INVESTIGACIONES ECONÓMICAS. vol. XXII (2), 1998, 201-224

RE-EMPLOYMENT PROBABILITIES OF YOUNG WORKERS IN SPAIN

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We use matched files of the Labour Force Survey (EPA) for the period 1987-1996 to study the re-employment probabilities of workers aged 16-29 in Spain. The sample is restricted to men and women who posses work experience. A discrete hazard rate model, assuming competing risks, allows us to investigate the factors that affect the probability of leaving unemployment for becoming either employed or inactive. In addition to a set of explanatory variables related to personal and previous job characteristics, we include year dummies to control for the effects of the economic cycle and other relevant factors that may have changed over the period of study. As an alternative measure for the business cycle, GDP growth is used. Duration dependence is incorporated in the model in a flexible way by including quarterly dummies. (*JEL* J21, J24)

1. Introduction

In the second quarter of 1995, 41.8 per cent of workers aged 16-24 were unemployed in Spain. This figure compares to an unemployment rate of 19.9 per cent for people with 25-54 years of age. Despite declining labour force participation rates among young men and women, Spanish youth unemployment appears extremely high, even by European standards.[1] Improving the youth labour market continues to pose a challenge to labour market policies in many countries (OECD (1992)). Because of having the highest overall unemployment rate in the OECD area, Spanish young workers face comparatively harder conditions to integrate themselves in the world of work.

I thank Pedro Albarrán Pérez for excellent research assistance. I am also grateful to César Alonso, Rafael Repullo, and two anonymous referees for their helpful comments and suggestions.

[1] In 1991, when the Spanish labour market was at its best, the youth employment rate in Spain was 30.5 per cent, and in the European Community the corresponding figure was 17.6 per cent. See Alba-Ramírez (1996a) for features of youth labour market policy and performance in Spain.

From the extensive literature that has studied the youth labour market, we know that the latter has specific features which contribute to explain the relatively poorer employment performance of young workers (Wachter and Kim (1984), Rees (1986), Lynch (1989), Topel and Ward (1992), Narendranathan and Elías (1993)). For instance, that many youths share participation in the labour force with school attendance; that young workers change labour force status much more frequently than adults; that many young persons live with their parents, which means that they tend to be less pressed to find work and to remain in the labour force; and, that early work experience has a significant impact on future career developments.

In previous work, Alba-Ramírez (1996a) finds that a key issue to study youth unemployment is the success in finding the first job. Having contact with the labour market for the first time, after school, young people must overcome the natural obstacle of lacking experience. In a context of high unemployment, first job seekers are obliged to compete for employment with experienced workers. The latter have an advantage in finding work because they know better how to search for a job, i.e., using already created networks; and also because employers tend to have a taste for workers with work experience. Thus, the employment performance of new entrants to the labour market is usually worse than that of workers who have worked before.[2]

In this article, we focus on the labour market performance of experienced young workers. In particular, we study the transition from unemployment to employment and to inactivity of men and women aged 16-29 who have already acquired some work experience. By imposing additional restrictions on the sample used, we are able to concentrate on a group of young workers who are highly attached to the labour market.[3] This also warranties lower heterogeneity in the group of young job seekers whose labour force transitions we study. We apply a discrete-time duration model, and use matched files from the Spanish Labour Force Survey (EPA).

[2] Alba-Ramírez (1996a) finds that the exit rates from unemployment is about twice as high among experienced young workers than among first job seekers. For instance, 9.3 per cent of teenagers looking for the first job in the second quarter of 1995 were reported employed three months later; the equivalent transition rate was 23.7 per cent for teenagers who had some work experience. For persons aged 20-29 the differences in transitions probabilities were also quite important.

[3] Lynch (1989) adopts a similar strategy in her study of unemployment duration among U.S. young men and women.

In the following section, we present a discrete hazard model under competing risks. In Section 3 we describe the data and indicate the criteria for sample selection. In Section 4 we estimate the model and give results on labour force transitions of experienced young workers. Finally, in Section 5, we summarize the results and conclude.

2. A Discrete Hazard Model for Labour Force Transitions

As described in the next section, we can study transitions from unemployment by using quarterly matched files from EPA. Because in this date set we are able to follow individuals for a maximum of six quarters, it is possible to apply a discrete-time duration model. In a discrete-time model, an individual's unemployment spell is represented by a random variable, T, which can take on positive integer values only. We observe a total of n independent individuals ($i = 1, ..., n$) beginning a some natural starting point $t = 1$. In the data described in the previous section, such point is the quarter when the worker becomes unemployed. Each observation continues until time t, at which point an event occurs or the observation is censored. The unemployment spell can end, $T = t$, in any of j states: $j = 1$ (employment) or $j = 2$ (inactivity). The observation is censored when the surviving individual is observed at quarter t but not at quarter $t + 1$. It is assumed that the time of censoring is independent of the hazard rate for the occurrence of events, at least after controlling for other factors. Also, it is assumed that the set of two states at which unemployment spells can end is absorbing and equal for each person.

For modelling the transition from unemployment to employment or to inactivity, we define the discrete transition rate. For the $i - th$ person the transition rate into state j ($j = 1, 2$) in period t, P_{itj}, is the conditional probability of a transition to state j in this period, given that individual i has been unemployed until t.[4]

$$P_{itj} = Pr[T_i = t_i, J = j \mid T_i \geq t_i, x_{it}], \qquad [1]$$

where x_{it} is a vector of covariates for individual i, some of which can be time-variant. Assuming that the competing risks are independent,

[4] According to the simple job search model (Lippman and MacCall (1976)), given a stationary reservation wage, the re-employment probability is the result of two probabilities, the rate at which offers arrive times the probability that a random offer is accepted. In our competing risks model, unemployed workers can either obtain a job or leave the labour force.

the hazard rate from unemployment is given by

$$P_{it} = \sum_{j=1}^{2} P_{itj}. \qquad [2]$$

The conditional probability that individual i remains unemployed in period t is given by

$$Pr[T_i > t_i \mid T_i \geq t_i, .] = 1 - P_{it}. \qquad [3]$$

And not conditioning on the individual's previous unemployment history, the survivor function up to period t is

$$Pr[T_i > t_i] = \prod_{k=1}^{t} (1 - P_{ik}). \qquad [4]$$

Then, the transition into state j in period t can be expressed in terms of the respective transition rate and the survivor function as

$$Pr[T_i = t_i, J = j] = P_{itj} \prod_{k=1}^{t-1} (1 - P_{ik}). \qquad [5]$$

To derive the likelihood function for this model, we need to define the following indicator function:

$\delta_{ij} = 1$, if duration is complete (individual i makes a transition to state j)

$= 0$, if duration is censored.

Assuming independence of all observations, the sample likelihood function is given by

$$L = \prod_{i=1}^{n} [\prod_{j=1}^{2} [Pr(T_i = t_i, J = j)]^{\delta_{ij}} [Pr(T_i > t_i)]^{1-\delta_{ij}}]. \qquad [6]$$

Substituting [4] and [5] into [6], we can have the sample likelihood function in terms of the transition and hazard rates. We can write

$$L = \prod_{i=1}^{n} [\prod_{j=1}^{2} [\frac{P_{itj}}{(1 - P_{it})}]^{\delta_{ij}} [\prod_{k=1}^{t} (1 - P_{ik})]]. \qquad [7]$$

Given that [7] is in function of the transition rates, we just need to specify the dependence of the latter on the explanatory variables. For

the transition rate we chose the logistic specification that, with multiple events, generates the multinomial logit model (Maddala (1983)). It allows for the three possible labour force states considered: employment, inactivity, and unemployment, which is the base category.

For individual i, the transition rate to state j in period t is given by

$$P_{itj} = \frac{exp(\alpha_{jt} + \beta_j' z_{it})}{1 + \sum_{m=1}^{2} exp(\alpha_{mt} + \beta_m' z_{it})}, \qquad [8]$$

where α_{jt} is a vector of coefficients for dummies variables for each period (quarter) workers remain unemployed, z_{it} is a vector of explanatory variables which may vary with time, β_j is the vector of parameters to be estimated, and by definition, $x_{it} = [\alpha_{jt}, z_{it}]$. Note that α_{jt}, known as the baseline hazard, is a set of constants that describe in a flexible way the time dependency of the transition process. We consider quarter dummies which coefficients for transitions to employment can differ from those for transitions to inactivity.

Note that in the discrete hazard model described above, each discrete time unit for each individual can be treated as a separate observation or unit of analysis. For the data set used in this article, which is described in the next section, the dependent variable or unit of analysis is the individual's quarter of unemployment. It takes the value of 1 if a certain event occurred to that worker in that time unit, and zero otherwise. As workers are interviewed every three-month intervals, the event that takes place is observing a transition to either employment or inactivity.

From the likelihood function [7] one can proceed by substituting the chosen regression model, in our case the logistic, and then maximize log L with respect to α_{jt} and β_j.

However, it can be shown that the likelihood function for the discrete-time model as expressed by equation [7] is equivalent to a multinomial logit model where, assuming independence between the three states, all individual observed time units are pooled (Allison (1982)). Taking logarithm in [7] yields the log-likelihood function

$$logL = \sum_{i=1}^{n} [\sum_{j=1}^{2} \delta_{ij} log[\frac{P_{itj}}{(1 - P_{it})}] + \sum_{k=1}^{t} log(1 - P_{ik})]. \qquad [9]$$

If we define a dummy variable y_{itj} equal to 1 if person i makes a transition from unemployment to either employment or inactivity at

time t and zero otherwise, then [9] can be rewritten as

$$logL = \sum_{i=1}^{n}\sum_{k=1}^{t}[\sum_{j=1}^{2} y_{ikj} log(\frac{P_{ikj}}{1-P_{ik}}) + log(1-P_{ik})], \qquad [10]$$

which has the same form as the log-likelihood for a multinomial logit in which all observed time units for all individuals are treated as separate, independent observations. As Allison points out, it is important to realize that, "...unlike the likelihood function for the continuous-time model, the discrete-time likelihood cannot be factored into separate components for each of the m kinds of events. Hence ML [maximum likelihood] estimation must be done simultaneously for all kind of events." (p. 88).[5] Accepting the model specification, the estimates for α_{jt} and β_j posses the standard properties of the maximum likelihood estimations.

3. Data and Sample Selection

The Labour Force Survey (EPA) is used for analysing labour marker transitions of young workers. This is possible by taking advantage of the panel structure of the EPA, in which a sixth of the sample (some 60,000 households) rotates every quarter. This allows to follow a person for a maximum of six quarters. With some restrictions, EPA files suitable for studying labour market transitions have just recently been made available by the Spanish National Institute of Statistics (INE). Place of residence, and the code to identify members of the same household have been dropped from the matched files. Age is available as grouped in five-year brackets.

The time period available expands from the second quarter of 1987 to the fourth quarter of 1996. This period includes part of the phase of strong employment growth that lasted until the early 1990's, the deep employment crisis of 1992 and 1993, and the recovery since 1994. Therefore, the data permit to analyse transitions over a complete cycle of the Spanish economy. We do this by pooling all individuals whose

[5] It should also be indicated that when there are many kinds of risks or events it becomes cumbersome to specify each type of them in order to apply the multinomial methodology. In this case, a simpler alternative analogous to that of the continuous time method, consists of treating as censored those spells which end in states different from the one under consideration. The binomial model can then be used. See Allison (1982), p. 90 and references there in. Also, see Narendranathan and Stewart (1993) and Jenkins (1995) for expositions of the binomial model.

labour force state we observe for at least two consecutive quarters beginning at the first interview. We restrict the sample to youth aged 16-29 and match individual observations from the second quarter of 1987 to the fourth quarter of 1996. Conditioning on being in the household at the first interview, we obtain a sample of 22,706 unemployed men and 25,426 unemployed women, aged 16-29.

In selecting the sample for this article we first consider all unemployed persons whose labour force state is observed at the first and one or more posterior adjacent quarters. About 65 percent of individuals were observed for the six consecutive quarters -maximum length of permanence in the sample of a rotating panel. Spells that follow a missing quarter, even though they may be adjacent, are ignored. For instance, and individuals who is in the survey at the first and the second quarter, is missing in the third, and re-appear in the fourth, fifth and sixth quarters is only considered for labour force transition between the first and the second quarter. If he or she remains unemployed in the second quarter, the observation will be censored. After applying this selection criteria, we obtain a sample of 20,418 men and 22,693 women.

The next step in sample selection consists of retaining those unemployed persons who indicated to have worked before, resulting a total sample of 24,536 observations. Of these, we consider only those who, when first interviewed, reported to have lost or left the previous job 3 or fewer months ago -7,660 observations. Because we wish to analyse a sample of unemployed youths who are highly attached to the labour force, we exclude 322 women and 418 men because they indicated to be attending school when first interviewed. Moreover, we use a question on the person's activity before starting job search in order to retain in the sample only those who reported to be working, 95 and 92 percent of men and women, respectively. By deleting observation for which relevant variables are missing, we end up with a sample of 4,055 men and 2,419 women, which generate 9,208 and 6,125 quarterly spells (time units) of unemployment for men and women, respectively. Of the 4,055 men in the sample, we observe a complete spell for 3,061 -2,656 become re-employed and 405 inactive. Of the 2,419 women in the sample, 1,611 completed their spell by finding a job (1,249) or leaving the labour force (362).

4. Estimation and Results

In order to estimate the discrete-time hazard model described in Sec-

tion 2, subject to the available information indicated in the previous section, we consider the following groups of explanatory variables:[6]

i. *Demographic variables.* Dummies for three age groups, four educational levels, and marital status.

ii. *Previous job characteristics.* Dummies for type of previous employment (wage and salary job in the private or the public sector, or self-employment); five dummies for duration of the previous job; three dummies for reasons for loosing or leaving the previous job; and five sectoral dummies.

iii. *Variables related to job search.* Dummies for the worker's situation at the public employment office (registered receiving benefits, registered without benefits, and not registered); four dummies for willingness to accept a job that implies: change of residence, a different activity than in the previous job, lower wage, or less qualified occupation; three dummies for type of job searched (full-time only, full-time but part-time would be acceptable, and other possibilities).

iv. *Calendar time dummies.* Four seasonal dummies indicating the quarter in which the worker became unemployed, and year dummies for the year in which that event took place. The latter are intended to control for the business cycle and other factors that changed over the period of study.

v. *Aggregate variable.* As an alternative to year dummies, we use the quarterly rate of change of the gross domestic product (GDP) from the second quarter of 1987 to the sixth quarter of 196. This is indented to pick up the effect of the business cycle on labour market transitions.

vi. *Unemployment duration dummies.* Three dummies to control for the number of months unemployed at the time of the first interview (one, two, or three months); and five quarterly dummies, one for each quarter the worker remains unemployed after becoming so during the three months preceding the first interview.

Given the properties of the discrete-time duration model described in Section 3 (Allison 1982), together with the discrete nature of the data,

[6] As indicated earlier, these variables are deemed to pick up the effect of personal and other characteristics on the probability of receiving a job offer and the probability that the offer is acceptable; and, also, on the probability of leaving the labour force. Unfortunately, we lack information on the individual's region of residence and household composition to control for local labour market conditions and family structure.

we estimate a multinomial logit model on pooled individual time-unit observations. Unemployed workers in the initial quarter can become either employed or inactive in any of the subsequent quarters.[7] We follow Flinn and Heckman (1983) to make sense of this distinction, contrary to what is claimed by Clark and Summers (1982), for example. Flinn and Heckman reject the hypothesis that unemployment and out of the labour force are behaviorally meaningless distinctions. In this article, distinguishing between transitions to employment and transitions to inactivity along the unemployment spell is particularly useful for taking into account that some young workers may stop searching to return to school or become inactive as a consequence of conscription. Also, a transition from unemployment to out of the labour force can occur if the person falls discouraged in looking for work.[8]

Before discussing the estimation results, it is useful to look at the empirical hazard rates from unemployment to employment or to inactivity. The hazard (or transition) rate from state i to state j is defined as the proportion of persons who enter state j in time $t+1$ given that they had remained in state i until time t. Because we know an individual's labour force state for a maximum of six consecutive quarters, we can calculate hazard rates over five quarterly periods.

Table 1 presents the Kaplan-Meier estimates or empirical hazard rates from unemployment to employment and from unemployment to inactivity –averaged for the period 1987-1996– for men and women. It is clear that men are more likely to become employed and less likely to leave the labour force than women. From the first to the second quarter, about 33 percent of men and 22 percent of women become employed, and 4.6 percent of men and 7.3 percent of women become inactive. As time passes, the probability of leaving unemployment diminishes for both sexes, particularly since the fourth quarter. On the other hand, the hazard rates from unemployment to inactivity do not change much over the unemployment spell.

Negative duration dependence is common in unemployment duration studies. Usually, this phenomenon persists after controlling for obser-

[7] A shortcoming of observing labour force states in one-quarter intervals is that we certainly miss some of the very short employment or inactivity spells.

[8] Although it is hard to discriminate between the different reasons for becoming inactive, an advantage of the competing risks model is that we can obtain a neater result for the re-employment probability because we estimate the discrete-time hazard model simultaneously for the two kinds of exits from unemployment.

ved heterogeneity. Experience tells us that by introducing unobserved heterogeneity in the model its estimation becomes more complicated without adding much to the main results.[9] In this paper we have opted for keeping the statistical model as simple as possible; and, at the same time, we try to reduce heterogeneity by considering a sample of youths deemed to be highly attached to the labour market. Tables 2 and 3 contain the proportions for each variable and the estimated coefficients with their asymptotic t-statistics in absolute values. In what follows, we first indicate the resulting relationship between explanatory variables and the probability of making a transition to either employment or inactivity. Then we focus on the predicted hazards rates for workers with specific characteristics.

TABLE 1
Empirical Hazard Rates from Unemployment to Employment and to Inactivity. Pooled Sample of Workers 16-29 years of age

	Men		Women	
	Employment	Inactivity	Employment	Inactivity
Initial Sample:	4,055		2,419	
Follow-up Quarters				
Second	33.19	4.61	22.28	7.31
Third	28.50	3.78	21.79	5.59
Fourth	28.45	5.25	20.84	5.23
Fifth	18.77	3.99	16.59	5.87
Sixth	16.15	3.87	11.11	5.45

Note The empirical hazard (or Kaplan-Meier estimate) is defined as the proportion of persons who change labour force satatus each quarter, after having remained unemployed up to that same quarter
Source Matched EPA files, second quarter of 1987 to the fourth of 1995

4.1 Individual and Other Characteristics

Age has quite different effects on transitions by gender. Men aged 16-19 exhibit a lower probability of re-employment and higher probability of becoming inactive. On the other hand, women aged 25-29 are

[9]Bover *et al.* (1996) estimate a discrete-time duration model with unobserved heterogeneity on a data set that, as the one used in this paper, was obtained from matched EPA files. When taking into account unobserved heterogeneity, their model does not produce significantly different results from those obtained with a general hazard model. In fact, as Meyer (1990) shows, this is likely to happen when the hazard rate is allowed to be nonparametric, which is the case with the Cox proportional hazard model and the discrete-time duration model.

TABLE 2

Determinants of Transitions from Unemployment to Employment and to Inactivity. Multinomial Logit Estimates and Asymptotic *t*-Statistics. Men

	Sample proportions	To employment		To inactivity	
		Coeff	|t|	Coeff	|t|
Constant		- 3027	1 78	-3 3150	8.11
Aged 16-19	1499	- 1393	1 84	1.4550	1 67
Aged 20-24	4591				
Aged 25-29	.3908	-.0045	0.08	-.4418	2.86
Primary education or less	3523	- 0608	1 13	.0745	0 63
Secondary (academic)	4995				
Secondary (vocational)	1227	0343	0.45	-.1138	0.60
University	0254	- 3436	1.98	.4201	1.12
Married	1695	2555	3 85	- 1285	0 62
Previous job characteristics					
Self-employment	0198	.1036	0 50	- 2402	0 48
Wage/salary (Public)	.1095				
Wage/salary (Private)	8705	.0181	0.20	-.0995	0.47
Tenure 0-2 months	3226	-.1615	2.21	-.2220	1.34
3-5	.1911				
6-11	.2139	- 0653	0 87	1133	70
12-35	1835	-.1878	2.32	-.0090	0.05
36+	0887	- 3118	2 97	-.3623	1.30
Lost a temporary job	.8322				
Layed-off	.0852	-.0862	0.95	0404	0.19
Other	.0825	0297	0 30	.0483	0 22
Farming/fishing	.2060	.1312	1 48	1960	0.99
Manufacturing	1779				
Construction	.2522	- 0268	0 35	-.4086	2 27
Trade/hotel	1940	-.0709	0.89	1823	1 13
Other services	1696	- 1773	1 97	-.2085	1.01
Job search related variables					
Receiving benefits	3553	-.0057	0 10	- 0174	0 13
Registered without benefits	.5799				
Not registered	.0647	.3323	3.42	4609	2 58
Willing to change residency	.5090	0056	0 10	1833	1.58
Willing to change activity	.7944	- 0213	0.29	0274	0.16
Willing to accept lower wage	5981	1531	1 80	.1040	0 55
Willing to accept lower category	.6716	-.1463	1 57	-.1693	0 81
Look for full-time job only	1548	3527	5 19	.1199	0 76
Part-time job acceptable	2982	1159	2 10	-.0589	0 47
Seasonal and yearly variables					
First quarter	2505				
Second quarter	.2218	0181	0.26	0698	0.44
Third quarter	.2391	.0407	0.59	.1378	0 89
Fourth quarter	2884	- 1309	1 93	-.0218	0.14
Year 1987	0691				
Year 1988	.1028	-.0145	0.12	1809	0 60
Year 1989	.1152	.0130	0 11	3780	1.32
Year 1990	.1048	- 0352	0 31	.3157	1.06
Year 1991	.1194	-.1266	1 12	.6691	2 43
Year 1992	.1333	-.4289	3.77	5484	2.00
Year 1993	.1466	-.3870	3.46	.3330	1.20
Year 1994	1184	-.2412	2 10	9770	3.60
Year 1995	0900	-.2186	1.79	7003	2.38
Unemployment duration dummies					
Unemployed 1 month or less	4410				
Unemployed 2 months	2994	- 1792	3 18	-.1228	0.97
Unemployed 3 months	2591	- 2743	4 54	- 1109	0.82
Quarter 1	4403				
Quarter 2	.2468	-.1920	3 28	- 2624	1.90
Quarter 3	1530	- 1438	2 06	1242	0.84
Quarter 4	0925	-.6900	7 22	- 2717	1.38
Quarter 5	0672	-.8657	7 46	- 2795	1.22
Proportion of cases		.288		044	
Log likelihood		-6,724			
Number of individuals		4,055			
Number of spells		9,208			

Note The sample is composed of unemployed men aged 16-29 See text for details on criteria for sample selection
Source: Matched EPA files second quarter of 1987 to fourth quarter of 1996.

TABLE 3

Determinants of Transitions from Unemployment to Employment and to Inactivity. Multinomial Logit Estimates and Asymptotic t-Statistics. Women

	Sample proportions	To employment		To inactivity	
		Coeff.	|t|	Coeff.	|t|
Constant		-.4221	1.81	-3 0238	7.26
Aged 16-19	.2099	.0124	0.14	.1639	1.01
Aged 20-24	.4382				
Aged 25-29	.3518	-.1327	1.64	.0574	0.43
Primary education or less	.2339	-.0456	0.53	-.1130	0.83
Secondary (academic)	.5322				
Secondary (vocational)	.1642	.2296	2 40	-.3502	1 95
University	0695	.4887	3.59	-.2250	0.85
Married	.2524	-.3057	3.37	.9722	7.54
Previous job characteristics					
Self-employment	.0200	-.4233	1 35	-.0987	0 24
Wage/salary (Public)	.1333				
Wage/salary (Private)	.8465	-.0209	0.17	-.1066	0.52
Tenure 0-2 months	2754	-.1177	1.22	.0575	0.34
3-5	.2132				
6-11	2207	-.1571	1 61	-.0114	0.06
12-35	.1797	-.3100	2 81	-.4018	1 99
36+	.1108	-.3215	2 31	1042	0.48
Lost a temporary job	.8109				
Layed-off	.0742	-.1432	1 03	2626	1 24
Other	.1147	- 1083	0 90	4313	2 38
Farming/fishing	.1338	.0724	0 56	7113	3 40
Manufacturing	2055				
Construction	.0150	-1 3038	2 74	6181	1 65
Trade/hotel	3093	-.0166	0 17	2698	1.61
Other services	.3361	-.1133	1 08	-.1164	0 62
Job search related variables					
Receiving benefits	.3178	-.1187	1.49	-.1383	1 07
Registered without benefits	6091				
Not registered	.0729	4884	4.09	4137	2.10
Willing to change residency	.3007	.0707	0 95	.1445	1.12
Willing to change activity	7484	- 0879	0.94	- 1578	1 02
Willing to accept lower wage	.5506	-.0156	0.13	-.1492	0.78
Willing to accept lower category	.6111	.0394	0.32	.1856	0.92
Look for full-time job only	.1268	.1633	1.61	.1538	0.90
Part-time job acceptable	.3391	-.0042	0.05	.0793	0.65
Seasonal and yearly variables					
First quarter	.2558				
Second quarter	.2117	-.0373	0.38	.1200	0.71
Third quarter	.2643	-.1400	1 51	.1692	1.06
Fourth quarter	2680	- 0971	1.03	.3360	2.16
Year 1987	0582				
Year 1988	.0937	-.1627	1.01	-.3805	1.18
Year 1989	1131	-.0950	0 61	-.0290	0.10
Year 1990	.1283	- 3715	2.35	- 1850	0.65
Year 1991	.1289	-.4550	2.83	.4378	1 61
Year 1992	.1172	-.4448	2.72	.6409	2.39
Year 1993	.1691	-.6640	4.24	.0952	0.35
Year 1994	.1120	-.4224	2.60	.1480	0 51
Year 1995	.0791	-.2978	1.71	.1407	0.44
Unemployment duration dummies					
Unemployed 1 month or less	4464				
Unemployed 2 months	3028	- 0954	1.22	-.0322	0.25
Unemployed 3 months	.2506	-.0888	1.08	-.0546	0.39
Quarter 1	.3949				
Quarter 2	.2509	-.0022	0.02	- 2734	1.95
Quarter 3	.1621	-.0464	0.49	- 3221	1.93
Quarter 4	.1111	-.3166	2.71	-.2076	1.11
Quarter 5	0808	-.7772	5.06	-.3588	1.64
Proportion of cases		.204		.062	
Log likelihood		-4,245			
Number of individuals		2,419			
Number of spells		6,125			

Note The sample is composed of unemployed women aged 16-29 See text for details on criteria for sample selection
Source Matched EPA files second quarter of 1987 to fourth quarter of 1996.

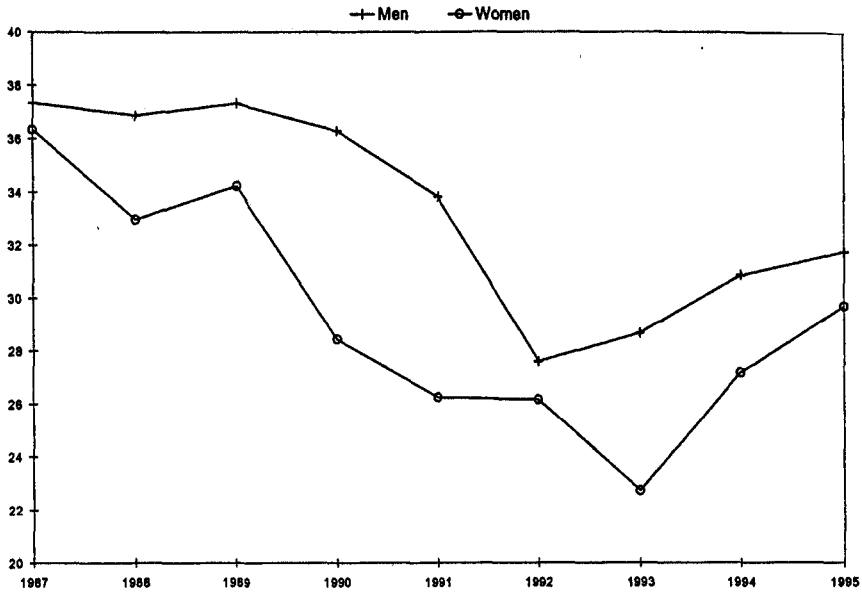
less likely to become employed, and age has no effect on transitions to inactivity. Secondary vocational and university education have strong effects on the probability of obtaining a job among women. However, the dummy for university education obtains a negative and slightly significant coefficient for men's transition to employment. Married men and married women are, respectively, more and less likely to become employed. Also, married women exhibit a strong probability of leaving unemployment to become inactive.

As for the impact of previous job characteristics on the transition rates, some results are worthy to mention. Among men, the re-employment probability is higher for workers whose previous job tenure was 3-11 months. For both, men and women longer tenure at the previous job means longer unemployment duration. To interpret this results one should take into account that longer duration of the previous job entails more specific human capital, and also make workers more likely to be eligible for unemployment compensation. Note that more than 70 percent of unemployed youth stayed in their previous job for less than one year, which is an indication of very high turnover among our sample of unemployed youths. On the other hand, men who previously worked in "Other services" are found to be less likely to find work.

Variables deemed to be related to job search provide some interesting results. Both, men and women, not registered at the public employment office are more likely to find work and also to become inactive. However, being registered and receiving benefits does not obtain a significant coefficient in the multinomial regressions. The three dummies that indicate the situation with respect to the public employment office, as quarterly reported, are allowed to vary over the unemployment spell.[10] The dummy equals to one if the worker is willing a accept a job that implies a lower than expected wage, given his or her qualifications, obtains a positive and significant coefficient for men and an insignificant coefficient for women. This could be interpreted as a more flexible reservation wage among unemployed men. Also remarkable is the result that workers who indicate to be searching for a full-time job

[10] By examining quarterly data on the worker's relation with the public employment office, we found quite bizarre patterns. Many changes in benefit receipt throughout the unemployment spell seem difficult to explain. Thus, instead of making any hard-to-justify adjustment, we decided to use the row data on the worker's status at the employment office. Alba-Ramírez (1996b) indicates some caveats in using matched EPA files to study the effect of unemployment compensation on unemployment duration.

FIGURE 1
Predicted Transitions Rates



1. -From unemployment to employment

2. -From unemployment to inactivity

Source: Based on results presented in Tables 2 and 3

only (15.5 percent of men and 12.7 percent of women) show a higher probability of finding work. The coefficient is highly significant for men and slightly significant for women. The dummy that equals one if the worker is looking for a full-time job but he or she would be ready to accept a part-time job is also associated with a higher probability of re-employment among male job seekers.

Regarding calendar time variables, becoming unemployed in the fourth quarter reduces significantly the probability of employment among men and increases significantly the probability of inactivity among women. Year dummy variables, aimed at picking up the cyclical effect on transition rates, show some differences by gender. Compared to 1987, the transition to employment declined significantly for men who became unemployed in 1992 or after, and for women who became unemployed in 1990 or after. This can be seen more clearly in Figure 1, where the predicted average transition rates to either state are depicted for the reference worker defined below in each year of the sample period. The figure shows that transition to employment reached a minimum in 1992 for men and in 1993 for women. On the other hand, the transition to inactivity is increasing over the period among men and more stable among women, except for the strong increase in the probability of leaving the labour force in 1991 and 1992.

4.2 Predicted Hazard Rates

Tables 4 and 5 present the predicted hazard rates decomposed into transitions to employment and transitions to inactivity for men and women, respectively. The first row of each table and panel contains quarterly hazard rates of the reference group, and the remaining rows refer to predicted hazards calculated for workers with specific characteristics or at a certain point in time, keeping other explanatory variables constant. The difference between hazards of the reference group and that resulting from changing a specific covariate indicates the latter's marginal effect on the probability of making a transition at a given quarter of the unemployment spell.

For the reference group,[11] the probability of becoming employed du-

[11] The characteristics of the reference group are: Aged 20-24, academic secondary education, not married, lost a temporary job, employed for 3-5 months in a previous public-sector job, the job was in manufacturing, registered without benefits, not willing to move to another area, not willing to accept a change in activity, not willing to accept a lower than expected wage, not willing to accept a lower occupation,

ring the second quarter after entering unemployment (a spell duration of 3 to 6 months) is 42 percent among men and 38 percent among women. On the other hand, the probability of leaving the labour force in such quarter is similar for men and women, at about 2 or 3 percent. Among workers who remain unemployed when observed the second time, the probability of re-employment declines significantly for men (by 10 percent), and stays constant for women. From the third to the fourth quarter the transition rate to employment keeps roughly constant among both men and women. Thereafter, Tables 4 and 5 show that the re-employment probability strongly declines for both men and women. Whereas 38 percent of unemployed men become employed from the third to the fourth quarter of the unemployment spell, three months later the re-employment probability is 26 percent, which represents a decline of 37 percent. For women, the corresponding decline in the re-employment probability is 16 percent, from 37 to 31 percent. From the fifth to the sixth quarter –the maximum period for which we can follow unemployed people– the decline in the re-employment probability is 12 percent for men, and 29 percent for women.

The effects of characteristics on the hazard rate have been indicated in the previous sub-section. Tables 4 and 5 contain the predicted hazards for some specific characteristics which obtained significant coefficients in the estimated multinomial models. For women aged 16-19 the hazard to employment is not significantly different from that for 20-24 year old women. However, among men teenagers exhibit a lower probability of becoming employed. University education strongly increases the hazard to employment among women but reduces it for men. One possible explanation for this result could be related to a high reservation wage among men with university education.[12]

Being married increases the hazard to employment among men, and decreases the hazard to employment among women. At the beginning

looking for any job regardless of work-time, and became unemployed in the first quarter of 1987. As the sample is composed of new entrants to unemployment –when first interviewed the person has been unemployed for 3 or fewer months– in order to calculate predicted hazards the reference worker is set to have an initial unemployment duration equal to that of the average worker in the sample. This is reasonable because we compute quarterly hazards in order to be consistent with the nature of the data.

[12] For men aged 20-64, Bover *et al.* (1996) find a relatively weak effect of education on the probability of leaving unemployment. For university education, they find a decreasing effect over the unemployment spell.

of the unemployment spell, the referred increase for men is 15 percent and the decrease for women is 22 percent. However, married women are more likely to leave the labour force than unmarried women. Because we lack other controls for women's family responsibilities, the dummy for being married is likely to pick up the probable existence of children and the constrains they impose on female labour force participation. Without information on household composition we are unable to control for factors that affect the labour force decisions of married women, as for instance spouse's labour market status.

TABLE 4
Predicted Hazard Rates for Men

	Quarters				
	1⇒2	2⇒3	3⇒4	4⇒5	5⇒6
1. From unemployment to employment					
Reference Group	41.62	37.23	38.06	26.50	23.23
Aged 16-19	35.74	32.14	32.12	22.37	19.48
University education	33.17	29.31	29.92	20.14	17.46
Married	48.03	43.45	44.36	31.84	28.15
Previous job tenure=12-35 months	37.15	32.96	33.75	23.01	20.05
Not registered at INEM	49.34	44.87	45.58	33.10	29.34
Willing to accept a lower wage job	45.29	40.80	41.63	29.53	26.01
Search for a full-time job only	50.25	45.68	46.53	33.83	30.02
Year 1992	31.16	27.47	28.00	18.72	16.19
Year 1995	35.62	31.69	32.19	22.00	19.14
2. From unemployment to inactivity					
Reference Group	2.05	1.71	2.45	1.98	2.05
Aged 16-19	8.66	7.26	10.18	8.24	8.48
University education	3.50	2.88	4.13	3.23	3.31
Married	1.61	1.36	1.94	1.62	1.69
Previous job tenure=12-35 months	2.18	1.81	2.60	2.06	2.12
Not registered at INEM	2.76	2.34	3.33	2.81	2.95
Willing to accept a lower wage job	2 12	1.78	2.55	2.10	2.19
Search for a full-time job only	1.96	1.66	2.37	2.00	2.10
Year 1992	4.07	3.35	4.79	3.72	3.80
Year 1995	4.39	3.64	5.19	4.12	4.24

Source. Calculated from estimation results shown in Table 2

As indicated earlier, variables related to job search produce interesting results. We do not obtain that registered unemployed youth receiving unemployment benefits exhibit a lower probability of re-employment.[13] As explained, this could be caused by measurement error in the variable that indicates the individual's situation at the public employment

[13]For a sample of U.S. youths, Lynch (1989) finds that various measures for benefit receipt do not appear to significantly affect their re-employment probability.

office.[14] However, it is clear that unemployed young persons who are not registered (6.5 of men and 7.3 percent of women in the sample) are significantly more likely to become employed and, at the same time, more likely to leave the labour force than those registered. This result,

TABLE 5
Predicted Hazard Rates for Women

	Quarters				
	1⇒2	2⇒3	3⇒4	4⇒5	5⇒6
1. From unemployment to employment					
Reference Group	38.47	38.68	37.68	31.49	22.57
Aged 16-19	38.57	38.83	37.83	31.61	22.68
University education	50.71	50.88	49.81	43.02	32.36
Married	29.97	30.50	29.66	24.16	16.92
Previous job tenure=12-35 months	31.77	31.89	30.96	25.45	17.77
Not registered at INEM	49.88	50.24	49.20	42.35	31.84
Willing to accept a lower wage job	38.25	38.43	37.42	31.26	22.38
Search for a full-time job only	42.22	42.48	41.45	34.97	25.45
Year 1992	27.78	28.15	27.32	22.17	15.36
Year 1995	31.55	31.78	30.87	25.33	17.72
2. From unemployment to inactivity					
Reference Group	2.85	2.19	2.12	2.60	2.54
Aged 16-19	3.33	2.55	2.48	3.04	2.97
University education	1.84	1.41	1.37	1.74	1.79
Married	7.98	6.19	5.99	7.17	6.84
Previous job tenure=12-35 months	2.15	1.64	1.59	1.92	1.83
Not registered at INEM	3.43	2.64	2.57	3.25	3.33
Willing to accept a lower wage job	2.48	1.90	1.84	2.26	2.21
Search for a full-time job only	3.10	2.38	2.31	2.86	2.84
Year 1992	6.10	4.71	4.55	5.43	5.13
Year 1995	3.63	2.79	2.69	3.25	3.10

Source. Calculated from estimation results shown in Table 3

that holds for both men and women, suggests that there may be two types of non-registered workers: more employable and less attached to the labour force, two attributes that are hard to separate from these workers' ineligibility for unemployment benefits.

[14]Bover *et al.* (1996) use a measure for benefit receipt that differs from the quarterly row data in order to correct for delay in receipt of benefits attributable to the administrative process for entitlement. They establish that unemployed workers without benefits when first interviewed and reported receiving benefits when subsequently interviewed are considered to be benefit recipients from the beginning of the unemployment spell to the last quarter in which the worker declares to be receiving benefits. As indicated by Alba-Ramirez (1996b), this may cause a bias in the estimated effect of benefit receipt on re-employment probabilities. Another reason for not adopting such strategy in this paper is that, for youths, we have observed erratic changes in benefit status throughout the unemployment spell.

Men willing to accept a job that pays a lower than expected wage are about 9 percent more likely to become employed when observed the second time after entering unemployment. The marginal probability keeps roughly constant over the unemployment spell. This results is consistent with a job search model where workers who are willing to reduce their reservation wage should leave unemployment earlier (Burdett and Vishwanath (1988)).

Of the characteristics included in the multinomial regression, that of being searching for a full-time job only (14.5 percent of men and 13 percent of women) has the strongest impact on the re-employment probability among men. As compared with the reference group, the corresponding hazard is 21 percent higher at the beginning of the unemployment spell, and about 29 percent higher when survivor workers are observed six quarters later. The dummy also obtains a positive and significant coefficient for women. Men who are looking for a full-time job but would be willing to accept a part-time job (30 percent of the sample) are also more likely to find work. This result may indicate that workers who would only accept a full-time job search more intensively, have higher income needs, or simply are more confident about their job prospects.[15]

4.3 The Effect of the Business Cycle

As the data used correspond to a period in which the Spanish economy experienced high GDP growth, entered in a deep recession, and slowly recovered, we are able to study how this economic cycle affected the transitions out of unemployment of young workers. In principle, one may think that downturns reduce the re-employment probability as firms stop hiring and lay off workers. On the other hand, the recovery brings more job offers. However, workers are more likely to accept job offers when they are harder to come by, and the opposite is true when the situation of the labour market improves. With regard to the transition out of the labour force, one can expect that it increases as a result of discouragement in sluggish labour markets, whereas economic recovery makes job search more successful.

As indicated earlier, a first manner of taking into account the effect of the business cycle on the transitions from unemployment is by using

[15] Also, one may think that workers searching for a full-time job are more likely to receive offers if employers find it more attractive to hire full-time workers.

year dummies. In this respect, the last two rows of Tables 4 and 5 (Figure 1) document the fact that 1992 is a through in the business cycle, and that by 1995 the re-employment probabilities for the reference group were still well below those for 1987, particularly among men. This is also reflected in the latter's higher probability of leaving the labour force. As labour market conditions deteriorate, unemployed youths face harder re-employment probabilities and become more prone to stop actively looking for a job. Note, however, that this "discouraging effect" is less apparent for women than for men, after controlling for observed heterogeneity.

Although, year dummies are very useful to show the timing of business cycle effects on labour market transitions, there is the problem that other factors associated with calendar time cannot be separated from the genuine business cycle effect. For this reason, we use an alternative manner of picking up such an effect which consists of replacing year dummies with the GDP rate of change, measured at every quarter over the same quarter of the previous year. It is important to realize that the indicated variable is allowed to vary over each individual's unemployment spell. The use of GDP growth instead of year dummies is the only difference of the new specification compared with those presented in Tables 2 and 3.[16] Given that the coefficients for the other variables changed little in comparison with those reported in the latter tables, in Table 6 we only present results for GDP growth.

The business cycle, as measured by GDP growth, has a strong effect on the re-employment probability of men and of women. At the beginning of the unemployment spell, a GDP growth rate of 4 percent raises the hazard rate by 7.65 percentage points (24 percent) for men, and by 7.75 percentage points (31 percent) for women. To capture changes in the effect of GDP growth on the re-employment probability, we included in the regressions an interaction term between GDP growth and unemployment duration and obtained insignificant coefficients. Notice that GDP growth is a time-variant covariate and, therefore, its value is allowed to change over each individual's unemployment spell.

As regards the relationship between GDP growth and the transition

[16]Based on this new specification, we tried several dummies to control for institutional changes occurred during the data period. For instance, the reform of the unemployment compensation system carried out in April of 1992. Results did not show any significant dummy effect, except for a reduced probability of leaving the labor force among women since the second quarter of 1992.

to inactivity, Table 6 indicates that there is no effect for men and a negative effect for women. Women's transition to out of the labour force declines by almost a third when the GDP increases by 4 percentage points. This results is not surprising because it is well known that women's labour force participation tends to be highly responsive to economic fluctuations and the state of the labour market. As indicated earlier, year dummies in the regressions for young men document the finding that their transition out of the labour force increased during and after the recession. Whereas, among young women, the probability of becoming inactive increased only during the recession.

TABLE 6
The effect of the bussiness cycle on young workers' Transitions from unemployment

	Men		Women	
	Employment	Inactivity	Employment	Inactivity
Coeff.	.082	-.021	.090	-.072
t-Statistics	7.3	-0.9	5.6	-2.8
Predicted transition rates by quarters				
		Δ GDP = 0 %		
1⇒2	31.83	4.10	25 03	5.01
2⇒3	28.30	3.34	25.42	3.79
3⇒4	28.95	4.80	24.74	3.62
4⇒5	19.54	3.74	20.0	4.22
5⇒6	16.98	3.83	13.67	4.00
		Δ GDP = 4 %		
1⇒2	39.48	3.36	32.78	3.42
2⇒3	35.52	2.77	33.14	2.58
3⇒4	36.30	3.98	32.33	2.46
4⇒5	25.32	3.21	26.69	2.94
5⇒6	22.21	.31	18.70	2.85

Note The reported coefficients correspond to those obtained for the GDP growth, defined as the rate of change of each quarter over the same quarter a year earlier. The model specification for results shown in Tables 2 and 3 was used, where the year dummies have been replaced with the GDP growth as a measure of the business cycle. The reference group for calculating the predicted transition rates has the same characteristics as those indicated in note 11
Source: Matched EPA files, second quarter of 1987 to fourth quarter of 1996

5. Summary and Conclusions

This articles has addressed some dynamic aspects of the youth labour market in Spain. The focus has been on assessing the impact of a number of variables on the re-employment probability of experienced

young men and women. We used matched EPA files in order to pool all possible rotating panels for the period that extends from the second quarter of 1987 to the fourth quarter of 1996. By employing a discrete-time hazard model, within a competing risks framework, we were able to analyse transitions from unemployment to either employment or inactivity. In order to reduce heterogeneity in the sample of experienced young workers, we imposed some restrictions for warranting high labour market attachment.

Among the main results we should emphasize the following: 1) Women with university education exhibit a significantly higher re-employment probability, whereas university education is associated with a significantly lower re-employment probability among men; 2) contrary to the result for women, marriage increases the re-employment probability among men; 3) men who are willing to accept a job that entails a lower than expected wage show a higher probability of finding work; 4) men and women who indicate to be looking for a full-time job exhibit a higher probability of re-employment, which is particularly strong among men; 5) predicted hazard rates show duration dependence for men from the very beginning of the unemployment spell, whereas for women such duration dependence becomes apparent only for those who remain unemployed for more than three quarters; 6) Growing GDP improves the re-employment probability among young workers, but it reduces the probability of leaving the labour force only among young women.

A shortcoming of this article is the impossibility to control for local labour market conditions and family structure. The nature of the data used prevented us from doing so. However, the results presented in this paper shed some light on labour force transitions of experienced young workers in Spain, where youth unemployment is much higher than in other European countries. It would probably be too ambitious to derive public policy recommendations from the results obtained in this article. For more confident policy implications, further work is needed to clarify the observed differences in the effects of formal education and of job search related variables on the re-employment probabilities. Along these same lines, improving the currently available matched EPA files to include relevant missing information will be helpful in future work.

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Resumen

En este artículo se utilizan los ficheros enlazados de la Encuesta de Población Activa (EPA) del periodo 1987-1996 para estudiar las tasas de salida del paro entre trabajadores de 16 a 29 años de edad. La muestra está restringida a varones y a mujeres que han trabajado alguna vez. Para el análisis se usa un modelo de duración discreta que admite dos vías alternativas de salida del paro: hacia el empleo o hacia la inactividad. Además de variables demográficas y otras relacionadas con el empleo anterior, en las regresiones se incluyen variables ficticias anuales para tener en cuenta el efecto del ciclo económico y de otros factores que podrían haber cambiado a lo largo del periodo de estudio. Como una medida alternativa del ciclo económico se utiliza el crecimiento del PIB. La posible variación de la tasa de salida a lo largo de la duración del desempleo se incorpora en el modelo de manera flexible mediante la inclusión de variables ficticias trimestrales.