

THE INFLUENCE OF PREVIOUS LABOUR MARKET EXPERIENCES ON SUBSEQUENT JOB TENURE (*)

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P. T. N.º 17/03

(*) The authors thank INEM for the provision of the SIPRE data and gratefully acknowledge funding support from the Instituto de Estudios Fiscales under the research contract "Movilidad laboral, desempleo y pérdidas salariales".

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Edita: Instituto de Estudios Fiscales

N.I.P.O.: 111-03-006-8

I.S.S.N.: 1578-0252

Depósito Legal: M-23772-2001

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ABSTRACT

The aim of this investigation is to analyse the influence of individual's previous labour market experiences on the duration of subsequent job matches in the Spanish labour market. The study draws on a sample of workers extracted from a Spanish administrative dataset (covering the 1980s and the 1990s). We find evidence on the existence of a scarring effect: the longer the time spent in non-employment since previous job separation, the shorter the duration of subsequent re-employment relationships. Other result is that workers whose previous job match terminated due to the ending of a temporary contract are very likely to come back to employment under another temporary job and have a higher probability of job termination (their new employment engagements last less time). The exhaustion of unemployment benefits also seems to exert a scarring effect on job duration.

Keywords: job tenure, job separations, non-employment.

JEL classification: J24, J44, J63

1. INTRODUCTION

Active labour market programmes aim at improving job prospects of the unemployed with the objective of achieving higher levels of employment. One obvious risk of those programmes is that they can be successful to move the unemployed into work in the short-run but these individuals may return quickly to unemployment. In other words, such policy requires that the unemployed who find a job remain in employment for some time.

It may be the case that those individuals who suffer job interruptions and spend some time in unemployment not only experience earnings losses due to the spells of interruption but are also “scarred” by their experience of unemployment. The first issue has been previously documented in many empirical studies for the US (Hamermesh, 1987; Podgursky and Swaim, 1987a; Addison and Portugal, 1989; Kletzer, 1989, 1991; Farber, 1993; Jacobson et al., 1993; Stevens, 1997) and the UK labour markets (Arulampalam, 2001, and Gregory and Jukes, 2001). Evidence for other European economies are much more limited and less conclusive (see Ackum, 1991, for Sweden; Van Audenrode and Leonard, 1995, for Belgium; Pichelmann and Riedel, 1993, for Austria; and Burda and Mertens, 2001, for Germany).

The effect of unemployment incidence and/or duration on future unemployment or subsequent job tenure has been less studied. On the one hand, the US evidence suggests that displaced workers face more unemployment than non-displaced workers (Podgursky and Swaim, 1987b; Swaim and Podgursky, 1991; Ruhm, 1991). There is also evidence that individual’s previous unemployment experience affects future unemployment occurrence (Narendranathan and Elias, 1993, Arulampalam et al., 2000, and Gregg, 2001, for the UK; Flaig et al., 1993, and Muhleisen and Zimmermann, 1994, for Germany; and Omori, 1997, for the US labour market). On the other hand, studies on the effect of unemployment incidence and duration on subsequent job tenure are scarce. For Britain, Booth et al. (1999) find that the most recent labour history affects current job tenure (for instance, a layoff in the previous job has a positive impact on the layoff hazard in the following job). Results from Böheim and Taylor (2002) suggest that jobs following an unemployment spell have shorter mean duration than other jobs and that unemployment incidence rather than duration has the major severe penalty on subsequent job tenure.

All that evidence seems to suggest the existence of persistent costs associated with the unemployment experience. This might be due to firms using unemployment records in their hiring decisions to detect workers’ productivity. Thus, workers with a history of job mobility and unemployment incidence may be offered less secure jobs because they lost valuable work experience or human capital while unemployed (Pissarides, 1992) or because employers use unem-



ployment experience as a signal of workers' productivity (Vishvanath, 1989, and Lockwood, 1991). The existence of costs linked to unemployment may motivate concern over the long-term prospects of those individuals and the most appropriate assistance policies for them. In this sense, understanding whether the costs of job interruptions are persistent and what circumstances may influence that persistence is an important step toward developing such policies.

Recent Spanish studies have shown that past non-employment incidence and duration have scarring effects on unemployed workers either in terms of wages (Arranz and García-Serrano, 2003) or future unemployment experiences (Arranz and Muro, 2001). However, the impact of non-employment spells on subsequent job tenure has not investigated yet in the Spanish literature. This will be the main purpose of this research work: to contribute evidence on how future job durations are affected by the length of previous non-employment spells using Spanish data.

Specifically, we are interested in giving answers to the following questions. First, is there evidence that longer time spent in subsequent employment relationships is the result of longer previous unemployment spells (and longer search)? Second, how does the reason for previous job termination (end of contract or layoffs) affect the exit rate from jobs accepted by the unemployed? Stated differently, do the exit rates (or the duration) of subsequent employment relationships differ among the unemployed due to the influence of the way prior job terminated? Third, does the exhaustion of previous unemployment benefits influence the hazard rate from a future job match? And finally, are differences in exit rates associated with different individual and job characteristics?

The data we use in this study were obtained from the Spanish administrative dataset HSIPRE (Histórico del Sistema de Prestaciones por Desempleo). This data source contains information on unemployment benefit histories for a random sample (40 per cent) of unemployed workers who ever received unemployment benefits over the period 1987-1997. The main advantage of this database lies in that it contains retrospective information on the last job prior to the unemployment experience, including workers' wage, employment duration and job category. This retrospective information makes it possible to construct a complete labour history of Spanish workers (who received unemployment benefits at least twice) over the 1980s and the 1990s in order to analyse the influence of unemployment on subsequent job durations, since it offers data on timing of unemployment and employment spells. Moreover, information on the reason for job loss is available, thus allowing analysing the effect of different sort of job separations: layoff versus the ending of temporary contracts.

Our sample consists of workers who have been in unemployment at least twice (i.e. they all have experienced some unemployment sometimes in the past and re-entered into unemployment after having enjoyed a job match). With this

sample we are able to analyse the effect of three main variables related to prior labour market experience of workers on subsequent job duration: the duration of previous employment and non-employment spells, the reason for termination of previous job match, and the exhaustion of unemployment benefits received by workers in their prior unemployment spell. To focus on these issues, we have used information related to the first two employment spells and the intervening non-employment spell of the above-commented sample of Spanish workers.

The rest of this investigation is organised as follows. Section two describes the construction of the dataset and the sample restrictions. Section three presents some descriptive statistics. Section four provides the results from the estimation of an independent competing risks framework to model the duration of job matches with previous labour market information and individual and job characteristics. Finally, some concluding remarks follow in section five.

2. DATA AND SAMPLE

In this section, we describe how we have extracted the data from the original dataset and what type of sample restrictions we have imposed in order to investigate the influence of non-employment on job duration upon re-employment.

2.1. Constructing the data

Our investigation draws on data coming from longitudinal linkage of records from monthly payroll computer files for all registered unemployed workers who receive all types of unemployment benefits from the Spanish public agency (INEM, Instituto Nacional de Empleo) in charge of the administration of the payment of unemployment benefits.

The original administrative data, the Benefits Integrated System (SIPRE, Sistema Integrado de Prestaciones), can be defined as a cross-section, since it comes from the monthly payroll computer tapes of unemployment recipients. It registers claims of unemployment insurance (UI) and unemployment assistance (UA) benefits by all fully unemployed workers as well as some of those partially unemployed (i.e. on short-time work)¹. From those monthly tapes information on individual entries to the Unemployment Compensation System (UCS) were extracted so that their evolution therein could be followed. This was undertaken by INEM with the purpose of facilitating the management of the system,

¹ There are two groups excluded from the files by definition: workers who quit and workers with very short-time contracts whose contribution periods are below the minimum.



thus allowing a complete month-by-month follow-up of recipients. This new longitudinal database has been named the ‘historical’ SIPRE (HSIPRE). We constructed our longitudinal data from a 40 per cent representative random sample of all unemployed workers who started their UI or UA spell either in February, June, or November over the period 1987-1997².

All that means that HSIPRE gives information on spells of benefit receipt for each individual, being that information collected at the moment of entry in the UCS and during the ongoing unemployment spell. But what becomes essential for our purposes is that collected information relates not only to individual characteristics (age, gender, number of children, region where benefit is paid) and benefit parameters (level and duration) of covered unemployment spells but also to some important features of the former employment relationship.

More precisely, information is gathered on the duration of previous job, reason for separation (mainly, ending of temporary contract, collective layoff or individual layoff), former job category (a proxy for occupation and educational attainment), and former wage (the average wage on the latest six months of employment)³.

Therefore, we always have information on the previous employment relationship, which generated the right to receiving unemployment benefits (either UI or UA) for each individual entering the UCS. This means that we are able to construct “labour histories” for those individuals: we know the duration of former job (and other characteristics of the employment relationship), the date of job termination (and hence the date of entry into the UCS), and the date of exit from unemployment (for those finding a job before benefit exhaustion, we know the date of exit and, thus, the date of entry into a new job engagement; and for those exhausting the UI entitlement period, we can add information on duration of UA benefits if received and on duration of non-employment otherwise).

Furthermore, thanks to the existence of information on the previous employment relationship, our period of study is extended to some years prior to 1987. One important issue to have in mind is that collecting information on subsequent job matches results impossible for those who never come back to the UCS. But information on subsequent employment relationship is always present for those who terminate any future job engagement.

² HSIPRE data have also been used to analyse the exit from unemployment by Cebrián et al. (1996) and García-Serrano (1997). However both studies focus on a single cohort of UI entrants in June 1990. Other works using the HSIPRE data for a larger period of time (1987-1993) are Jenkins and García-Serrano (2000) and Arranz and Muro (2001).

³ Although information on protected unemployment spells and benefit parameters is very complete, information on marital status and educational attainment, for instance, does not exist. In addition, more details on the former job (industry, firm size, redundancy payments) are, unfortunately, not available in the dataset.

2.2. Sample restrictions

To be included in the analysis the individuals should meet some criteria. First, they must have entered the UCS for the first time in any of the months selected for the analysis (February, June, or November) over the period 1987-1997. Second, they must be in full unemployment; this means that we have excluded those entering covered unemployment due to either temporary layoffs or short-time work. Third, they were in paid employment obtaining a wage equal to or greater than the statutory minimum wage (SMW) and working full-time. Fourth, they must have an entitlement period (expressed in days) which corresponds with the legal provisions; this implies that we have also excluded those workers whose entitlement period do not correspond to those provisions (taking into account the reform introduced in April 1992 which modified the potential entitlement spells). Fifth, to avoid problems associated with the current employment status, we exclude self-employment. Sixth, we limit our sample to workers aged between 20 and 52 at the moment of first entry into the UCS (to avoid complications associated with early retirement) and to workers for whom the individual, job and unemployment spell characteristics are present. Seventh, observations with missing values were not omitted from the sample; thus, appropriate dummy variables for missing cases are used as additional regressors. Finally, we restrict the sample to those unemployed workers who were continuously present in our data in paid employment in at least two employment spells (with at least one intervening non-employment spell) to analyse the influence of previous labour market experience on subsequent job duration⁴.

After implementing all the previous restrictions, the sample consists of 65,340 unemployed workers who first ever entered the UCS over the period 1987-1997 and experience at least two employment spells across the 1980s and 1990s. This means that all individuals in our sample passed through the unemployment state. In other words, we do not have information on workers who experienced job-to-job movements without an intervening unemployment spell. For each job spell, information is available on individual, job-related and previous labour market status characteristics. For the analysis to follow, we use information on workers for their first two job matches and the intervening non-employment spell.

3. DESCRIPTIVE STATISTICS

The HSIPRE dataset provides us with information on two valuable variables. On the one hand, the dataset registers the reason for termination of former

⁴ It is obvious that those workers who once entered the UCS and exited but never returned do not contribute information on future job tenure.



employment relationships for all workers: the ending of a temporary contract, collective layoff, individual layoff, and others⁵. This information allows to focus the attention on jobs following an unemployment spell and to investigate how job tenure differs between jobs that follow a layoff and jobs that follow the ending of a temporary contract). This means that having information on previous and subsequent job termination offers rich possibilities to analyse the association between previous and future job stability. For instance, are there many workers connecting successive temporary contracts in their employment relationships? Do they suffer higher future job instability than workers who were previously laid off?

On the other hand, we are able to know whether the unemployed exited to a job either before or after they exhausted their unemployment benefits. This variable may partially be interpreted as a proxy for individual differences in either job search intensity or reservation wage. Hence, it would be interesting to know whether jobs found by individuals who exit unemployment before exhaustion (hereafter, the “non-exhausters”) last longer than jobs found by individuals who exit un/non-employment after exhaustion (hereafter, the “exhausters”). In other words, do the former find more stable employment than the latter?⁶

As a first step towards trying to answer to the previous questions, Table I provides the distribution, mean duration and mean daily wages (deflated to 1990 prices by the retail prices index) of jobs by reason for separation from previous job matches, previous “exhaustion” state and reason for subsequent job separations, using information for the first and the second employment spells of the sample of covered unemployed workers.

Of all individuals who ever entered the UCS, 85.2 per cent of them terminated their first employment spell due to the ending of a temporary contract, while 14.6 per cent entered into unemployment due to a layoff. After that, 48 per cent exited their first unemployment spell to a job before the time of benefit exhaustion, while 52 per cent moved to a job after the exhaustion of unemployment benefits.

The distribution for all individuals indicates again that the majority (87.5 per cent) of subsequent job matches terminates in consequence of the ending of temporary contracts. This is consistent with the fact that during the 1980s and 1990s temporary contracts accounted for nearly all-new employment engage-

⁵ As the number of individuals experiencing unemployment spells after being collectively laid off is very small (1.4 per cent), we have decided to merge spells ending due to individual (11.1 per cent) and collective layoffs. We have also excluded spells ending due to other reason as they only account for 0.1 per cent of all spells.

⁶ It would be interesting to ascertain the influence of different job search methods on exit rates from unemployment and on subsequent job duration, but the dataset we use lack that information. For a recent work on these issues, see Addison and Portugal (2002).

ments in the Spanish economy. Only 12.5 per cent of subsequent job matches terminates due to a layoff (either individual or collective).

Table 1
CURRENT JOB TENURE (months) AND
CONSTANT WAGES (in € deflated to 1990 prices)
BY REASONS FOR SEPARATION FROM PREVIOUS JOB, PREVIOUS "EXHAUSTION"
STATE AND REASON FOR SUBSEQUENT JOB SEPARATION

Reasons for job termination	All			Exhausters			Non exhausters		
	%	Mean duration	Mean wage	%	Mean duration	Mean wage	%	Mean duration	Mean wage
<i>Exits from current job due to:</i>									
End of contract	87.5	528.1	21.9	89.5	438.6	20.3	85.3	630.3	23.7
Layoff	12.5	917.7	26.5	10.5	739.2	23.3	14.7	1055.9	29.0
Total	(100.0)	577.2	22.5	(52.1)	470.3	20.6	(47.9)	693.4	24.5
<i>Exits from previous employment spell due to the ending of temporary contract and from current job due to:</i>									
End of contract	90.7	511.2	21.7	91.7	432.5	20.2	89.5	607.0	23.4
Layoff	9.3	849.2	24.8	8.3	737.8	23.1	10.5	953.3	26.5
Total	(85.2)			(54.3)			(45.7)		
<i>Exits from previous employment spell due to layoff and from current job due to:</i>									
End of contract	68.8	654.4	23.5	71.9	500.4	20.8	66.8	763.1	25.5
Layoff	31.2	1035.6	29.4	28.1	742.5	23.7	33.2	1197.8	32.6
Total	(14.6)			(39.6)			(60.4)		

Before analysing job durations, it is important to look at the association between previous and subsequent reason for job termination. We can take an insight of this comparing the distributions of workers by subsequent reason for job termination between both categories of previous reason for job termination. In the case of those who first entered unemployment due to the ending of a temporary contract, 90.7 per cent also ended their next employment relationship due to the same reason. On the contrary, 68.8 per cent of those who first entered unemployment due to a layoff finished their subsequent job match due to the ending of a temporary contract. This seems to point out that there a certain (large) proportion of individuals who are involved in a “temporary employment - unemployment - temporary employment” cycle.

Moreover, the share of unemployed workers who exit to a job after having exhausted their benefits is larger among those whose first employment relationship terminated due to the ending of a temporary contract (54.3 per cent) compared to those whose first employment relationship terminated due to a layoff

(39.6 per cent). This may be caused by the distinct entitlement period enjoyed by workers with temporary contracts and by workers with permanent contracts: in average, it is shorter for the former (see Cebrián et al., 1996, and García-Serrano, 1997).

Distinguishing individuals by way of their previous exhaustion state provides new insights about their distributions by reason for job termination. Of those workers who exited unemployment after having exhausted their benefits and returned to the UCS after having experienced an employment spell, 89.5 per cent finished their job matches in consequence of the ending of a temporary contract. This share is larger than the corresponding share for those workers who exited unemployment before the time of exhaustion (85.3 per cent). These differences persist even when we distinguish workers by previous job termination.

Turning to job duration and wages, there are distinct differences among jobs defined according to their reason for job termination. Employment relationships that terminate because the contracts expire are those with the shortest mean duration (528 days) and the lowest mean daily wage (21.9 €). Workers who are laid off enjoyed job matches with longer mean duration (918 days) and higher mean wage (26.5 €)⁷.

If we separate individuals according with the previous exhaustion of unemployment benefits, we obtain that mean job duration differs notably between both groups (exhausters and non-exhausters). It amounts to approximately fifteen months (470 days) for those who exited unemployment after having exhausted their benefits, while it goes up to almost two years (693 days) for those who exited unemployment before having exhausted their benefits. Furthermore, mean job durations are always larger for the latter when comparisons are made between the same categories of the variable “reason for job termination”. For instance, workers who re-enter unemployment due to layoffs differ in their mean job duration. Those who did not wait until the time of benefits exhaustion to accept a job enjoyed more stable job matches: their mean job duration exceeded in nearly fifteen months that of those who accepted a job after exhaustion.

In fact, the shortest mean job duration correspond to workers who exited from their former job match due to the ending of a temporary contract, ex-

⁷ Figures not reported here indicate that workers who are collectively laid off are those who benefited from job matches characterised by having the longest durations and the highest wages. Employment engagements finishing due to individual layoffs are situated in between. This finding is very interesting. The asymmetric information theory argues that plant closure gives a less negative signal than individual firing, since workers losing jobs that way avoid being labelled as low-ability workers (Gibbons and Katz, 1991). Therefore, the prediction would be that workers losing jobs due to plant closure are expected to suffer smaller losses (in terms of future wages or job stability) than workers who have been selected for layoffs. Our results are consistent with that prediction.

hausted their unemployment benefits and found another temporary job (433 days). As a comparison, workers who experienced the same sort of “temporary chain” but exited to their subsequent job before benefits exhaustion are found to have a mean job duration of 607 days. This implies that not exhausting the unemployment benefits increases job duration by 40 per cent. The corresponding figure is lower (29 per cent) if individuals find a permanent job and are laid off later.

Reason for previous job termination influences the job duration of subsequent employment engagement. Mean duration of current jobs accepted by workers whose first and second job matches terminated due to a layoff (1,035 days) doubles mean duration for comparable workers whose first and second job matches terminated due to the ending of a temporary contract (511 days).

To investigate further the likely relationships between reason for previous job termination, previous exhaustion state, reason for subsequent job termination and duration of subsequent employment matches, Table 2 displays life table estimates of job duration using the non-parametric Kaplan-Meier estimator. As it is known, it provides the proportion of job matches that survive for a given length of time. For all workers, 47 per cent of subsequent job engagements finishing in consequence of the ending of a temporary contract last fifteen months and only 2 per cent last six years. However, 95 per cent of subsequent job engagements that terminates with an individual layoff survive for fifteen months, 53 per cent for nearly five years and 7 per cent for at least six years.

The comparison of life table estimates for both groups of individuals characterised by their exhaustion state shows salient differences. Among those workers who exited to employment before the time of benefit exhaustion and their job matches ended due to the ending of temporary contracts, 60 per cent of subsequent jobs last for up to fifteen months, compared to 35.7 per cent of subsequent jobs for those workers who moved to the employment state after having exhausted their benefits. The same pattern of the largest survival rates of employment engagements for the group of non-exhausters emerges when we consider the termination of jobs due to layoffs: 56.4 per cent of subsequent jobs for non-exhausters survive for nearly five years, compared to 45 per cent for exhausters.

The influence of reason for previous job termination on the survival of jobs is clear: 44.1 per cent of current jobs accepted by workers whose first and second job matches terminated due to the ending of a temporary contract survive for up to fifteen months, while the corresponding figure for comparable workers whose second job match terminated due to a layoff is 66.4 per cent. Results for groups of individuals characterised by their previous exhaustion state are similar: non-exhausters whose first and second jobs terminated due to layoffs (or ending of a contract) always display higher survival rates than exhausters.



Table 2
LIFE TABLE OF CURRENT JOB TENURE BY REASON FOR
SEPARATION FROM PREVIOUS JOV, PREVIOUS "EXHAUSTION" STATE AND
REASON FOR SUBSEQUENT JOB SEPARATIONS

Reason for job termination	Current job duration in months									
	3	9	15	21	33	45	57	69	72	Sample
<i>Exits from current job:</i>										
<i>All</i>										
End of contract	98.5	75.3	47.4	35.9	21.4	10.5	6.0	3.9	2.0	65,251
Layoff	100.0	98.7	94.6	90.6	82.1	70.2	52.6	37.8	7.0	
<i>Exhausters</i>										
End of contract	97.2	69.8	35.7	25.4	13.4	5.7	3.2	1.8	1.2	33,994
Layoff	99.9	98.4	93.0	87.7	77.4	63.6	45.0	29.5	3.7	
<i>Non-exhausters</i>										
End of contract	99.8	81.3	60.0	47.1	29.8	15.5	8.9	5.9	3.0	31,257
Layoff	100.0	99.1	95.9	92.8	85.2	73.9	56.4	41.5	8.4	
<i>Exits from previous employment spell due to the ending of a contract and exit from current employment spell due to:</i>										
<i>All</i>										
End of contract	98.4	73.1	44.1	32.5	18.3	7.8	3.8	2.0	0.8	55,580
Layoff	100.0	99.1	95.4	91.9	84.4	73.1	56.9	37.4	10.1	
<i>Exhausters</i>										
End of contract	97.2	68.0	33.8	23.6	12.2	4.8	2.4	1.2	0.6	30,180
Layoff	100.0	98.9	94.3	89.7	80.2	67.8	50.3	30.3	6.1	
<i>Non-exhausters</i>										
End of contract	99.8	79.1	56.4	42.9	25.4	11.4	5.5	2.9	1.1	25,400
Layoff	100.0	99.2	96.4	93.7	87.4	76.5	60.8	41.4	12.3	
<i>Exits from previous employment spell due to layoff and exit from current employment due to:</i>										
<i>All</i>										
End of contract	98.7	88.5	66.4	56.3	40.6	27.7	20.5	16.8	10.5	9,558
Layoff	99.9	97.0	90.7	84.9	73.6	60.9	42.3	33.3	4.3	
<i>Exhausters</i>										
End of contract	96.9	85.0	51.9	40.9	24.8	14.9	11.3	8.6	7.9	3,784
Layoff	99.8	94.5	84.6	76.0	62.5	45.3	26.8	21.3	0.5	
<i>Non-exhausters</i>										
End of contract	99.9	90.7	75.4	65.7	49.8	35.0	25.8	21.3	12.6	5,774
Layoff	100.0	98.6	94.3	89.6	78.9	67.1	48.0	37.7	5.6	

To finish our descriptive analysis, we are interested in investigating the likely influence of previous non-employment duration on subsequent job dura-

tion⁸. Table 3 provides the mean and standard deviation for employment matches by duration of the previous non-employment spell, previous exhaustion state and reason for current job termination.

Table 3
MEAN DURATION AND STANDARD DEVIATION (in days) FOR EMPLOYMENT MATCHES BY DURATION OF THE PREVIOUS NON-EMPLOYMENT SPELL, EXHAUSTION STATE AND REASON FOR CURRENT JOB TERMINATION

Non-employment duration (months)	Job tenure								
	All			Exhausters			Non-exhausters		
	%	Mean	Std.	%	Mean	Std.	%	Mean	Std.
<i>All exits from current job</i>									
≤ 6	39.5	631.7	501.2	19.6	390.9	370.1	61.2	715.4	513.6
> 6 and ≤ 12	22.0	560.9	436.2	25.0	461.1	368.3	18.7	705.6	483.8
> 12 and ≤ 24	23.0	557.2	402.0	29.7	519.7	375.3	15.7	634.3	442.4
> 24 and ≤ 36	9.7	510.4	339.8	15.4	503.6	339.9	3.5	543.8	337.6
> 36	5.8	454.8	270.8	10.4	450.5	267.4	0.9	509.2	305.8
Sample	65,251			33,994			31,257		
<i>Exits from current job due to the ending of a temporary contract</i>									
≤ 6	39.5	565.7	438.8	20.4	353.4	298.1	61.4	646.1	456.4
> 6 and ≤ 12	22.3	516.7	390.7	25.5	435.7	338.1	18.6	643.7	431.6
> 12 and ≤ 24	22.9	518.4	361.7	29.2	487.3	340.1	15.6	584.8	396.1
> 24 and ≤ 36	9.5	480.1	309.8	14.8	471.6	306.8	3.5	520.9	320.9
> 36	5.8	433.7	247.2	10.1	429.0	242.1	0.9	494.2	299.5
Sample	57,074			30,425			26,649		
<i>Exits from current job due to layoff</i>									
≤ 6	39.5	1091.9	646.7	12.8	897.4	716.5	60.2	1124.0	628.9
> 6 and ≤ 12	19.8	908.4	591.3	20.1	736.7	532.9	19.6	1044.8	600.1
> 12 and ≤ 24	23.9	816.4	538.5	33.7	759.6	511.4	16.3	907.2	567.6
> 24 and ≤ 36	10.6	700.0	442.6	20.5	700.0	450.0	3.0	700.4	402.6
> 36	6.1	594.9	363.5	12.9	594.5	366.5	0.8	600.0	331.2
Sample	8,177			3,569			4,608		

For all workers, it holds that the longer the duration of the previous non-employment spell the shorter the duration of the current employment spell. Differences across categories of the non-employment duration variable are apparent. Mean job duration is 632 days for those workers whose non-employment spell was short (less than six months), compared to just 455 days for those wor-

⁸ The definition of non-employment refers to covered unemployment (workers receiving unemployment benefits) for non-exhausters, adding information on extra time of either unemployment without receiving benefits or inactivity for exhausters.



kers whose non-employment spell was long (more than three years). This implies a difference of nearly six months.

By reason for current job termination, the association between longer past non-employment duration and shorter duration of subsequent job matches holds in general. This is specially true for workers whose jobs terminate due to layoffs. Mean job duration amounts to three years for those whose former non-employment spell was less than six months, compared to more than one and a half year for those whose former non-employment spell was larger than three years.

Distinguishing among workers by exhaustion state and reason for current job termination, we observe that the previous pattern remains for non-exhausters but it is less clear for exhausters. In fact, for exhausters that terminate job matches due to the ending of a temporary job, if anything, there is an inverse U-shaped relationship between previous non-employment duration and subsequent employment duration.

To sum up, the information presented so far seems to point out that the answer to the question on whether the reason for termination of previous jobs influences the reason for termination of subsequent jobs is affirmative: a large proportion of jobs which terminated due to the ending of temporary contracts are followed by new employment relationships involving temporary contracts. Moreover, mean job duration of these jobs is shortest, compared even with temporary jobs found by workers who first entered unemployment due to layoffs. Previous unemployment benefits' exhaustion state also influences the survival and the duration of subsequent employment matches: those who exit unemployment before exhaustion appears to find more stable and durable jobs. Furthermore, workers who remain longer in non-employment seem to gain access to consistently shorter job matches. This means that there are specific categories of unemployed workers (those who come from temporary employment, those who wait until the exhaustion of unemployment benefits to accept a job, and those with longer non-employment spells) that accept short-term job matches or poor quality employment engagements characterised by having high destruction rates.

4. MULTIVARIATE ANALYSIS

4.1. Model specification

The empirical analysis of labour market transitions is usually based on the standard job search theory (Mortensen, 1977; Lancaster, 1990). In this approach, the hazard rate from a job could be modelled as the sum of three probabilities: the probability of a worker being laid off, the probability of a job match being

terminated due to the ending of a temporary contract, and the probability of a worker quitting⁹. This might be used as a starting point for a structural model.

However, we will not try to specify a structural model but use the more common procedure of specifying the hazard directly; that is, we will use a reduced-form specification. In particular, we will estimate the determinants of job separations using a discrete time proportional hazard model with competing risks of exits, where the log-likelihood may be separated into the sum of its risk specific hazards and observations which exit to a different destination are treated as censored (Prentice and Gloecker, 1978; Allison, 1982). The virtues of this semi-parametric approach are that it allows the hazard rate to vary non-monotonically with job tenure and to capture possible effects of spells duration on the hazard rate¹⁰. Formally, the hazard rate from a job can be written as¹¹:

$$h_{ij}(t; X_{ij}) = \lambda_0(t) \exp[X_{ij}'\beta] \theta_i. \quad (1)$$

Where $\lambda_0(t)$ is the interval-specific baseline hazard rate, X_{ij} is a vector of individual and local labour characteristics which potentially may vary with time (calendar time or duration), β is a vector of parameters to be estimated, $i = 1 \dots N$ are individuals-month observations, j identify the competing risks (job matches terminated due to the ending of a temporary contract or layoffs), and finally θ_i captures unobserved individual characteristics that affect job tenure such as motivation, ability, absenteeism, and so on. A convenient and commonly distribution used for unobserved heterogeneity is the gamma distribution (Meyer, 1990). It can be shown that when θ is gamma distributed with unit mean and variance σ^2 , the log-likelihood function becomes as follows (Meyer, 1990, pp. 770)¹²:

$$\log L = \sum_{i=1}^n \log \left\{ \left[1 + \sigma^2 \sum_{j=1}^{t_i-1} \exp(X_{ij}'\beta + \gamma_j(t)) \right]^{-\sigma^{-2}} - d_i \left[1 + \sigma^2 \sum_{j=1}^{t_i} \exp(X_{ij}'\beta + \gamma_j(t)) \right]^{-\sigma^{-2}} \right\} \quad (2)$$

Where $\gamma(t)$ is a function that describes duration dependence in the hazard rate and includes a set of dummy variables differing for each t allowing the hazard

⁹ This latter probability will not be considered in this paper because we do not have the possibility of observing job-to-job transitions in our dataset.

¹⁰ We may expect that the hazard rate changes non-monotonically with job duration. It might be increasing in the earlier employment months, as workers and employers learn about the quality of job matches. In this sense, good matches (high productivity, high wages) will last longer. Thereafter, hazard rates might decrease (Jovanovic, 1979).

¹¹ This semi-parametric approach has found applications in the study of unemployment duration (Meyer, 1990; Narendranathan and Stewart, 1993) and employment duration (Böheim and Taylor, 2002).

¹² Alternatively, the distribution can be approximated non-parametrically (Heckman and Singer, 1984). However, the choice of gamma distribution is made for computational reasons, which could be debatable (Narendranathan and Stewart, 1993).



rate to vary non-monotonically with job tenure; and d_i is a dummy variable that is equal to 1 if individual i 's spell ends in a transition and 0 otherwise.

4.2. Results

Table 4 provides the determinants of job duration using reasons for separation from current job as the competing risks. Two single risk estimations have been made based on the likelihood function (2) by the maximum likelihood estimator¹³. The first column reports estimated coefficients for exits from jobs that follow the end of a temporary contract and the second column from jobs that follow a layoff. The descriptive statistics of the variables included in the estimation can be found in the Appendix (Table B.1).

Our main variables of interest are those related to the individual's previous labour market experience. We have considered three sets of such variables. The first refers to the reason for termination of the former employment relationship. As our sample consists of workers who entered the UCS after having been employed, all of them come from previous job matches which ended due to any of these two reasons: ending of a temporary contract or layoff.

Moreover, all workers have been in covered unemployment for some time. Therefore, they all have been receiving unemployment benefits, but they differ in the time spent to exit from the UCS system: before or after the time of benefits exhaustion. The second variable related to previous labour market experience that we have included in the models thus captures the individual's exhaustion state. Finally, the third group of variables refers to the duration (measured in months) of the individual's immediately previous employment spell and non-employment spell. The reference categories for the first and second variables are that past employment terminated due to a layoff and that the individual did not exhaust his or her previous unemployment benefits, respectively.

We first focus our attention on the estimations for the exit from a job due to the ending of temporary contracts. The coefficient of the categorical variable controlling for the way the previous employment relationship terminated is statistically significant with a positive sign. This means that the hazard rate from a job due to the ending of a temporary contract is 38 per cent higher if the prior job match also finished due to the same reason¹⁴. This result suggests that the reason for previous job termination influences the survival of future employment engagements.

¹³ The programme for estimating the model with gamma unobserved heterogeneity was written by Jenkins (1997) using Stata version 7.0.

¹⁴ The ratio of the hazard rate of an individual with a dummy variable equal to 1 to the hazard rate of the reference is $\exp(\beta)$. The percentage of increment (detriment) in the hazard rate is calculated as $(\exp(\beta)-1)*100$.

Table 4

DISCRETE TIME PROPORTIONAL HAZARD ESTIMATIONS FOR JOB TENURE:
 JOBS TERMINATING DUE TO EITHER THE ENDING OF A TEMPORARY
 CONTRACT OR A LAYOFF (controlling for unobserved heterogeneity)

Variable	End of a contract separation			Layoff separation		
	Coeff.	Std.	Signif.	Coeff.	Std.	Signif.
<i>Gender</i>						
Men	-0.128	0.013	***	0.049	0.029	
Women	—	—	—	—	—	—
<i>Age (years old)</i>						
> 20 and ≤ 25	—	—	—	—	—	—
> 25 and ≤ 30	-0.544	0.015	***	-0.260	0.036	***
> 30 and ≤ 35	-0.511	0.019	***	-0.325	0.045	***
> 35 and ≤ 40	-0.391	0.024	***	-0.241	0.054	***
> 40 and ≤ 45	-0.374	0.027	***	-0.162	0.060	***
> 45	-0.582	0.028	***	-0.175	0.057	***
<i>Job category</i>						
High level/associated professional technicians and supervisors	0.304	0.027	***	0.824	0.055	***
Technical assistants and skilled clerical workers	-0.189	0.022	***	0.551	0.044	***
Semi-skilled clerical workers	0.187	0.030	***	-0.077	0.074	***
Unskilled clerical workers	-0.125	0.020	***	0.235	0.045	***
Skilled production workers	—	—	—	—	—	—
Semi-skilled production workers	0.027	0.019	***	-0.001	0.044	
Unskilled production workers	0.228	0.018	***	-0.078	0.045	
Missing	0.100	0.037	***	-0.799	0.163	***
<i>Children</i>						
Yes	0.011	0.014		-0.050	0.031	
No	—	—	—	—	—	—
<i>Duration (months) in:</i>						
Previous employment	-0.022	0.001	***	-0.010	0.001	***
Previous non-employment	0.006	0.001	***	0.020	0.001	***
<i>Reason for termination previous job matches</i>						
End of contract	0.320	0.018	***	-0.774	0.036	***
Layoff	—	—	—	—	—	—
<i>Exhaustion previous unemploy benefits</i>						
Yes	0.282	0.015	***	0.101	0.034	***
No	—	—	—	—	—	—
Ln wages (€ in 1990)	-0.864	0.021	***	-0.605	0.044	***
Gamma variance	0.414	0.022	***	0.531	0.113	***
χ^2 (Prob > χ^2)	527.975 (0.000)			36.746 (0.000)		
Log-likelihood	-117,046.438			-30,306.566		
Observations individual-months	402,918					

Notes: Regression also controls for regions, calendar and business cycle dummies and duration dummies variables. χ^2 statistics refers to testing model with unobserved heterogeneity against that without.

*** indicates significance at 1 per cent.



The duration of the previous employment and non-employment spells affects significantly the hazard rate from a job, although in an opposite way. On the one hand, the hazard rate decreases with duration in the previous job match. This implies that the higher the relative job stability experienced by workers in their previous employment engagements the lower the exit rate from the current job. On the other hand, the probability of job termination in the subsequent job match increases with duration in previous non-employment spells.

The individual's exhaustion state related to their previous unemployment spell also has a significant impact on the hazard rate from the subsequent job match. Workers who exited the UCS after the time of benefits exhaustion exhibit a 25 per cent higher probability of their subsequent employment relationship being terminated through the ending of a temporary contract in comparison with the hazard of workers who did not exhausted their previous unemployment benefits.

In the estimation of the hazard rate from a job due to layoffs (either collective or individual), the variables related to the individual's previous labour market experience present in general the same sign as previously, although they differ in the magnitude of the estimated effects. The exception is the categorical variable controlling for the termination of the prior employment relationship, which shows a statistically significant negative sign. This implies that the probability of job termination due to a layoff diminishes a 54 per cent if the previous employment finished in consequence of the ending of a temporary contract.

As we saw earlier, the longer the duration of the previous job match, the lower the hazard rate from a job. But now this negative effect is lower than in the case of jobs terminating due to the end of a temporary contract. This may suggest that job stability gained by workers in their previous employment relationships is more important for workers in temporary jobs as a signal for employers that their productivity is not low. At the same time, previous non-employment duration affects positively the probability of job termination due to a layoff. This finding reflects that past non-employment duration has a scarring effect on subsequent job tenure, being the effect larger on future permanent jobs.

Finally, the exhaustion variable also indicates that workers who move to the employment state after having exhausted their previous unemployment benefits face a significant higher chance of leaving a job through a layoff. Nevertheless, this positive impact is lower in this case (1.106 times) compared to job termination through the ending of a temporary contract (1.326 times). This evidence suggests that workers who exhausted their unemployment benefits but happened to find a job with a permanent contract enjoy less stable employment experiences than workers who did not exhaust their benefits and found a permanent job, although they are relatively better than those individuals who were not able to access to such jobs.

Our next step is to consider the effects of other covariates included in the estimations. Men have a significantly 14 per cent lower probability of exiting a job than women when the reason for termination is the ending of a temporary contract; however, there are no significant differences between men and women as for job termination due to a layoff. Compared to workers aged less than 25, the hazard rate for job termination due to the ending of a temporary contract is lower for the rest of workers (especially for those aged more than 45). In the case of job termination due to layoffs, prime-age workers (25-40 years old) are less likely to exit. In addition, having children does not affect the probability of exiting from a job.

The dataset does not provide us with variables related to the individual's educational attainment and occupation. However, there is a variable concerning the workers' job category in former employment relationship that allows distinguishing very broadly between non-manual and manual occupations¹⁵. Results are somewhat mixed. In general, it seems that non-manual categories (especially the first one) present a positive and statistically significant coefficient. Workers in manual occupations also have a significantly higher probability of exiting a job than the reference when the reason for termination is the ending of a temporary contract. For exits that are consequence of layoffs, results indicate that workers in manual jobs are relatively less likely to terminate their employment relationships.

Wages present a disincentive effect on the hazard rates for job termination either due to the ending of a temporary contract or due to a layoff: the higher the daily wage, the lower the probability of job termination.

Regarding the effect of local labour market characteristics on job tenure, the model estimations also include either dummies to take account of the existence of regional differences or a continuous variable on the regional unemployment rate. Using the dummies (not reported in the table), compared to the regional reference category (Andalucía, where the share of temporary workers over total workers is the highest in Spain), the rest of regions present a lower hazard rate for job termination in consequence of the ending of temporary contracts. Regions where this hazard is specially low are Madrid, Catalonia, Aragon, and La Rioja, i.e. regions with unemployment rates below the national average. However, regarding the exit due to layoffs, differences among regions are less marked. When we use the regional unemployment rate (not reported in the table), we find that it is positively correlated with the hazard rate from a job due

¹⁵ The categories are as follows: 1) High level and associate professional technicians, foremen and supervisors; 2) Technical assistants and skilled clerical workers; 3) Semi-skilled clerical workers; 4) Unskilled clerical workers; 5) Skilled production workers (reference category); 6) Semi-skilled production workers; 7) Unskilled production workers; and 8) Not registered (missing).

to a layoff. This result is consistent with British studies (Gregg and Wadsworth, 1995, and Böheim and Taylor, 2002).

Finally, we address that the estimation results favour the gamma heterogeneity specification because the size of the variance of the gamma mixture distribution relative to its standard error suggests that unobserved heterogeneity is significant. The likelihood ratio test of a model with unobserved heterogeneity against that without also suggests the same conclusion¹⁶. Nevertheless, we report estimation results without controlling for unobserved heterogeneity in Appendix (Table B.2).

4.3. Some extensions

We are interested in further investigating the relationships between the effects of some characteristics of previous employment and non-employment spells and of workers and jobs on current employment durations. Table 5 displays the estimate results from interacting some variables.

Table 5
SOME EXTENSIONS
(controlling for unobserved heterogeneity)

Variable	Ending of a contract			Layoff		
	Coeff.	Std.	Signif.	Coeff.	Std.	Signif.
<i>Gender</i>						
Men	-0.308	0.048	***	0.020	0.089	
Women	—	—	—	—	—	—
<i>Age</i>						
> 20 and ≤ 25	—	—	—	—	—	—
> 25 and ≤ 30	-0.552	0.015	***	-0.287	0.037	***
> 30 and ≤ 35	-0.537	0.020	***	-0.347	0.046	***
> 35 and ≤ 40	-0.429	0.024	***	-0.236	0.056	***
> 40 and ≤ 45	-0.416	0.028	***	-0.146	0.062	***
> 45	-1.155	0.058	***	-0.248	0.084	***

(Keep.)

¹⁶ The likelihood ratio test value of models with and without unobserved heterogeneity that reports estimated exit coefficients from jobs that follow the ending of a temporary contract (a layoff) is 527.975 (36.746). These values exceed the critical Chi square value of 3.84 for 1 d.f. at the 5 per cent significance level. Hence, we may conclude that the unobserved heterogeneity component may be included in the estimations. Nevertheless, standard likelihood ratio tests cannot, strictly speaking, be used to choose between models with and without unobserved heterogeneity, because the latter is not a nested version of the former (Jenkins, 1997).

(Continuation.)

Variable	Ending of a contract			Layoff		
	Coeff.	Std.	Signif.	Coeff.	Std.	Signif.
<i>Job category</i>						
High level/associated professional technicians and supervisors	0.315	0.027	***	0.870	0.056	***
Technical assistants and skilled clerical workers	-0.187	0.022	***	0.571	0.045	***
Semi-skilled clerical workers	0.187	0.030	***	-0.083	0.077	***
Unskilled clerical workers	-0.125	0.021	***	0.240	0.047	***
Skilled production workers	—	—	—	—	—	—
Semi-skilled production workers	0.029	0.019	—	-0.006	0.046	—
Unskilled production workers	0.307	0.045	***	0.479	0.077	***
Missing	0.079	0.037	**	-0.784	0.164	***
<i>Children</i>						
Yes	0.011	0.014	—	-0.042	0.032	—
No	—	—	—	—	—	—
<i>Duration (months) in:</i>						
Previous employment	-0.014	0.001	***	-0.019	0.002	***
Previous non-employment	0.004	0.001	***	0.017	0.002	***
<i>Reason for termination of previous job matches</i>						
Ending of a contract	0.521	0.040	***	-1.162	0.074	***
Layoff	—	—	—	—	—	—
<i>Exhaustion of previous unempl. benefits</i>						
Yes	0.355	0.022	***	0.136	0.053	***
No	—	—	—	—	—	—
<i>Men and</i>						
Previous employment duration (months)	0.003	0.001	***	-0.001	0.002	***
Previous non-employment duration (months)	0.004	0.001	***	0.006	0.002	***
Previous unempl. benefits exhausted	-0.141	0.028	***	-0.073	0.069	***
Previous job match (end of contract)	0.182	0.038	***	0.021	0.065	***
<i>Aged > 45 and</i>						
Previous unempl. benefits exhausted	0.108	0.053	**	0.389	0.101	***
Previous job matches (end of contract)	0.654	0.063	***	-0.104	0.101	***
<i>Previous employment duration and</i>						
Previous job match (end of contract)	-0.013	0.001	***	0.018	0.002	***
<i>Previous job match (end of contract) and</i>						
Unskilled manual workers in current job	-0.089	0.046	—	-0.741	0.085	***
Ln wages (€ in 1990)	-0.875	0.021	***	-0.614	0.045	***
Gamma variance	0.434	0.022	***	0.744	0.131	***
χ^2 (Prob > χ^2)	591.053 (0.000)			61.577 (0.000)		
Log-likelihood	-116,882.221			30,199.663		
Observations individual-months	402,918					

Notes: Regression also controls for regions, calendar and business cycle dummies and duration dummies variables. χ^2 statistics refers to testing model with unobserved heterogeneity against that without.

** indicates significance at 5 per cent.

*** indicates significance at 1 per cent.



First, we analyse the effect from interacting gender with duration of previous employment spell, duration of previous non-employment spell, exhaustion of previous unemployment benefits, and reason for prior job termination. Results suggest that the rise in the hazard rate from a job due to the ending of a temporary contract is magnified for men through the duration of previous employment and non-employment spells and through the termination of the former job match due the ending of a temporary contract. However, the exhaustion of unemployment benefits seems to be less scarring for men: a 36.17 per cent less (a point estimate of $-0.308 - 0.141 = -0.449$). These interactions are found to have an insignificant effect on the probability of job termination due to a layoff (only the duration of previous non-employment spell has a significant positive influence).

We have also tried some interactions between the effects of age, occupation and characteristics of previous spells. Regarding age, we are interested in looking at the influence of two variables on the hazard rate from a job for workers aged over 45: the reason for former job termination and the exhaustion of unemployment benefits. Although the exit rate is lower for those workers relative to those aged 25 or less, the interaction terms suggest that the probability of job exit due to the ending of a temporary contracts doubles for workers aged over 45 if they terminated their prior job match due the same reason (a point estimate of 1.175 for workers aged 45 and above compared to 0.521 for workers under 45). This interaction is not significant for the probability of job exit due to a layoff. However, the exhaustion of unemployment benefits significantly increases this latter probability (it also increases the former). This means that the scarring effect of benefit exhaustion is magnified for workers aged over 45 relative to those aged 45 or less.

The impact of the interaction term of reason for prior job termination and being working in manual, less skilled occupations is relevant for the exit rate from a job due to a layoff. Results indicate that, while workers in manual, unskilled occupations face a significantly greater probability of leaving a job than the reference (manual, skilled workers), the hazard rate decreases when those workers come from a job terminating due to the ending of a temporary contract.

Finally, the interaction between the reason for previous job termination and duration of that spell of employment shows interesting results. The longer the duration of prior job match (if termination was due to the ending of a temporary contract), the lower the probability of terminating the current job match due to the same reason. This adds to the reduced effect that duration of prior employment spells exerts on the hazard rate. This seems to suggest that accumulation of work experience have a positive influence on the stability of future job matches. However, the influence of previous employment relationships does not appear to work the same way in the case of permanent jobs, since what makes some difference in current tenure is duration in prior permanent matches.

5. CONCLUSIONS

This investigation has aimed at analysing the effects of previous labour market experiences on subsequent job tenure for Spanish workers over the 1980s and the 1990s. In particular, we have investigated how the subsequent employment relationship of unemployed workers is affected by the duration of previous employment and non-employment spells, the reason for termination of previous job matches, and the exhaustion of unemployment benefits received by workers in their prior unemployment spell. To focus on these issues, we have used information related to the first two employment spells and the intervening non-employment spell of a sample of Spanish workers from the administrative dataset HSIPRE.

The findings from our analysis suggest that there is a scarring effect of previous non-employment duration on subsequent job tenure: the longer the time spent in non-employment since previous job separation, the shorter the duration of subsequent re-employment relationships. This result is consistent with the job search theory which predicts shorter job duration after longer non-employment spells: unemployed workers will decrease their reservation wage as time passes by, accepting jobs which are more likely to be destroyed. This makes those workers more likely to experience more unemployment in the future (Pissarides, 1992). In contrast with this effect of non-employment duration, we have also found a positive influence of previous employment experiences on future jobs: the longer the job stability experienced by workers in their previous employment engagements, the lower the exit rate from the current job.

Other results refer to the reason for termination of prior employment relationships. The evidence points out that workers whose previous job match terminated due to the ending of a temporary contract are very likely to come back to employment under another temporary job and have a higher probability of job termination (their new employment engagements last less time). This suggests that there is a group of unemployed workers who are involved in a "temporary employment-unemployment-temporary employment" cycle.

Finally, the exhaustion of unemployment benefits also seems to exert a scarring effect on job duration: workers who exit the unemployment state before the time of exhaustion find more durable and stable jobs than workers who exhausted their previous unemployment benefits.

Hence, our results highlight that there are specific categories of unemployed workers for which the scarring effect of previous non-employment in terms of increasing the probability of re-entering unemployment is most important: those who come from temporary employment, those who wait until the exhaustion of unemployment benefits to accept a job, and those with longer



un/non-employment spells. These effects are also magnified for some other categories of workers, as those aged over 45.

Previous studies having detected this scarring effect are those by Heckman and Borjas (1980), Arulampalam et al. (2000), Gregg (2001) and Böheim and Taylor (2002). These investigations point out that the cause of the scarring effect may be that past unemployment experiences may change preferences, prices and/or constraints that help determine current unemployment; that firms may hire workers taking into account their previous unemployment history; or that the unemployed may change their reservation wage as time in unemployment passes by and then accept short-term job matches or employment engagements characterised by having high destruction rates.

In any case, the existence of scarring suggests that policies aimed at preventing unemployment would have a long-term impact on aggregate unemployment. As scarring seems to be particularly important in the case of the long-term unemployed and older workers, programmes aimed at the prevention of long-term unemployment and targeted to particular groups of workers should be in the public agenda. At the same time, active policies towards job finding would be efficient since they can reduce individual unemployment durations and speed up the return to employment. Moreover, appropriate on-the-job training and more stable jobs would avoid depreciation in acquired skills and undesirable effects linked to the employment-unemployment chain. Supply-side policies that make individuals more employable and increase work incentives should go hand in hand with demand-side policies to generate more (stable) employment.

APPENDIX

Table B.1
DESCRIPTIVE STATISTICS

Variables	Employment	
	Mean	Std.
<i>Gender</i> (men = 1, women = 0)	0.588	0.492
<i>Age</i> (years old)		
> 20 and ≤ 25	0.337	0.473
> 25 and ≤ 30	0.332	0.471
> 30 and ≤ 35	0.143	0.350
> 35 and ≤ 40	0.078	0.268
> 40 and ≤ 45	0.055	0.229
> 45	0.055	0.228
<i>Children</i> (yes)	0.267	0.442
<i>Job category</i>		
High level, associated professional technicians and supervisors	0.076	0.265
Technical assistants and skilled clerical workers	0.111	0.314
Semi-skilled clerical workers	0.044	0.204
Unskilled clerical workers	0.154	0.361
Skilled production workers	0.192	0.394
Semi-skilled production workers	0.175	0.380
Unskilled production workers	0.221	0.415
Missing	0.028	0.164
<i>Duration</i> (days)		
Tenure in current employment	577.2	443.3
Previous unemployment	231.5	241.9
Previous non-employment	380.2	367.3
<i>Daily wages</i> (€-1990 prices)	22.5	9.7
<i>Reason for job termination</i>		
End of contract	0.873	0.332
Individual layoff	0.111	0.314
Collective layoff	0.014	0.118
Others	0.001	0.037
<i>Regions</i>		
Andalucia	0.187	0.390
Extremadura	0.018	0.132
Canarias	0.072	0.259
Asturias	0.019	0.137
Murcia	0.028	0.165
Castilla-León	0.044	0.206
Castilla-Mancha	0.032	0.175

(Keep.)



(Continuation.)

Variables	Employment	
	Mean	Std.
Galicia	0.060	0.238
País Vasco	0.036	0.187
Cantabria	0.009	0.096
Cataluña	0.158	0.364
Madrid	0.162	0.368
Navarra	0.010	0.100
Baleares	0.030	0.170
Aragón	0.022	0.146
La Rioja	0.005	0.070
<i>Entry year</i>	90.5	1.815
<i>Exit year</i>	92.5	2.059
<i>Sample</i>	65,340	

Table B.2

DISCRETE TIME PROPORTIONAL HAZARD ESTIMATIONS FOR JOB TENURE:
JOBS TERMINATING DUE TO EITHER THE ENDING OF A TEMPORARY CONTRACT
OR A LAYOFF (without controlling for unobserved heterogeneity)

Variable	Ending of a contract			Layoff		
	Coeff.	Std	Signif.	Coeff.	Std.	Signif.
<i>Gender</i>						
Men	-0.088	0.010	***	0.038	0.026	***
Women	—	—	—	—	—	—
<i>Age (years old)</i>						
> 20 and ≤ 25	—	—	—	—	—	—
> 25 and ≤ 30	-0.441	0.011	***	-0.240	0.033	***
> 30 and ≤ 35	-0.442	0.015	***	-0.305	0.041	***
> 35 and ≤ 40	-0.340	0.018	***	-0.223	0.048	***
> 40 and ≤ 45	-0.336	0.021	***	-0.158	0.053	***
> 45	-0.482	0.022	***	-0.181	0.050	***
<i>Job category</i>						
High level/associated professional technicians and supervisors	0.209	0.021	***	0.707	0.045	***
Technical assistants and skilled clerical workers	-0.153	0.017	***	0.481	0.037	***
Semi-skilled clerical workers	0.134	0.022	***	-0.079	0.068	***
Unskilled clerical workers	-0.087	0.016	***	0.216	0.040	***
Skilled production workers						
Semi-skilled production workers	0.033	0.014	**	-0.005	0.040	
Unskilled production workers	0.181	0.013	***	-0.078	0.041	
Missing	0.280	0.028	***	-0.762	0.161	***
<i>Children.</i>						
Yes	0.000	0.011		-0.034	0.027	
No	—	—	—	—	—	—
<i>Duration (months) in:</i>						
Previous employment	-0.015	0.000	***	-0.010	0.001	***
Previous non-employment	0.006	0.000	***	0.019	0.001	***
<i>Reason for termination previous job matches</i>						
End of a contract	0.291	0.014	***	-0.678	0.028	***
Layoff	—	—	—	—	—	—
<i>Exhaustion previous unemploy benefits</i>						
Yes	0.193	0.011	***	0.081	0.030	***
No	—	—	—	—	—	—
Ln wages (€ in 1990)	-0.647	0.015	***	-0.507	0.036	***
Log-likelihood	-117,310.430			-30,324.939		
Observations individual-months	402,918					

Notes: Regression also controls for regions, calendar and business cycle dummies and duration dummies variables. χ^2 statistics refers to testing model with unobserved heterogeneity against that without.

** indicates significance at 5 per cent.

*** indicates significance at 1 per cent.

Table B.3
SOME EXTENSIONS
(without controlling for unobserved heterogeneity)

Variable	Ending of a contract			Layoff		
	Coeff.	Std.	Signif.	Coeff.	Std.	Signif.
<i>Gender</i>						
Men	-0.206	0.037	***	0.001	0.074	
Women	—	—	—	—	—	—
<i>Age</i>						
> 20 and ≤ 25	—	—	—	—	—	—
> 25 and ≤ 30	-0.445	0.011	***	-0.259	0.033	***
> 30 and ≤ 35	-0.457	0.015	***	-0.321	0.041	***
> 35 and ≤ 40	-0.365	0.019	***	-0.223	0.049	***
> 40 and ≤ 45	-0.362	0.021	***	-0.143	0.053	***
> 45	-0.914	0.047	***	-0.236	0.066	***
<i>Job category</i>						
High level/associated professional technicians and supervisors	0.214	0.021	***	0.730	0.045	***
Technical assistants and skilled clerical workers	-0.151	0.017	***	0.487	0.037	***
Semi-skilled clerical workers	0.133	0.022	***	-0.083	0.068	***
Unskilled clerical workers	-0.086	0.016	***	0.220	0.041	***
Skilled production workers	—	—	—	—	—	—
Semi-skilled production workers	0.035	0.014	***	-0.007	0.040	***
Unskilled production workers	0.235	0.035	***	0.391	0.063	***
Missing	0.272	0.028	***	-0.739	0.161	***
<i>Children.</i>						
Yes	0.000	0.011		-0.026	0.027	
No	—	—	—			
<i>Duration (months) in:</i>						
Previous employment	-0.009	0.001	***	-0.015	0.002	***
Previous non-employment	0.005	0.001	***	0.016	0.002	***
<i>Reason for termination of previous job match</i>						
Ending of a contract	0.415	0.031	***	-0.940	0.055	***
Layoff	—	—	—	—	—	—
<i>Exhaustion of previous unempl. benefits</i>						
Yes	0.241	0.016	***	0.111	0.046	***
No	—	—	—	—	—	—
<i>Men and</i>						
Previous employment duration (months)	0.003	0.001	***	0.001	0.002	**
Previous non-employment duration (months)	0.002	0.001	***	0.004	0.002	
Previous unempl. benefits exhausted	-0.094	0.021	***	-0.066	0.061	
Previous job match (end of contract)	0.119	0.030	***	0.043	0.054	
<i>Aged > 45 and</i>						
Previous unempl. benefits exhausted	0.077	0.040	**	0.252	0.080	***
Previous job matches (end of contract)	0.489	0.050	***	-0.048	0.082	

(Keep.)

(Continuation.)

Variable	Ending of a contract			Layoff		
	Coeff.	Std.	Signif.	Coeff.	Std.	Signif.
<i>Previous employment duration and</i> Previous job match (end of contract)	-0.009	0.001	***	0.013	0.001	***
<i>Previous job match (end of contract) and</i> Unskilled manual workers in current job	-0.061	0.035	**	-0.650	0.072	***
Ln wages (€ in 1990)	-0.648	0.015	***	-0.493	0.036	***
Log-likelihood	-117,177.75			-30,230.451		
Observations individual-months	402,918					

Notes: Regression also controls for regions, calendar and business cycle dummies and duration dummies variables. χ^2 statistics refers to testing model with unobserved heterogeneity against that without.

** indicates significance at 5 per cent.

*** indicates significance at 1 per cent.

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