

The timing of the school-to-permanent work transition: A comparison across ten European countries

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ABSTRACT*

The school-to-work transition is a turbulent period of youth, with possible consequences on the social and working conditions of individuals. The alternative status of employment during the transition possibly affect the transition probabilities. On the one side, the larger use of temporary contracts has made entry in the labour market easier, but has also made longer and, sometimes, harder the path toward a stable job. On the other side, periods of no work possibly deteriorate skills, while vocational experiences possibly avoid the obsolescence of skills. This paper applies discrete time duration models to ECHP micro information to investigate both the role of individual characteristics and, overall, of alternative origin labour market status in favoring the school-to-permanent work transition, focusing on ten European countries. The timing of the transition and the allocation of time to alternative labour market status differ among countries. Vocational training experience increases the hazard rate. Temporary contracts positively operate in Southern countries, where unemployment and inactivity prevail among school-leavers. On the contrary, where temporary jobs are widely used they reduce the hazard rate, favoring the establishment of a strong separating equilibrium, at least in the short-term. However, individuals with at least one temporary job or vocational training period show a greater duration dependence parameter, indicating their role in reducing the stigma effect of no permanent employment positions.

Keywords: school-to-work transition, duration model, unobserved heterogeneity

JEL codes: J24, J64, C41

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* Although the authors are both responsible for the whole paper, paragraphs 1,2 and par.3.1. are mainly due to A. Righi and paragraphs. 3.2 and 4 to D. Sciulli.

Introduction

Theoretical interest in the school-to-work transition is a recent development associated to change, and to uncertainty and it embraces different long period matters like education, employment, and training. Even though it has always been considered like a process that begins when an individual leaves education and ends when the person finds a job, much is changed in the last decades. In fact, what in the '70 was a fast and direct transition between education and permanent work, in the last 25-30 years, the transition became an increasingly turbulent period of youth, producing negative effects in terms of work and social conditions. Since the '80 the main response to the increase of youth unemployment rate and of youth unemployment duration, was the introduction of flexibility policies. On the one side, the large use of temporary contracts made easier the entry in working positions, on the other side, it made longer and, sometimes, harder the transition to stable employment. Therefore, since the '80 and, overall, since the '90, the work stabilization of youth became the outcome of a composed path across alternative labour market statuses, including temporary work, vocational activities, no working conditions.

The difficulty of the school-to-work transition obliges young, people to test different strategies during the period of job search. Among these, besides the profitable job search across formal and informal networks, there is vocational training to improve their skills, and there are temporary work experiences; but there can also occur elements of discouragement that persuade individuals to alternate periods of job search to periods of inactivity. The probability of finding a job varies according to numerous factors: individual and familial heterogeneity, the activity performed during the not permanent work phase, the specific features of the labour market and of the educational system in which the individual lives.

The duration of the period of not permanent employment spanning between leaving school and permanent work, maintained an important role to determine both the perspectives of the working career of the young, and for the negative effects that can produce to macroeconomic level (for example on productivity). Long periods of not work can negatively influence the labour market participation, the type of employment found (with respect to contractual typology, working hours, incomes), the human capital and the working experience. Although the number of studies are increased in the last years according to the availability of ad-hoc data, micro-econometric evidence on the school-to-work transition remain quite limited and focused on the single country analysis, as showed below. This paper focuses on the school-to-permanent work transition, studying the differences. In the transition probability¹ that emerges for young people in some European

¹ Many definitions exist about work in the school-to-work transition, more or less restrictive: the OECD (1996) standard definition refers to permanent employment; Hotz and Tienda (1998) use two definitions of exit or first stable job (a)

countries (Austria, Belgium, Denmark, France, Ireland, Italy, Greece, Spain, Portugal, Germany) characterized by different regulations of the labour market and of the educational system, according to personal characteristics and, overall, to the labour market statuses experienced during the transition to permanent employment relationship. Importantly, alternative no permanent job statuses possibly work differently across countries, variously affecting the probability of permanent employing. First, the role of temporary jobs in favouring transitions to permanent jobs possibly differs according to their effective training contents and to the presence and the level of monetary incentives in case of transformation into permanent job. Second, temporary contracts possibly delay the transition to permanent jobs, according to the legislation regulating the duration of temporary contracts and to the time employers need to receive a signal about the ability of workers tested by temporary relationship. Third, the expenditures in passive and active labour market policies, possibly determine different levels of duality in the European labour markets. Therefore, individuals living in countries characterized by high levels of unemployment benefit and by vocational training activities between temporary job relationships, possibly experience a longer stay in the temporary labour market since it is less costly in terms of the present well-being and of the future permanent employment probability. Fourth, the congestion of a specific labour market status possibly involves greater job competition. For example, individuals employed with temporary contracts and living in countries with a large share of temporary contracts, possibly derive less advantage in terms of signalling and accumulation of work experience compared to individuals with temporary contracts living in a country with a small share of temporary employed.

Before going further, it is useful to present the reference literature and to describe the considerable differences in the education systems and in main labour market features of the various countries. The main features of the school-to-work transitions in the EU countries are also briefly analyzed according to the LFS figures referring the year 2000. The recent increasing availability of longitudinal dataset favoured the development of studies on the sequence of experiences of young people, allowing also to eliminate the bias in the study of causal links. For this, the longitudinal ECHP (1994-2001)² data permit some direct estimates of the probability to find a job at one/two years from the end of education applying a probit model with numerous explanatory variables. Finally, the duration of school-to-work transitions is analyzed applying different specifications of a discrete time duration model that allows to take into account individual, family, regional and behaviour characteristics within the considered status in the analyzed countries. Such analysis

occupation of at least 6 months and at least 15 weekly hours, b) a full time occupation of at least one year); Klerman and Karoly (1994) instead adopt more restrictive criteria and use definitions of regular employment in their model that consists in jobs of one, two and three years.

² These data, even if not very up-to-date, are the only ones that allow a longitudinal comparative analysis on these subjects.

emphasized that taking into account such specificity leads to a considerable differentiation of the probability of finding a job.

1. Literature review

Among the main transitions from a social, cultural or economic status to another one, the transition from school/training to work represents a crucial phase of life in developed countries. In the context of continuous evolution and of increasing uncertainty, this transition becomes particularly complex. From a period when family, labour market and welfare system guaranteed safety and social protection, in the last decades we have moved to a period in which, increasing unemployment, precarious jobs, the request of flexibility of working hours, and decrease in career opportunities have reduced safety and social protection. Many authors have investigated possible explanations of the difficulties in the school-to-work transition; some findings apply to different countries, others are specific. Caruso and Staffolani (1999) list the following main causes of these difficulties: 1) a mismatch, that is to say a qualitative difference, between labour demand and supply (among others, Andrews *et al.*, 2001), Eurostat, 2003b); 2) extreme protection of workers that pushes new entrants in precarious situations or, still worse, in unemployment (Apulian, 1993); 3) lack of flexible and effective measures for youth employment; 4) insufficient economic growth and job-less growth (Baici and Samek-Lodovici, 2001); 5) the aspiration of young people to a full time job possibly in the public sector; 6) the existence of a productive system based on small and medium enterprises, often not innovative, that asks more for executive personnel than for highly educated people.

In this frame, some authors assume that the transition cannot be considered only a pathology produced by flexibility or a (more or less prolonged) transition towards adult life, but rather a stable condition that people are confronted with in this phase of the modern world. Thus, it is necessary to reconsider how the transition from education to the labour market was traditionally analyzed. It is necessary to consider it as a dynamic process that emphasizes the transition as a series of events, in which expectations, ties and opportunities give place to dynamic and interdependent choices, opened to different results.

Since different decades, the measuring of the school-to-work transition was the object of several studies by sociologists and economists as well. In 2003 Eurostat dedicated three publications to this subject (2003a,b,c). Some of the authors of these contributions continued to develop the topic with different qualifications: selection of indicators, determination of transition features (Kogan and Muller, 2003). Also, the international COTEWE project of comparison of the school-to-work

transitions deals with differences in the education systems and in the labour market in European countries (Hannan, Smyth and McCoy, 1999).

The important descriptive study of Iannelli and Soro-Bonmati (2003) emphasizes the differences between the transition of youth in Spain and Italy with respect to Northern countries. In addition to national specificities (in Italy the risk of long-lasting unemployment and in Spain the risk to lose the job or to be placed in low-level occupations), it also emphasizes, two similarities: the vulnerability of the young in Southern countries and the family burden that stretches out somehow to restrain the transition to adulthood. Bernardi, Layte and Schizzerotto (2000) use ECHP figures for a comparison between Italy and Great Britain to focus on the vulnerability in the labour market of young job searchers, considering institutional and individual aspects. Betti, Lemmi and Verma (2005) compare the measuring of the school-to-work transition in different European countries using ECHP figures too.

Regarding econometric analysis at international level, several microeconomic studies were produced (for a review Ryan, 2001). Recently Nguyen and Taylor (2003), applying a duration model to English data, find that the employment opportunities vary according to type of school. In addition, they find that, when monitoring for not observe heterogeneity, duration dependence is strongly growing.

Blazquez-Cuesta and Garcia-Perez (2007), applying a duration model, underline the possible negative role of the decentralization process of the Spanish education system on the school-to-work transition. On the other hand, it emerges that an adequate public expenditure for education significantly increases the opportunity of finding a job. The authors find that the hazard rate increases during the first year of unemployment and subsequently decreases. In Italy, descriptive contributions and/or empirical on the topic come from Bernardi and Ghellini (1997) and Mariani, Tronti and Zelis (2001). D'Agostino, Ghellini and Black (2000) in two papers calculate multivariate econometric estimates at national and regional level. De Santis and Tronti (2006) analyze the international comparison of labour market entry and of the precariousness of the young.

2. Main characteristics of educational systems, labour markets and school-to-work transitions in European countries - 1994-2001

2.1 Educational systems

European countries present considerable differences in their educational systems, both in structure, in terms of actual output (different percentages of young people who graduate per year) and from

the organizational point of view (more or less centralized or homogenous). Differences in the age limits of compulsory education are still quite variegated in European countries: on average 9 years are compulsory but in some countries they are above 10-12 years (the Netherlands) (table 1). Also secondary education is very different in length and features among countries. In some countries lower and upper secondary education are not divided (like in Belgium, Germany and Netherlands), while in the greater part of the other countries a 3-years course of lower secondary education is expected before entering upper secondary education.

In addition, in many countries vocational training is considered higher education and is provided until the age of 20/21 (like in Spain and in Poland).

<< Table 1 >>

There are different classifications of educational systems: the first one refers to the difference between curricula and institutions of the same level and it refers to the existence of differentiated paths (like training). Such differentiations can take place at a lower age (12-15 years) like in the Netherlands or in Germany or at the beginning of the upper secondary school, like in many other countries. Table 2, re-elaborated on the basis of an important comparative study (Hannan *et al.*, 1999), allows to consider the main elements to better classify each national educational system: first, the degree of selectivity, second, the degree of standardization of the different education and training patterns, third the differences in patterns (high schools/vocational training), then the differences in outcomes and finally the linkages with the labour market. Standardization is a particularly relevant dimension. If education is not standardized (as it happens in the USA, for example) degrees are not considered effective signals of skills. In many countries vocational training and general education are equally standardized, but in Ireland, for example, general education is more standardized than vocational training. This element can determine important differences of treatment at regional level of the young job seekers having the same level of education.

<< Table 2 >>

The Italian and Spanish systems are considered as systems characterized by a high level of standardization and a medium level of stratification (Allmendinger, 1989; Hannan *et al.*, 1999), as there is a central certification process of curricula and of examinations uniformly applied at national

level. In both countries there is a quite strong rigidity in the upper secondary school, which creates difficulties in changing education decisions and a scarcely flexible curriculum.

The educational system plays a crucial role in the transition. In Austria, Denmark, Germany and Luxembourg, where the so-called dual system exists, students have the choice between an academic or a vocational pathway at an early stage; the latter is designed to give young people a combination of training at the workplace and of school-based education. The system of other countries is characterised by a range of relations between school and work experience. France, Italy and Spain have systems that offer training in school, but often lack solid institutional bridges from school to work.

The figures show that in all countries young generations are better educated than previous generations and this is particularly true in Italy and Spain. Table 3 shows the substantial differences in the educational systems outcomes in European countries in the period of our following analysis, it refers to the proportion of drop outs between the age of 18 and 24 after the lower secondary degree and the percentage of population aged 20-24 with at least an upper secondary degree. Referring to the first indicator, Portugal (44% in 2001) presents a proportion four times higher than that of the Scandinavian countries or of Northern European countries. Spain and Italy present a quota higher than the European average. But in both countries this proportion has very much improved with respect to 1994 figures, as in the United Kingdom. Referring to the proportion of 20-24 years population with at least an upper secondary degree, once again Scandinavian countries and Austria (with beyond the 85% of young people between 20 and 24 years graduated in 2001) present almost double percentages compared with those of Portugal (44%). At the end of the range there are Spain (65%), Italy and Luxemburg (68%). These countries present intense enhancement for this proportion between 1994 and 2001, less strong enhancement are observed also in the other countries, except for Germany (due to the reunification) and Denmark.

<< Table 3 >>

2.2 The labour market and the main features of the school-to-work transition

The 90's and the beginning of the years 2000 were characterized by remarkable structural changes in the economies, like modernization and market liberalization, globalization and rapid ICT development. The fixed-term employment model with only one employer was replaced by that of a working life made of different jobs that ask for different skills. In Europe structural reforms were developed to face the challenges of globalization, to increase employment rates and to guarantee the full development of the economic potential. The most relevant among those reforms are the

introduction of greater flexibility in the access to the labour market, and job creation measures. Some common aspects in the process of the new regulation of the labour markets are: 1) more flexible rules to enter in the labour market, 2) decentralization of negotiations as a mechanism of wage determination, 3) a wide use of social pacts (national/local) to moderate industrial relations, involving the social parts in development measures and in the reform of the labour market and of the welfare. Although there is a trend to converge on the development of strategies harmonized at European level, the replies of the European countries to the pressures for a new regulation of the labour markets and of the industrial relations seem to go in different directions (Queens, 2002). France and Spain seem to have inverted the previous trend to favour the advent of temporary jobs. The trilateral agreements on income policy in Italy, Ireland, Portugal, and Norway apparently show a new centralisation of the contractual system. As for the most recent social pacts for development, they seem to obtain some significant results only at local level. Therefore, distances in the European labour markets are still relevant and determine substantial differentials in the employment and unemployment rates of various countries.

Mediterranean countries show lower levels of employment and higher levels of unemployment with respect to Northern countries and with time the gap does not seem to close. Between 1994 and 2001, employment in Spain did a big bounce in before, also Ireland -in 1994 with the same employment rates of Southern European countries- in 2001 overtook the EU15 average rates. Scandinavian countries present the highest employment rates, while Luxemburg, Netherlands and Austria show the best performance for unemployment rates.

The gap between countries is emphasized by female employment rates that in the Southern countries are much lower than the EU15 average.

<< Table 4 >>

The international comparison of labour market indicators between young and adult people shows differences in the Mediterranean countries higher than in any other. The youth employment rates are lower in Italy and Spain than in Germany or in United Kingdom (Iannelli and Soro-Bonmati, 2003). The youth unemployment rates are three times higher in Southern countries, except for Finland (in 1994 42% in Spain, 36% in Finland, 29% in Italy, 10% in Germany and 16% in United Kingdom) and the differences are absolutely higher for women in absolute terms. Besides, the long-lasting youth unemployment in Spain and especially in Italy is greater with respect to other countries.

Such marked differences in labour market characteristics in various countries, originate substantial variations in the access to the labour market of new school leavers.

Labour market policies have come to play an important role in helping youth who exit school; these measures include: 1) training/apprenticeship programmes; 2) policies on temporary or fixed-term contracts; 3) measures to lower labour costs.

Referring to training and apprenticeship schemes, examples of mainly school based systems to aid the transition are found in Denmark, Norway and Sweden. Instead there are several mainly workplace-based systems: the dual system (Austria, Germany, and Luxembourg) tends to integrate workplace training with vocational schooling and there are public subsidies for firms who hire apprentices. The dual system is often claimed to be the key to successful integration of non-university-bound youth. Some other European countries, those with mainly school-based systems, rely on employers' subsidies or tax relief conditional on work-place training combined with special school-based training programmes. In Belgium, France, Greece, Italy, Portugal and Spain there is a commonly-used practice of specific training/apprenticeship contracts aimed at youth (OECD, 1998). Temporary or fixed-term apprenticeship/training contracts aimed at youth are central to the debate about non-university-bound young people. In Scandinavian and dual system countries these contracts are just a small part of the broader context of school-to-work strategies. In France, Italy and Spain fixed-term contracts and apprenticeship/training contracts are a central policy tool to fight youth unemployment. These contracts are designed for young job seekers, especially early school leavers and in some countries they envisage incentives for firms. The importance of these contracts varies considerably among countries: in the mid-1990s they accounted for 25% in Italy, 20% in Greece, 12% in France and Spain. In Italy, probably because they are aimed at skilled youth, these contracts may serve as a real bridge for the first access to the labour market. Finally some OECD countries also use direct job creation schemes as a complementary policy tool (OECD, 1998).

Moreover, since the mid-1990s many countries started to implement new active labour market policies to reduce youth unemployment and to improve the school-to-work transition. In 1997 France launched the *Plan Emplois-jounes* and Italy the *Treu Package* with employment promotion measures. Also new measures have been started in the UK (OECD, 1998).

According to OECD figures on the school-to-work transition, one year after leaving education, youth in Finland, Greece, Portugal and Spain face a very high risk of unemployment while in Austria Germany, Luxembourg and Norway the risk is considerably lower. Generally speaking, higher levels of education not only reduce the risk of unemployment but they also increase the chance of obtaining a full time job with a permanent contract. Nevertheless, about one-half of the

jobs found by school leavers are temporary while one-third are part-time. In Spain over 80% of new school leavers who are in a job are on temporary contracts. Many temporary contracts, especially in countries where apprenticeship is important, are often combined with training (OECD, 1998). The analysis suggests that co-ordinated/centralised collective bargaining structures provide a better context for new school leavers to get into employment compared with decentralised structures; the same holds for well-developed apprenticeship systems.

The labour force survey of the year 2000 gives important indications on school-to-work transitions of the young Europeans (Eurostat, 2003a). These figures confirm that, although the activity rate of the young aged 15-35 at the end of the upper secondary school or university in Europe is around 90% and remains stable on such levels after the end of studies, there are differences in the levels and in the model of labour force participation. On the one hand, some countries like France, Belgium, Netherlands, Luxemburg, Ireland and Spain present higher activity rates than the EU average. On the other hand, the majority of countries present a participation model with a strong peak of participation immediately after the end of studies and then the level of participation becomes stabilized. The opposite model is observed in Finland and the United Kingdom where the participation decreases over time; this is partly due to the return of many people to the vocational training system and partly to the return of women to domestic work (Eurostat, 2003a).

Due to lack of experience and inadequacies of the knowledge accumulated in the years of education that is not immediately and easily useful on the labour market, school leavers have more difficulty to find a job in the short period but the situation improves later on. In Austria, the Netherlands, Denmark (countries with a dual educational system), but also in Sweden, Ireland, the United Kingdom and Portugal, the unemployment rate remains low and constant after the end of the education period. In France, Greece, Spain, Italy, where unemployment for school leavers goes beyond 50%, the period immediately after the access to the labour market seems to be more difficult. In most countries, the unemployment rates of graduates are lower than those of people who have attained a lower secondary degree.

Countries differ a lot in the proportion of young people in precarious jobs: the highest levels are observed in Spain, especially at the beginning of access (without education level differences), and in France. Relatively low levels of temporary work are observed in Austria and Italy. A higher education level does not really protect people from entering in precarious work at the beginning of their working career. The probability of finding a precarious job decreases with time in all countries except Austria.

<< Figures 1, 2 >>

3. The Application

3.1 Data source: ECHP

The European Community Household Panel (ECHP) is a longitudinal survey on the family/individual standards of living annually conducted from 1994 to 2001 in different EU countries (Belgium, Denmark, France, Germany, United Kingdom, Greece, Ireland, Italy, Luxemburg, Netherlands, Portugal, Spain, Austria, from 1995, and Finland, from 1996).

The survey is carried out with the same procedure and information is gathered with a standardized questionnaire. It can give comparable results on individual and household incomes to monitor social exclusion and poverty and to determine adequate policy measures. The survey offers a multidimensional framework where the analysis of financial situations is enriched with information on work, education and vocational training, mobility, living conditions, type of household, health conditions and many other variables.

The survey provides dynamic data, including information on the transitions in addition to those on the states for different topics (i.e., in and out flows from the labour market, internal transitions to the labour market from a job to another one). It follows the evolution of the financial situation and all the transition can be studied combining information on changes in civil status, in living or health conditions.

More, ECHP tries to support quantitative information with subjective variables. These are derived from questions on the degree of satisfaction or the judgment (from individuals or households) and can contribute to provide further detail on quantitative information. The reference population of the Panel is the ensemble of the families of fact, residents in private houses, and of members of families above the age of 16. The sample for the twelve EU countries in 1994 is of 61,106 families and 127,000 individuals; the initial Italian sample includes 7,989 families and 24,063 individuals residents in 208 municipalities.

The European Panel is based on a probabilistic two-stage sampling design. In every household the Panel distinguishes between sampling individuals and not sampling individuals. A sampling individual is someone present in the first wave (1994) that is still in life in the following surveys; in addition, sons of a sampling mother are considered sampling individuals too. The sampling evolution derives from the combined mechanism of following rules and from the response rates. The following rules allow to contain the loss of units during time and to fully exploit the informative potentials of the panel that is especially sensitive to the problem of missing data; in fact it becomes less representative if some categories of interviewees exit out more easily to exit from the sample. Even though in 1994 the cross-section response rate to at household level for the whole

Panel exceeded 70%, there are considerable differences between countries: Germany and Luxemburg present rates of 50%, while Greece and Italy reach about 90%. The response rates improve in 1995 and in 1996 when the European average is about 87%.

However, possible bias in the estimates produced from missing data is corrected using a weighting procedure and imputation techniques.

Even though the data refer to the period 1994-2001 and can be considered over dated, they are very useful for the techniques adopted and because of the abundance of information that covers a wide range of theme in a comparable way for different European situations. In this paper we use Eurostat Longitudinal Users' Data Base. From the 1994 sample we selected school leavers younger than 32 and we considered also new entrances of young people during the survey. We selected ten countries (Austria, Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Portugal and Spain) among those that participated in the survey according to the robustness and reliability of the figures concerning our topic.

Our reconstruction of the trajectories of the school-to-permanent work transition derives from the monthly figures referring to the main condition declared from the interviewees from 1994 to 2001 (in the individual dataset). It allows a most careful determination of the paths and of the durations of the transition with respect to the punctual information at the beginning and the end of the events. The explanatory variables used to explain differentials in the transition probability refer to personal and household feature, to the activity carried out during the period of no permanent work, to the trends in the business cycle. We consider the following variables. Age, considered in a not linear way, gender, level of education (high, medium and low educational levels, or missing information that is inserted to avoid the loss of observations), civil status (married or cohabitant), a dummy indicating the single status, a dummy for individuals looking after children and disadvantaged people in the household (elderly and disabled people), a dummy for people receiving benefits (unemployment, redundancy and other benefits), a dummy for membership at any club to measure the role of social networks, health status, household income, months of working experience during the educational period, and the growth, at regional level (NUTS2), of employment rates to control for the business cycle. Finally, the effects of alternatives to no permanent work statuses (fixed-term contract, on the job training contract, vocational training, unemployment and inactivity) during the transition process are measured. Specifically, to catch both the qualitative and the relative quantitative effects, the control variables represent the share of time spent in each no permanent work status at each point of the time at risk.

Descriptive information are reported in tables 5, 6 and 7, and in figures 3 and 4. Table 5 presents descriptive statistics for each analyzed countries. Table 6 reports the average duration of the

transition from education to the first stable work and the use of time during the transition among alternative no stable work statuses. Countries differ by expected duration and by the use of time. Danish, French and Irish individuals take about two years to complete the transition, but differently use time during the transition process. The Danish spend more time in on the job training contracts and vocational training activities, the French spend over than 50% in unemployment and inactivity, while the Irish use over 50% of time in temporary jobs. In six countries (Germany, Austria, Belgium, Portugal, Spain and Greece), individuals take between 29 and 33 months to reach a stable job. However the use of time strongly differs across countries: in Germany and Austria on the job training contracts strongly prevail, possibly because of the dual educational system operating in those countries that provides for apprenticeships; Belgium and Portugal show a quite equal distribution between temporary jobs and unemployment/inactivity; in Spain there is a prevalence of unemployment, followed by fixed-term contracts; the Greeks spend more than 80% of the time of transition in unemployment and inactivity, and about 5 months in temporary contracts; finally in Italy school-leavers need about 39 months to reach a permanent contract and they spend less than 5 months in temporary jobs (two of which in on the job training contract), and more than 27 in unemployment. Table 7 presents the share of time employed among the alternative statuses during the transition, distinguishing among educational level. Descriptive statistics show a heterogeneous distribution of the timing of transition among educational level and countries, even though high educational level seems to favour a faster transition to permanent jobs.

Figures 3 and 4 describe the transition probability observed during the analyzed period and the rapidity of employment, using the discrete distribution of the timing of transitions and the failure variable. Specifically, figure 3 displays the cumulative transition probability with respect to the time spent in no work statuses, and figure 4 displays the cumulative transition probability conditional on having found a permanent job, with respect to the time spent in no work statuses. The first figure shows the percentage of school-leavers that find a job by a given elapsed time. For example after one year, less than 20% of the Italians have found a permanent job, against the 30% of the Irish and about 40% of the French and the Danish. Even though the differences remain remarkable over time, the countries displaying the lower transition probabilities partly recover the existing gaps, overall after the fourth year of search. The second figure focuses on the individuals that find a permanent work during the observed period, informing on the rapidity of becoming employed. For example, among school-leavers that find a stable job during the analyzed period, less than 50% of the Italians and almost 80% of the Danish find a job by the first year of search.

3.2 Econometric analysis

The duration analysis of the school to permanent work transition is approached using the standard job search tools, according to which the individual leaving the educational status starts his/her job search process immediately.

Since we have access to interval censored data, discrete-time hazard models are estimated (Prentice and Gloecker, 1978). According to the hazard models framework, the conditional probability that a transition to permanent employment will take place in a given interval $[a_{j-1}, a_j)$, conditional on the time already spent in it, is estimated as a reduced form equation that resume the product of two probabilities: the probability of receiving a job offer, and the probability of accepting it. The probability of accepting a job offer corresponds to the probability that the wage offer exceeds the reservation wage. The hazard of completing the school-to-permanent work transition can vary over the spell according to changes in the offer probability and to changes in the reservation wage, that are determined by time-varying individual characteristics and by the labour market statuses experienced during the transition process.

In summary, the hazard of leaving not permanent work can vary over the spell according to changes in the offer probability and to changes in the reservation wage, because of the duration of the time at risk, the employment of the time at risk and other exogenous variables that affect the hazard rate, i.e. individual, household job related characteristics. The hazard of exit in the j_{th} reads:

$$h_j \equiv \Pr\{T \in [a_{j-1}, a_j) | T \geq a_{j-1}\} \quad (1)$$

Assuming unit length intervals, the realization j of the discrete random variable T is the recorded spell duration. The discrete-time hazard model requires data to be organized into a “sequential binary form”, that is, the data form an unbalanced panel of individuals with the i_{th} individual contributing $j = 1, 2, \dots, t$ observations, i.e. j indicates the number of period at risk of the event³.

The hazard rate is assumed to follow a complementary log-log specification, that consists in the discrete time representation of a continuous time proportional hazard model. The model reads:

$$h(j, X) = 1 - \exp\{-\exp[\beta' X + \gamma_j]\} \quad (2)$$

³ Specifically, a binary dependent variable was created. If the individual i 's survival time is censored then the dependent binary variable always takes value zero, if the individual i 's survival time is not censored then the dependent binary variable takes value zero in the first $j-1$ observations and value one in the last one.

where, X is a set of, also time-varying, covariates, that includes variables catching the effects of spending time in no permanent employment statuses during the transition process. β is a vector of unknown parameters, including intercepts, to be estimated. Finally, γ_j summarizes the baseline hazard and consists in the log of the difference between the integrated baseline hazard (θ_0) evaluated at the end and the beginning of the interval:

$$\gamma_j = \log \left[\int_{a_{j-1}}^{a_j} \theta_0(w) dw \right] \quad (3)$$

With the aim of reducing the risk of estimation bias from misspecification of the functional form the baseline hazard is estimated not parametrically. Specifically, we assume a piecewise constant exponential specification, in which the groups of months are assumed to have the same hazard rate, but the hazard may differ among groups. For comparison purposes, we also assume a monotonic baseline hazard in which the duration dependence specification is assumed to be the log of the time at risk, which may be thought of as a discrete-time analogue to the continuous time Weibull model, because the shape of the hazard is monotonic. Specifically, if the duration dependence specification is $\delta \log(j)$, then the hazard rate monotonically increases if $\delta > 0$, monotonically decreases if $\delta < 0$, or is constant if $\delta = 0$;

The model is estimated by maximum likelihood, and the partial log-likelihood function for each destination is given by:

$$\log L(\beta, \gamma) = \sum_{i=1}^N \sum_{j=1}^t [y_{ij} \log h_{ij} + (1 - y_{ij}) \log(1 - h_{ij})] \quad (4)$$

where y_{ij} is an indicator assuming value one if the individual transition takes place in month j (i.e. the spell is uncensored) and zero otherwise. Because of the independence assumption, the total log-likelihood function simply consists in the sum of the partial log-likelihood function derived for each contract destination.

The model presented above assumes that all differences between individuals are captured by observed explanatory variables. However, as well known, it may be relevant to use a model that allows for unobservable individual effects to prevent estimation bias deriving, for example, from omitted variables and/or measurement errors in the observables. Specifically, the more likely and relevant effect is the possibility of spurious duration dependence, for which the degree of negative

duration dependence in the hazard is over-estimated or the degree of positive duration dependence in the hazard is under-estimated, if unobserved heterogeneity is not controlled for.

Two approaches are possible to model unobserved heterogeneity. The first assumes that the heterogeneity term follows a particular parametric distribution, usually Gamma or Gaussian. However, since a misspecification in the distribution form possibly leads to estimation bias (see Lancaster, 1990), the non parametric approach suggested by Heckman and Singer (1984) may be applied. In this case, the idea is to estimate a not a priori defined and discrete distribution using a set of parameters. These parameters include a set of mass points and the relative probabilities that a person is located at each mass point. It follows that the process describing time to event now differs among a number of groups within the population. Here, we consider the case of a two mass point distribution function, i.e. we suppose that there are two types of individuals in the population. The Z mass points parameters describing the support of the discrete binomial distribution are η_1 and η_2 and their corresponding probabilities are π_1 and π_2 , with $\omega = (\eta_1, \eta_2, \pi_1, \pi_2)$.

The idea is incorporated in the model by allowing the intercept to vary between the two groups, i.e. a random intercept model characterized by a discrete distribution is estimated. Therefore the hazard rates for the two types of individuals (z) are:

$$h_{zij}(X, \eta_z) = 1 - \exp\left\{-\exp\left[\left(\eta_z + \beta' X_{ij}\right) + \gamma_j(t)\right]\right\} \quad z = 1, 2 \quad (5)$$

If $\eta_2 > \eta_1$ then type 2 individual exits faster than type 1 individual.

The model is estimated by maximum likelihood. The log likelihood function is the weighted sum of the two partial log likelihood functions relative to the two types of individuals:

$$\log L(\beta, \gamma, \omega) = \sum_{z=1}^2 \pi_z \sum_{i=1}^N \sum_{j=1}^t \left[y_{ij} \log h_{ij} + (1 - y_{ij}) \log(1 - h_{ij}) \right] \quad (6)$$

4. Results

Evidence from descriptive statistics shows that the European countries analyzed quite strongly differ both in terms of the timing of the school-to-permanent work transition and the use of the time of transition. Denmark, France and Ireland are characterized by the lowest observed transition duration. Even though German and Austrian school leavers display a medium duration, they spend the largest share of time in apprenticeship work as a consequence of the dual educational system characterizing those countries. Southern European school-leavers (excluding Portugal) display the

longest observed durations, and spend many months in unemployment. Among them the Italians rank in the worst position. Individual and family characteristics as well as labour market statuses during the transition process contribute, with possible differences among countries, to determine permanent employment probabilities.

Uncovering that determinants and their effect is an empirical issue that we solve applying discrete time hazard models. As illustrated in the previous paragraph, we apply the discrete time case for a proportional hazard model, i.e. using a complementary log-log specification, both without unobserved heterogeneity and with unobserved heterogeneity. To reduce estimation bias deriving from misspecification of parametrical functional forms of unobservables and of baseline hazard we assume a mass point distribution (Heckman and Singer, 1984) for unobserved heterogeneity and piecewise constant baseline hazard. However, we also use a monotonic baseline hazard to shed light on the direct effects of specific labour market statuses on duration dependence.

Results are reported in tables 8, 9 and 10 and figure 5. Specifically, in table 8 results are presented from the cloglog specification without unobserved heterogeneity and figure 5 shows the country-level hazard rates predicted by the first model; in table 9 results, when available, are presented from the cloglog specification with Heckman-Singer unobserved heterogeneity; finally, table 10 shows the effect of experimenting specific labour market statuses during the transition process on the duration dependence parameters, adopting a monotonic baseline hazard. For brevity we comment the results reported in table 8, and only describe relevant differences emerging from the specification taking into account unobserved heterogeneity.

Figure 5 illustrates predicted hazard rates derived from the cloglog model estimates using piecewise constant baseline hazard. Patterns are not monotonic and tend to strongly differ across countries and according to the time past without a stable job. We find that French school-leavers experiment the highest hazard rate in the first four years, even though with some negative peaks, and it tends to be strongly reduced once the individual does not find a stable job by the fourth year from the end of school. The first 18 months of search seem to be rather productive. Danish individuals experiment a quite similar pattern, even though the probability of stable employment reaches the maximum after 18 months of search. Irish, Belgian and Portuguese school-leavers show a good performance: the probability of stable employment is quite high during the first year, subsequently decreases, and tends to rise in the long-term (more than 4 years). An increasing trend is found for Austrian school leavers: the hazard rate is very low in the first two years, when they are likely to be employed with on the job training contracts, and rises afterwards, showing a good performance in the medium-long term. The results for Germany are quite surprising. The hazard rate is low in the first two years, reaches fairly good levels in the medium-term (from two to four years of search) and drops in

the long-term. However, as for Austria, predictions are possibly slightly spurious, because the apprenticeships periods that represent a large part of the time at risk of German and Austrian school-leavers, and that we consider as a wait for a stable job, possibly are concentrated in the last period of the dual educational system operating in those countries. Finally, among Southern countries (except Portugal), the hazard rates reflect the strong difficulties that youths experimented during the '90 in finding a job and, especially, permanent employment. Among them, Spain shows the best performance: the hazard rate is low in the first 9 months, reaches the maximum value by the end of the year and constantly decreases thereafter, even though it remains at fairly good levels. Italy and Greece share the worst performance among the analyzed countries. In both countries the probability of finding a stable job is very low in the first months, reaches an upper level between the first and second year of search, and dramatically falls after the second year. As we will see below, all countries share the effect direction of many individual, family and job-related characteristics. However, the magnitude often differs and some peculiarity of each country seems to be maintained, as gender discrimination and the role of social networks in the Southern countries.

A large number of personal (demographic, family and job related) variables are taken into account. When significant they show quite homogenous effects across countries, even though the magnitude of the effects differs. The age of school-leavers shows the typical inverted U shaped form. When significant a stronger effect is found in Austria and Belgium, while it is less important in Denmark and Germany. Evidence of gender discrimination against women is found in Southern countries, Portugal, Spain and overall Italy. On the contrary men appear to be disadvantaged in terms of permanent employability in Ireland. Educational levels contribute to explain the probability of reaching a permanent employment in 5 of the countries considered. With respect to the base-category (the low level of education), having a high educational level seems to be particularly important for Danish, French and Italian school-leavers. In Germany and Spain medium educational levels show the highest positive effects, even though also high education positively affects the hazard rate. Living in a single adult household and/or to be married or cohabitant increases permanent employment probabilities in France, Italy and Spain. It may indicate that leaving the own original household, and consequently possibly receiving a reduction of its support, and also increased family responsibilities possibly increases the search activities and therefore the hazard rate. As expected, caring activities (for children, elderly persons and disabled people) living in the household decrease the probability of permanent employment in six of the analyzed countries: Austria, Belgium, Denmark, Italy, Portugal and Spain. Bad health significantly reduces the hazard rate only in Austria, Interestingly, being a member in any club positively affects the hazard rate in Italy and Spain. It indicates that social networks actively operate in determining permanent

employment probabilities in some Southern European countries, signalling the important role of informal search channels. Household income positively affects (in Germany, Greece, Italy and Spain) the hazard rate possibly as a consequence of better search conditions. Receiving benefits (unemployment, redundancy, or other benefits), according with the economic theory predictions, quite strongly decreases permanent employment probabilities indicating a reduction in job-search effort. When significant, having a job during the educational period, increases permanent employment probabilities, indicating the positive role of work experience. The business cycle indicator shows the expected positive sign (except in France and Portugal). Finally, we focus on the effects of alternative labour market statuses in improving permanent employability. As explained above, explanatory variables identify the share of time (as a percentage value) spent in each status at each point of the time at risk. This definition allows us to recognize both qualitative and quantitative effects of spending time in a specific non permanent employment status. However, the effects tend to strongly differ across countries possibly for a number of alternative and not mutually exclusive reasons. The inactivity status is the base-category. Having a fixed-term contract experience reduces permanent employment probability in Austria, Belgium, Denmark and Ireland. Similar effects are found from on the job training contract experience excluding Belgium. Both pieces of evidence are possibly indicative of a strong separating equilibrium in labour markets, hence the temporary employed do not tend to reach permanent employment. However, with consistent labour market policies, both active and passive, the well-being loss for temporary workers should be limited. Fixed-term contract and on the job training contract experiences help Italian, Spanish and partially German school-leavers to reach a permanent job relationship. At least for Southern countries this possibly indicates that where temporary contracts are scarcely applied in comparison with other no work statuses, job competition is reduced and a temporary job provides workers with a positive signal. On the contrary, in the labour markets where temporary jobs are widely used, they seem to be to do so. Vocational training, in France, Germany and Italy, positively affects the probability of permanent employment, possibly indicating the positive effect of providing specific skills. On the contrary, for Danish workers vocational training reduces permanent employability, possibly because it is strictly connected with active labour market policies devoted to fill the unemployment periods of temporary workers, and mainly operates among individuals belonging to temporary labour market. As expected, unemployment has better effects than inactivity, because of positive job search efforts. In some countries, possibly reinforcing the idea of a strong labour market segmentation, unemployment raises permanent employment probability when compared with temporary contract experiences. However, the effect of each status at each point in time of the time at risk tends to differ from the long-term effects deriving from experiences

in specific labour market statuses. Specifically, we are interested in the long-term effects of having temporary work and vocational training experiences rather than spent all the permanent job search in unemployment or inactivity. In this sense, we estimate the duration dependence parameter for each country using monotonic baseline hazard, that allows to consider the whole trend of the probability of stable employment, and we compare the parameters obtained from the full country sample with sub-groups of individuals experiencing at least one fixed-term contract, on the job training contract, vocational training period, no months in unemployment and inactivity and, finally, all months in unemployment or inactivity. Table 9 reports estimation results of the cloglog model with two-mass points unobserved heterogeneity. Only in four cases (Austria, France, Germany and Ireland) the maximization process is completed and estimations are available. Differences with the model that does not control for unobserved heterogeneity regard the magnitude of the effects but not the sign of the estimated coefficients. Overall, the most important aspect concerns the estimation bias of the duration dependence parameters of the piecewise constant specification. As econometric theory predicts, controlling for unobserved heterogeneity reveals stronger positive duration dependence, since, in the model without unobserved heterogeneity, negative piecewise coefficients are overestimated and the positive ones are underestimated. In each analyzed countries type 2 individuals present unobserved factors that increase the hazard rate, above all in Austria and Germany. Moreover between 71% and 86% of individuals are localized in the second mass point, meaning that a large part of them holds “good” unobservable factors.

Table 10 shows the above mentioned effects for each analyzed country. When significant, model estimations show that the sub-groups of individuals having at least one temporary work experience and/or at least one period of vocational training experience stronger positive duration dependence parameters. It is indicative that spending time in temporary work, even though it may reduce the instantaneous probability of finding a stable employment (as it is the case in some Central and Nordic countries), produces positive long-term effects, reducing or eliminating stigma effects. Vocational training experiences produce similar effects, overall in Danish, German, Greek and Italian labour markets. As a further control, we also estimate the duration dependence parameters for the sub-groups of individuals not spending any month in unemployment or inactivity statuses. In all cases we find that duration dependence parameters are positively increased, confirming previous finding. On the contrary, no significant estimates are obtained for the sub-groups of individuals spending all months of non permanent employment in unemployment or inactivity statuses; for them a negative duration dependence was expected or, at least, a significant decrease of the duration dependence parameters.

Conclusions

In the last years the issue of the school-to-work transition has caught the economists' attention. In fact, what once was a direct and fast process, in the last two or three decades has become a turbulent and long path, that has determined high and persistent youth unemployment. Flexibility policies, aimed at fighting the problem, have made entry in the labour market easier, but have also made longer and, sometimes, harder to keep a permanent position. Micro studies remained quite limited and concentrated on single country analysis. This study proposes a comparison among ten European countries using ECHP micro information focusing on the timing of school-to-permanent work transition, applying discrete time hazard models. Countries differ in terms of transition probability and in the workers use of time during the process. However, for each country, the hazard rate tends to increase, not monotonically, with the time of permanent job-search, at least during the first or the second year of the process. In summary, France, Denmark, Belgium, Ireland and Portugal show a fairly good performance with respect to other countries. In particular, French and Danish school-leavers are more likely to reach a stable job by the end of the first three years, while in Belgium and Ireland the transition probability reaches the highest values after the fourth year of search. Austrian individuals experiment a very low transition probability in the first year, but the hazard rate tends to be strongly raising after the third year of search. Germany shows an unexpected low hazard rate, but as in Austria, Denmark and Ireland, school-leavers spend much of the no permanent job time in temporary employment or vocational training. Spain, and much more heavily Italy and Greece, show the worst performances. Besides, Southern school-leavers spend the majority of the time of transition in unemployment and inactivity. With respect to individual characteristics, we find positive effects from high and medium educational levels, from the independence from the household of origin, and from high household income. Gender discrimination is found in Southern countries, while where, social networks act positively. Individuals caring for household member or receiving benefits show reduced transition probabilities. The labour market statuses during the transition process to a permanent work, act differently across countries. Vocational training tends to increase permanent employment probabilities. Temporary contracts seem to operate positively where temporary labour market is not congested, and the unemployment and inactivity statuses prevail among school-leavers. On the contrary, countries where temporary contracts are widely used and no work statuses are less relevant, a strong separating equilibrium in the labour market is found, indicating that, in the short-term they reduce the probability of permanent employment. However, individuals with at least one temporary job or a vocational training period show a stronger duration dependence parameter, indicating their role in reducing the stigma effect and in favouring the transition to permanent employment in the long-term. With regard to unobserved heterogeneity we

find that it is not common for every analyzed country. Our evidence shows that not controlling for unobserved heterogeneity underestimates the whole duration dependence, suggesting spurious results. Economic policies aimed at increasing the permanent employment transition probability should take into account differences at country-level, and possibly encourage vocational training activities to avoid skill obsolescence.

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Table 1. Characteristics of Educational System in EU countries referring compulsory education and secondary school system

| Country | Compulsory education | Secondary school |
|--------------------|--|--|
| Austria | | <i>Upper level (15-18 years)</i> |
| Belgium (Flanders) | 12 years (from 6 to 18 years of age) | <i>Secondary education (12-18 years)</i> |
| Czech Republic | 9 years (from 6 to 15 years of age) | <i>Gymnázium, Střední odborná škola (15-18 years)</i> |
| Cyprus | 9 years (from 6 to 15 years of age) | <i>Secondary education (15-18 years)</i> |
| Danmark | 9 years (from 6/7 to 15/16 years of age) | <i>Studentereksamen, Handelsskole, Teknisk skole (15–19 years) Erhvervsuddannelse, svendeprøve (15–20 years)</i> |
| Finland | 9 years (from 7 to 17 years of age) | <i>Lukio (16–19 years)</i> |
| France | 10 years (from 6 to 16 years of age) | <i>Lycées (15-18 years)</i> |
| Germany | | <i>Gymnasium (11/13-19 years)</i> |
| Greece | 9 years (from 6 to 15 years of age) | <i>Eniaio Lykeio (3 years after 15 years); Formazione Tecnico-professionale/Technika Epaggelmatika Ekpaideftiria-TEE (2+1 years after 15 years of age); Professionale/Institouto Epaggelmatikis Katartisis-IEK (1-2 years after 15 or 17 years of age)</i> |
| Ireland | 10 years (from 6 to 16 years of age) | <i>Senior Cycle/ Leaving Certificate Programme (15/16-17/18 years) Post Leaving Certificate Courses (1 or 2 years after 18/19 years of age)</i> |
| Netherlands | 12 years (from 4 to 16 years of age) | <i>Secondary education / vo (voortgezet onderwijs) (12-18 years)</i> |
| Norway | 10 years (from 6 to 16 years of age) | <i>Videregående skole (16-19 years) Videregående skole (16-19 years)</i> |
| Poland | | <i>(16-18 years); vocational training (16-18 o 20/21 years)</i> |
| Portugal | 9 years (from 6 to 15 years of age) | <i>Escola Secundária (15-18 years)</i> |
| Slovakia | 9 years (from 6 to 15 years of age) | <i>Gymnázium ; vocational training/ Středné odborné učilište (SOU) (15-17 o 18 years)</i> |
| Slovenia | 9 years (from 6 to 15 years of age) | <i>(15-19 years)</i> |
| Spain | 10 years (from 6 to 16 years of age) | <i>Bachillerato (16-18 years) Formación profesional (16-20 years)</i> |
| Sveden | 9 years (from 7 to 16 years of of age) | <i>Gymnasium (16–19 years)</i> |
| Unghary | | <i>Gimnázium, szakközépiskola, szakképző programok (14–18 years)</i> |
| United Kingdom | England, Wales and Scotland 11 years (from 5 to 16 years of age). Eire 12 years (from 4 to 16 years of age) | <i>Secondary education (16-18 years) not compulsory</i> |

Source: www.e-twinning.net e www.europa.eu.int/ploteus/

Table 2. Characteristics of education/training systems and linkages to labour market for upper secondary level and third-level education in Europe

| | <i>Austria</i> | <i>Finland</i> | <i>France</i> | <i>Germany</i> | <i>Ireland</i> | <i>Italy</i> | <i>Netherland</i> | <i>Portugal</i> | <i>Sveden</i> |
|---|-----------------------|--|-----------------------------|---------------------------------------|------------------------------------|---------------------------------------|-------------------|-----------------|----------------------------------|
| <i>Upper secondary level education</i> | | | | | | | | | |
| Selectivity | High | Low/mod for technical education mod./High for others | Low, but mod/High for Licei | Mod., reduced mobility among profiles | Highly selectiv verso licei Low | Mod., reduced mobility among profiles | Very High | Low/Mod. | Low, High selective to technical |
| Standardisation | | | | | | | | | |
| (A) General education | High | High | High | High | High | High | High | High | High |
| (B) vocational training | High | High | High | High | Low-mod. | Low | High | Mod./Low | High |
| Track differentiation | High | Moderate | Mod./hi. | High | Low/mod. | High | High | Moderate | Moderate |
| Outcome differentiation | Mod | Mod./High | High | Mod./High | High | High | Mod./High | High | High |
| Institutionalised linkages to labour market (apprenticeship...) | Very High | Low | Low/Mod | Very High | Low | Low | High | Low/Mod | Very Low |
| <i>Third level education</i> | | | | | | | | | |
| Selectivity | Low | Mod./High | Low/mod. | Low | High | Low | Moderate | High | Mod/High |
| Standardisation | High | High | High | High | Mod./High | High | Mod./High | Low | High |
| Track differentiation | Mod | High | High | Mod./High | Mod./High | Moderato | High | Moderato | High, |
| Outcome differentiation | Mod. many drop out | High | High | Mod./High | High | Mod/High | High | High | Mod |
| Institutionalised linkages to labour market | Mod. | Mod. | Mod. | Mod. | Mod. | Mod/Low | Mod./High | Mod./Low | High/low |

source: Hannan et al, 1999

Tabella 3. Indicators on drop outs and on education attainment - EU15 – 1994-1998-2001

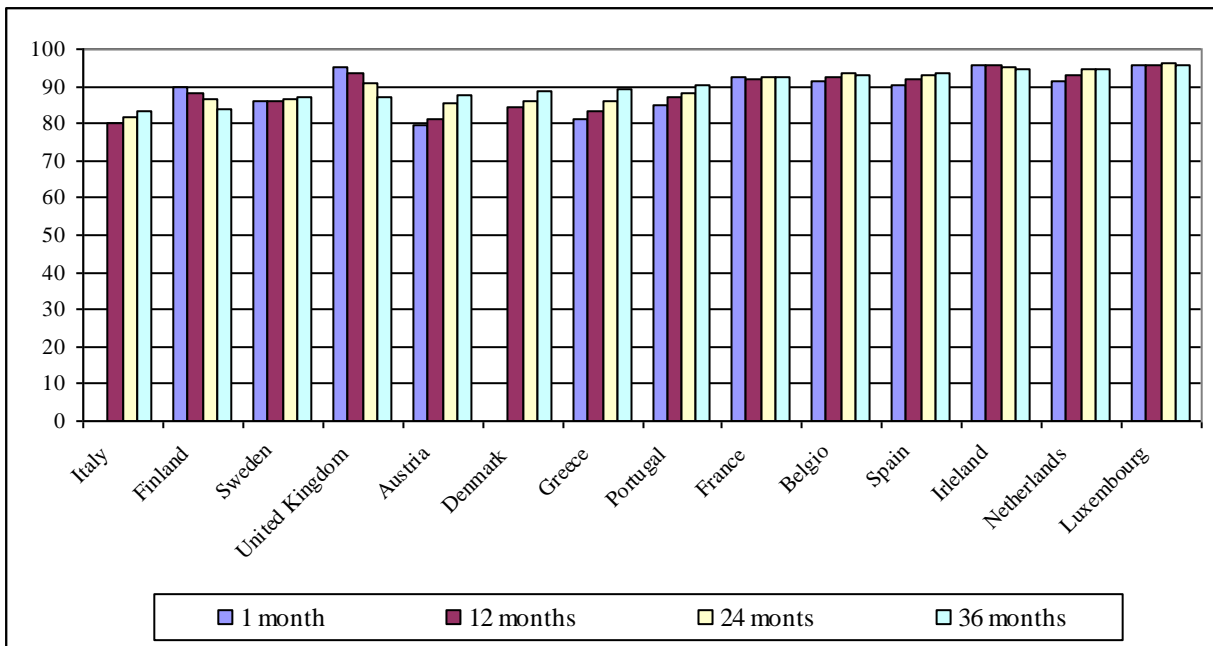
| | % of drop out after lower secondary degree in the 18-24 years population | | | % 20-24 years population with at least an upper secondary education degree | | |
|----------------|--|-------------|-------------|--|----------|-------------|
| | 1994 | 1998 | 2001 | 1994 | 1998 | 2001 |
| Austria | - | - | 10.2 | - | 84.4 | 85.1 |
| Belgium | 16.1 | 14.5 | 13.6 | 76.3 | 79.6 | 81.7 |
| Danmark | 8.6 | 9.8 | 9.0 | 84.9 | 76.3 | 78.4 |
| Finland | - | 7.9 | 10.3 | - | 85.2 | 86.1 |
| France | 16.4 | 14.9 | 13.5 | 77.5 | 78.9 | 81.8 |
| Germany | - | - | 12.5 | 82.8 | - | 73.6 |
| Greece | 23.2 | 20.7 | 17.3 | 71.4 | 76.4 | 80.2 |
| Ireland | 22.9 | - | - | 72.2 | - | 83.9 |
| Italy | 35.1 | 28.4 | 26.4 | 56.3 | 65.3 | 67.9 |
| Luxembourg | 34.4 | - | 18.1 | 54.0 | - | 68.0 |
| Netherland | - | 15.5 | 15.3 | - | 72.9 | 72.7 |
| Portugal | 44.3 | 46.6 | 44.0 | 41.3 | 39.3 | 44.4 |
| Spain | 36.4 | 29.6 | 29.2 | 56.1 | 64.6 | 65.0 |
| Sveden | - | - | 10.5 | - | 87.5 | 85.5 |
| United Kingdom | 32.3 | : | 17.7 | 61.0 | - | 76.9 |
| EU15 | - | 23.6 | 19.0 | - | - | 73.6 |

Table 4. Total and young employment and unemployment rates in European countries - 1994-2001

| | Employment rate | | | Unemployment rate | | | Young Unemployment rate (less than 25 years) | | |
|----------------|-----------------|-------------|-------------|-------------------|------------|------------|--|-------------|-------------|
| | 1994 | 1998 | 2001 | 1994 | 1998 | 2001 | 1994 | 1998 | 2001 |
| Austria | - | 67.9 | 68.5 | - | 4.5 | 3.6 | 5.7 | 6.4 | 5.8 |
| Belgium | 56.0 | 57.4 | 59.9 | 9.8 | 9.3 | 6.6 | 23.2 | 22.1 | 16.8 |
| Danmark | 72.9 | 75.1 | 76.2 | 8.0 | 4.9 | 4.5 | 10.2 | 7.3 | 8.3 |
| Finland | - | 64.6 | 68.1 | - | 11.4 | 9.1 | 34.0 | 23.5 | 19.8 |
| France | 59.2 | 60.2 | 62.8 | 12.0 | 11.0 | 8.3 | 28.0 | 25.1 | 18.9 |
| Germany | 65.2 | 63.9 | 65.9 | 8.6 | 9.1 | 7.6 | 9.6 | 9.1 | 7.7 |
| Greece | 55.9 | 56.0 | 56.3 | 8.9 | 10.8 | 10.7 | 27.7 | 29.9 | 28.0 |
| Ireland | 54.0 | 60.6 | 65.8 | 14.9 | 7.5 | 4.0 | 23.0 | 11.3 | 7.3 |
| Italy | 51.7 | 51.9 | 54.8 | 11.2 | 11.3 | 9.1 | 29.1 | 29.9 | 24.1 |
| Luxembourg | 60.6 | 60.5 | 63.1 | 3.5 | 2.7 | 2.0 | 7.1 | 6.9 | 7.1 |
| Netherland | 64.3 | 70.2 | 74.1 | 7.0 | 3.8 | 2.2 | 10.9 | 7.6 | 4.5 |
| Portugal | 65.8 | 66.8 | 69.0 | 6.7 | 4.9 | 4.0 | 14.7 | 10.4 | 9.4 |
| Spain | 45.5 | 51.3 | 57.8 | 24.0 | 15.0 | 10.3 | 42.3 | 33.1 | 23.2 |
| Sveden | - | 70.3 | 74.0 | - | 8.2 | 4.9 | 22.0 | 16.1 | 10.9 |
| United Kingdom | 68.8 | 70.5 | 71.4 | 9.6 | 6.1 | 5.0 | 16.4 | 13.1 | 11.7 |
| EU15 | - | 61.4 | 64.0 | 11.0 | 9.3 | 7.2 | 21.1 | 18.1 | 14.1 |

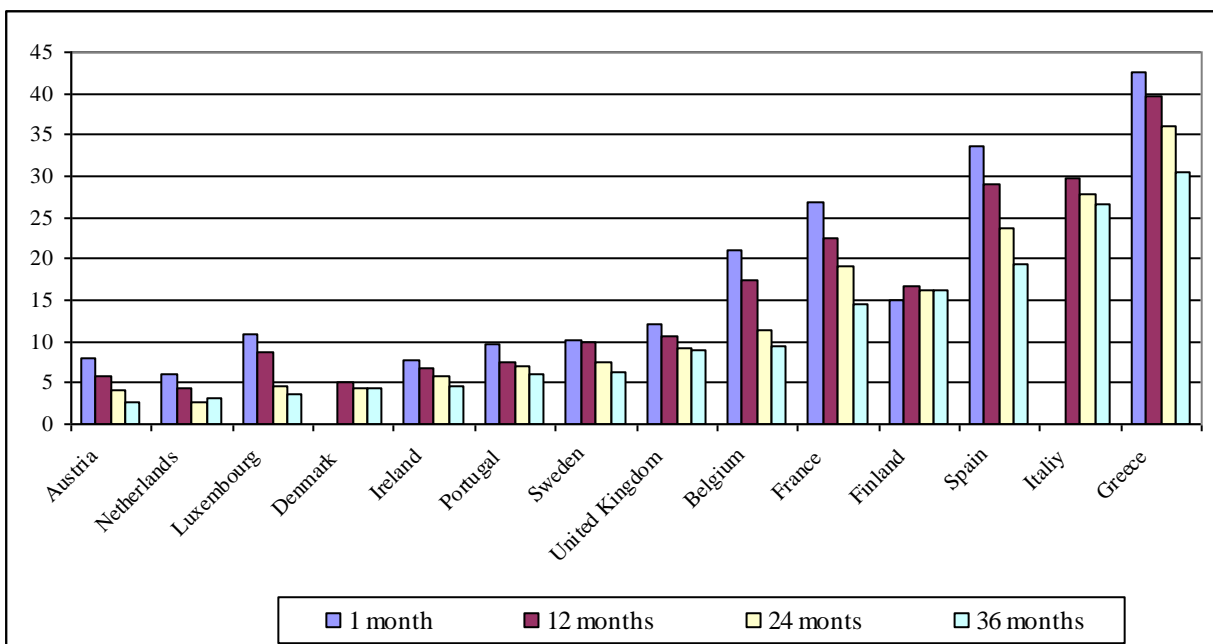
Source: Eurostat

Fig. 1. Activity rates (1, 12, 24, 36 months) from the first exit from education in European countries – 2000



Source: Eurostat, 2003a

Fig. 2. Unemployment rates (1, 12, 24, 36 months) from the first exit from school in European countries – 2000



Source: Eurostat, 2003a

Table 5. Descriptive statistics

| | Austria | | Belgium | | Denmark | | France | | Germany | | Greece | | Ireland | | Italy | | Portugal | | Spain | |
|---------------------|---------|-------|---------|-------|---------|-------|--------|-------|---------|-------|--------|--------|---------|-------|--------|-------|----------|--------|--------|--------|
| | Mean | S.d. | Mean | S.d. | Mean | S.d. | Mean | S.d. | Mean | S.d. | Mean | S.d. | Mean | S.d. | Mean | S.d. | Mean | S.d. | Mean | S.d. |
| Age | 19.094 | 3.013 | 23.533 | 3.189 | 22.998 | 4.635 | 23.617 | 2.575 | 21.074 | 3.378 | 22.098 | 3.137 | 21.535 | 3.041 | 23.537 | 3.800 | 21.760 | 3.072 | 23.004 | 3.918 |
| Male | 0.621 | 0.485 | 0.448 | 0.497 | 0.451 | 0.498 | 0.527 | 0.499 | 0.593 | 0.491 | 0.322 | 0.467 | 0.570 | 0.495 | 0.477 | 0.499 | 0.438 | 0.496 | 0.441 | 0.497 |
| High education | 0.032 | 0.175 | 0.322 | 0.467 | 0.153 | 0.360 | 0.309 | 0.462 | 0.075 | 0.263 | 0.197 | 0.398 | 0.195 | 0.396 | 0.131 | 0.338 | 0.109 | 0.312 | 0.372 | 0.483 |
| Medium education | 0.213 | 0.409 | 0.303 | 0.460 | 0.401 | 0.490 | 0.160 | 0.367 | 0.294 | 0.456 | 0.601 | 0.490 | 0.410 | 0.492 | 0.609 | 0.488 | 0.302 | 0.459 | 0.296 | 0.457 |
| Low education | 0.686 | 0.464 | 0.154 | 0.361 | 0.372 | 0.483 | 0.168 | 0.374 | 0.563 | 0.496 | 0.169 | 0.375 | 0.207 | 0.405 | 0.253 | 0.435 | 0.572 | 0.495 | 0.330 | 0.470 |
| Missing education | 0.070 | 0.254 | 0.221 | 0.415 | 0.073 | 0.260 | 0.364 | 0.481 | 0.068 | 0.251 | 0.033 | 0.179 | 0.189 | 0.392 | 0.007 | 0.084 | 0.017 | 0.129 | 0.001 | 0.037 |
| Single | 0.028 | 0.166 | 0.078 | 0.268 | 0.190 | 0.392 | 0.146 | 0.354 | 0.072 | 0.258 | 0.022 | 0.146 | 0.036 | 0.187 | 0.015 | 0.121 | 0.003 | 0.057 | 0.021 | 0.142 |
| Married/Cohabitant | 0.092 | 0.289 | 0.295 | 0.456 | 0.427 | 0.495 | 0.230 | 0.421 | 0.134 | 0.340 | 0.113 | 0.317 | 0.047 | 0.211 | 0.092 | 0.289 | 0.196 | 0.397 | 0.108 | 0.310 |
| Looking at person | 0.056 | 0.230 | 0.171 | 0.377 | 0.195 | 0.396 | 0.097 | 0.296 | 0.066 | 0.248 | 0.058 | 0.233 | 0.107 | 0.310 | 0.089 | 0.285 | 0.130 | 0.337 | 0.110 | 0.313 |
| Bad health | 0.061 | 0.240 | 0.077 | 0.267 | 0.249 | 0.432 | 0.074 | 0.261 | 0.137 | 0.344 | 0.023 | 0.150 | 0.105 | 0.307 | 0.018 | 0.135 | 0.069 | 0.254 | 0.075 | 0.264 |
| Social network | 0.519 | 0.500 | 0.348 | 0.476 | 0.570 | 0.495 | 0.224 | 0.417 | 0.270 | 0.444 | 0.091 | 0.287 | 0.495 | 0.500 | 0.200 | 0.400 | 0.151 | 0.358 | 0.234 | 0.423 |
| Household income | 514.1 | 246.6 | 1165.0 | 750.4 | 233.8 | 138.1 | 157.2 | 106.9 | 60.8 | 29.9 | 4618.4 | 2944.1 | 23.8 | 14.0 | 36.8 | 23.4 | 2737.9 | 1864.6 | 3137.2 | 2365.3 |
| Benefit | 0.078 | 0.268 | 0.320 | 0.467 | 0.318 | 0.466 | 0.273 | 0.446 | 0.067 | 0.250 | 0.027 | 0.163 | 0.278 | 0.448 | 0.014 | 0.118 | 0.062 | 0.242 | 0.042 | 0.200 |
| Previous work | 0.158 | 1.183 | 0.343 | 2.225 | 1.106 | 3.918 | 0.620 | 3.143 | 0.220 | 1.704 | 0.194 | 1.322 | 1.546 | 4.003 | 0.156 | 1.229 | 0.316 | 2.488 | 0.335 | 1.613 |
| Fixed-term contract | 0.056 | 0.202 | 0.245 | 0.369 | 0.211 | 0.362 | 0.245 | 0.358 | 0.109 | 0.284 | 0.100 | 0.260 | 0.332 | 0.430 | 0.058 | 0.194 | 0.315 | 0.410 | 0.204 | 0.342 |
| On the job training | 0.717 | 0.424 | 0.071 | 0.229 | 0.276 | 0.400 | 0.002 | 0.040 | 0.627 | 0.449 | 0.034 | 0.173 | 0.153 | 0.334 | 0.038 | 0.163 | 0.023 | 0.131 | 0.033 | 0.149 |
| Unemployment | 0.094 | 0.256 | 0.458 | 0.428 | 0.234 | 0.374 | 0.381 | 0.421 | 0.082 | 0.233 | 0.545 | 0.452 | 0.342 | 0.430 | 0.714 | 0.396 | 0.334 | 0.417 | 0.541 | 0.428 |
| Inactivity | 0.101 | 0.282 | 0.179 | 0.333 | 0.159 | 0.323 | 0.298 | 0.406 | 0.146 | 0.320 | 0.257 | 0.401 | 0.098 | 0.275 | 0.171 | 0.332 | 0.299 | 0.419 | 0.146 | 0.311 |
| Vocational | 0.032 | 0.154 | 0.048 | 0.186 | 0.120 | 0.290 | 0.073 | 0.209 | 0.037 | 0.178 | 0.064 | 0.235 | 0.075 | 0.226 | 0.020 | 0.125 | 0.029 | 0.154 | 0.076 | 0.242 |
| Employment growth | -0.087 | 0.911 | 0.482 | 0.961 | 0.413 | 0.904 | 0.309 | 0.769 | 0.085 | 0.974 | -0.192 | 1.141 | 1.848 | 0.874 | 0.387 | 0.966 | 0.609 | 1.975 | 2.075 | 1.431 |

Source: our elaboration on ECHP data

Table 6. Average timing of transition and use of the time of permanent job search.

| | Fixed-term contract | | On the job training | | Vocational | | Unemployment | | Inactivity | | | |
|----------|---------------------|-------|---------------------|-------|------------|-------|--------------|------|------------|-------|------|-------|
| | Mean | S.d. | Mean | S.d. | Mean | S.d. | Mean | S.d. | Mean | S.d. | | |
| Denmark | 23.56 | 17.64 | 4.86 | 9.93 | 7.91 | 11.54 | 1.97 | 4.54 | 4.59 | 8.17 | 4.23 | 11.02 |
| Belgium | 29.72 | 19.88 | 9.20 | 13.12 | 2.35 | 7.04 | 0.88 | 3.15 | 13.89 | 16.66 | 3.39 | 6.88 |
| France | 23.50 | 16.68 | 8.00 | 12.08 | 0.02 | 0.36 | 0.63 | 1.59 | 9.05 | 13.31 | 5.73 | 10.11 |
| Ireland | 25.67 | 19.92 | 7.55 | 13.13 | 6.23 | 13.68 | 1.35 | 4.04 | 6.99 | 12.52 | 3.56 | 10.37 |
| Italy | 38.90 | 23.48 | 2.47 | 6.48 | 1.74 | 5.89 | 0.35 | 1.75 | 27.24 | 23.08 | 7.10 | 14.90 |
| Greece | 32.62 | 21.97 | 4.10 | 9.27 | 0.71 | 3.47 | 1.15 | 4.43 | 18.92 | 20.12 | 7.74 | 13.55 |
| Spain | 32.91 | 21.84 | 8.19 | 11.00 | 0.92 | 3.38 | 1.24 | 3.87 | 16.68 | 18.03 | 5.87 | 14.35 |
| Portugal | 28.60 | 19.10 | 11.67 | 14.77 | 0.41 | 2.21 | 0.43 | 1.99 | 8.26 | 12.15 | 7.83 | 14.39 |
| Austria | 30.38 | 15.39 | 1.80 | 5.71 | 24.29 | 17.09 | 0.48 | 1.89 | 1.76 | 4.82 | 2.05 | 5.38 |
| Germany | 31.87 | 17.11 | 4.15 | 9.93 | 20.76 | 15.92 | 0.65 | 2.69 | 2.61 | 6.61 | 3.67 | 10.12 |

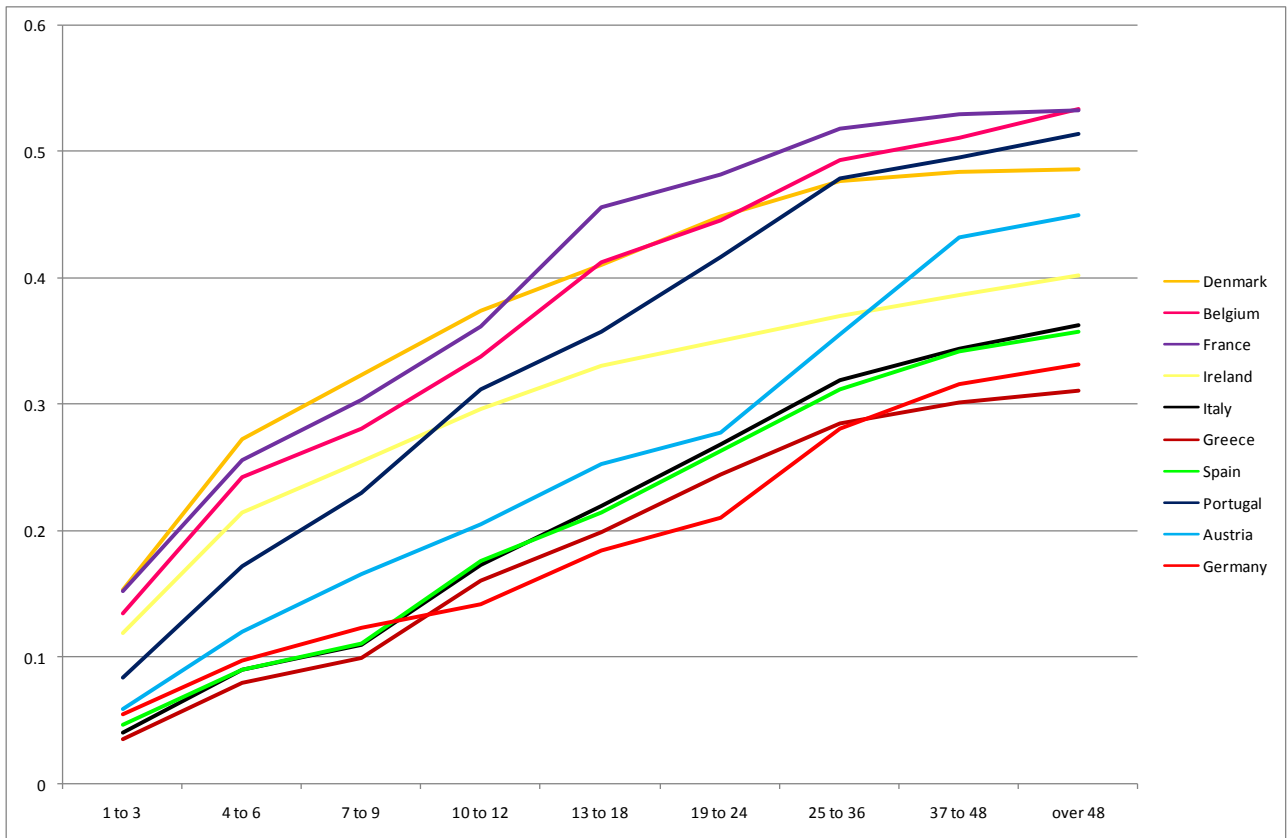
Source: our elaboration on ECHP data

Table 7. Average timing of transition and use of the time of permanent job search by educational levels.

| Share of time | | Education | | | Share of time | | Education | | |
|---------------|----------------------|-----------|--------|--------|---------------|----------------------|-----------|--------|--------|
| Country | | High | Medium | Low | Country | | High | Medium | Low |
| Denmark | Timing of transition | 20.81 | 20.54 | 29.25 | Greece | Timing of transition | 32.30 | 33.52 | 30.75 |
| | Fixed-term contract | 26.54% | 21.38% | 16.62% | | Fixed-term contract | 12.63% | 9.54% | 9.66% |
| | On the job training | 19.76% | 30.12% | 31.06% | | On the job training | 3.93% | 2.26% | 6.31% |
| | Vocational | 2.85% | 11.74% | 16.36% | | Vocational | 1.63% | 5.33% | 16.62% |
| | Unemployment | 38.09% | 21.48% | 19.89% | | Unemployment | 58.90% | 56.70% | 40.42% |
| | Inactivity | 12.76% | 15.28% | 16.07% | | Inactivity | 22.91% | 26.16% | 26.99% |
| Belgium | Timing of transition | 28.92 | 32.45 | 29.69 | Spain | Timing of transition | 33.48 | 29.75 | 35.17 |
| | Fixed-term contract | 39.78% | 18.46% | 8.92% | | Fixed-term contract | 24.37% | 21.75% | 14.93% |
| | On the job training | 3.31% | 7.96% | 14.47% | | On the job training | 2.93% | 2.92% | 3.86% |
| | Vocational | 1.53% | 4.46% | 13.01% | | Vocational | 4.73% | 7.60% | 10.65% |
| | Unemployment | 40.14% | 48.79% | 47.63% | | Unemployment | 55.01% | 52.98% | 54.37% |
| | Inactivity | 15.25% | 20.33% | 15.97% | | Inactivity | 12.95% | 14.76% | 16.20% |
| France | Timing of transition | 22.48 | 23.02 | 33.46 | Portugal | Timing of transition | 23.39 | 27.94 | 30.26 |
| | Fixed-term contract | 27.75% | 21.02% | 20.76% | | Fixed-term contract | 62.76% | 32.29% | 25.39% |
| | On the job training | 0.00% | 0.59% | 0.00% | | On the job training | 9.12% | 1.92% | 1.21% |
| | Vocational | 6.15% | 8.27% | 7.66% | | Vocational | 1.98% | 2.38% | 3.34% |
| | Unemployment | 30.45% | 45.77% | 50.10% | | Unemployment | 19.51% | 36.93% | 33.43% |
| | Inactivity | 35.71% | 24.46% | 21.45% | | Inactivity | 6.62% | 26.46% | 36.63% |
| Ireland | Timing of transition | 22.36 | 26.48 | 30.42 | Austria | Timing of transition | 20.44 | 26.35 | 32.08 |
| | Fixed-term contract | 58.52% | 28.26% | 10.70% | | Fixed-term contract | 38.69% | 12.02% | 2.54% |
| | On the job training | 3.55% | 22.87% | 11.75% | | On the job training | 11.85% | 49.23% | 79.81% |
| | Vocational | 3.58% | 9.53% | 7.12% | | Vocational | 1.03% | 5.22% | 3.00% |
| | Unemployment | 28.27% | 31.32% | 49.70% | | Unemployment | 20.92% | 13.53% | 7.92% |
| | Inactivity | 6.08% | 8.01% | 20.73% | | Inactivity | 27.50% | 20.00% | 6.74% |
| Italy | Timing of transition | 31.29 | 39.67 | 41.53 | Germany | Timing of transition | 28.12 | 30.59 | 32.86 |
| | Fixed-term contract | 7.71% | 6.08% | 4.13% | | Fixed-term contract | 69.31% | 12.30% | 3.51% |
| | On the job training | 4.05% | 3.73% | 3.57% | | On the job training | 7.08% | 53.25% | 73.81% |
| | Vocational | 2.88% | 1.96% | 1.15% | | Vocational | 1.77% | 2.40% | 4.78% |
| | Unemployment | 69.60% | 71.30% | 72.59% | | Unemployment | 12.88% | 9.86% | 6.91% |
| | Inactivity | 15.76% | 16.92% | 18.57% | | Inactivity | 9.10% | 22.12% | 11.03% |

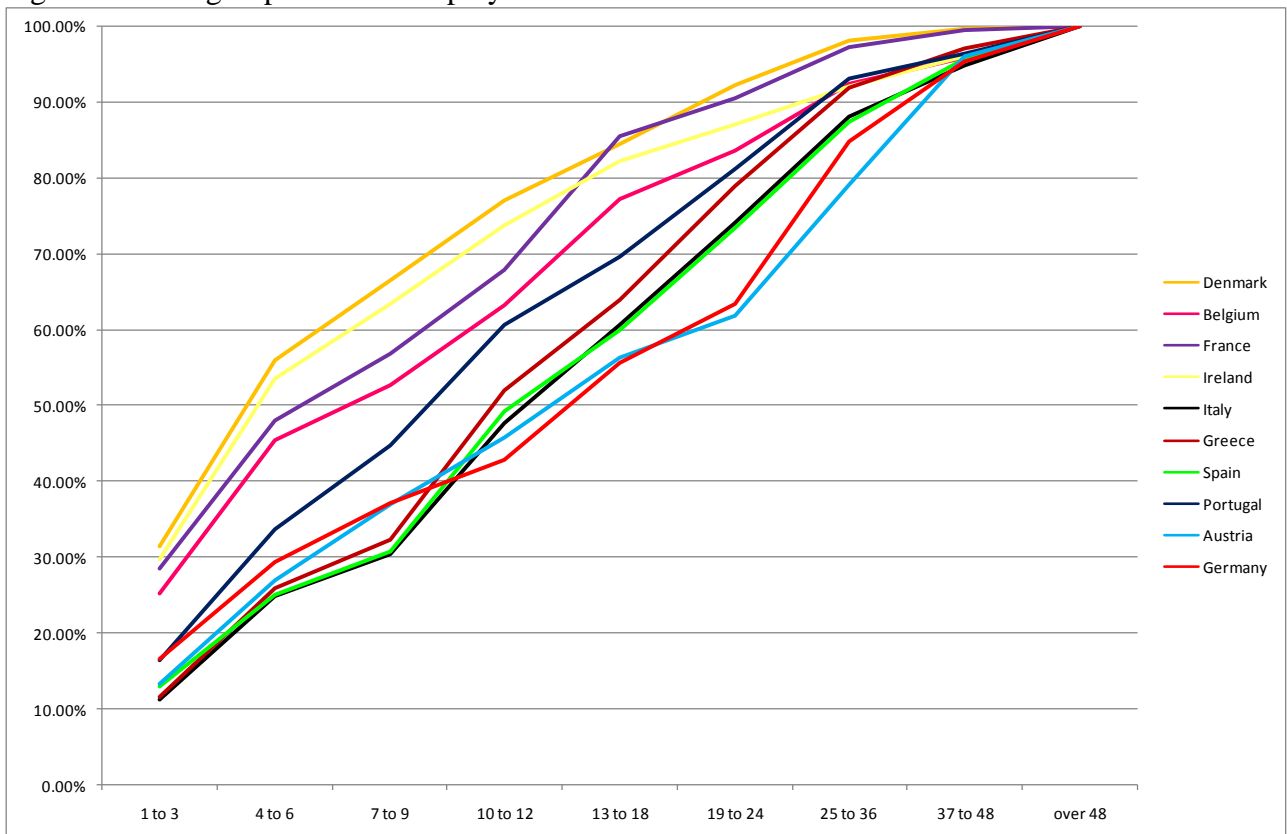
Source: our elaboration on ECHP data

Figure 3. Probability of permanent employing by countries and time of search.



Source: our elaboration on ECHP data

Figure 4. Timing of permanent employment



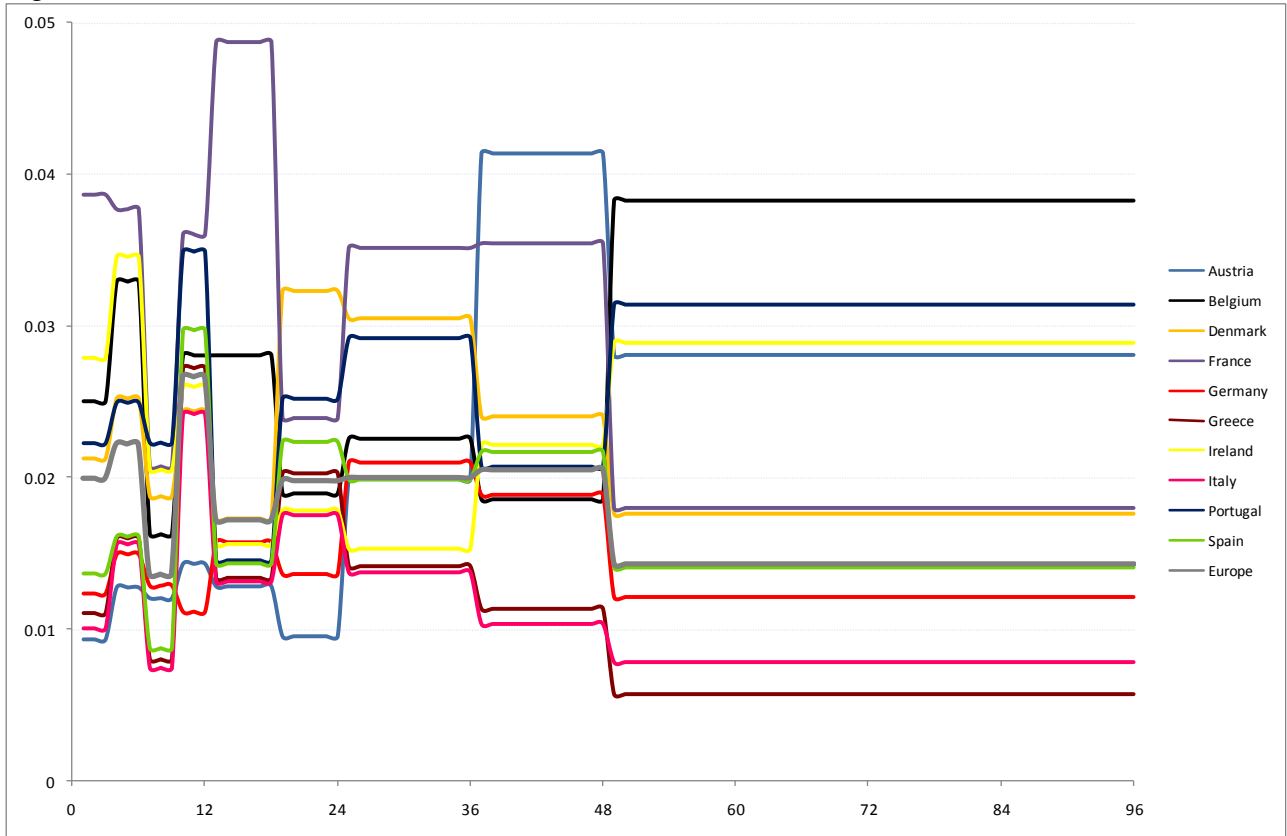
Source: our elaboration on ECHP data

Table 8. Complementary log-log model estimations

| | Austria | | Belgium | | Denmark | | France | | Germany | | Greece | | Ireland | | Italy | | Portugal | | Spain | |
|--|---------|-----------|---------|-----------|---------|-----------|---------|-----------|---------|-----------|--------|-----------|---------|-----------|---------|-----------|----------|-----------|---------|-----------|
| | b | s.e. | b | s.e. | b | s.e. | b | s.e. | b | s.e. | b | s.e. | b | s.e. | b | s.e. | b | s.e. | b | s.e. |
| Age | 0.921 | 0.225 *** | 1.374 | 0.372 *** | 0.475 | 0.207 ** | 0.016 | 0.267 | 0.551 | 0.241 ** | 0.269 | 0.335 | 0.356 | 0.311 | 0.063 | 0.140 | 0.177 | 0.217 | 0.049 | 0.125 |
| Age2 | -0.017 | 0.005 *** | -0.027 | 0.008 *** | -0.010 | 0.004 ** | 0.000 | 0.005 | -0.011 | 0.005 ** | -0.005 | 0.007 | -0.007 | 0.007 | -0.001 | 0.003 | -0.004 | 0.005 | -0.001 | 0.002 |
| Male | -0.167 | 0.156 | 0.036 | 0.151 | -0.021 | 0.144 | 0.098 | 0.126 | -0.133 | 0.144 | -0.097 | 0.171 | -0.357 | 0.162 ** | 0.278 | 0.091 *** | 0.192 | 0.116 * | 0.166 | 0.090 * |
| High education | -0.053 | 0.331 | 0.065 | 0.307 | 0.859 | 0.294 *** | 0.444 | 0.206 ** | 0.647 | 0.313 ** | 0.409 | 0.316 | 0.157 | 0.342 | 0.526 | 0.206 ** | 0.329 | 0.223 | 0.338 | 0.150 ** |
| Medium education | 0.252 | 0.168 | -0.134 | 0.286 | 0.468 | 0.209 ** | 0.364 | 0.226 | 0.975 | 0.188 *** | 0.270 | 0.244 | 0.254 | 0.239 | 0.252 | 0.135 * | 0.203 | 0.138 | 0.412 | 0.126 *** |
| Missing education | 0.372 | 0.283 | 0.290 | 0.306 | 0.827 | 0.264 *** | 0.582 | 0.214 *** | -0.774 | 0.476 | 0.084 | 0.470 | 0.180 | 0.303 | 0.716 | 0.429 * | 0.671 | 0.358 * | | |
| Single | -0.264 | 0.397 | 0.155 | 0.280 | 0.063 | 0.272 | 0.439 | 0.193 ** | 0.338 | 0.245 | -0.588 | 0.553 | -0.501 | 0.546 | 0.605 | 0.294 ** | 0.870 | 0.736 | 0.663 | 0.233 *** |
| Married/Cohabitant | 0.034 | 0.218 | 0.122 | 0.179 | -0.103 | 0.225 | 0.618 | 0.149 *** | 0.289 | 0.188 | -0.020 | 0.261 | -0.436 | 0.412 | 0.482 | 0.174 *** | -0.036 | 0.176 | 0.056 | 0.163 |
| Look at person | -0.492 | 0.295 * | -0.515 | 0.254 ** | -0.462 | 0.250 * | -0.164 | 0.213 | -0.116 | 0.264 | -0.062 | 0.357 | 0.058 | 0.277 | -0.551 | 0.199 *** | -0.643 | 0.260 ** | -0.524 | 0.193 *** |
| Bad health | -1.037 | 0.370 *** | -0.045 | 0.272 | 0.023 | 0.168 | 0.068 | 0.192 | -0.005 | 0.193 | -0.096 | 0.552 | -0.076 | 0.277 | -0.241 | 0.350 | -0.388 | 0.248 | -0.152 | 0.174 |
| Social net | -0.026 | 0.134 | 0.083 | 0.146 | 0.009 | 0.142 | 0.156 | 0.127 | | | 0.222 | 0.228 | 0.014 | 0.149 | 0.233 | 0.099 ** | 0.013 | 0.152 | 0.201 | 0.096 ** |
| Income | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.001 | 0.001 | 0.003 | 0.002 ** | 0.000 | 0.000 *** | 0.009 | 0.007 | 0.008 | 0.002 *** | 0.000 | 0.000 | 0.000 | 0.000 ** |
| Benefit | -0.857 | 0.259 *** | -1.222 | 0.225 *** | -1.526 | 0.204 *** | -1.372 | 0.192 *** | -1.055 | 0.342 *** | -1.091 | 0.728 | -1.702 | 0.246 *** | -0.110 | 0.372 | -0.669 | 0.370 * | -0.485 | 0.309 |
| Previous work | 0.077 | 0.037 ** | 0.022 | 0.036 | 0.017 | 0.019 | 0.002 | 0.016 | 0.030 | 0.023 | 0.129 | 0.026 *** | -0.031 | 0.025 | 0.061 | 0.023 *** | 0.004 | 0.022 | 0.041 | 0.020 ** |
| <i>Share of status during transition</i> | | | | | | | | | | | | | | | | | | | | |
| Fixed-term contract | -1.093 | 0.337 *** | -0.740 | 0.252 *** | -1.107 | 0.259 *** | 0.013 | 0.206 | 0.605 | 0.314 * | 0.048 | 0.285 | -0.982 | 0.347 *** | 0.996 | 0.195 *** | 0.125 | 0.171 | 0.499 | 0.181 *** |
| On the job training | -1.359 | 0.264 *** | -0.633 | 0.398 | -2.058 | 0.301 *** | 1.249 | 0.942 | -0.357 | 0.277 | -0.491 | 0.510 | -1.560 | 0.438 *** | 0.832 | 0.219 *** | 0.423 | 0.372 | 0.293 | 0.310 |
| Unemployment | 0.288 | 0.265 | -0.308 | 0.223 | 0.533 | 0.225 ** | 0.587 | 0.189 *** | 1.255 | 0.303 *** | -0.267 | 0.207 | 0.361 | 0.334 | -0.069 | 0.146 | 0.025 | 0.166 | 0.046 | 0.171 |
| Vocational | -0.154 | 0.413 | -0.410 | 0.455 | -1.423 | 0.353 *** | 0.854 | 0.253 *** | 0.825 | 0.453 * | -0.427 | 0.373 | -0.422 | 0.459 | 0.706 | 0.290 ** | -0.581 | 0.502 | -0.172 | 0.261 |
| Employment growth | -0.011 | 0.077 | 0.177 | 0.093 * | 0.037 | 0.096 | -0.327 | 0.105 *** | 0.167 | 0.076 ** | 0.053 | 0.067 | 0.080 | 0.124 | 0.143 | 0.060 ** | -0.056 | 0.031 * | 0.134 | 0.039 *** |
| Constant | -15.35 | 2.70 *** | -20.15 | 4.51 *** | -8.71 | 2.62 *** | -3.86 | 3.27 | -11.66 | 3.01 *** | -7.75 | 3.94 ** | -8.24 | 3.62 ** | -5.35 | 1.76 *** | -6.14 | 2.55 ** | -5.14 | 1.55 *** |
| d1_3 | -0.321 | 0.273 | -0.116 | 0.245 | 0.209 | 0.285 | -0.236 | 0.175 | -0.242 | 0.262 | -0.191 | 0.300 | 0.587 | 0.282 ** | -0.270 | 0.187 | 0.428 | 0.221 * | -0.048 | 0.181 |
| d4_6 | -0.006 | 0.268 | 0.162 | 0.239 | 0.382 | 0.286 | -0.262 | 0.179 | -0.052 | 0.260 | 0.178 | 0.281 | 0.805 | 0.285 *** | 0.171 | 0.169 | 0.542 | 0.223 ** | 0.116 | 0.179 |
| d7_9 | -0.063 | 0.286 | -0.551 | 0.302 * | 0.083 | 0.307 | -0.867 | 0.220 *** | -0.201 | 0.281 | -0.513 | 0.344 | 0.276 | 0.320 | -0.570 | 0.213 *** | 0.430 | 0.235 * | -0.493 | 0.217 ** |
| d10_12 | 0.110 | 0.292 | 0.000 | 0.268 | 0.347 | 0.308 | -0.308 | 0.196 | -0.344 | 0.306 | 0.715 | 0.256 *** | 0.515 | 0.316 | 0.614 | 0.155 *** | 0.883 | 0.219 *** | 0.733 | 0.162 *** |
| d19_24 | -0.299 | 0.335 | -0.397 | 0.314 | 0.634 | 0.332 * | -0.723 | 0.255 *** | -0.143 | 0.283 | 0.418 | 0.270 | 0.134 | 0.378 | 0.288 | 0.163 * | 0.553 | 0.233 ** | 0.446 | 0.170 *** |
| d25_36 | 0.443 | 0.261 * | -0.221 | 0.289 | 0.576 | 0.364 | -0.333 | 0.233 | 0.290 | 0.230 | 0.056 | 0.285 | -0.020 | 0.390 | 0.045 | 0.166 | 0.702 | 0.235 *** | 0.328 | 0.173 * |
| d37_48 | 1.188 | 0.273 *** | -0.418 | 0.417 | 0.334 | 0.564 | -0.325 | 0.373 | 0.182 | 0.271 | -0.166 | 0.375 | 0.354 | 0.444 | -0.241 | 0.211 | 0.356 | 0.352 | 0.416 | 0.205 ** |
| d_ov48 | 0.793 | 0.404 ** | 0.315 | 0.420 | 0.018 | 1.063 | -1.011 | 0.737 | -0.262 | 0.363 | -0.851 | 0.483 * | 0.623 | 0.489 | -0.521 | 0.238 ** | 0.776 | 0.353 ** | -0.019 | 0.255 |
| Log likelihood | -1029.8 | | -906.2 | | -850.3 | | -1387.6 | | -1139.1 | | -994.2 | | -867.8 | | -2708.2 | | -1525.2 | | -2676.9 | |
| LR chi2 | 288.7 | | 134.1 | | 226.8 | | 187.9 | | 263.8 | | 97.9 | | 146.2 | | 271.2 | | 94.2 | | 181.0 | |
| Observations | 10350 | | 6465 | | 6112 | | 8091 | | 15214 | | 12331 | | 6706 | | 35095 | | 11236 | | 28728 | |
| Failures | 249 | | 224 | | 225 | | 363 | | 249 | | 205 | | 212 | | 553 | | 354 | | 562 | |

Source: our elaboration on ECHP data

Figure 5. Hazard rates



Source: our elaboration on ECHP data

Table 9. Complementary log-log model with unobserved heterogeneity estimation.

| | Austria | | | France | | Germany | | Ireland | | | | |
|--|---------|-------|-----|---------|-------|---------|---------|---------|--------|---------|-------|-----|
| | b | s.e. | | b | s.e. | b | s.e. | b | s.e. | | | |
| Age | 0.768 | 0.245 | *** | 0.055 | 0.288 | 0.624 | 0.272 | ** | 0.423 | 0.345 | | |
| Age2 | -0.014 | 0.005 | *** | -0.001 | 0.006 | -0.012 | 0.005 | ** | -0.009 | 0.007 | | |
| Male | -0.195 | 0.176 | | 0.102 | 0.149 | -0.201 | 0.171 | | -0.313 | 0.186 | * | |
| High education | 0.132 | 0.370 | | 0.519 | 0.246 | ** | 0.567 | 0.344 | * | 0.161 | 0.370 | |
| Medium education | 0.451 | 0.193 | ** | 0.473 | 0.270 | * | 0.894 | 0.210 | *** | 0.264 | 0.264 | |
| Missing education | 0.486 | 0.296 | | 0.626 | 0.250 | ** | -0.708 | 0.494 | | 0.188 | 0.340 | |
| Single | -0.618 | 0.439 | | 0.486 | 0.217 | ** | 0.373 | 0.312 | | -0.511 | 0.580 | |
| Married/Cohabitant | -0.058 | 0.235 | | 0.713 | 0.176 | *** | 0.226 | 0.225 | | -0.297 | 0.496 | |
| Look at person | -0.501 | 0.310 | | -0.126 | 0.246 | | 0.075 | 0.301 | | 0.083 | 0.333 | |
| Bad health | -1.126 | 0.380 | *** | 0.181 | 0.224 | | 0.119 | 0.226 | | -0.172 | 0.316 | |
| Social net | 0.027 | 0.149 | | 0.190 | 0.150 | | 0.005 | 0.002 | ** | 0.003 | 0.161 | |
| Income | 0.000 | 0.000 | | 0.001 | 0.001 | | | | | 0.011 | 0.007 | |
| Benefit | -0.668 | 0.281 | ** | -1.479 | 0.203 | *** | -1.170 | 0.367 | *** | -1.790 | 0.276 | *** |
| Previous work | 0.081 | 0.039 | ** | -0.001 | 0.019 | | 0.015 | 0.029 | | -0.031 | 0.027 | |
| <i>Share of status during transition</i> | | | | | | | | | | | | |
| Fixed-term contract | -0.107 | 0.359 | | 0.209 | 0.253 | | 0.833 | 0.361 | ** | -1.070 | 0.374 | *** |
| On the job training | -1.970 | 0.329 | *** | 1.328 | 0.988 | | -1.086 | 0.363 | *** | -1.777 | 0.529 | *** |
| Unemployment | 0.564 | 0.284 | ** | 0.711 | 0.216 | *** | 1.504 | 0.356 | *** | 0.412 | 0.357 | |
| Vocational | 0.115 | 0.455 | | 1.067 | 0.291 | *** | 0.933 | 0.481 | ** | -0.433 | 0.493 | |
| Employment growth | 0.016 | 0.080 | | -0.309 | 0.120 | *** | 0.187 | 0.089 | ** | 0.097 | 0.136 | |
| Constant | -16.455 | 2.960 | *** | -5.999 | 3.602 | * | -15.335 | 3.388 | *** | -10.441 | 4.282 | ** |
| d1_3 | -0.781 | 0.287 | *** | -0.462 | 0.211 | ** | -0.790 | 0.288 | *** | 0.417 | 0.379 | |
| d4_6 | -0.389 | 0.280 | | -0.422 | 0.199 | ** | -0.485 | 0.278 | * | 0.698 | 0.336 | ** |
| d7_9 | -0.328 | 0.293 | | -0.994 | 0.231 | *** | -0.486 | 0.290 | * | 0.203 | 0.335 | |
| d10_12 | -0.059 | 0.296 | | -0.393 | 0.202 | * | -0.527 | 0.310 | * | 0.469 | 0.323 | |
| d19_24 | 0.032 | 0.349 | | -0.612 | 0.266 | ** | 0.096 | 0.294 | | 0.208 | 0.393 | |
| d25_36 | 0.862 | 0.290 | *** | -0.007 | 0.302 | | 0.730 | 0.263 | *** | 0.165 | 0.454 | |
| d37_48 | 1.981 | 0.326 | *** | 0.319 | 0.609 | | 0.973 | 0.349 | *** | 0.650 | 0.628 | |
| d_ov48 | 2.467 | 0.623 | *** | -0.353 | 0.966 | | 0.945 | 0.570 | * | 1.095 | 0.851 | |
| <i>Unobserved heterogeneity</i> | | | | | | | | | | | | |
| Mass Point 1 | 0.000 | | | 0.000 | | | 0.000 | | | 0.000 | | |
| Mass Point 2 | 3.305 | 0.598 | *** | 1.791 | 0.915 | ** | 2.690 | 0.419 | *** | 1.715 | 0.955 | * |
| Prob. Type 1 | 0.144 | 0.036 | *** | 0.228 | 0.139 | * | 0.290 | 0.058 | *** | 0.208 | 0.235 | |
| Prob. Type 2 | 0.856 | 0.036 | *** | 0.772 | 0.139 | *** | 0.710 | 0.058 | *** | 0.792 | 0.235 | *** |
| Log likelihood | -1016.8 | | | -1386.4 | | -1129.3 | | -867.1 | | | | |

Source: our elaboration on ECHP data

Table 10. Duration dependence parameters by sub-groups

| | | | | | | | | | |
|---------|----------------------------------|--------|-------|-----|----------|----------------------------------|--------|-------|-----|
| Austria | All | 0.321 | 0.082 | *** | Greece | All | 0.089 | 0.080 | |
| | At least one fixed term contract | 0.635 | 0.130 | *** | | At least one fixed term contract | 0.964 | 0.254 | *** |
| | At least one on the job training | 1.902 | 0.323 | *** | | At least one on the job training | - | - | |
| | At least one vocational | 1.205 | 0.509 | ** | | At least one vocational | 1.324 | 0.611 | ** |
| | No unemployment and inactivity | 0.767 | 0.184 | *** | | No unemployment and inactivity | 0.844 | 0.338 | ** |
| | Only unemployment or inactivity | 0.223 | 0.143 | | | Only unemployment or inactivity | -0.025 | 0.092 | |
| Belgium | All | 0.080 | 0.081 | | Ireland | All | -0.076 | 0.080 | |
| | At least one fixed term contract | 0.404 | 0.138 | *** | | At least one fixed term contract | 0.817 | 0.164 | *** |
| | At least one on the job training | 1.498 | 0.627 | ** | | At least one on the job training | 0.285 | 0.385 | |
| | At least one vocational | 0.639 | 0.447 | | | At least one vocational | 0.430 | 0.309 | |
| | No unemployment and inactivity | 0.938 | 0.257 | *** | | No unemployment and inactivity | 0.438 | 0.176 | ** |
| | Only unemployment or inactivity | 0.173 | 0.129 | | | Only unemployment or inactivity | 0.038 | 0.138 | |
| Denmark | All | 0.051 | 0.080 | | Italy | All | 0.114 | 0.051 | ** |
| | At least one fixed term contract | 0.475 | 0.149 | *** | | At least one fixed term contract | 0.640 | 0.130 | *** |
| | At least one on the job training | 0.899 | 0.264 | *** | | At least one on the job training | 0.823 | 0.201 | *** |
| | At least one vocational | 1.288 | 0.429 | *** | | At least one vocational | 1.236 | 0.393 | *** |
| | No unemployment and inactivity | 0.254 | 0.165 | | | No unemployment and inactivity | 0.617 | 0.188 | *** |
| | Only unemployment or inactivity | -0.156 | 0.131 | | | Only unemployment or inactivity | -0.054 | 0.063 | |
| France | All | -0.069 | 0.063 | | Portugal | All | 0.094 | 0.060 | |
| | At least one fixed term contract | 0.360 | 0.108 | *** | | At least one fixed term contract | 0.520 | 0.103 | *** |
| | At least one on the job training | - | - | | | At least one on the job training | 7.525 | 1.952 | *** |
| | At least one vocational | 0.285 | 0.170 | * | | At least one vocational | - | - | |
| | No unemployment and inactivity | -0.198 | 0.126 | | | No unemployment and inactivity | 0.504 | 0.136 | *** |
| | Only unemployment or inactivity | -0.070 | 0.104 | | | Only unemployment or inactivity | -0.103 | 0.086 | |
| Germany | All | 0.122 | 0.074 | * | Spain | All | 0.192 | 0.050 | *** |
| | At least one fixed term contract | 0.379 | 0.124 | *** | | At least one fixed term contract | 0.625 | 0.087 | *** |
| | At least one on the job training | 0.789 | 0.189 | *** | | At least one on the job training | 0.931 | 0.287 | *** |
| | At least one vocational | 2.544 | 0.998 | ** | | At least one vocational | 0.553 | 0.195 | *** |
| | No unemployment and inactivity | 0.303 | 0.116 | *** | | No unemployment and inactivity | 0.317 | 0.109 | *** |
| | Only unemployment or inactivity | 0.074 | 0.197 | | | Only unemployment or inactivity | 0.078 | 0.078 | |

Source: our elaboration on ECHP data