemployed/inactive=0.(baseline category) Multinomial logit estimates (maximum likelihood estimates).

Baseline case: Spanish woman, mother and father lower than Primary education, with Higher Vocational completed in 2001, not having on the job training, living in Andalusia. Standard errors in brackets. *** significant at 1%, ** significant at 5%, * significant at 10%.

The most interesting result stemming from table 2 relates to the influence of the qualification obtained by 2001. Similarly to the results shown for the single risk model, those young individuals taking a special (training or apprenticeship) programme has lower hazard of leaving unemployment/inactivity than those others with a higher vocational qualification[25]. However for men the impact of ETCO programmes is positive with regard to the probability of finding a non significant job (either 'part or full-time'), and also positive for FIP programmes although just for those finding a job of less than 20 hours a week. So, it seems that the negative impact on the probability of finding a FSJ for those with FIP or ETCO programmes hold regardless of the model we estimate (single or competing). Likewise the positive effect of having a period of "work placement" before achieving the highest educational level –reported- also holds for the

[25] Following the theoretical discussion presented in section 3.1 each parameter show the probability of leaving unemployment/inactivity for a certain destination state relative to the probability of staying.

different potential pathways analysed, and the interaction of that variable with the one indicating whether getting this additional training helped to find a job, presents a higher slope.

Finally, the parameters related to unobserved heterogeneity imply that a significant fraction of heterogeneity is not captured by the included variables regardless of whether we focus on the sample of men or women.

4.2 Job Quality

Thus far we have focused on the time taken to secure a FSJ. In this section we consider two other measures of job quality, namely wages and skill match. Table 3 shows the wage differences across field of study/ qualification level combinations for the person's FSJ, estimated by interval regression. The dependent variable is net wage per calendar month in levels in the person's first significant job. The bounds for these net wage levels are: <433.55€, 433.55 - 749.99€, 750 - 999.99€, 1000 - 1249.99€, 1250 - 1499.99€, 1500 - 1999.99€, 2000 - 2499.99€, 2500 - 2999.99€ and >=3000€. The first specification shows wage differences across the different levels of qualifications. As we move from left to right across the table, Specification II disaggregates the effect of completing different fields of study. Specification III separates out those with FIP or ETCO training according to prior educational achievement. Finally, in specification IV, we allow for skill mismatch, i.e. whether the qualifications required for the job exceed the individual's own level of qualification or whether s/he is over qualified.

Following the argument of this paper, we consider necessary to estimate the wage equation in a way that takes the dependence between wages and unemployment duration into consideration. To this aim we follow two different econometric strategies. First, we just include among the regressors the total previous –to FSJ- unemployment period (months). However following Bratberg and Nilsen (2000) and, more recently, Davia and Marcenaro (2008) -for Spain-, unobserved heterogeneity may bias the estimation of wages, as "...a priori unobserved factors increasing the search period might be imagined to increase wages (better match), or to decrease wages as well (low ability)". To sort this out the second econometric strategy we implemented was to estimate a simultaneous equations model, i.e. a reduced form duration equation that will be simultaneously estimated with an earnings function. The identification of the second equation requires exclusion restrictions for some of the exogenous variables of the system Bratberg and Nilsen (2000). We have made clear them in table 4 (under the label "excl. rest."), which gives the estimates of the coefficients for the simultaneous equation model. Summarising we assume that regional unemployment rate affects unemployment duration but not necessarily wages and, on the contrary, the former does not depend on number of training courses and the wages do. In table 4 only the results for Specifications I and IV are reported to conserve space. To the extent that results, in terms of sign and significance levels, from tables 3 and 4 are slightly the same, in what follows we briefly highlights the main results from both tables jointly.

Briefly, the results indicate that, unsurprisingly, men earn significantly more than women; this gender gap is softened when we control simultaneously by longer

unemployment periods faced by women. As above highlighted the main advantage from using interval regression, as compared to ordered probits (logits), is that the coefficients estimated by the former procedure are easier to interpret since they are the partial effect of the regressor expressed in terms of the dependent variable units. So, we find the men earn approximately over 117€ more, per calendar month, than women. Likewise, workers earn more when working more hours that agreed, as do those in larger firms and those who undertake more training. Particularly relevant appears that each language course accomplished seems to increase, on average, 16-22€ per month the net wage, giving support to the idea of significant positive returns to human capital accumulation.

Regardless of the econometric strategy -and the specification we look at- the coefficients of the variable "total previous –to FSJ- unemployment period (months)" show a negative and statistically significant value, meaning that, on average, longer search periods are associated to decreasing wages.

Parental education is largely positively related to the individual's monthly wage, although only maternal education is significant. However, our interest is primarily in the coefficients on the qualification variables.

Table 3

Returns to vocational qualifications

	Specification I	Specification II	Specification III	Specification IV
Gender (male=1)	207.315***	182.870***	182.756***	179.401***
	(5.641)	(6.724)	(6.728)	(6.675)
Age at completion of education	9.985***	9.591***	7.708***	7.572***
	(1.656)	(1.661)	(1.727)	(1.712)
Working hours:				
Agreed working hours	5.653***	5.412***	5.441***	5.334***
	(0.455)	(0.455)	(0.454)	(0.451)
Surplus working hours	3.554***	3.309***	3.389***	3.652***
	(0.569)	(0.568)	(0.568)	(0.564)
Firm size:				
11-49 employees	26.146***	24.307***	24.096***	24.715***
	(6.753)	(6.753)	(6.743)	(6.685)
50 or plus employees	69.165***	64.558***	63.831***	65.345***
	(6.587)	(6.625)	(6.617)	(6.562)
Training courses:				
Number of IT courses	10.563**	9.805*	9.539*	8.333
	(5.180)	(5.198)	(5.189)	(5.146)
Number of language courses	21.566***	19.740***	17.962**	16.367**
	(7.017)	(7.044)	(7.045)	(6.985)
Number of other (no regulated) courses	17.350***	19.987***	19.602***	17.985***
	(3.896)	(3.918)	(3.913)	(3.881)

Returns to vocational qualifications (Continued)

	Specification I	Specification II	Specification III	Specification IV
Mother highest level of education:				
Certificated Primary	18.372*	20.150**	19.398*	18.922*
	(10.326)	(10.280)	(10.268)	(10.181)
Secondary (academic track)	45.335***	46.069***	43.392***	42.990***
	18.372*	20.150**	19.398*	18.922*
University Degree (long/PhD/Master)	56.593**	58.780**	58.182**	58.993**
	(25.636)	(25.520)	(25.489)	(25.272)
Previous unemployment period (months)	-5.326***	-5.308***	-5.245***	-4.989***
	(0.757)	(0.754)	(0.753)	(0.747)
Qualification completed in 2001:				
Intermediate Voc	-25.400***			
	(6.996)			
FIP – training programme	-46.039***			
	(7.655)			
ETCO	-90.042***			
	(10.597)			
Access via for those with FIP:				
Below Primary			-100.332***	-103.564***
			(29.358)	(29.109)
Primary or Lower Secondary			-71.835***	-77.379***
			(19.367)	(19.206)
Intermediate Vocational			-37.118	-37.785*
			(23.107)	(22.910)
Required qualifications:				
Overqualified				-80.841***
				(6.444)
Underqualified				41.582***
				(14.158)
Vocational fields:				
Intermediate:				
Accommodation and food service		54.314**	39.922*	38.351
		(23.442)	(24.015)	(23.807)
Construction		258.657***	245.316***	241.544***
		(84.000)	(84.002)	(83.275)
Information and communication		-42.306*	-55.759**	-51.911**
		(24.509)	(25.029)	(24.818)
Manufacturing		46.644***	31.862**	26.217
		(15.370)	(16.252)	(16.117)
Professional, scientific and technical		93.601***	80.410**	96.068***
		(34.481)	(34.836)	(34.563)

Returns to vocational qualifications (Continued)

	Specification I	Specification II	Specification III	Specification IV
Higher:				
Accommodation and food service		58.443***	47.539**	52.956**
		(21.128)	(21.729)	(21.547)
Agriculture		83.787**	71.614*	87.284**
		(36.622)	(36.945)	(36.651)
Arts, entertainment and recreation		-93.347***	-103.835***	-102.927***
		(31.588)	(31.961)	(31.685)
Construction		88.578***	77.555***	65.436***
		(22.531)	(23.083)	(22.903)
Information and communication		62.278***	51.416***	49.972***
		(13.628)	(14.531)	(14.407)
Manufacturing		82.071***	71.067***	68.253***
		(14.925)	(15.762)	(15.627)
Other service activities		-42.728**	-54.552***	-54.217***
		(19.368)	(20.038)	(19.867)
Professional, scientific and technical activities		101.624***	91.267***	92.866***
		(24.580)	(25.082)	(24.865)
Wholesale and retail trade		54.948***	43.829***	43.520***
		(16.125)	(16.897)	(16.751)
Energy, electricity, gas and water supply		84.754***	73.356***	71.779***
		(17.088)	(17.817)	(17.663)
FIP:				
Agriculture		43.851	77.245*	71.715*
		(39.096)	(40.954)	(40.595)
Entertainment and recreation		53.341	81.596	86.816*
		(48.577)	(50.078)	(49.646)
Construction		53.731*	101.240***	92.440***
		(29.206)	(31.950)	(31.679)
Wholesale and retail trade		43.979**	83.299***	79.514***
		(18.252)	(22.161)	(21.973)
Mining and quarrying		232.106***	288.265***	286.694***
		(88.894)	(89.757)	(88.988)
ETCO:				
Agriculture		-48.673*	-430.836	-406.946
		(27.421)	(268.197)	(265.874)
Other service activities		-60.073	-450.319*	-410.795
		(38.320)	(269.252)	(266.926)
Constant	320.029***	307.842***	363.459***	392.523***
	(41.613)	(41.794)	(43.574)	(43.271)
Observations	9892	9892	9892	9892
σ	254.526***	252.364***	251.855***	249.463***
	(1.992)	(1.977)	(1.974)	(1.957)
LR χ^2	2340.58***	2496.52***	2532.12***	2706.17***

Note: Only significant coefficients are reported.

Estimated by interval regression. Base case: Spanish female, with mother and father with lower than Primary education, who has a Higher Vocational qualification in the administration field completed in 2001 and, for those with FIP, accessed to the qualification reported in 2001 via higher vocational; living in Andalusia and working for a firm with 10 or less employees.

For the models that also control for skill mismatch, the base case is an individual in a job which matches their qualification level. All models also control for nationality, number of training courses taken since 2001, parental education, other qualifications acquired, the way in which their job search was conducted, tenure at FSJ and type of contract.

Standard errors in brackets. *** significant at 1%, ** significant at 5%, * significant at 10%.

Table 4

Returns to vocational qualifications (simultaneous equation model estimates)

	Specification I		Specification IV	
	Previous unemployment period equation	**Earnings function equation**	**Previous unemployment period equation**	**Earnings function equation**
Previous unemployment period (months)		-88.084***		-48.370***
		(24.695)		(15.265)
Gender (male=1)	-2.149***	117.819***	-0.340**	119.647***
	(0.448)	(26.500)	(0.138)	(20.731)
Age at completion of education	√	9.769***	√	7.933***
		(1.661)	√	(1.719)
Working hours:				
Agreed working hours	excl. rest.	5.645***	excl. rest.	5.333***
		(0.456)		(0.452)
Surplus working hours	excl. rest.	3.608***	excl. rest.	3.692***
		(0.570)		(0.565)
Firm size:				
11-49 employees	excl. rest.	25.694***	excl. rest.	24.229***
		(6.765)		(6.697)
50 or plus employees	excl. rest.	68.553***	excl. rest.	64.775***
		(6.599)		(6.574)
Training courses:				
Number of IT courses	excl. rest.	10.631**	excl. rest.	8.368
		(5.191)		(5.157)
Number of language courses	excl. rest.	21.264***	excl. rest.	15.927**
		(7.032)		(7.000)
Number of other (no regulated) courses	excl. rest.	17.815***	excl. rest.	18.522***
		(3.903)		(3.887)
Mother highest level of education:				
Secondary (academic track)	√	42.712***	√	40.083***
		(13.741)		(13.585)
University Degree (long/PhD/Master)	√	63.869**	√	66.430***
		(25.770)		(25.434)

Returns to vocational qualifications (simultaneous equation model estimates) (Continued)

	Specification I		Specification IV	
	Previous unemployment period equation	**Earnings function equation**	**Previous unemployment period equation**	**Earnings function equation**
Qualification completed in 2001:				
Intermediate Voc	-0.691**	-45.716***		
	(0.338)	(9.169)		
FIP – training programme	1.737***	-68.782***		
	(0.350)	(15.525)		
ETCO	1.476***	-72.401***		
	(0.483)	(19.622)		
Regional unemployment rate (by	0.018*	excl. rest.	0.022**	excl. rest.
	(0.011)		(0.011)	
Access via for those with FIP:				
Below Primary			0.805**	-14.332
			(0.399)	(41.226)
Primary or Lower Secondary			0.736***	-3.545
			(0.263)	(32.726)
Intermediate Vocational			0.644**	-33.723
			(0.314)	(32.820)
Higher Vocational			1.038***	√
			(0.379)	
Required qualifications:				
Overqualified			excl. rest.	-81.662***
				(6.454)
Underqualified			excl. rest.	39.750***
				(14.183)
Vocational fields:				
Intermediate:				
Accommodation and food service			-0.786**	-46.013
			(0.327)	(36.787)
Information and communication			√	-69.926***
				(25.562)
Professional, scientific and technical			√	170.904***
				(42.492)

Returns to vocational qualifications (simultaneous equation model estimates) (Continued)

	Specification I		Specification IV	
	Previous unemployment period equation	**Earnings function equation**	**Previous unemployment period equation**	**Earnings function equation**
Higher:				
Agriculture			√	106.303***
				(37.241)
Arts, entertainment and recreation			√	-136.261***
				(33.683)
Information and communication			√	77.749***
				(17.099)
Manufacturing			-0.394*	38.783**
			(0.221)	(18.431)
Other service activities			√	-44.180**
				(20.175)
Professional, scientific and technical			√	91.052***
				(24.917)
Energy, electricity, gas and water supply			√	46.896**
				(19.477)
FIP:				
Agriculture			√	121.066***
				(43.777)
Entertainment and recreation			√	107.305**
				(50.173)
Construction			√	82.039**
				(31.922)
Wholesale and retail trade			√	67.604***
				(22.383)
Mining and quarrying			√	189.919**
				(94.801)
Constant	-4.410**	410.901***	-1.104*	490.837***
	(2.163)	(95.856)	(0.660)	(80.037)
Observations		9892		9892
σ		255.059***		249.958***
LR χ^2	249.66***	2302.76***	345.41***	2670.37***

Note: Only significant coefficients at any of the equations are reported.

Base case: Spanish female, with mother and father with lower than Primary education, who has a Higher Vocational qualification in the administration field completed in 2001 and, for those with FIP, accessed to the qualification reported in 2001 via higher vocational; living in Andalusia and working for a firm with 10 or less employees. For the models that also control for skill mismatch, the base case is an individual in a job which matches their qualification level. All models also control for nationality, number of training courses taken since 2001, parental education, other qualifications acquired, the way in which their job search was conducted, tenure at FSJ and type of contract.

Standard errors in brackets. *** significant at 1%, ** significant at 5%, * significant at 10%.

The coefficients from tables 3 and 4 suggest that individuals with intermediate vocational qualifications earn less than those with higher vocational qualifications. This is perhaps reassuring; even if individuals with higher vocational qualifications take longer to secure a FSJ (as suggested by the previous duration analysis), the value of higher vocational qualifications exceeds intermediate level qualifications. The results also suggest that workers taking FIP or ETCO training earn significantly less than workers with higher level qualifications. We are not claiming this is causal[26] however, due to the negative selection into these programmes discussed earlier. Indeed this is obvious from Specification III (table 3)[27], which allows for the previous qualification level of workers taking FIP and ETCO programmes. Specification III suggests that FIP workers earn less even if they had other vocational qualifications previously. This might confirm that there is a selection process here, whereby individuals with previously high levels of vocational qualification then have difficulties in the labour market and enrol in FIP (or ETCO.) These individuals then go on to earn less in the labour market.

Our final specification (IV) includes controls for whether or not the person is over qualified for his or her job. Of course the quality of the job match achieved by a worker is in fact an outcome from that person's education investments, including their choice of subject area. So we might view whether or not the person is overeducated and any correlation with wages arising from this as part of the negative or positive return to a given qualification and endogenous[28]. In other words, we can take the potential mismatch as a measure of the distance between workers and their jobs (Jovanovic, 1979). In which case, specification III would be preferable. However, it is nonetheless of interest to investigate the correlation between being overeducated and workers' wages and the wage differences across qualification/ subject combinations. The variable signifying whether someone is over qualified in their job is highly negatively significant, i.e. overeducated workers earn significantly less than adequately matched workers. Undereducated workers earn significantly more than adequately matched workers[29]. This is consistent with a range of empirical evidence for Spain and other countries (see, e.g., Alba-Ramirez, 1993, or Dolton and Marcenaro, 2009).

For example, workers with intermediate qualifications in construction appear to be very highly paid compared to the base case of a worker with a higher vocational qualification in administration (table 3). After we control for whether a worker is overqualified, this positive wage premium remains. However this coefficient turns insignificant when we account for the simultaneity between unemployment duration and wages (table 4), what means that there are common unobserved factors affecting the dependent variable of

[26] Note that our specification is a purely reduced form model and although we are able to identify correlations, we are not necessarily able to identify causal relations between variables.

[27] This result holds when the simultaneous equation model is estimated (do not showed to conserve space).

[28] It could also be the case that the lower returns for overqualified workers are a consequence of low qualification requirements of some jobs. This is why we cannot express this as a causal relationship, but simple correlation.

[29] The proportion of skill-mismatched workers in our sample (23.6% are overqualified, and 3.60% are under-educated) is similar to that reported by Blazquez (2005) at LFS.

both equations that need to be accounted for. Equally workers with higher vocational or intermediate vocational qualifications in professional, scientific and technical activities earn significantly more than workers with a higher vocational qualification in administration. This gap virtually triple once we consider workers with FIP in mining and quarrying; although we have to be cautious on this as the sample of individuals in this field is extremely reduced (only 9 observations).

The reader may find interesting to look at the earnings progression between jobs as an alternative measure of opportunities provided by different vocational tracks. Unfortunately, although for part of the sample we observe transitions between jobs, due to the short span period we have information for and the fact that we have wages in levels, makes 'progression estimates' a very imprecise econometric exercise[30].

5 Conclusions

The purpose of this paper was to describe the early labour market experiences of Spanish youth entering the labour market with different types of vocational education. Specifically, we focused on the hazard of finding a good quality 'permanent' job, i.e. the probability of finding a First Significant Job (FSJ). This analysis suggested that in fact workers with higher level vocational qualifications face lower probability to integrate into the labour market than workers with lower level qualifications, such as intermediate vocational qualifications. Given that workers with more educated parents also show lower probability to secure a FSJ, we interpret these findings to mean that more advantaged youth (with more educated parents and taking higher vocational qualifications) may be taking longer to secure a FSJ perhaps because they are extending their job search to secure a higher quality job. In fact, our analysis of the impact of different types of vocational qualifications on workers' job quality (as measured by earnings) seems to confirm this. Although workers with higher vocational qualifications seem to have lower probability to secure a FSJ, they do earn significantly more than workers with intermediate vocational qualifications, for example. This finding illustrates the importance of analysing many dimensions of job quality, rather than simply focusing on the duration of unemployment or under-employment for example. Likewise we found that over qualified workers were paid substantially less than adequately matched workers.

Our single risk analysis also clearly indicated that workers taking the special vocational apprenticeship programmes, such as ETCO, fared poorly in the labour market: they do not guaranty higher probabilities of accessing to a FSJ and earned significantly less when they did find such a job. We do not however, suggest that the relationship between having an ETCO qualification and poor labour market prospects is causal, as we found evidence of negative selection into these special vocational training programmes. It is more likely that low productivity individuals who find integration into

[30] We estimated several models to show if they youngsters experience significant wage mobility. The results are not reported due to lack of representativeness (only few individuals moved to a job with a lower or higher wage during the observed period).

the labour market difficult, end up taking these special programmes. Such individuals would have fared poorly in the labour market anyway. Without rigorous programme evaluation, it is impossible to say whether such programmes are being effective and such evaluation is urgently needed in the Spanish labour market.

Using detailed data on the field of study taken by each worker, we were also able to look within categories of qualification (i.e. within a more homogenous sample of young people) and describe the different labour market experiences of workers with qualifications in different fields of study. We found substantial differences in both the probability to secure a FSJ and earnings, across different fields of study. In general, qualifications in booming industries (e.g. construction) were less valuable than qualifications in service sector jobs (e.g. administration). It is perhaps of note that very few sectors of the labour market are occupationally regulated in Spain, and as a result the link between the qualifications awarded to those in school-based vocational programmes and particular occupations is relatively loose. This may explain why some fields of study in major industries (e.g. arts and entertainment) appear to give relatively low labour market returns.

Despite being descriptive, this information should be useful to both policy-makers and youths themselves in helping them understand the relative demand for different qualifications and fields of study. In general terms, given the ongoing difficulties faced by Spanish youngsters in integrating into the labour market, it will certainly be of interest to understand the fate of workers with different combinations of vocational qualifications. Whilst the analysis cannot provide easy solutions to improve the effectiveness of the Spanish vocational training system, it does illustrate the fact that special vocational programmes (ETCO), despite being relatively high cost, are not associated with good labour market outcomes. A priority for the Spanish government is obviously to design programmes that can shorten the length of time taken to secure a good job, and to help workers improve the quality of their job match.

Appendix A

A brief description of the Spanish education system

There are a variety of different qualifications that students can take and the educational system is divided into two different stages. First, Compulsory Education, which comprises Primary School (*Educación Primaria*) and the first level of Secondary School (*Educación Secundaria Obligatoria*). Second, Non-Compulsory Education, consisting of the second level of Secondary School (*Formación Profesional I or Bachillerato*), and Higher Education (University or Non-University).

Pupils attend Primary School from 6 to 12 years old. Students attend first level of Secondary School from 13 to 16 (which is the statutory leaving age). At age 16, pupils who satisfactory achieve the stipulated academic target are awarded the *Graduado de Educación Secundaria Obligatoria*. After age 16 students may choose to leave the education system completely (around 15% in the academic year 2000-2001) or stay on

at school. Those who stay on at school follow one of the two distinct tracks: the vocational (*Ciclos Formativos de Formación Profesional de Grado Medio o Superior*) track or the academic track (*Bachillerato LOGSE*).

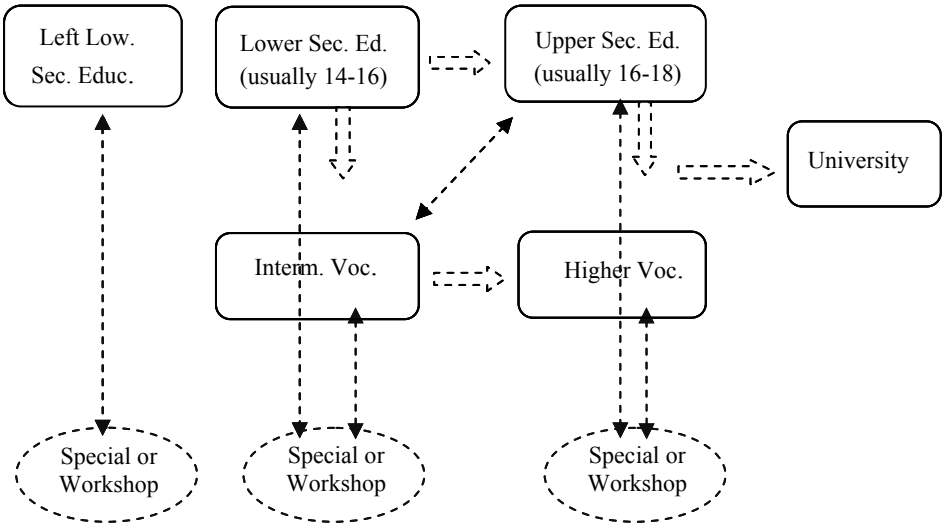
The vocational track is for the less academic students who can choose from a variety of vocational qualifications based upon practical subjects such as computing, hairdressing, office skills, etc. Students who succeed in the first two years of vocational education obtain a Certificate called *Ciclo Formativo de Formación Profesional de Grado Medio (intermediate level).* For those continuing beyond the *intermediate level* there is a wide range of higher vocational qualifications *Ciclo Formativo de Formación Profesional* (*higher level*), with more than hundred specialities.

There is also the possibility to take one of the courses of the "Special Vocational Plan" (*Plan Nacional de Formación e Inserción Profesional*, FIP) or the "Vocational Workshop" (Escuelas Taller y Casas de oficio) which are labour market orientated plans to help youngsters with bigger difficulties to make easier their insertion into the labour market.

To make clearer the basic structure of the Spanish Educational system we present Diagram A1.

Diagram A1

Basic structure of the Spanish Education system



Note: Special Plan and Workshop is not a higher qualification level but special qualifications to gain experience in particular occupations.

The academic track is for the 'more academically able' students who study at Secondary for a further two years (*Bachillerato)* after completing compulsory education. Once this stage is successfully undertaken, they have the option to continue to higher education.

Students can opt for either a 3 years (first-cycle) degree, which can be technical (*Escuelas Universitarias Técnicas*) or non-technical (*Escuelas Universitarias no Técnicas*), or a 4-5-6 years (first and second cycle) degree (*Facultades and Escuelas Superiores*). For both sorts of education, entrance is competitive, as places are limited.

References

AASSVE, A., BILLARI, F.C., MAZZUCO, S. & ONGARO, F. (2002). «Leaving home: a comparative analysis of ECHP data», *Journal of European Social Policy,* 12 (4): 259-275.

ABBRING, J. H., VAN DEN BERG, G. & VAN OURS, J. (2001). «Business Cycles and Compositional Variation in U.S. Unemployment», *Journal of Business & Economic Statistics*, vol. 19(4): 436-448.

AHN, N & UGIDOS, A (1995). «Desempleo juvenil en España: ¿qué determina su duración?», *Ekonomiaz*, vol. 31/32: 247-265.

ALBA-RAMIREZ, A. (1993). «Mismatch in the Spanish Labour Market Overeducation?», *The Journal of Human Resources*, vol. 28: 259-278.

ALBA-RAMÍREZ, A. (1998). «Re-Employment Probabilities of Young Workers in Spain», *Investigaciones Económicas*, vol. 22(2): 201-224.

ALBA-RAMÍREZ, A. (1999). «Explaining the Transitions Out of Unemployment in Spain: The Effect of Unemployment Insurance», Applied Economics, 31: 183-193.

ALBERT, C., DAVIA, M. A, & TOHARIA, L. (2008). «To find or not to find significant job», *Revista de Economía Aplicada*, n. 46, vol. XVI: 37-59.

ALLISON, P. A. (1982). «Discrete-Time Methods for the Analysis of Event Histories» in Leinhardt, S. (ed.), *Sociological Methodology*. Jossey-Bass Publishers.

ANDREWS, M., BRADLEY, S. & STOTT, D. (2002). «The School-to-Work Transition, Skill Preferences and Matching», *Economic Journal*, 112, C201-C219.

ARRANZ, J. Mª. & MURO, J. (2007). «Duration Data Models, Unemployment Benefits and Bias», *Applied Economics Letters*, vol. 14(15): 1119-1122.

BLAZQUEZ, M. (2005). «Youth labour market integration in Spain: Search time, job duration and skill mismatch», *Spanish Economic. Review*, vol. 7: 191–208.

BOVER, O., ARELLANO, M. & BENTOLILA, S. (2002). «Unemployment Duration, Benefit Duration, and the Business Cycle», Economic Journal, vol. 112: 1-43.

BRATBERG, E. & NILSEN, O. A. (2000). «Transition from School to Work and the Early Labor Market Experience», *Oxford Boulletin of Economics and Statistics,* vol. 62: 909–929.

CAÑADA, J., OLIVARES, A. & SUAREZ, J. (1998). «From entering the labour market to obtaining permanent employment: an approach by education levels and marital status to processes followed by Spanish youth» Working paper n. 7, TSER, Orleans.

CHIURI, M. C. & DEL BOCA, D. (2007). «Living arrangements in Europe: exploring gender differences and institutional characteristics». CHILD - Centre for Household, Income, Labour and Demographic economics – ITALY, WP 24-07.

CLEVES, M., GOULD, W. M., & GUTIERREZ, R. G. (2004). «An Introduction to Survival Analysis using Stata» *College Station, Tex: Stata Press*:7, 34.

CORRALES, H. (2005). «El Transito hacia un Primer Empleo Significativo en la Década de los Noventa». *PhD. Thesis, University of Valladolid.*

DAVIA, M. A. & MARCENARO, O. D. (2008). «Exploring the link between employment search time and reservation wages in Southern Europe», *Hacienda Publica*, vol. 186 (3): 65-93.

D'ADDIO, A. C. & ROSHOLM, M. (2005). «Exits from Temporary Jobs in Europe: A Competing Risks Analysis», *Labour Economics*, vol. 12: 449-468.

DOLADO, J. J., FELGUEROSO, F. & JIMENO, J. F. (2000). «La Inserción Laboral de los Titulados Universitarios en España», *Papeles de Economía Española*, vol. 86: 78–98.

DOLTON, P. & MARCENARO, O. (2009). «Overeducation Across Europe». In *Education and Inequality Across Europe*. E. Barth and R. Ashplund (eds): 67-90.

EUROSTAT (2003). «School Leavers in Europe and the Labour Market effects of Job Mismatches», *Population and Social Conditions,* Part II of Theme 3-5/2003.

FLINN, C. J. & HECKMAN, J, 1983. «Are Unemployment and Out of the Labor Force Behaviorally Distinct Labor Force States?» *Journal of Labor Economics*, vol. 1(1): 28-42.

GONZALEZ-BETANCOR, S., DAVILA, D. & GIL, J. (2004). «El primer periodo de desempleo de técnicos y técnicos superiores», *Revista de Economía laboral*, vol. 1: 1-37.

HAUSMAN, J. & MCFADDEN, D. (1984). «Specification tests for the multinomial logia model». *Econometrica*, vol. 52 (5): 1219-1240.

HECKMAN, J. J. (1991). «Identifying the Hand of Past. Distinguishing State Dependence from Heterogeneity». *American Economic Review Papers and Proceedings*, vol. 81, 75-79.

HECKMAN, J. J. & SINGER, B. (1984A). «A Method of minimizing the distributional impact in econometric models for duration data». *Econometrica*, vol. 52, 271-320.

HECKMAN, J. J. & SINGER, B. (1984B). «Econometric duration analysis». *Journal of Econometrics*, vol. 52, 271-320.

JENKINS, S. P. & GARCÍA-SERRANO, C. (2004). «The Relationship Between Unemployment Benefits and Re-employment Probabilities: Evidence from Spain», *Oxford Bulletin of Economics and Statistics*, vol. 66 (2): 239-260.

JOVANOVIC, B. (1979). «Job Matching and the Theory of Turnover». *Journal of Political Economy*, vol. 89: 972–990.

JUDGE, G. G., HILL, R. C., GRIFFITHS, H. L. & LEE, T. (1985). «Introduction to the Theory and Practice of Econometrics», 2nd ed., New York: Wiley and Sons.

KOGAN, I. & MÜLLER, W. (EDS.) (2002). *School-to-Work Transitions in Europe: Analyses of the EULFS 2000 Ad hoc*, Mannhein.

LANCASTER, T. (1990). «The Econometrics Analyses of Transition Data», *Econometric Society Monographs* (17), Cambridge University Press.

LASSIBILLE, G., NAVARRO, L., AGUILAR, I. & DE LA O SANCHEZ, C. (2001). «Youth Transitions from School to Work in Spain», *Economics of Education Review,* vol. 20: 139–149.

LAUER, C. (2003). «Education and Unemployment: A French-German Comparison», Discussion Paper 03-34, ZEW.

MORA, J. G., GARCÍA-MONTALVO, J. & GARCÍA ARACIL, A. (2000). «Higher education and Graduate Employment in Spain». *European Journal of Education*, vol. 35(2): 229–237.

NICKELL, S. & LAYARD, R. (1999). «Labour Market Institutions and Economic Performance, in Ashenfelter, O and D. Card. (eds.)», *Handbook of Labour Economics*, Elsevier, vol. 3: 3029-3084.

NIELSEN, H., ROSHOLM, M., SMITH N. & HUSTED L. (2001). «Intergenerational transmissions and the school-to-work transition of 2nd generation immigrants», *IZA Discussion Paper* n. 296.

OECD (2000). «From Initial Education to Working Life» *Making Transitions Work*, OECD, Paris.

REIZE, F. (2002). «Leaving Unemployment for Self-employment: an empirical approach» *ZEW Economic Studies*, 25.

RYAN, P. (2001). «The School-to-Work Transition: A Cross-National Perspective». *Journal of Economic Literature, vol.* XXXIX(1): 34–92.

SERNEELS, P. (2001). «Unemployment Duration in Urban Ethiopia», *Discussion Paper*: Centre for the Study of African Economies, Oxford University.

SMALL, K. & HSIAO, CH. (1985). «Multinomial logit specification tests». *International Economic Review*, vol. 26(3): 619-627.

STEINER, V. (2001). «Unemployment Persistence in the West German Labor Market: Negative Duration Dependence or Sorting?». *Oxford Bulletin of Economics and Statistics*, 63: 91-113.

VAN DEN BERG, G. (2001). «Duration models: specification, identification and multiple duration dependence», in J. Heckman and E. Leamer, *Handbook of Econometrics*, vol. V, North-Holland.