

The Dynamics of Temporary Jobs in Spain*

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Abstract

In this paper we analyse the role of temporary jobs as an entry port to permanent employment and to other transitions using a sample drawn from the first waves of the ECHP. Our main result is that some groups of workers end trapped in temporary contracts. Less educated workers are not only less likely to get a permanent position but also more likely to end unemployed or in another temporary contract. Women and young workers have a strong probability of ending in unemployment. The same applies to young employees. Past labor market history also plays an important role in all the transitions. In this sense, long term unemployed workers are more likely to go to the unemployment.

Keywords: temporary contracts, permanent contracts, unemployment, transitions.

JEL classification: J63, J64.

1 Introduction.

Up to the early 1980's, permanent contracts in Spain represented more than 90 per cent of all contracts, with temporary contracts only on seasonal activities, such as agriculture or tourist industry. In 1984, with the unemployment rate at 20,1 %, the government implanted a kind of "reform in the margin" in order to liberalize the labor market. This reform was characterized by the introduction of a new typology of temporary contracts, with limited duration and negligible firing costs. However, non equivalent to reducing dismissal cost on permanent contracts was allowed. The new legislation provoked a quick expansion of temporary contracts (see Dolado et al (2002)).

Since 1990, despite a serie of reforms in 1994, 1997 and 2001, the proportion of temporary employment has remained above 30 per cent. Only the last reform,

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not a "reform in the margin" (in the sense that it led to dismissal costs for permanent contracts) marks a decline on temporary contracts for some groups.

As it has been pointed out by several authors, Bentolila and Bertola (1990) and Bentolila and Saint-Paul (1994), temporary contracts can have positive consequences in the labor market. Temporary contracts imply lower layoff costs and, therefore, stimulate employment creation. It depends whether they are "dead ends" jobs with poor pay prospects or a route to permanent employment in good jobs.

There exists a growing literature which studies several aspects of the impact of temporary contracts on OECD countries, with special reference to the Spanish case. Dolado et al (2002), in a survey of the theoretical literature, show that the introduction of this new type of contracts may increase the wage of permanent workers and has undesirable consequences for output, employment and segmentation of the labor market. Blanchard and Landier (2002) show, using a search model the pernicious effects of a partial reform. Wasmer (1999) provides a matching model to explain the rising share of temporary employment in Europe as side-product of the slowdown in the growth labor productivity. Finally, Güell (2000) endogenizes firms' choice of contracts and conversion of fixed-term contracts into permanent contracts in an efficiency wage scenario. She concludes that employment is not necessarily higher in the two-tier system than in one with permanent contracts only.

There are some important aspects that remain unexplored. One of them is the dynamics of temporary contracts. In this sense, little is known about where temporary contracts led when they expire. Perhaps, the main reason is that the small proportion of temporary contracts in most countries does not allow a thorough analysis of this question. As we noted before, the Spanish case provides a fascinating case of study since the share of temporary contracts in the economy remains above 30 per cent since the last decade. Some researchers, as Petrolongo and Güell (2001) make a first attempt to clarify this puzzle, using the Labor Force Survey (LFS) from 1989 to 1995, although they mainly focus in the elapsed duration of temporary contracts. Alba (1998) also analyzes renewal rates using the LFS by means of logit models.

The theoretical section of the paper presents a model with temporary and permanent contracts to illustrate the impact on the aggregate share of temporary contracts of different labor market scenarios. In our model, changes in the labor demand (such as productivity increases), changes in legislation (such as reduction of firing costs) and changes in the supply side (such as increases in the human capital endowments of workers) reduce the share of temporary contracts. By contrast, higher unemployment rates increase the proportion of temporary contracts. These conclusions can be extrapolated to an individual worker under or not a temporary contract, that is, changes in labor demand, legislation or the unemployment rate affect the probability that this worker ends in a temporary or a permanent contract.

The empirical analysis examines two questions. First, we address whom workers are more sensitive of getting a temporary job. Secondly, we analyze where do workers go at the conclusion of a temporary job and which are the

determinants that govern the transition. Moreover, we are interested in the duration patterns of this kind of contracts. More specifically, we try to explain the performance of temporary contracts focusing on individual's factors and demand-side variables (unemployment). Controlling by individuals characteristics, like educational attainment and also previous labor market histories, allow us to distinguish which kind of workers are more likely to be trapped in a temporary contract. Also, we also want to test if the temporary contract is a potential route for some recipients to enter the permanent force. Introducing demand-side variables, such as firm size, we want to observe which prospects are shared among temporary workers and also to achieve a better understanding of the boom of temporary contracts. Our final objective is to provide the patterns of the relationship between workers and employers in order to allow public authorities to design optimal public policies.

For these purposes we use a simple independent competing risk model with a flexible baseline hazard in order to observe the rate of individual transition from the temporary contract to other states. We distinguish between having a permanent work, unemployment, working with a temporary contract in another firm and other states.

More specifically, the transition rates are function of three sources of variation. First, they are function of the elapsed duration of temporary contracts. Secondly, they are modelled as function of observable explanatory variables, as individual characteristics, past labor market histories and demand-size variables. Finally, we take into account unobserved heterogeneity.

Our data are drawn from the first five waves the European Community Panel Household Survey (ECPH). The ECPH allow us a better measurement of individuals characteristics and previous labor market histories that the LFS at individual level, although the sample size is smaller. Since demand-side variables play also a role, we match the data with the unemployment rate.

Our main result is that some groups of workers end trapped in temporary contracts. Less educated workers are not only less likely to get a permanent position but also more likely to end unemployed or in another temporary contract. Women and young workers have a strong probability of ending in unemployment. The same applies to young employees. Past labor market history also plays an important role in all the transitions. In this sense, long term unemployed workers are more likely to go to the unemployment.

The paper is organized as follows. In Section 2, we develop a formal model to illustrate the impact of labor market factors on the search of temporary contracts. Section 3 discusses the econometric model specification we use in the empirical analysis and Section 4 presents data and variables. Section 5 contains the estimation and we conclude in Section 6.

2 The Theoretical model

This model illustrates the impact of different factors of the labor market associated to the supply side, demand side and legislation either on the share of

temporary contracts and on the probability of a worker of getting a temporary job.

Consider an economy populated by a continuum of workers with measure normalized to one. There are two types of jobs: temporary jobs, denoted by T, and permanent jobs denoted by P.

Permanent jobs are terminated with a low exogenous Poisson separation rate ϕ , in which case firing costs, f , must be paid to the worker. Temporary jobs involve no firing costs and are terminated with a high exogenous separation rate $\lambda > \phi$. Both types of jobs are assumed to be perfect substitutes in the production function.

Matching between firms and unemployed workers takes time and is represented by a matching technology. Total number of contacts is a constant returns to scale function $m(v, u)$, where v and u are the number of vacancies posted by the firms and the number of unemployed workers per unit of time, respectively.

Workers, ranking jobs P and T, choose the first kind of job so that there are $m_p = m(v_p, u)$ hires in permanent jobs and $m_T = m(v, u) - m(v_p, u)$ in temporary jobs.

It is assumed that $m(0, u) = m(v, 0) = 0$, $\frac{dm}{du} > 0$, $\frac{dm}{dv} > 0$, $\frac{d^2m}{du^2} < 0$, $\frac{d^2m}{dv^2} < 0$.

The ratio of vacancies of type i where $i \equiv \{P, T\}$, to the number of unemployed workers, $\frac{v_i}{u}$, is denoted by θ_i and $\theta = \theta_T + \theta_p$.

The probability for a firm of filling a *permanent vacancy* is equal to the number of permanent job creations divided by the number of permanent vacancies:

$$q_p = \frac{m_p}{v_p} = x(\theta_p).$$

where $x(\theta) = \frac{m(v, u)}{v} = m\left(1, \frac{1}{\theta}\right)$.

$x(\theta)$ is decreasing and with elasticity $\frac{\theta x'(\theta)}{x(\theta)} = -\eta$, $0 < \eta < 1$.

The probability for a firm of filling a *temporary vacancy* is:

$$q_T = \frac{m_T}{v_T} = \frac{x(\theta_T + \theta_p) - (1 - \varphi)x(\theta_p)}{\varphi}.$$

where $\varphi = \frac{v_T}{v_T + v_p}$.

Wage formation and job creation

First, the decisions of opening a new vacancy of either type are based on the asset values of such an option. Let V_T and V_P be, respectively, the value to the firm of a temporary and permanent vacancy:

$$rV_T = -ky + q_T(J_T - V_T) \tag{1}$$

$$rV_P = -ky + q_P(J_P - V_P) \tag{2}$$

where J_T and J_P are, respectively, the value to the firm of a temporary and permanent filled job.

In equilibrium, all profit opportunities from new jobs are exploited, driving rents from vacant jobs to zero. Therefore, the equilibrium condition of vacancies is $V_T = V_P = 0$, implying from (1) and (2) that:

$$J_T = \frac{ky}{q_T} \quad (3)$$

$$J_P = \frac{ky}{q_P} \quad (4)$$

On the other hand, J_T and J_P satisfy value equations similar to the ones for vacant jobs:

$$rJ_T = y - w_T + \lambda(V_T - J_T) \quad (5)$$

$$rJ_P = y - w_P + \phi(V_P - J_P - f) \quad (6)$$

From (3), (4), (5) and (6) we obtain the job creation conditions for temporary and permanent jobs:

$$y - w_T - \frac{(r + \lambda)ky}{q_T} = 0 \quad (7)$$

$$y - w_P - \frac{(r + \phi)ky}{q_P} = 0 \quad (8)$$

Equations (7) and (8) correspond to the marginal conditions for the demand for temporary and permanent labor.

Let U , W_T and W_P denote the present value of the expected income stream of, respectively, an unemployed and an employed worker in a temporary and permanent job.

$$rU = z + \theta_T q_T (W_T - U) + \theta_P q_P (W_P - U) \quad (9)$$

$$rW_T = w_T + \lambda(U - W_T) \quad (10)$$

$$rW_P = w_P + \phi(U - W_P) \quad (11)$$

By solving (9), (10) and (11) and substituting (7) and (8), together with the assumption of a Nash sharing rule given by:

$$(1 - \beta)(W_T - U) = \beta J_T$$

$$(1 - \beta)(W_P - U) = \beta(J_P + f)$$

we obtain that the wage of a worker in a temporary and permanent job is:

$$w_T = (1 - \beta)z + \beta[y(1 + \theta k) + \theta_P q_P f] \quad (12)$$

$$w_P = (1 - \beta)z + \beta[y(1 + \theta k) + f(1 + \theta_P q_P)] \quad (13)$$

Finally, we need the Beveridge curve where the mean number of worker who enter unemployment equals the mean number of workers who leave unemployment:

$$u = \frac{\lambda + \phi}{\lambda + \phi - \theta_T q_T - \theta_P q_P} \quad (14)$$

Steady-State Equilibrium

Equilibrium is the set of variables $(u, \theta, \varphi, w_T, w_P)$, where $\varphi = \frac{v_T}{v_T + v_P}$ is the proportion of temporary vacancies, which satisfies job creation conditions (7), (8); wage equations (12) and (13); and the Beveridge curve (14). That is:

$$u = \frac{\lambda + \phi}{\lambda + \phi - \theta_T q_T - \theta_P q_P}$$

$$y - w_T - \frac{(r + \lambda) k y}{q_T} = 0$$

$$y - w_P - \frac{(r + \phi) k y}{q_P} = 0$$

$$w_T = (1 - \beta) z + \beta [y (1 + \theta k) + \theta_P q_P f]$$

$$w_P = (1 - \beta) z + \beta [y (1 + \theta k) + f (1 + \theta_P q_P)]$$

We focus in the steady state equilibrium in which there is coexistence between temporary and permanent jobs, that is, $0 < \varphi < 1$. In this case we can characterize the equilibrium by the intersection of two loci: the temporary jobs equation (7) and the permanent jobs equation (8). In the following figure, we draw these two loci in the φ - θ plane. Locus (7), along which a firm that opens a temporary vacancy makes zero-profits is decreasing under some conditions. Locus (8), in contrast is upward sloping.

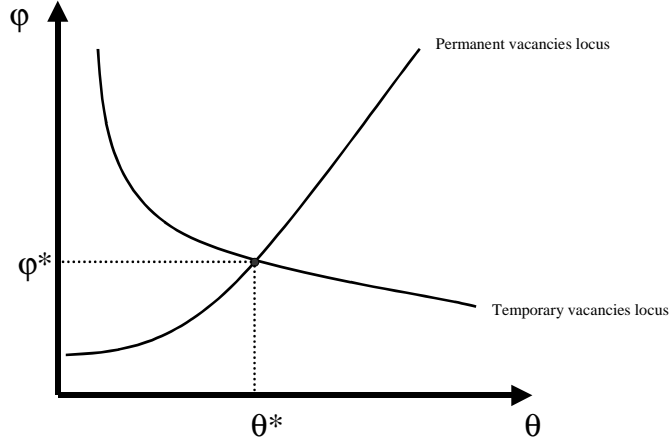


Figure- Equilibrium determination

To simplify, we introduce the following type-specific constant-return matching functions $m_p = (v_p)^{1-\alpha} (u)^\alpha$ and $m_T = (v_T)^{1-\alpha} (u)^\alpha$ for permanent and temporary jobs, respectively.

In the equilibrium where there is coexistence we obtain:

$$(r + \phi) [\theta^* (1 - \varphi^*)]^\alpha - (r + \lambda) [\theta^* \varphi^*]^\alpha = \frac{(\beta + \phi) f}{ky} \quad (15)$$

Operating, we obtain that the share of temporary jobs depends on:

$$\varphi^* = \exp \left(- \frac{(\ln(1 + e^{-\frac{\sigma}{\alpha}})) \alpha + \sigma}{\alpha} \right) \quad (16)$$

where $\sigma = \ln \left(\frac{(r+\lambda)(1-u^*)(\lambda+\phi)ky+(\beta+\phi)fu^*}{(r+\phi)(1-u^*)(\lambda+\phi)ky+(\beta+\phi)fu^*} \right)$.

Now, we are in a position to evaluate the impact of different variables on the share of temporary jobs.

First, we obtain that an increase of the firing costs (f) rises the share of temporary contracts:

$$\frac{d\varphi^*}{df} > 0.$$

Secondly, a decline in the profitability of a job (y) increases the share of temporary contracts:

$$\frac{d\varphi^*}{dy} < 0$$

The difference between the separation rates of temporary and permanent jobs ($\lambda - \phi$) has an impact on the share of temporary contracts:

$$\frac{d\varphi^*}{d(\lambda - \phi)} < 0$$

Finally, we obtain that the unemployment rate has a positive impact on the proportion of temporary contracts:

$$\frac{d\varphi^*}{du^*} > 0$$

In summary, we have sketched a simple model that predicts that legislative changes, such as lower firing costs or restrictions in temporary contracts hires, have a negative impact on the share of temporary contracts. Adverse macroeconomic conditions, that is, higher unemployment rates, have a positive impact on temporary contracts. Finally, a decline in the profitability of hiring labor causes a rise in the share of temporary contracts.

These results can be also interpreted in a more disaggregated manner, that is, we predict that the probability of getting a temporary job depends on labor demand variables, legislation changes and adverse macroeconomic conditions.

3 The Econometric model.

Denote t as duration of interest (say, the time a temporary worker remains in the same contract) by the continuous random variable t , let $\mathbf{x}(t)$ a column vector of time-invariant and time-variant regressors to which is associated a column vector of parameters $\boldsymbol{\beta}$. The time-variant regressors contained in $\mathbf{x}(t)$ are age, changes in marital status and current unemployment rate disaggregated by sex and the time-invariant regressors are sex, occupation, educational attainment and past labor market experiences. The (instantaneous) hazard function for each individual (spell) i is assumed to take the proportional hazard form:

$$\theta_i(t | \mathbf{x}) = \Psi(t) \exp(\boldsymbol{\beta}' \mathbf{x}_i(t)) \quad (17)$$

where $\Psi(t)$ is the unknown baseline hazard. The associated survivor function is given by the probability of survivor in a determinate state and can be expressed as:

$$S_i(t | \mathbf{x}) = \exp\left(-\int_0^t \theta_i(s) ds\right) \quad (18)$$

Consider we have n spells of longitude t_i and some of the observations are right-censored. In this case, the likelihood function is given by (see Lancaster (1990)):

$$LnL = \sum_{i=1}^n c_i \ln \theta_i(t_i) + \sum_{i=1}^n [\ln S(t_i)]$$

where c_i is a censored indicator that is 1 if the spell is completed and zero otherwise. In our approach, the baseline hazard is not restricted to any parametric specification in order to avoid the potential biases caused by mis-specification of parametric baseline (Meyer (1990)).

The model outlined specifies the determinants of a single risk: that of leaving a temporary job. But we consider that temporary work can terminate in alternatives states. For this reason, we extended the former model into a competing risk model framework. Let the indices 1, 2, 3 and 4 denote the states of "permanent", "unemployment", "other states" and "another firm", the individual transition rate from temporary to state j is denoted by $\theta_{ij} = \Psi(t) \exp(\beta' \mathbf{x}_{ij}(t))$. The survivor function for survival in temporary work can be expressed as

$$S_i(t | \mathbf{x}) = \exp\left(-\sum_{j=1}^{j=4} \int_0^t \theta_{ij}(s) ds\right) \quad (19)$$

The likelihood contribution for the individual i in this case is as follows

$$LnL_i = \sum_{j=1}^{j=4} c_{ij} \ln \theta_{ij}(t_i) + [\ln S_i(t_i)] \quad (20)$$

The full log likelihood is given by $LnL = \sum_{i=1}^n LnL_i$. Note that the likelihood is separable in the hazard-function, so that each cause-specific hazard can be estimated separately (see Lancaster (1990)).

The inclusion of unobserved heterogeneity allows for measurement errors in the dependent variable as well as omitted unobserved covariates. Let v be a random variable that has a gamma distribution with variance σ^2 , then the hazard rate can be reexpressed as:

$$\theta_{ij} = \Psi(t) \bullet \exp(\beta' \mathbf{x}_{ij}(t)) v_{ij}. \quad (21)$$

We assume that v is independent of t and $\mathbf{x}(t)$. However, in a competing risk framework, allowing for a random disturbance term in each of the cause-specific hazards requires an additional assumption that imposes the independence of these disturbance terms across the cause-specific hazards¹. Given this, it is

¹These model can be extended allowing that disturbance among cause-specific hazard to be related for a given individual (see Van den Berg et al (1999)).

easy to construct a log likelihood function as (20). For more details, see Han and Hausman (1990) or Lancaster (1990).

The former model identifies three sources of variation among individuals hazard rates: the elapsed duration of the temporary contracts $\Psi(t)$, the observable differences between individuals $x(t)$ and the unobservable ones (v).

4 Data and variables.

The data used in our analysis is drawn from the five first waves of ECHP. Since 1994, the ECHP has been designed to compare different aspects of European countries and annually interviews a representative sample of 80.000 households, of which 8.000 are Spanish. The same individuals are reinterviewed each successive year, and if they leave their original households to form a new one, all adults members of these new households are also interviewed. Similarly, children in original households are interviewed when they are sixteen. The sample remains broadly representative of the Spanish population.

At each date of interview, all respondents are asked detailed questions related to their current employment status (kind of contract occupation, size of firm) regarding household composition, individual demographics and income. Respondents are also asked about other labor experience and unemployment experience in the previous five years. In particular, respondents are asked to recall start dates of current job and finish date of last job, although no contract identifier is supplied. Various related characteristics are collected for each job spell experience, included type of employment (full-time, part-time), type of contract (permanent, fixed-term contract casual work and other arrangement), occupation and industry.

We examine two questions. First, we address whom workers are more sensitive of getting a temporary job. Secondly, we analyze where workers go at the conclusion of a temporary job. For this reason, we select two different subsamples.

Firstly, we select a subsample (ssample1) of men and women who are born after 1932², reported positive hours of work, provided complete information at the interview dates, had left school and were employed at the time of the survey, and, more specifically, those who are working with an employer in paid employment more than fifteen hours a week³. We delete some observations because information about type of contract is not available (we drop 20 observations). We also drop the first wave because we have no information about this kind of contract is available. Finally, we have a longitudinal sample of 3.286 individuals.

²Individuals are included in our sample until they reach the state retirement age, 65 years old.

³We have used self-defined classification instead of LFS classification because the type of contract is only defined for these people. For these reasons we have excluded people who are working with an employer in paid apprenticeship (15+ hours / week), working with an employer in training under special schemes related to employment (15+ hours / week) and self-employment (15+ hours / week).

The data set allows us to distinguish three types of temporary contracts, but we have collapsed this information in a simple category since we are mostly interested in the transitions (second analysis) and we have not enough observations to analyze them with a disaggregated measure of temporary contracts.

Table 1 and 2 summarize some descriptive statistics of the first sample. In Table 3, we show the distribution of permanent and temporary workers by demographic, household, job related characteristics and previous labor market status (all variables used are defined in the Table 1A of the Appendix). These tables allow us to observe whom workers get a temporary work. The largest fraction of temporary contracts involves young workers (up to 25 years old), that work in the private sector, in relatively unskilled occupations and with low levels of qualifications, work in agricultural and construction and mainly in small firms. Moreover, it is important to say that long-term unemployed workers and also those who have been unemployed more than once are more likely to have a temporary contract.

Secondly, we are interested both in analyzing the determinants of transitions for temporary work to other states and how long do temporary contracts last. For these purposes, we select only those individuals who had a temporary contract at least once during this period (ssample2). We also focus in people who are working with an employer in paid employment more than fifteen hours a week.

The duration of each spell is constructed using information of the individual questionnaire from the successive waves. Spell duration is defined as months in the same job with the same employer and not involving a promotion in a permanent position. To each job spell we have attached a vector of demographic, household, job related and local labor market conditions, and the details of previous labor market status. Some problems arise since both the information is annual and no contract identifier is supplied. Therefore, in order to follow the temporary contract and to determinate the spell duration we rely on the information concerning to the type of contract held and main activity. Moreover, we can determine the start (last) date of the spell using the variable, month start the current job (month finish the last job).

We are also interested in where workers go at the conclusion of a temporary job. The data allow us to distinguish among four states: a) having a permanent position (regardless of the firm)⁴ b) unemployment⁵ c) other states as inactivity or working with an employer in training d) temporary contract in another firm. As no direct information is provided, we follow the variable year start the current job and year finish last job during different waves in order to obtain if the individual switches the firm. Finally, if the worker is last observed holding the temporary contract in the last interview, we consider the spell right-censored⁶.

⁴When the individual obtains a permanent position in the same firm we have no information about the timing. We assume that in this case the spell finishes in December.

⁵In order to define this state we use LFS classification.

⁶A lot of information gaps can be filled (individuals who appear and disappear in the sample following the variable year start the current job is the same). In these case, we assume that the variable marital status, and educational level are invariant

Finally, we have 4126 spells. Jobs that start prior to the wave one are discarded, since we have not information about start date and duration. We also drop some spells because we have missing information about the elapsed duration. Finally, we have deleted 946 spells. Table 4 provides some descriptive statistics of the duration data for the four transitions. Transitions to other states are less relevant because we have a small number of spells (157).

Table 4 shows that for some individuals there are multiple observations. As in the econometric model we have assumed independence between spells, we only use this information to estimate the standard errors. It is also interesting to note that only a 13,08 % of temporary contracts end in a permanent position. By contrast, a 18,73 % of the contracts go to unemployment.

Figure 1 and Table 6 depict the estimated Kaplan-Meier survivor functions for the four transitions. The survivor function from temporary work to permanent contract (Figure 1a) strongly decline at 6-12 month. Moreover, there is another change at 24 months. By contrast, it is interesting to note that the survivor function from temporary work to unemployment (Figure 1b) declines strongly until 12 months and later declines at a constant rate. The performance of the survivor function from temporary to another firm (Figure 1d) is similar to the former transition, although the estimated survivor function experimented a stronger declining at 6-12 months.

5 Empirical results.

In the theoretical section of this paper we predict that the probability of getting a temporary job depends on labor demand variables, legislation changes and adverse macroeconomic conditions. In this section, we test these results but also we focus on the individual characteristics of workers⁷.

More specifically, first, we examine who gets a temporary job using the first subsample selected. Secondly, we estimate the econometric model proposed in Section 3, for the determinants of worker transitions from temporary to permanent, unemployment and another firm.

5.1 Who gets a temporary job?

To address this question, we estimate a model determining the probability of being employed under a temporary contract.

We specify four models in order to obtain a better understanding of the relationship between different controls and the outcome variable. In model I, we control for individual characteristics as a dummy for sex, three dummies for age and nine dummies for occupation. In model II, we include demand-side variables: four dummies reflecting size of the firm, sector dummies (six), regional controls (six), a dummy to indicate if the individual work in the public sector, part-time (one) and local unemployment rate disaggregated by sex. In model

⁷Labour reform of 1997 is not analysed because we need additional waves of the ECHP to assess this question.

III we drop sector dummies and include dummies of industry (nine). Finally, in model IV, we drop industry dummies and include variables related with past labor market history. More specifically, we include a set of dummies reflecting if the individual has been long term unemployed, if the individual has worked before in a different firm and a continuous variable reflecting the number of times the individual has been unemployed (all variables used are defined in the Table 1A of the Appendix).

We also control for the selectivity bias of being employed using Heckman's method (see Maddala (1993)). The selection equation determining employment in each sector include age dummies, gender, educational attainment and marital status. Table 6 reports the estimated elasticities of getting a temporary job obtained from the probit models with sample selection for the four models. The estimated coefficients and their standard errors are reported in Table 2A of the Appendix.

We observe that workers aged from 16 to 25 are more likely to be in a temporary job while those aged 45 and over have a lower probability to get a temporary job. Higher educational attainment is associated with permanent jobs, although the estimated elasticity is small. This can be explained by the fact that educational attainment plays a very important role in the probability of being employed (see Table 2A of Appendix). We also see that semiskilled workers are 25% more likely to get temporary job than unskilled. Service workers have a higher probability of getting a temporary job. Employees who have suffered long term unemployment have a 23% higher probability of getting a temporary job. Finally, it is important to note that workers with a high number of layoffs are more likely to be in a non permanent job. For an average worker, an additional layoff increases the risk of being in a temporary job by 40%.

5.2 Do temporary jobs lead anywhere?

In this section, we estimate the econometric model described in section 3 for the three transitions from temporary to permanent employment, to unemployment and to other states. Tables 7, 8 and 9 report the estimated parameters of the covariates for each transition, respectively. In Figure 2, we show the estimates of the baseline hazard. Finally, in Table 10 we report the estimates of the parameters of the distribution of unobserved heterogeneity and in Table 11 the new estimates taking into account unobserved heterogeneity.

We specify the same models that we perform in the former section for each transition, although we include also marital status. We fully exploit the time variation of job tenure by using a monthly measure. We allow the unemployment rate to vary quarterly, the highest frequency available although the other time-varying regressors take the same values for all month during each interview.

We first examine the transition rate from temporary to permanent. In model I, we can observe that educational attainment (both secondary and third level of education) is very significant and positive. Moreover, we can see that this kind of transition is more likely to be made by associate professionals and clerks. By contrast, age and woman are irrelevant. In model II we control for demand-

side variables and we drop profession dummies in order to avoid correlations between professions and education. In this case, we find that living in regions with adverse labor market conditions reduce the chance of exiting temporary job into permanency, that is, living in the south, center or Canaries Island. Firm size is also relevant, more specifically, working in a medium size firm (20-100) increases the probability of renewal in permanent. It is important to note that when we drop controls for profession, the transition rate for workers with higher education increases more than for workers with secondary education. Moreover, sector dummies show that renewal rates into permanency are higher in services. In model III, we make a further step by using more disaggregated controls for sectors. We obtain that working in construction reduces the probability of a permanent renewal, as opposed to working in the retail or transport sector, where this renewal rate is higher and significant. Finally, in model IV we find that workers that have experienced a long-term unemployment spell are significantly less likely to gain permanency.

These results are consistent with previous results obtained for Spain. Petrolongo and Guell (2000), using a sample of temporary workers drawn from the LFS during the period 1987 to 1996, obtain similar results although they obtain that being a woman has a negative effect in a transition rate to permanency. This can be explained because we use a more disaggregated sample that allows us to use a wide set of controls.

Francesconi et al (2002), using data from the British Household Panel Survey, observe that the transition to a permanent position is determined by a temporal pattern, which has little to do with either observed personal characteristics and firm specific characteristics. Two reasons can explain these differences. They use different definitions of temporary work: casual, seasonal and fixed-term contracts. Moreover, it can be explained by the different role that temporary contracts have played in the UK labor market (they are only 10 per cent of the contracts and this rate keeps constant over time).

Next, we analyze the transition from temporary jobs to unemployment. To our knowledge, there is no other research analyzing this transition. As we noted before, in Spain, a high proportion of temporary contracts end in unemployment. In model I, we can observe that either young people (between 16-25) and workers who are between 46-65 are more likely to exit into unemployment. These results remain for any controls we include. We also obtain that this probability is higher for females than males. As opposed to the former transition, both higher education and work in an associate profession affect negatively to this transition. These results reinforce the role played by these variables in the transition into permanency. By contrast, secondary education is irrelevant.

In model II we introduce demand-side variables. We obtain that region of residence has a significant impact on the exit into unemployment. Sector effect also emerges in the data. Individuals employed in agriculture have the highest probability of ending in unemployment. Public sector workers have higher rates of exit into unemployment than those in the private sector. This result is consistent with Dolado et al (2002). They find that the public sector has increased a lot the proportion of temporary hires for this period due to the fiscal

consolidation pursued by the Spanish government after the Maastricht Treaty. This change in the hiring behavior of the public sector has also been reflected in a higher exit of public workers into unemployment. Part-time workers have also higher transition rates into unemployment. Finally, local unemployment rate has a positive and significant effect on this transition as opposed to the transition into permanency where this variable is irrelevant.

In model III, we find that a number of industry effects emerge in the data. Individuals employed in agriculture, construction, health service, education and social work have the highest transition rates into unemployment.

Finally, in model IV we can observe that previous labor market experience increases the transition rate into unemployment. We observe that workers who have experienced long-term unemployment spells have a higher probability of ending in unemployment. The number of times a worker has been unemployed has also a positive and significant effect. Therefore, there is some evidence of a causal relationship between past and present labor market experiences.

We move on to analyze the exit from temporary work to work in another firm. We observe that educational attainment play an important role. In this sense, possessing a university degree affects negatively the probability of switching from one temporary job to another. Size firm and industry effects are relevant. More specifically, working in a medium size firm and in the agricultural sector increases the probability of this transition. By contrast, working in the service sector affects in the opposite side. Finally, workers who have experienced unemployment spells are more likely to switch from one temporary job to another.

Table 10 shows the estimates for unobserved heterogeneity distribution for model IV of each transition. More the estimates of $\ln(\sigma^2)$ and also the likelihood ratio test (LR) to test model with unobserved heterogeneity versus model without unobserved heterogeneity. For transition into permanent, both LR and estimates of $\ln(\sigma^2)$ indicate that there is no evidence of heterogeneity in this transition. By contrast, we can confirm the existence of unobserved heterogeneity in the transition into unemployment and in the transition to another firms. Table 11 displays the estimates of these transition taking into account unobserved heterogeneity in Table 11 for specification IV.

For both transitions we obtain similar results that in the previous models without unobserved heterogeneity. However, for transition into unemployment, it can observe that with unobserved heterogeneity the estimates are quite larger. In this sense, it is important to note that for the former transition both part-time and long term unemployment play a more important role.

Figure 2 displays the baseline hazard estimates of model IV for exits from temporary jobs to the four transitions. The figure shows a sharply different pattern between the temporary to permanent baseline hazard estimates and the temporary to unemployment one. In the former, we observe sharp spikes at durations around one, two and three years. By contrast, in the latter we observe a rising baseline hazard with a small spike at around the first year, followed by a longer decrease with small spikes until the second year. Finally, in the third year the baseline hazard shortly increases.

This evidence on the baseline hazard may suggest that there exist strong cyclical patterns in exits from temporary work to unemployment and much weaker (or nonexistent) cyclically in exits to permanent. Secondly, the fact that exits to permanent concentrate at around the twelfth, twenty-fourth and thirty-sixth months indicate that employers wait until the expiration of the temporary contract to proceed to the permanent renewal. Besides, exits to permanent are virtually zero in the first months of a temporary contract.

6 Conclusions

In this paper we analyze the role of temporary jobs as an entry port to permanent employment and to other transitions using a sample drawn from the first waves of the ECHP.

Our main result is that some groups of workers end trapped in temporary contracts. Less educated workers are not only less likely to get a permanent position but also more likely to end unemployed or in another temporary contract. Women have a strong probability of ending in unemployment, although it is irrelevant to get a permanent contract. The same applies to young employees. Past labor market history play an important role in all the transitions. Long term unemployed workers are more likely to go to unemployment and have lower renewal rates. Moreover, previous labor market status has a positive effect on the transition to either unemployment and getting a temporary job in another firm.

We also obtain, as it was predicted in the theoretical model, that demand side variables as industry, sector, firm size are relevant. Service workers have a stronger probability to get a permanent position. In contrast, construction and agriculture employees are more likely to end in unemployment or working in a temporary contract in another firm. Moreover, firm size play an important role, albeit the results are contradictory.

Finally, public sector workers have higher rates of exit into unemployment than those in the private sector. This result is consistent with Dolado et al (2002). They find that the public sector has increased a lot the proportion of temporary hires for this period due to the fiscal consolidation pursued by the Spanish government after the Maastricht Treaty. Therefore, this result points a shift in the pattern pursued by the public sector which has not been reflected in previous research, such as Guell and Petrongolo (2000).

Concerning the shape of the baseline hazard, we first observe cyclical patterns in exits from temporary work to unemployment and much weaker (or nonexistent) cyclically in exits to permanent. Secondly, the fact that exits to permanent concentrate at around the twelfth, twenty-fourth and thirty-sixth months indicate that employers wait until the expiration of the temporary contract to proceed to the permanent renewal. Besides, exits to permanent are virtually zero in the first months of a temporary contract.

7 Tables.

Table 1.
Descriptive Statistics by type of contract.

	Permanent Contract	Temporary contract
Aged between 16 and 25	0.061	0.314
Aged between 26 and 34	0.278	0.405
Aged between 35 and 46	0.366	0.200
Aged between 47 and 65	0.312	0.136
woman	0.331	0.387
Married or cohabiting	0.758	0.500
Other States	0.039	0.035
Single	0.203	0.463
Part-time	0.031	0.117
Public sector	0.324	0.122
Managerial	0.035	0.008
Professional	0.056	0.032
Teachers and others	0.107	0.043
Associate Professional	0.041	0.019
Associate Teachers	0.094	0.037
Clerks	0.133	0.080
Protection, personal services and sales.	0.137	0.165
Semi-skilled workers	0.013	0.023
Unskilled workers	0.264	0.300
Miscellaneous	0.104	0.267
Size1-5	0.129	0.243
Size5-20	0.192	0.277
Size20-50	0.128	0.161
Size51-99	0.084	0.082
Size100-500	0.125	0.089
Size500+	0.164	0.059
Agricultural	0.022	0.066
Industry	0.299	0.378
Services	0.673	0.534

Primary	0.022	0.066
Energy	0.021	0.010
Manufacturing	0.202	0.163
Construction	0.048	0.182
Wholesale	0.120	0.132
Hotels and restaurants	0.037	0.072
Transport	0.098	0.066
Banking	0.103	0.066
Local Public sector	0.125	0.042
Education, health and social services.	0.220	0.066
Higher qualification	0.343	0.193
Secondary qualification	0.216	0.204
Some qualification	0.440	0.601
Unemployment spells longer than 1 year.	0.233	0.339
Number of times unemployed	0.436	0.793
Experience in another firm	0.287	0.780
Northeast	0.125	0.125
Northwest	0.178	0.142
Madrid	0.140	0.079
Center	0.122	0.145
East	0.239	0.224
South	0.140	0.197

Note: Computed on all individuals using ssample1.

Table 2.
Mean unemployment by sex and region.
1995-1998.

	Men	Woman
Northeast	0.150	0.256
Northwest	0.116	0.253
Madrid	0.152	0.248
Center	0.153	0.328
East	0.131	0.251
South	0.249	0.403
Northeast	0.170	0.242

Table 3.
Distribution of temporary work by individual and job-specific characteristics
(row percentages).

	Row Freq.	Permanent Contract	Temporary contract
Aged between 16 and 25	2779	24,25	75,75
Aged between 26 and 34	5801	53,16	46,84
Aged between 35 and 46	5402	75,16	24,84
Aged between 47 and 65	4377	79,10	20,90
woman	6265	58,55	41,45
Married or cohabiting	11761	71,46	28,54
Other States	669	64,42	35,58
Single	5355	41,94	58,06
Part-time	1137	30,69	69,31
Public sector	4415	81,49	18,51
Managerial	436	88,07	11,93
Professional	836	74,40	25,60
Teachers and others	1472	80,57	19,43
Associate Professional	584	78,08	21,92
Associate Teachers	1291	80,71	19,29
Clerks	2008	73,41	26,59
Protection, personal services and sales.	2628	57,80	42,20
Semi-skilled workers	4942	59,31	40,69
Unskilled workers	300	48,33	51,67
Miscellaneous	2943	39,04	60,96
Primary	691	35,46	64,54
Energy	296	77,03	22,97
Manufacturing	3333	67,18	32,82
Construction	1751	30,33	69,67
Wholesale	2220	60,00	40,00
Hotels and restaurants	899	46,05	53,95
Transport	1526	70,97	29,03
Banking	1580	71,96	28,04
Local Public sector	1661	83,14	16,86
Education, health and social services.	3632	67,10	32,90
Agricultural	691	35,46	64,54
Industry	5850	56,67	43,33
Services	11048	67,59	32,41

Size1-5	3056	46,73	53,27
Size5-20	3993	53,42	46,58
Size20-50	2498	56,73	43,27
Size51-99	1485	62,83	37,17
Size100-500	1978	69,97	30,03
Size500+	2215	82,21	17,79
Higher qualification	5096	74,55	25,45
Secondary qualification	3770	63,63	36,37
Some qualification	8910	54,76	45,24
Unemployment spells longer than 1 year.	3270	30,40	69,60
Number of times unemployed	7899	32,66	67,34
Experience in another firm			

Note: Computed using ssample1.

Table 4.
Summary statistics of durations.

Number of individuals	3130
Number of spells	4126
Average duration of temporary to permanent transitions*.	17,04
Average duration of temporary to unemployment transitions*.	16,35
Average duration of temporary to other states transitions*.	15,61
Average duration of temporary to other temporary in other firm transitions.	16,39
Average duration of uncompleted spells.	11,10
Number of spells censored.	1998
Number of spells that end in a permanent job.	540
Number of spells that end in Unemployment.	773
Number of spells that end in other states.	157
Number of spells that end in a temporary contract in another firm.	658

Note: Duration of spells is measured in number of months.
Computed using ssample2.

Table 5.
Kaplan-Meier estimates for the four transitions.

Transitions into permanent.

	Deaths	(%)	Survivor Function.
6	96	17,84	0.8216
12	105	19,52	0.6264
18	145	26,95	0.3569
24	69	12,83	0.2286
30	56	10,41	0.1245
36	41	7,62	0.0483
42	18	3,35	0.0149
48	8	1,49	0.0000
	538		

**Transitions into
Unemployment.**

	Deaths	(%)	Survivor Function.
6	52	6,74	0.9326
12	163	21,11	0.7215
18	259	33,55	0.3860
24	172	22,28	0.1632
30	73	9,46	0.0687
36	29	3,76	0.0311
42	14	1,81	0.0130
48	8	1,04	0.0026
54	2	0,26	0.0000
	772		

Transitions into others situations.

	Deaths	(%)	Survivor Function.	
	6	15	9,62	0.9038
	12	32	20,51	0.6987
	18	55	35,26	0.3462
	24	29	18,59	0.1603
	30	10	6,41	0.0962
	36	10	6,41	0.0321
	42	4	2,56	0.0064
	48	1	0,64	0.0000
		156		

Transitions into another firm.

	Deaths	(%)	Survivor Function.	
	6	35	5,33	0.9467
	12	170	25,88	0.6880
	18	217	33,03	0.3577
	24	128	19,48	0.1629
	30	47	7,15	0.0913
	36	31	4,72	0.0441
	42	13	1,98	0.0244
	48	10	1,52	0.0091
	54	4	0,61	0.0030
	60	2	0,30	0.0000
		658		

Table 6.
Estimated elasticities of being employed under a temporary contract.

	(1) Model I	(2) Model II	(3) Model III	(4) Model IV
Aged between 16 and 25	0,222 (23,03)	0,217 (24,71)	0,231 (26,62)	0,234 (31,02)
Aged between 26 and 35	0,146 (13,30)	0,138 (15,83)	0,143 (15,87)	0,072 (8,07)
Aged between 47 and 65	-0,081 (-7,92)	-0,077 (-9,61)	-0,079 (-9,620)	-0,027 (-3,33)
woman	0,075 (5,60)	0,055 (5,09)	0,108 (10,07)	0,053 (5,00)
Higher qualification	-0,062 (-5,03)	-0,083 (-9,64)	-0,092 (-10,49)	-0,050 (-5,92)
Secondary qualification	-0,052 (-5,96)	-0,062 (-8,97)	-0,054 (-7,67)	0,053 (5,00)
Managerial	-0,031 (-6,73)			
Professional	-0,012 (-5,55)			
Teachers and others	-0,034 (-9,38)			
Associate Professional	-0,046 (-10,25)			
Associate Teachers	-0,022 (-4,05)			
Clerks	0,005 (2,97)			
Protection, personal services and sales.	0,052 (8,650)			
Semi-skilled workers	0,222 (23,03)			
Miscellaneous	0,146 (13,30)			
Northeast		0,034 (5,65)	0,031 (5,04)	0,034 (5,52)
Northwest		0,022 (3,00)	0,030 (3,95)	0,027 (3,59)
Centre		0,041 (6,38)	0,038 (5,80)	0,036 (5,49)
East		0,022 (2,16)	0,030 (2,94)	0,007 (0,67)
South		0,078 (9,88)	0,076 (9,28)	0,063 (7,74)
Canarias		0,032 (8,97)	0,027 (7,44)	0,022 (6,02)
Size1-5		0,076 (11,59)	0,085 (13,37)	0,055 (8,18)
Size5-20		0,067 (10,29)	0,066 (10,08)	0,036 (5,35)
Size20-50		0,043 (9,87)	0,042 (9,64)	0,025 (5,60)
Size51-99		0,017 (5,67)	0,018 (5,90)	0,009 (2,85)

Size100-500	0,013 (3,48)	0,013 (3,58)	0,001 (0,25)
Agricultural	0,013 (6,14)		0,011 (5,24)
Services	-0,156 (-11,67)		-0,131 (-9,47)
Part-time	0,042 (6,90)		0,036 (14,26)
Public sector	-0,041 (-6,54)		-0,032 (-4,89)
Local unemployment rate	0,010 (4,35)	0,011 (4,39)	0,009 (3,75)
Unemployment spells longer than 1 year.			0,236 (21,42)
Number of times unemployed			0,408 (22,15)
Experience in another firm			0,236 (21,42)
Primary		0,023 (10,21)	
Energy		-0,003 (-2,13)	
Construction		0,075 (18,76)	
Wholesale		-0,017 (-3,96)	
Hotels and restaurants		0,007 (2,94)	
Transport		-0,006 (-1,90)	
Banking		-0,016 (-4,55)	
Local Public sector		-0,027 (-7,44)	
Education, health and social services.		0,000 (0,000)	
Person-month observations	17801	17801	17801

Note: The table reports marginal elasticities obtained using a probit model with selection. The estimated coefficients and their standard errors are reported in Table 2A of the Appendix. Results obtained using ssample1. The robust standard errors reported in parenthesis allow for clustering by individual.

Table 7.
Exit from temporary work to permanent work.

	(1) Model I	(2) Model II	(3) Model III	(4) Model IV
Aged between 16 and 25	0.093 (0.77)	0.060 (0.48)	0.034 (0.27)	0.041 (0.33)
Aged between 26 and 35	0.053 (0.50)	0.049 (0.46)	0.017 (0.16)	0.070 (0.66)
Aged between 47 and 65	-0.155 (0.93)	-0.171 (1.02)	-0.177 (1.07)	-0.189 (1.14)
Other States	-0.407 (1.27)	-0.545+ (1.75)	-0.544+ (1.68)	-0.506 (1.56)
Single	-0.039 (0.38)	-0.068 (0.63)	-0.082 (0.78)	-0.036 (0.35)
woman	-0.041 (0.41)	-0.084 (0.85)	-0.121 (1.22)	-0.063 (0.62)
Higher qualification	0.282** (2.15)	0.360*** (3.05)	0.347*** (3.02)	0.345*** (2.94)
Secondary qualification	0.236** (2.16)	0.277** (2.51)	0.217** (2.03)	0.257** (2.42)
Managerial	0.471 (1.24)			
Professional	0.223 (0.89)			
Teachers and others	-0.014 (0.06)			
Associate Professional	0.296 (1.01)			
Associate Teachers	0.545*** (3.02)			
Clerks	0.306+ (1.93)			
Protection, personal services and sales.	0.145 (1.11)			
Semi-skilled workers	-0.274 (0.73)			
Miscellaneous	-0.372*** (2.83)			
Northeast		-0.246 (1.42)	-0.237 (1.32)	-0.214 (1.22)
Northwest		-0.172 (1.06)	-0.200 (1.22)	-0.166 (1.04)
Centre		-0.689*** (3.84)	-0.658*** (3.57)	-0.663*** (3.68)
East		-0.163 (1.09)	-0.184 (1.22)	-0.139 (0.95)
South		-0.790*** (4.53)	-0.761*** (4.21)	-0.728*** (4.07)
Canarias		-0.626*** (3.02)	-0.561** (2.55)	-0.593*** (2.75)

Size1-5	0.149 (0.91)	0.173 (1.08)	0.146 (0.88)
Size5-20	0.280+ (1.80)	0.316** (2.05)	0.284+ (1.82)
Size20-50	0.121 (0.71)	0.133 (0.80)	0.122 (0.72)
Size51-99	0.368+ (1.93)	0.392** (2.03)	0.385** (1.99)
Size100-500	0.126 (0.67)	0.105 (0.56)	0.118 (0.63)
Agricultural	0.210 (0.95)		0.183 (0.81)
Services	0.382*** (3.63)		0.381*** (3.52)
Part-time	-0.178 (1.14)		-0.154 (1.01)
Public sector	-0.228 (1.52)		-0.203 (1.34)
Local unemployment rate	-0.004 (0.19)	0.001 (0.03)	-0.002 (0.09)
Unemployment spells longer than 1 year.			-0.179+ (1.80)
Number of times unemployed			-0.141** (2.05)
Experience in another firm			0.171 (1.35)
Primary		-0.114 (0.49)	
Energy		-0.059 (0.15)	
Construction		-0.743*** (4.42)	
Wholesale		0.254+ (1.75)	
Hotels and restaurants		-0.122 (0.72)	
Transport		0.483*** (2.67)	
Banking		-0.013 (0.07)	
Local Public sector		-0.351 (1.28)	
Education, health and social services.		-0.084 (0.57)	
Person-month observations	58212	58212	58212

Note: Obtained using semi-parametric proportional hazard models. The sample used is `ssample2`. The robust standard errors reported in parenthesis allow for clustering by individual. Robust z statistics in parentheses. + Significant at 10%; ** significant at 5%; *** significant at 1%

Table 8.
Exit form from temporary work to unemployment.

	(1) Model I	(2) Model II	(3) Model III	(4) Model IV
Aged between 16 and 25	0.278*** (2.63)	0.293*** (7.46)	0.323*** (3.06)	0.310*** (2.89)
Aged between 26 and 35	-0.059 (0.65)	-0.047 (1.40)	-0.036 (0.40)	-0.071 (0.79)
Aged between 47 and 65	0.291** (2.46)	0.285*** (6.42)	0.285** (2.39)	0.306*** (2.63)
Other States	0.090 (0.55)	0.055 (0.82)	0.057 (0.34)	-0.017 (0.10)
Single	-0.093 (0.99)	-0.088** (2.50)	-0.090 (0.94)	-0.133 (1.38)
woman	0.332*** (3.98)	0.271*** (8.75)	0.332*** (3.83)	0.235*** (2.81)
Higher qualification	0.482*** (3.27)	-0.529*** (11.64)	-0.537*** (4.20)	-0.500*** (3.83)
Secondary qualification	-0.013 (0.14)	-0.024 (0.68)	-0.016 (0.17)	0.008 (0.08)
Managerial	-0.061 (0.12)			
Professional	0.107 (0.35)			
Teachers and others	0.033 (0.12)			
Associate Professional	-0.031 (0.09)			
Associate Teachers	-0.657** (2.20)			
Clerks	0.035 (0.22)			
Protection, personal services and sales.	0.059 (0.54)			
Semi-skilled workers	0.381+ (1.67)			
Miscellaneous	0.136 (1.43)			
Northeast		0.405*** (5.97)	0.381** (2.04)	0.375** (2.05)
Northwest		0.325*** (4.78)	0.333+ (1.73)	0.334+ (1.75)
Centre		0.374*** (5.72)	0.354+ (1.91)	0.363** (1.99)
East		0.305*** (4.84)	0.312+ (1.77)	0.282 (1.62)
South		0.507*** (8.12)	0.497*** (2.82)	0.431** (2.49)
Canarias		0.155** (2.07)	0.116 (0.55)	0.098 (0.48)

Size1-5	0.251*** (5.02)	0.252+ (1.94)	0.258+ (1.92)
Size5-20	0.217*** (4.47)	0.214+ (1.68)	0.224+ (1.74)
Size20-50	-0.009 (0.17)	-0.004 (0.03)	0.004 (0.02)
Size51-99	0.105 (1.62)	0.109 (0.64)	0.115 (0.66)
Size 100-500	0.223*** (3.81)	0.266+ (1.72)	0.248 (1.61)
Agricultural	0.165*** (3.03)		0.241 (1.64)
Services	0.006 (0.19)		-0.003 (0.03)
Part-time	0.368*** (9.55)		0.334*** (3.32)
Public sector	0.308*** (7.05)		0.271** (2.26)
Local unemployment rate	0.026*** (2.84)	0.024 (0.89)	0.031 (1.12)
Unemployment spells longer than 1 year.			0.394*** (5.10)
Number of times unemployed			0.101+ (1.87)
Experience in another firm			-0.177+ (1.65)
Primary		0.364** (2.21)	
Energy		0.120 (0.35)	
Construction		0.266** (2.02)	
Wholesale		-0.070 (0.47)	
Hotels and restaurants		0.228 (1.58)	
Transport		0.324 (1.64)	
Banking		0.090 (0.47)	
Local Public sector		0.600*** (3.39)	
Education, health and social services.		0.419*** (3.11)	
Person-month observations	58212	58212	58212

Note: Obtained using semi-parametric proportional hazard models. The sample used is `ssample2`. The robust standard errors reported in parenthesis allow for clustering by individual. Robust z statistics in parentheses. + Significant at 10%; ** significant at 5%; *** significant at 1%

Table 9.
Exit form from temporary work to work in another firm.

	(1) Model I	(2) Model II	(3) Model III	(4) Model IV
Aged between 16 and 25	0.101 (0.85)	0.090** (2.08)	0.079 (0.68)	0.183 (1.56)
Aged between 26 and 35	-0.172 (1.63)	-0.173*** (4.70)	-0.174+ (1.68)	-0.197+ (1.93)
Aged between 47 and 65	-0.156 (0.98)	-0.188*** (3.62)	-0.172 (1.10)	-0.171 (1.10)
Other States	-0.072 (0.30)	0.028 (0.32)	0.052 (0.22)	0.012 (0.05)
Single	0.028 (0.27)	0.093** (2.43)	0.112 (1.09)	0.131 (1.30)
woman	-0.058 (0.55)	-0.001 (0.04)	0.082 (0.79)	0.031 (0.30)
Higher qualification	-0.378*** (2.58)	-0.507*** (9.97)	-0.465*** (3.30)	-0.448*** (3.21)
Secondary qualification	-0.107 (0.93)	-0.127*** (3.20)	-0.112 (0.98)	-0.076 (0.66)
Managerial	-1.982+ (1.93)			
Professional	-0.011 (0.03)			
Teachers and others	-0.274 (0.96)			
Associate Professional	0.072 (0.23)			
Associate Teachers	-0.302 (1.14)			
Clerks	-0.209 (1.04)			
Protection, personal services sales.	-0.098 (0.71)			
Semi-skilled workers	0.044 (0.17)			
Miscellaneous	0.268** (2.53)			
Northeast		-0.143** (2.07)	-0.084 (0.42)	-0.106 (0.54)
Northwest		-0.155** (2.31)	-0.118 (0.62)	-0.130 (0.69)
Centre		-0.232*** (3.57)	-0.193 (1.03)	-0.243 (1.30)
East		-0.241*** (3.90)	-0.214 (1.18)	-0.231 (1.28)
South		-0.081 (1.32)	-0.044 (0.25)	-0.097 (0.54)
Canarias		0.250*** (3.69)	0.231 (1.17)	0.272 (1.40)

Size1-5	-0.038	-0.039	-0.005
	(0.66)	(0.25)	(0.03)
Size5-20	0.221***	0.178	0.220
	(4.14)	(1.22)	(1.52)
Size20-50	0.303***	0.286+	0.307**
	(5.36)	(1.87)	(2.02)
Size51-99	0.094	0.074	0.077
	(1.34)	(0.41)	(0.42)
Size100-500	0.014	-0.012	0.004
	(0.20)	(0.07)	(0.02)
Agricultural	0.373***		0.337**
	(6.88)		(2.18)
Services	-0.203***		-0.183+
	(5.58)		(1.82)
Part-time	0.163***		0.193
	(3.25)		(1.47)
Public sector	0.031		0.032
	(0.60)		(0.21)
Local unemployment rate	0.034***	0.033+	0.030
	(4.26)	(1.65)	(1.48)
Unemployment spells longer than 1 year.			-0.086
			(0.94)
Number of times unemployed			0.178***
			(3.16)
Experience in another firm			0.302**
			(2.24)
Primary		0.449***	
		(2.68)	
Energy		-0.095	
		(0.24)	
Construction		0.140	
		(1.07)	
Wholesale		-0.223	
		(1.40)	
Hotels and restaurants		0.129	
		(0.84)	
Transport		-0.098	
		(0.43)	
Banking		0.089	
		(0.48)	
Local Public sector		-0.139	
		(0.55)	
Education, health and social services.		-0.425**	
		(2.43)	
Person-month observations.	58212	58212	58212

Note: Obtained using semi-parametric proportional hazard models. The sample used is `ssample2`. The robust standard errors reported in parenthesis allow for clustering by individual. Robust z statistics in parentheses. + Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 10.
Estimation results of unobserved heterogeneity distribution

	Temporary to permanent	p-value
ln(σ^2)	0,0002	0,8926
Likelihood ratio statistic*	0,0000	0,9950
	Temporary to unemployment	
ln(σ^2)	3,637	3,069
Likelihood ratio statistic *	19,623	0,000
	Temporary to other transitions	
ln(σ^2)	2,490	2,400
Likelihood ratio statistic *	10,594	0,001

*Note: The Likelihood ratio statistic for testing model without observed heterogeneity versus model with observed heterogeneity.

Table 11.
Estimation results with unobserved heterogeneity.

	Transition into unemployment	Transition into other enterprises
Aged between 16 and 25	0,452** (2,560)	0,396** (2,410)
Aged between 26 and 35	-0,280 ⁺ (-1,870)	-0,095 (-0,710)
Aged between 47 and 65	-0,061 (-0,290)	-0,208 (-1,050)
Other States	0,080 (0,230)	0,296 (0,930)
Single	0,060 (0,360)	0,214 (1,480)
woman	0,544*** (3,430)	0,005 (0,030)
Higher qualification	-0,988*** (-4,440)	-0,583*** (-3,080)
Secondary qualification	-0,173 (-1,080)	-0,242 (-1,580)
Northeast	0,578 ⁺ (1,930)	-0,240 (-0,900)
Northwest	0,481 ⁺ (1,640)	-0,274 (-1,040)
Centre	0,599** (2,060)	-0,461 ⁺ (-1,790)
East	0,558** (2,000)	-0,158 (-0,680)
South	0,881 ⁺ (3,060)	-0,081 (-0,340)
Canarias	0,201 (0,620)	0,330 (1,230)

Size1-5	0,380 ⁺ (1,690)	-0,017 (-0,080)
Size5-20	0,346 ⁺ (1,650)	0,396** (2,410)
Size20-50	-0,066 (-0,290)	0,153 (0,610)
Size51-99	0,173 (0,620)	0,069 (0,290)
Size100-500	-0,067 (-0,260)	0,069 0,290
Agricultural	0,444 ⁺ (1,760)	0,431** (1,980)
Services	-0,107 (-0,710)	-0,306** (-2,23)
Part-time	0,742*** (3,750)	0,316 ⁺ (1,680)
Public sector	0,510** (2,390)	-0,159 (-0,790)
Local unemployment rate	0,085** (2,350)	0,046 (1,500)
Unemployment spells longer than 1 year.	0,776*** (5,110)	0,025 (0,200)
Number of times unemployed	-0,004 (-0,050)	0,142 ⁺ (1,810)
Experience in another firm	-0,127 (-0,700)	0,389** (2,170)

Note: Obtained using semi-parametric proportional hazard models with unobserved heterogeneity. The model estimated is model IV. The sample used is *ssample2*. The robust standard errors reported in parenthesis allow for clustering by individual.

+ Significant at 10%; ** significant at 5%; *** significant at 1%.

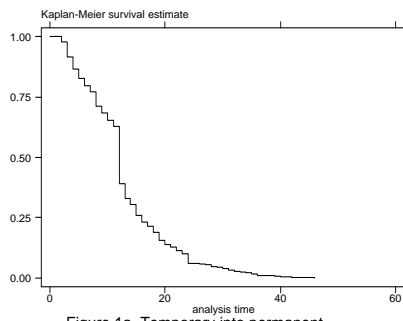


Figure 1a. Temporary into permanent

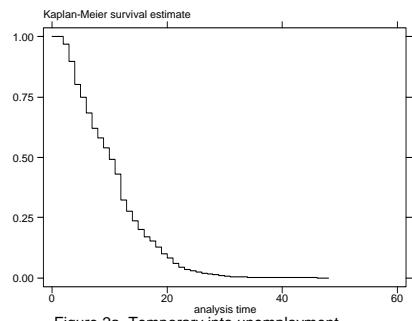


Figure 2a. Temporary into unemployment

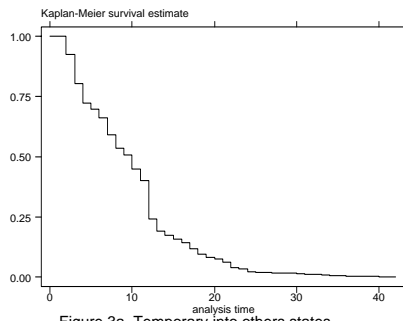


Figure 3a. Temporary into others states

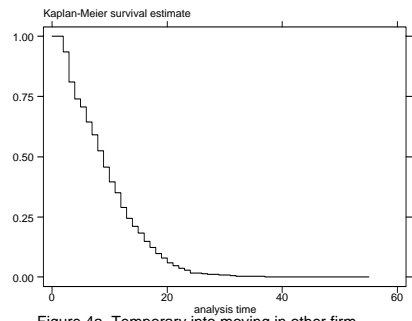


Figure 4a. Temporary into moving in other firm

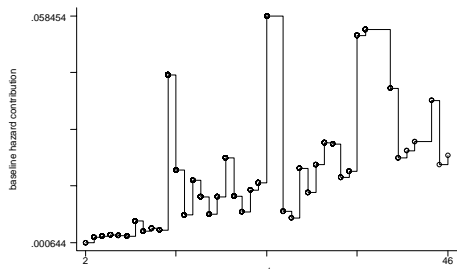


Figure 2a: Estimated baseline hazard: Temporary into permanent

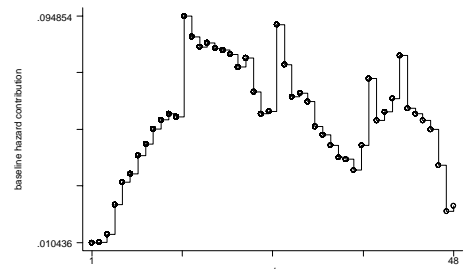


Figure 2b: Estimated baseline hazard: Temporary into unemployment

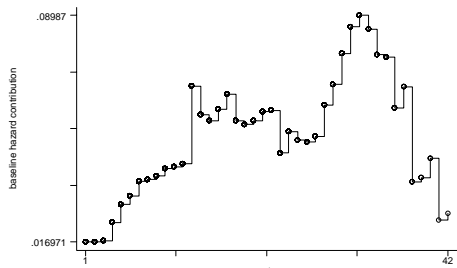


Figure 2c: Estimated baseline hazard: Temporary into other states

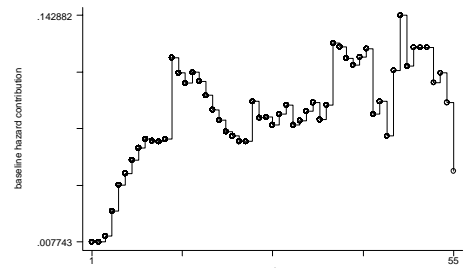


Figure 2d: Estimated baseline hazard: Temporary into other firms

Table A1. Definition of Variables.

Variable	Definition
Woman	Sex female
Age group	
Aged between 16 and 25	Aged between 16 and 25
Aged between 26 and 34	Aged between 26 and 34
Aged between 35 and 46 (Reference category)	Aged between 35 and 46
Aged between 47 and 65	Aged between 47 and 65
Marital status	
Married or cohabiting (Reference category)	Married or consensual union at interview date
Other States	Divorced, widowed or separated at interview date
Single	Single
Part-time	Part-time worker
Public sector	Work in the public sector
Current Profession (Grouped A)	
Managerial	Legislators, senior officials Corporate managers Managers of small enterprises.
Professional	Physical, mathematical and engineering science professionals Life science and health professionals
Teachers and others	Teaching professionals and others professionals
Associate Professional	Physical and engineering science associate professionals Life science and health associate professionals
Associate Teachers	Teaching associate professionals and other associate professionals
Clerks	Office clerks and customer services clerks
Protection, personal services and sales.	Personal, protective services workers, Models, salespersons, demonstrators
Semi-skilled workers	Services elementary occupations Skilled agricultural and fishery workers, Agricultural, fishery and related labourers
Unskilled workers (Reference category)	Metal, machinery and related trades workers Precision, handicraft, printing and related trades workers Stationary-plant and related operators Drivers and mobile-plan operators Machine operators and assemblers
Miscellaneous	Labourers in mining, construction, manufacturing and transport Miscellaneous
Industry (grouped B)	
Primary	Agriculture, hunting and forestry + Fishing
Energy	Mining and quarrying + Electricity, gas and water supply
Manufacturing (reference category)	Manufacture of metal products, machinery and equipments n.e.c. Manufacture of food products, beverages and tobacco Manufacture of textiles, clothing and leather products Manufacture off wood and paper products; publishing and printing Manufacture of coke, refined petroleum/chemicals/rubber & plastic/... Other manufacturing

Construction	Construction
Wholesale	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal/household goods
Hotels and restaurants	Hotels and restaurants
Transport	Transport, storage and communication
Banking	Financial intermediation
	Real estate, renting and business activities
Local Public Sector	Public administration and defense; compulsory social security
Education, health and social services.	Education
	Health and social work
	Other community, social and personal service activities; private households with employed persons; extra-territorial organizations and bodies
Main activity in the current job (grouped c)	
Agricultural Industry (Reference category)	Agricultural Industries
Services	Services
Firm size	
Size1-5	Firm size: fewer than 5 employees at the establishment
Size5-20	Firm size: 5-20 employees at the establishment
Size20-50	Firm size: 20-49- employees at the establishment
Size51-99	Firm size: 50-99- employees at the establishment
Size100-500	Firm size: 100-499 employees at the establishment
Size500+(reference category)	Firm size: +500 employees at the establishment
Educational Attainment	
Higher qualification	Recognised third level education (ISCED 5-7)
Secondary qualification	Second stage of secondary level education (ISCED 3)
Some qualification (Reference category)	Less than second stage of secondary education (ISCED 0-2)
Past jobs	
Experience in another firm	Have work in another place before the current job
Number of times unemployed	Number of times individuals have been unemployed during the five years before joining the survey.
Unemployment spells longer than 1 year.	1 if individuals are unemployed for more than a year.
Region	
Northeast	Northeast
Northwest	Northwest
Madrid (Reference category)	Madrid
Center	Center
East	East
South	South
Canarias	Canarias
Local unemployment rate	Quarterly local unemployment rate disaggregated by sex.

Table A2: Probit Estimation with Sample Selection

	(1)	(2)	(3)	(4)
	Model I	Model II	Model III	Model IV
Aged between 16 and 25	1.009*** (17.51)	0.950*** (17.48)	0.996*** (19.35)	1.086*** (22.91)
Aged between 26 and 35	0.433*** (12.87)	0.394*** (15.37)	0.402*** (15.68)	0.217*** (8.08)
Aged between 47 and 65	-0.319*** (8.13)	-0.290*** (9.85)	-0.293*** (9.88)	-0.110*** (3.37)
woman	0.184*** (5.34)	0.131*** (4.82)	0.252*** (9.17)	0.133*** (4.78)
Higher qualification	-0.231*** (4.79)	-0.299*** (8.64)	-0.327*** (9.52)	-0.191*** (5.58)
Secondary qualification	-0.220*** (5.79)	-0.253*** (8.60)	-0.218*** (7.47)	-0.151*** (4.93)
Managerial	-0.590*** (5.47)			
Professional	-0.207*** (2.82)			
Teachers and others	-0.458*** (6.71)			
Associate Professional	-0.457*** (5.53)			
Associate Teachers	-0.558*** (9.32)			
Clerks	-0.506*** (10.03)			
Protection, personal services and sales.	-0.177*** (4.00)			
Semi-skilled workers	0.263*** (2.98)			
Miscellaneous	0.371*** (8.83)			
Northeast		0.245*** (5.65)	0.221*** (5.04)	0.261*** (5.56)
Northwest		0.123*** (3.00)	0.165*** (3.96)	0.160*** (3.59)
Centre		0.274*** (6.38)	0.253*** (5.81)	0.257*** (5.52)
East		0.083** (2.17)	0.115*** (2.94)	0.028 (0.67)
South		0.408*** (9.89)	0.389*** (9.32)	0.349*** (7.81)
Canarias		0.460*** (8.96)	0.388*** (7.45)	0.335*** (6.06)

Size1-5	0.431*** (11.88)	0.480*** (13.75)	0.331*** (8.55)
Size5-20	0.349*** (10.62)	0.336*** (10.43)	0.196*** (5.52)
Size20-50	0.366*** (10.17)	0.353*** (9.95)	0.225*** (5.77)
Size51-99	0.245*** (5.76)	0.254*** (6.00)	0.134*** (2.88)
Size100-500	0.094** (2.39)	0.142*** (3.62)	0.011 (0.25)
Agricultural	0.330*** (6.14)		0.301*** (5.27)
Services	-0.287*** (11.41)		-0.254*** (9.44)
Part-time	0.749*** (16.79)		0.682*** (14.80)
Public sector	-0.204*** (6.51)		-0.167*** (4.87)
Local unemployment rate	0.029*** (4.35)	0.030*** (4.40)	0.027*** (3.76)
Unemployment spells longer than 1 year.			0.330*** (10.72)
Number of times unemployed			0.454*** (22.61)
Experience in another firm			0.626*** (24.08)
Primary		0.590*** (10.44)	
Energy		-0.196** (2.12)	
Construction		0.826*** (19.85)	
Wholesale		-0.147*** (3.90)	
Hotels and restaurants		0.148*** (2.97)	
Transport		-0.081+ (1.89)	
Banking		-0.196*** (4.49)	
Local Public sector		-0.341*** (7.27)	
Education, health and social services.		0.000 (0.00)	

Robust z statistics in parentheses

+ significant at 10%; ** significant at 5%; *** significant at 1%

Table A2. Selection equation (continued)

Aged between 16 and 25	-0.289*** (11.56)	-0.288*** (15.67)	-0.290*** (15.80)	-0.290*** (15.81)
Aged between 26 and 35	-0.470*** (12.78)	-0.466*** (16.18)	-0.468*** (16.28)	-0.478*** (16.64)
Aged between 47 and 65	-0.016 (0.53)	-0.014 (0.61)	-0.015 (0.66)	-0.020 (0.88)
woman	-0.098*** (2.89)	-0.100*** (4.00)	-0.099*** (4.00)	-0.099*** (3.99)
Other States	0.006 (0.09)	0.001 (0.02)	0.003 (0.05)	0.016 (0.35)
Single	-0.194*** (5.31)	-0.200*** (8.06)	-0.196*** (7.95)	-0.184*** (7.46)
Higher qualification	0.504*** (15.63)	0.506*** (21.60)	0.507*** (21.64)	0.507*** (21.64)
Secondary qualification	0.142*** (4.98)	0.143*** (6.37)	0.143*** (6.41)	0.143*** (6.40)
select:Constant	0.789*** (29.95)	0.789*** (39.71)	0.789*** (39.71)	0.788*** (39.60)
athrho:Constant	0.323*** (3.51)	0.362*** (3.71)	0.326*** (3.59)	0.212*** (2.59)

Robust z statistics in parentheses

+ significant at 10%; ** significant at 5%; *** significant at 1%

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