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Fixed-term Contracts, Transitions and Wage Growth: Evidence from Spain*

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Abstract. Employment instability is considered one of the main problems of the Spanish labour market. Thus, the proportion of temporary workers in Spain is around 30 per cent that is the highest rate of the European Union countries. The persistence of this situation could increase the risk of labour market segmentation. This paper presents new evidence of the factors affecting workers' transition from temporary work to permanent one and analyses whether this transition has a positive effect on wage growth. The former objective is obtained by estimating discrete choice models and the latter by estimating a wage growth equation correcting for selectivity bias through the two-step method developed by Trost and Lee (1984). The data are obtained from the second and third waves of the Spanish Household Panel Survey (INE 1996) conducted over the period 1995–1996. The main results are, on the one hand, that personal and job characteristics have a significant influence on the probability of becoming a permanent worker and, on the other hand, that this transition has an important positive effect on wage growth.

Keywords: labour force transitions, temporary and permanent workers, wage growth.

JEL Code: J30, J41, J42, J79

1. Introduction

The trend rise of employment instability has become a debated topic in most Western economies in recent years.[1] Such instability has been induced by policies to increase labour market flexibility. Within this context, the Spanish labour market is an extreme case.

Spanish labour market reform in 1984 allowed the extensive use of fixed-term contracts with low firing costs for all activities, temporary or not. The main objective of this reform was to lower the costs of payoff and discharge and thereby promote hiring. Following this reform, temporary contracts grew dramatically in Spain, which could bring about labour market segmentation with good (permanent) jobs and bad (temporary) jobs, because the protection and priviligies of rigid employment security legislation to permanent workers remained unchanged. Thus, nowadays, the proportion of temporary workers is above 30 percent (by contrast in the European Union, on average, this proportion is about 13 percent), around 90% of all new

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[1] *Davis and Haltiwanger (1999) report that roughly 10 percent of jobs are destroyed or created each year.*

contracts are temporary and over 80% of the newly unemployed wage earners were without work due to the termination of their temporary contracts.

The implications of temporary employment have been extensively studied in Spain for the 1990s. For example, researchers have debated issues such as the effects on wages of labour market flexibility, and the mobility of temporary workers between the various labour markets, especially the transition from temporary to permanent employment. This transition has important positive career implications because, for example, job security is linked to the opportunities of skill development ad promotion.

With respect to mobility, Alba-Ramírez (1998), Amuedo-Dorantes (2000), and Güell and Petrongolo (2000) use data from the Spanish Labour Survey provided by the Spanish Statistical Office (INE). On the one hand, Alba-Ramírez (1998) finds that women, youths, and the less educated temporary workers have a lower probability of obtaining permanent employment, estimating discrete choice models.

On the other hand, Amuedo-Dorantes (2000) estimates duration models for temporary employment, with competing risks of flowing into permanent employment versus alternative states, and finds that temporary employment appears more likely to persist within the employee's first year of tenure than in any subsequent year. Finally, Güell and Petrongolo (2000) also estimate models for the duration of temporary employment status. Their results find two possible uses of fixed-term contracts: first, employers may use these contracts as a device to screen good temporary employees. Second, they may opt for permanent hiring when there is no other way to retain the worker.

Concerning the wage effects of labour market flexibility, Jimeno and Toharia (1993), Bentolila and Dolado (1994), and Davia and Hernanz (2002) provide some theory and evidence. Jimeno and Toharia (1993) present a bargaining model that shows how the introduction of fixed-term employment may contribute to a rise in the wages of permanent workers. This issue may explain why liberalisation of the fixed-term employment contract in Spain has produced an unusually low wage drift (the difference between workers' earnings growth and bargained wage growth).

In some ways, this hypothesis is verified combining data from the Spanish Labour Survey and from the Ministry of Employment Statistical Office for the 1987–1991 period. Moreover, these authors find the presence of wage discrimination by type of contract by analysing a sample of wage earners covered by an experimental survey conducted by the INE in 1991. Their results show that, on average, fixed-term employees earn about 11 percent less per hour worked than permanent employees with the same characteristics.

The positive relationship between fixed-term employment and permanent workers' wage growth is also corroborated by Bentolila and Dolado (1994), using the database of balance sheets kept at the Bank of Spain for the 1983–88 period. They find that a 1 percentage point increase in the proportion of fixed-term workers raises the growth rate of permanent workers' wages by one-third of a percentage point. Although wage discrimination by type of contract is forbidden in Spain, the previous results (Jimeno and Toharia 1993; Bentolila and Dolado 1994) can be explained by the fact that employers tend to under-classify workers with temporary contracts, so that these workers actually get paid less than equivalent workers with permanent contracts (see Dolado et al. 2002). If this under-classification were true, we should observe a widening of the wage discrimination for higher-educated workers.

This fact has been verified by Bover et al. (2000) for Spain during the 1980s, using individual records at Social Security. Finally, Davia and Hernanz (2002) examine whether temporary contracts involve lower wages than permanent contracts, using the Spanish Household Panel Survey (INE 1995) and the Wage Structure Survey (INE 1995). They analyse the wage differentials applying the Oaxaca-Blinder decomposition (Oaxaca 1973). Thus it is possible to divide the wage differences due to selection bias, the distribution of jobs and employee characteristics, and the differences in returns between both types of employment contracts. Their results are different from those of earlier research; in particular, they find that temporary workers tend to receive better pay than permanent workers for certain attributes such as human capital and experience, indicating nondiscriminatory wage differences.

The objective of this paper is twofold. First, we present new evidence about the factors affecting workers' transitions from temporary employment to various labour market states, paying special attention to the transition to permanent employment. Second, we verify the existence of pecuniary benefits associated with the transition from temporary work to permanent work. In particular, we observe whether temporary workers who get a permanent job have a positive wage growth.

The data are obtained from the second and third waves of the Spanish Household Panel Survey (INE 1996) corresponding to period 1995–96.[1] This panel, which gathers information about the living standards of the population and the changes and transitions of an individual's social status, is highly suitable for this type of study, because it includes information about the career of individuals at different stages of their working life.

The paper proceeds in the following steps. Section 2 and 3 analyse the labour market transitions of temporary workers and their wage growth distinguishing temporary workers who follow in the same labour force status from those who become permanent workers. Next, section 4 summarises and draws conclusions. Finally an appendix describes the data used in the regressions.

2. Labour market transitions of temporary workers

This section sheds new light on the labour market transitions of temporary workers between 1995 and 1996. In particular, we analyse the influence on these transitions of several factors: workers' personal characteristics (sex, education, marital status, and labour experience), household characteristics (composition and household income), job characteristics (activity, tenure, and training[2]), level of education, duration of previous spell of unemployment, way of getting the work, and region of residence.

We look at the labour force status of those temporary workers a year later. The possible outcomes are that temporary workers are observed in one of the following situations: permanent employment[3], temporary employment, unemployment, inactivity, or self-employment. To analyse the corresponding transitions we estimate the following multinomial logit model:

1 The first wave of the Spanish Household Panel Survey is not considered because the information on the type of employment contract is not available.
2 Workers are considered having received training if they have take part in some courses to increase they job skills between 1994 and 1995.
3 The proportion of transitions to permanent employment observed within the same firm is about 94%.

$$\ln(p_{ji} / p_{1i}) = \beta_{1j} + \sum \beta_{hj} X_{hi} + \varepsilon_i \quad \text{with } j = 2,3,4,5; h = 2,...,35. \qquad (1)$$

where p_1 takes on the value of 1 if the individual is a permanent worker and 0 otherwise; p_2 is 1 if the individual is a temporary worker and 0 otherwise; p_3 is 1 if the individual is unemployed, and 0 otherwise; p_4 is 1 if the individual is inactive and 0 otherwise; and p_5 is 1 if the individual is self-employed and 0 otherwise. X_{hi} is the value of the explanatory variable h for each individual, $\beta_j^{'s}$ are unknown parameters, and ε_i is a random disturbance term.
Table 1 shows the results from the multinomial logit estimation model. A large number of significant variables are shown to explain the transition from temporary to permanent employment or to unemployment. These variables have the expected sign. However, when the transitions to inactivity or self-employment are analysed, this is not the case, perhaps because only a small number of temporary workers move to these labour force states (see table 1).

With respect to personal characteristics, first we observe that labour market conditions are more precarious for women. Women have greater probability of being a temporary worker, unemployed, or inactive in the next period. This may occur because offering women permanent employment is risky for the employer because women may withdraw from work due to the exigencies of child bearing and rearing. Second, the results show a positive relationship between education and transition to permanent employment.

This issue is particularly relevant to upper-secondary and higher education.[1] If temporary employment is considered as a probationary period (Jovanovic 1979; Loh 1994; Wang and Weiss 1998), education can positively influence the success of this period through the relationship with productivity. Thus, the postulates of human capital theory are verified because this theory shows a positive relationship between the accumulation of knowledge, productivity, and a successful career (Becker 1962; Black and Lynch 1996). Similar arguments can be used to explain the positive relationship between labour experience and the probability of getting a permanent contract.

Concerning marital status, we can see, for example, that this variable is relevant to explain the transition from temporary employment to inactivity. The variable's sign shows that individuals married or with a stable relationship have a greater probability of being inactive than of having a permanent job. This result affects mainly women,[2] who might spend time in housework or might take care of other family members (children or old people). We also observe that permanent workers are more likely to be married than temporary workers, perhaps because the economic instability that is associated with the fixed-term contract may discourage marriage.

With respect to household characteristics, in most cases the variables are not relevant. On the one hand, this may mean that only personal and job characteristics influence the employer's decision regarding the worker's future. On the other hand, few temporary workers become inactive in the labour force, and for those who do, it is not possible to verify whether household characteristics are as important as expected.

[1] *Within higher education the differentiation between a degree from an Escuela Universitaria (two to three years of post-secondary education) and a degree from a Facultad or Escuela Técnica Superior—ETS (five to six years of post-secondary education) is not carried out because no individuals are found in both cases for the labour state of inactivity.*
[2] *Women constitute 88 percent of the individuals making this transition (see table A1).*

Table 1. Multinomial logit estimates of transition probabilities to the indicated state among temporary workers[a]

Characteristic	Temporary worker		Unemployed		Inactive		Self-employed	
	Coeff.	St. Dev.	Coeff.	St. Dev.	Coeff.	St. Dev.	Coeff.	St. Dev.
Constant	2.0133***	0.4852	1.1745**	0.5690	-0.4378	0.9406	-1.1630	1.0226
Sex								
Male	-0.4899**	0.1951	-0.5907**	0.2348	-2.4473***	0.4945	0.3087	0.4418
Education								
Lower vocational or technical	-0.5741*	0.3166	-0.4912	0.3790	-0.5426	0.6457	0.4411	0.5893
Lower secondary	-0.3357	0.2327	-0.1784	0.2701	-0.7878*	0.4770	-0.5654	0.5159
Upper secondary	-0.8519***	0.2997	-1.1873***	0.3824	-1.7039**	0.7483	-0.1137	0.6374
Upper vocational or technical	-0.5199	0.3462	-0.7181*	0.4283	-2.4078**	1.1493	-0.2793	0.7546
Higher education	-0.6024**	0.3018	-1.0376**	0.3885	-3.2665**	1.1119	-0.4064	0.6683
Marital status								
Married	-0.7992***	0.2102	-0.3774	0.2544	1.0356**	0.4696	-0.5124	0.4550
Household characteristics								
Number of family members								
Under 6 years of age	0.4823**	0.1941	0.5067**	0.2241	0.4528	0.3690	0.1173	0.4169
6–16 years of age	0.0931	0.1134	-0.0476	0.1367	0.1230	0.2239	-0.1117	0.2447
More than 65 years of age	0.0758	0.1735	0.2065	0.2034	0.2996	0.3597	-0.0813	0.3743
Household income								
Second quartile	-0.1308	0.2341	0.2024	0.2766	0.4953	0.5101	-0.1729	0.4665
Third quartile	-0.1991	0.2455	0.0820	0.2929	-0.0113	0.5618	-0.5132	0.5177
Fourth quartile	-0.3774	0.2496	-0.3670	0.3095	0.0516	0.5841	-0.6792	0.5279
Experience	-0.0826**	0.0297	-0.0972**	0.0342	-0.1800***	0.0539	0.0522	0.0677
Experience squared	0.0019**	0.0007	0.0025***	0.0007	0.0043***	0.0012	-0.0013	0.0016
Activity								
Agriculture, livestock, hunting, and fishing	-1.265***	0.3684	-1.2309**	0.4441	0.2014	0.8118	-0.9614	0.8911
Industry[b]	0.4453*	0.2435	0.3133	0.2904	-0.0897	0.6300	0.2280	0.4988
Construction	0.9861***	0.2860	0.7117**	0.3336	0.6432	0.7920	0.1612	0.5966
Financial institutions, insurance, business activities, and renting	-0.4329	0.2906	-0.3914	0.3662	-1.7194	1.1208	-1.0649	0.8152
Other services[c]	-0.0196	0.2426	-0.1796	0.2925	0.4343	0.4708	0.3310	0.5018
Tenure								
Less than 1 year	0.9979***	0.1964	1.4077***	0.2498	1.8123***	0.4801	0.6736*	0.4094
1 to 3 years	0.5243**	0.2025	0.9996***	0.2597	1.1038**	0.5350	-0.0405	0.4547
Training								
Financed by individual	0.4267	0.2895	0.5734*	0.3445	0.8087	0.6555	0.6376	0.5836
Working time								
Full-time contract	0.3320	0.2514	-0.0407	0.2961	0.0622	0.4714	0.0732	0.5343
Over-educated	-0.1004	0.1709	-0.1453	0.2044	0.0556	0.3701	-0.8168**	0.3618
Duration of previous unemployment spell (months)	0.0108**	0.0053	0.0158**	0.0058	0.0240	0.0077	0.0067	0.0112
Way of getting job								
Contact employer directly	0.2909*	0.1830	0.0413	0.2196	-0.3908	0.4210	-0.3058	0.4197
Contact employer through employment agency	0.6409*	0.3692	0.8636**	0.4144	0.5292	0.6513	0.1305	0.8327
Region								
Canarias	0.0646	0.4001	-0.6601	0.4560	-0.4232	0.6619	-0.8751	1.1511
Center	-0.0687	0.3052	-0.7072**	0.3516	-0.6436	0.5750	0.2088	0.6126
East	-0.2182	0.2704	-0.8249***	0.3084	-1.1795**	0.5347	0.2364	0.5680
Madrid	-0.3231	0.3267	-1.7294***	0.4545	-2.5991**	1.1393	0.1515	0.6886
Northwest	-0.8373**	0.3018	-0.9917***	0.3390	-1.3219**	0.5854	-0.9975	0.7652
Northeast	-0.3904	0.2978	-0.9428***	0.3513	-1.8536**	0.8616	-0.0087	0.6251
Number of observations	1453							
Likelihood ratio test	397.30***							

a. The reference is a female individual, has a primary school education, no education, or is illiterate, is not married, has a household income in the first quartile distribution of household income, is active in trade, restaurants, hotels, repairs, transport, or communications, has more than three years of tenure, no specific training, and a part-time contract, is without over-education, got the job through the newspaper, friends, or family contacts, and resides in the South region.
b. This activity includes energy and water, extraction and transformation of non-energy ores and derivative products, metal transformation industries, precision mechanics, other manufacturing industries.
c. This activity includes public administration, defence, social security, health activity, and others social services.
(***) Statistically significant at 1 percent, (**) at 5 percent, (*) at 10 percent.

Regarding the effect of job characteristics, first we observe that activity has an influence on the type of contract. In particular, persons employed in construction are the least likely to become permanent. Temporary workers in this activity are the most likely to be engaged in more contingent and discontinuous work. Second, tenure in the current job has a very significant positive effect on the probability of becoming a permanent employee. Several factors can

explain this result: on the one hand, according to job matching theory (Jovanovic 1979), job tenure can be an increasing function of the quality of match between a worker and his employer, because a mismatch is likely to be detected early on rather than late. On the other hand, long job tenure can show that the worker has a low propensity to quit and the employer could reward this propensity by changing the fixed-term contract for a permanent one.

Duration of the previous spell of unemployment has a negative influence on the probability of becoming a permanent worker. Maybe good workers, who have the highest potential to become permanent workers, get a job more quickly than other workers. Regarding the way of getting the job, we observe that temporary workers who get the job through an employment agency have the highest probability of following the temporary assignment with a fixed-term contract and with unemployment. Finally, living in the Northwest region has a positive and significant effect on the probability of moving from temporary to permanent employment. Moreover, people who reside in Canarias and the South region have a greater probability of being unemployed or inactive than people living elsewhere.[1] This fact was expected because Canarias and the South are poorer and less developed than other regions.

3. Wage discrimination by type of contract

In this section, we analyse wage discrimination by type of contract from a different point of view with respect to the previous economic literature for Spain (Jimeno and Toharia 1993; Bentolila and Dolado 1994; Davia and Hernanz 2002). In particular, we observe whether the transition from temporary work to permanent work has a positive effect on wage growth.[2] The econometric specification used consists of the following wage growth equation:

$$\Delta \ln w_i = \alpha' H_i + \delta \text{ permanent}_i + u_i \qquad (2)$$

where the dependent variable represents the monthly real wage growth of temporary workers between 1995 and 1996, α is a vector of unknown parameters, and H_i includes all relevant variables on wage growth, that is, the worker's personal characteristics (sex, education, marital status, and labour experience), job characteristics (activity, occupation, tenure, training, working time, and wage), and the regional unemployment rate. The variable "permanent" also appears as a regressor in equation 2. It shows whether the temporary workers in 1995 had permanent contracts a year later; this effect is measured by the coefficient δ. Finally, u_i is a random disturbance term standard normally distributed.

Because this equation is observed only for temporary wage earners in 1995, we must correct for selectivity bias in the wage growth equation that arises when a nonrandomly sampled set of observations from the population is used. Since any individual faces five mutually exclusive options—permanent employment (j = 1), temporary employment (j = 2), unemployment (j = 3), inactivity (j = 4), or self-employment (j = 5)—we must use the two-step method developed by Trost and Lee (1984), which adapts Heckman's approach (Heckman 1979), to compute a selection term for choices of more than two alternatives. In the first stage, we estimate a multinomial logit model that represents a polychotomous sector of employment choice for all individuals in 1995. In the second stage, with the multinomial logit model estimate, a selection term for the alternative of temporary employment is generated:

$$\hat{\lambda}_j = \phi(J(\hat{\alpha}_j z)) / F(\hat{\alpha}_j z) \qquad (3)$$

[1] *This last result is similar to that of people living in the Center region.*
[2] *This transition was made by 23 percent of temporary workers between 1995 and 1996 (see table A3).*

where $\hat{\alpha}_j$ is the estimated parameter vector of the alternative of temporary employment, z is a vector of explanatory variables, ϕ is the standard normal density function, F is the logistic marginal distribution, J is $\Phi^{-1}(F)$, and Φ denotes the standard normal distribution function. Finally the variable $\hat{\lambda}_j$ is included among the explanatory variables of the wage growth equation.

The sector of employment model estimated is presented in table 2. This model gives the probability of participating in temporary employment, unemployment, inactivity, or self-employment relative to permanent employment for groups of people in 1995. The explanatory variables included in the choice relationships are sex, educational attainment, age, marital status, household characteristics (composition and household income), and region of residence. Obviously, as opposed to the estimates in multinomial logit model of section 2, in this model, job characteristics cannot be used because the sample includes people not working.

Once the employment sector choice model has been estimated, the next step is to regress the wage growth equation using the results from table 2. Such estimations are shown in table 3.

Table 2. Multinomial employment sector choice in 1995[a]

	Temporary worker		Unemployed		Inactive		Self- employed	
Characteristic	**Coeff.**	**St. Dev.**	**Coeff.**	**St. Dev.**	**Coeff.**	**St. Dev.**	**Coeff.**	**St. Dev.**
Constant	6.6724***	0.4966	6.7642***	0.5068	7.4332***	0.4970	1.5263***	0.0076
Sex								
Male	-0.3438***	0.0797	-0.5957***	0.0837	-2.6111***	0.0853	0.0629	0.0884
Education								
Lower vocational or technical	-1.2555***	0.1490	-1.2983***	0.1602	-1.5972***	0.1576	-0.8237***	0.1691
Lower secondary	-0.7318***	0.1042	-0.6834***	0.1086	-0.9025***	0.1014	-0.3887***	0.1079
Upper secondary	-1.4371***	0.1341	-1.5758***	0.1468	-1.9875***	0.1316	-0.8286***	0.1332
Upper vocational or technical	-1.4258***	0.1595	-1.6439***	0.1803	-2.2699***	0.2036	-1.1291***	0.1873
Higher education[b]								
Escuela Universitaria	-2.1224***	0.1749	-2.4292***	0.1978	-3.2967***	0.1723	-1.7200***	0.1805
Facultad/ETS	-1.3818***	0.1485	-2.0512***	0.1874	-3.1426***	0.1877	-1.0594***	0.1531
Age	-0.2639***	0.0270	-0.2973***	0.0271	-0.3942***	0.0257	-0.1188***	0.0289
Age squared	0.0024***	0.0003	0.0031***	0.0003	0.0051***	0.0003	0.0016***	0.0003
Marital status								
Married	-0.3339***	0.1052	-0.4978***	0.1110	0.4560***	0.1054	-0.0441	0.1132
Household characteristics								
Number of family members								
Under 6 years of age	-0.0076	0.0778	0.1775**	0.0813	0.3893***	0.0743	0.1771**	0.0800
6–16 years of age	0.1253***	0.0470	0.1614***	0.0501	0.3263***	0.0457	0.0912*	0.0485
More than 65 years of age	-0.0187	0.0778	-0.0481	0.0816	-0.0146	0.0777	0.1287	0.0807
Household income								
Second quartile	0.4040***	0.1024	1.0374***	0.1124	1.3167***	0.1152	-0.1387	0.1044
Third quartile	0.2663**	0.1079	0.8507***	0.1202	1.6800***	0.1170	-0.2207**	0.1124
Fourth quartile	0.35504***	0.1154	0.9585***	0.1298	2.1089***	0.1234	-0.0261	0.1188
Region								
Canarias	-0.0812	0.1676	-0.7280***	0.1870	-0.2605	0.1653	-0.0302	0.1910
Center	-0.0664	0.1322	-0.2349*	0.1332	-0.1128	0.1276	0.3004**	0.1437
East	-0.1180	0.1171	-0.6641***	0.1225	-0.9322***	0.1174	0.1483	0.1305
Madrid	-0.4648***	0.1495	-0.8684***	0.1597	-1.0094***	0.1465	-0.6324***	0.1806
Northwest	-0.2859**	0.1359	-0.6951***	0.1416	-0.5878***	0.1293	0.6268	0.1374
Northeast	-0.4656***	0.1297	-0.8287***	0.1348	-0.7245***	0.1249	0.0617	0.1383
Likelihood ratio test	6237***							
Number of observations	8893							

a. The reference is a female individual, has a primary school education, no education, or is illiterate, is not married, has a household income in the first quartile distribution of household income, and resides in the South region.
b. People in the higher education group are separated into two groups: those with a degree from an Escuela Universitaria (two to three years of post-secondary education) and those with a degree from a Facultad or Escuela Técnica Superior—ETS (five to six years of post-secondary education).
(***) Statistically significant at 1 percent, (**) at 5 percent, (*) at 10 percent.

Table 3. Estimated wage growth equation for temporary workers in 1995[a]

Variables	Coefficient	St. Dev.
Constant	0.5473***	0.1583
λ	0.2723**	0.1105
Permanent worker in 1996	0.0769***	0.0211
Sex		
Male	0.1159**	0.0326
Education		
Lower vocational or technical	0.0336	0.0407
Lower secondary	0.0014	0.0266
Upper secondary	0.0412	0.0414
Upper vocational or technical	0.0171	0.0455
Higher education[b]		
Escuela Universitaria	0.1956**	0.0662
Facultad/ETS	0.2718***	0.0517
Experience	0.0079**	0.0034
Experience squared	-0.0002***	0.0000
Marital status		
Married	0.0125	0.0229
Activity		
Agriculture, livestock, hunting, and fishing	-0.0890**	0.0416
Industry[c]	-0.0335	0.0286
Construction	0.0075	0.0307
Financial institutions, insurance, business activities, and	-0.0671*	0.0366
renting	0.0043	0.0284
Other services[d]		
Occupation	0.0925***	0.0235
Skilled occupations[e]	-0.0020	0.0355
Administrative occupations	0.0440	0.0313
Other occupations		
Tenure	0.0255	0.0218
Less than 1 year	-0.0183	0.0222
1 to 3 years		
Training	0.0650*	0.0367
Financed by employer	-0.0068	0.0323
Financed by individual		
Working time		0.0333
Full-time contract	0.1666***	0.0244
Logarithm of wage in 1995	-	0.0023
Regional unemployment rate	0.5790***	
	-0.0012	
R^2	0.38	
Number of observations	959	

a. The reference is a female individual, has a primary school education, no education, or is illiterate, is not married, is active in trade, restaurants, hotels, repairs, transport, or communications, works in the private sector, has an unskilled occupation, no specific training, more than three years of tenure, and a part-time contract, and was a temporary worker in 1996.
b. People in the higher education group are separated into two groups: those with a degree from an Escuela Universitaria (two to three years of post-secondary education) and those with a degree from a Facultad or Escuela Técnica Superior—ETS (five to six years of post-secondary education).
c. This activity includes energy and water, extraction and transformation of non-energy ores, and derivative products, metal transformation industries, precision mechanics, and other manufacturing industries.
d. This activity includes public administration, defence, social security, health activity, and other social services.
e. These occupations include management, technical, and skilled occupations.
(***) Statistically significant at 1 percent, (**) at 5 percent, (*) at 10 percent.

Variable λ is significant, which confirms the suitability of the method. The positive sign of this variable means that there is a positive correlation between the omitted factors in the sector of employment models and the omitted factors in the wage growth equation. In other words, unobserved characteristics that increase the probability of temporary employment also have a positive impact on the wage growth of individuals.

Workers' transitions from temporary to permanent employment have a positive effect on wage growth. Thus individuals who obtain a permanent contract get wages that, in relation to the previous period (that is, W_{it} / W_{it-1}), are about 8 percent higher than the relative wages they would have received had they not became permanent employees.[1] This result is consistent with the predictions of economic literature. On the one hand, Loh (1994) shows that if employers use fixed-term contracts as a type of probationary period, those workers who have success in this process obtain a wage premium in order to compensate them for the increased risk of layoff associated with being on probation. On the other hand, this result can be a consequence of the possible wage discrimination by type of contract that is caused by collective bargaining (Jimeno and Toharia 1993; Bentolila and Dolado 1994[2]) and disappears when individuals become permanent workers and are afforded the protection of collective bargaining.

Concerning personal and job characteristics, we observe that men and individuals with higher levels of education, with a full-time contract, with more experience, and with more skills have greater wage gains than other workers.[3] It is likely that these workers can have career paths with good opportunities for upward wage mobility within the firm, via promotion, or across firms (see, for example, Lazear and Rosen 1990; Sicherman 1990). In addition, the higher is the previous wage, the lower is the wage growth in the following period. This result might be due to the fact that, above a certain threshold, it becomes harder to increase productivity with the existing technology.

Another important variable in this research is training. The results find that specific human capital received from the current employer in the previous year is associated with increased wage growth. This finding is consistent with previous studies (see, for example, Altonji and Spletzer 1991; Barron et al. 1993; Mincer 1988) and shows that workers collect the returns of training though higher marginal products and higher wages since specific human capital is thought to make them more productive.

With respect to activity, we observe that wage growth is lower in the agricultural sector than in the other activity sectors. It can be explained by the small size[4] of agricultural firms and the limited options of getting a promotion in this sector.

Finally, we have obtained the wage growth for the individual with the more usual characteristics in the sample—that is, a male who was a temporary worker during the 1995–1996 period, with a primary school education, no education, or illiterate, with a stable relationship, a full-time contract, tenure of less than one year, and no specific training, and

1 Since the model is semi-logarithmic, we estimate the effect of the dummy variable by calculating the exponential of its coefficient and subtracting 1 (see Halvorsen and Palmquist 1980).
2 According to these authors, the wage bargaining process is described as one of rent sharing between firms ad their permanent workers (insiders), under the assumption that temporary workers (outsiders) are disregarded by workers' representatives.
3 The coefficient's negative sign of the variable experience squared shows that the positive effect of labour experience on wage growth is decreasing.
4 Firm's size is an existing variable in the Household Panel Survey (INE 1996), but we have not used it because of the large number of missing values.

with work in a skilled occupation and in trade or transport. In this case, the predicted wage growth is about 6 percent.

4. Conclusions

In this paper we have shed new light on two subjects of crucial importance to the evolution of the labour market in Spain. These subjects are workers' transitions from temporary to permanent employment and wage discrimination by type of contract. The data have been obtained from the second and third waves of the Spanish Household Panel Survey (INE 1996), which offers advantages for this kind of study.

With respect to the first issue, we have found that personal and job characteristics have a crucial role in the probability of becoming permanent. For example, this probability is significantly higher for men and for more experienced and educated people. Moreover, job tenure has a positive effect on the probability of obtaining a permanent job, which is consistent with the results of previous literature (Alba-Ramírez 1998; Amuedo-Dorantes 2000; Güell and Petrongolo 2000) and shows that having a temporary job can be a steppingstone to obtaining permanent work. Finally, getting a job through an employment agency has an unexpected negative effect on the probability of receiving a permanent contract.

Concerning wage discrimination by type of contract, we observe that the transition from a fixed-term contract to a permanent one has an important positive effect on wage growth, once selection bias has been corrected using Trost and Lee's approach (1984). In more specific terms, their wages in relation to the previous period are about 8 percent greater than the relative wages they would have had if they had not become permanent, once personal and job characteristics are controlled in the regression.

This result is consistent with the theory and empirical evidence that, on the one hand, considers a fixed-term contract as a probationary period (Loh 1994) where employers check on the quality of the match between workers and jobs and pay a wage premium to workers who are selected as good employees. On the other hand, our results indicate that temporary workers who transit to permanent employment begin to receive the higher wages obtained through collective bargaining (Jimeno and Toharia 1993; Bentolila and Dolado 1994). Finally, another interesting result is the influence of human capital on the wage growth of temporary workers. Thus individuals with higher education and with training from an employer show greater wage gains than other individuals. It is likely that the educational characteristics of these workers affect positively their probability of being promoted in the firm, which allows them to obtain a higher wage.

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Appendix

Table A1
Distribution of personal, household, and job characteristics among temporary workers, by labour force state in 1996

Characteristic	Permanent worker		Temporary worker		Unemployed		Inactive		Self-employed	
	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
Sex										
Female	0.35	0.48	0.36	0.48	0.39	0.48	0.78	0.42	0.27	0.45
Male	0.65	0.48	0.64	0.48	0.61	0.48	0.22	0.42	0.72	0.45
Experience	14.88	10.41	13.48	11.31	14.83	12.20	17.47	14.06	14.88	10.12
Education										
Primary school education, no education, or illiterate	0.30	0.45	0.39	0.49	0.43	0.23	0.37	0.48	0.35	0.46
Lower vocational or technical	0.09	0.30	0.09	0.28	0.09	0.29	0.09	0.30	0.18	0.39
Lower secondary	0.23	0.42	0.25	0.43	0.29	0.46	0.20	0.40	0.18	0.39
Upper secondary	0.14	0.34	0.09	0.28	0.06	0.25	0.06	0.24	0.11	0.32
Upper vocational or technical	0.08	0.28	0.07	0.26	0.06	0.24	0.01	0.14	0.06	0.25
Higher education	0.16	0.30	0.11	0.31	0.07	0.25	0.01	0.14	0.12	0.32
Marital status										
Not married	0.38	0.48	0.65	0.50	0.49	0.50	0.22	0.41	0.45	0.50
Married	0.62	0.48	0.45	0.50	0.51	0.50	0.78	0.41	0.55	0.50
Household characteristics										
Number of family members										
Under 6 years of age	0.18	0.46	0.21	0.47	0.24	0.53	0.25	0.25	0.20	0.46
6–16 years of age	0.48	0.83	0.47	0.76	0.44	0.72	0.63	0.63	0.45	0.85
More than 65 years of age	0.18	0.48	0.20	0.47	0.22	0.52	0.24	0.24	0.18	0.45
Per capita household income (10^{-4} pts. 1992)	61.37	52.44	56.26	50.98	50.24	39.81	54.42	38.05	49.90	44.69
Activity										
Agriculture, livestock, hunting, and fishing	0.08	0.28	0.05	0.23	0.05	0.23	0.18	0.39	0.04	0.21
Industry[a]	0.16	0.37	0.22	0.41	0.20	0.40	0.09	0.30	0.22	0.42
Construction	0.27	0.44	0.25	0.43	0.28	0.45	0.23	0.43	0.27	0.45
Trade, restaurant, hotels, repairs, transport, and communications	0.11	0.31	0.22	0.41	0.20	0.46	0.08	0.30	0.16	0.35
Financial institutions, insurance, business activities, and renting	0.13	0.34	0.06	0.25	0.07	0.26	0.01	0.14	0.04	0.21
Other services[b]	0.25	0.43	0.20	0.40	0.20	0.40	0.41	0.49	0.27	0.45
Tenure										
Less than 1 years	0.26	0.44	0.47	0.49	0.50	0.50	0.58	0.50	0.38	0.49
1 to 3 years	0.27	0.44	0.29	0.45	0.32	0.46	0.23	0.42	0.22	0.42
More than 3 years	0.47	0.18	0.24	0.42	0.18	0.31	0.19	0.40	0.40	0.50
Training										
Financed by individual	0.08	0.27	0.11	0.30	0.10	0.30	0.07	0.27	0.11	0.32
Working time										
Full-time contract	0.87	0.34	0.90	0.30	0.86	0.34	0.78	0.41	0.86	0.35
Part-time contract	0.13	0.34	0.10	0.30	0.14	0.34	0.22	041	0.14	0.35
Educational mismatch										
Over-educated	0.60	0.49	0.56	0.50	0.54	0.50	0.50	0.50	0.43	0.50
Not over-educated	0.40	0.49	0.44	0.50	0.46	0.50	0.50	0.50	0.57	0.50
Previous unemployment spell duration (months)	7.64	14.98	9.87	17.20	12.76	19.15	17.50	14.06	8.11	19.79
Way of getting job										
Contact employer directly	0.23	0.42	0.33	0.47	0.29	0.45	0.23	0.42	0.20	0.40
Contact employer through employment agency	0.73	0.42	0.60	0.47	0.62	0.45	0.65	0.42	0.76	0.40
Others	0.04	0.19	0.07	0.27	0.09	0.28	0.12	0.32	0.04	0.21
Region										
Canarias	0.04	0.20	0.08	0.27	0.07	0.26	0.14	0.35	0.02	0.15
Center	0.12	0.33	0.16	0.36	0.13	0.33	0.16	0.37	0.18	0.39
East	0.25	0.43	0.25	0.43	0.23	0.42	0.20	0.40	0.29	0.46
Madrid	0.12	0.32	0.09	0.29	0.03	0.18	0.01	0.14	0.11	0.32
Northwest	0.15	0.37	0.11	0.31	0.11	0.32	0.04	0.37	0.18	0.39
Northeast	0.17	0.36	0.14	0.35	0.15	0.35	0.16	0.20	0.06	0.25
South	0.15	0.37	0.17	0.38	0.28	0.44	0.29	0.45	0.16	0.35
Number of observations	242		840		276		51		44	

a. This activity includes energy and water, extraction and transformation of non-energy ores and derivative products,
metal transformation industries, precision mechanics, other manufacturing industries.
b.This activity includes public administration, defense, social security, health activity, and other social services.
Source: *INE (1996).*

Table A2
Distribution of personal and household characteristics among individuals, by labour force state in 1995

Characteristic	Permanent worker		Temporary worker		Unemployed		Inactive		Self-employed	
	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
Sex										
Female	0.32	0.47	0.39	0.49	0.46	0.50	0.88	0.33	0.27	0.44
Male	0.68	0.47	0.61	0.49	0.54	0.50	0.12	0.33	0.73	0.44
Education										
Primary school education, no education, or illiterate	0.29	0.45	0.43	0.45	0.52	0.50	0.70	0.40	0.47	0.50
Lower vocational or technical	0.07	0.27	0.08	0.27	0.07	0.27	0.04	0.19	0.05	0.23
Lower secondary	0.17	0.38	0.25	0.43	0.26	0.44	0.16	0.37	0.19	0.40
Upper secondary	0.14	0.35	0.08	0.28	0.07	0.27	0.05	0.22	0.09	0.29
Upper vocational or technical	0.07	0.26	0.06	0.25	0.05	0.22	0.01	0.12	0.04	0.20
Higher education[a]										
Escuela Universitaria	0.13	0.33	0.03	0.19	0.03	0.18	0.02	0.14	0.03	0.19
Facultad/ETS	0.13	0.33	0.07	0.25	0.04	0.19	0.02	0.13	0.07	0.25
Age	41.06	9.8	33.42	10.36	35.08	11.71	46.74	12.65	43.37	10.8
Marital status										
Not married	0.23	0.42	0.48	0.50	0.47	0.49	0.17	0.37	0.22	0.41
Married	0.77	0.42	0.52	0.50	0.53	0.49	0.83	0.37	0.78	0.41
Household characteristics										
Number of family members										
Under 6 years of age	0.26	0.52	0.25	0.53	0.26	0.57	0.23	0.53	0.25	0.43
6–16 years of age	0.65	0.85	0.60	0.90	0.60	0.88	0.58	0.85	0.67	0.89
More than 65 years of age	0.18	0.48	0.22	0.52	0.23	0.53	0.22	0.49	0.23	0.50
Per capita household income (10^3 pts. 1992)	51.51	54.82	54.57	47.97	60.54	40.10	78.80	49.27	44.92	49.98
Region										
Canarias	0.05	0.23	0.07	0.26	0.05	0.22	0.07	0.26	0.05	0.23
Center	0.12	0.32	0.15	0.35	0.17	0.37	0.17	0.38	0.15	0.36
East	0.24	0.42	0.25	0.43	0.20	0.40	0.18	0.38	0.23	0.42
Madrid	0.13	0.34	0.08	0.27	0.07	0.26	0.07	0.27	0.05	0.22
Northwest	0.13	0.34	0.12	0.33	0.12	0.32	0.14	0.35	0.22	0.41
Northeast	0.19	0.39	0.14	0.35	0.13	0.34	0.15	0.36	0.17	0.37
South	0.14	0.35	0.19	0.39	0.25	0.44	0.21	0.40	0.13	0.33
Number of observations	2436		1374		1144		2957		1082	

a. People in the higher education group are separated into two groups: those with a degree from an Escuela Universitaria (two to three years of post-secondary education) and those with a degree from a Facultad or Escuela Técnica Superior—ETS (five to six years of post secondary education).
Source: *INE (1996).*

Table A3
Distribution of job and personal characteristics among temporary workers in 1995

Variables	Mean	St. Dev.
Wage growth	0.05	0.35
Sex		
Female	0.35	0.48
Male	0.65	0.48
Education		
Primary school education, no education, or illiterate	0.39	0.45
Lower vocational or technical	0.08	0.27
Lower secondary	0.25	0.43
Upper secondary	0.09	
Upper vocational or technical		0.29
Higher education[a]	0.07	0.26
Escuela Universitaria	0.04	0.20
Facultad/ETS	0.08	0.27
Experience	14.86	11.11
Marital status		
Not married	0.47	0.50
Married	0.53	0.50
Activity		
Agriculture, livestock, hunting, and fishing	0.06	0.24
Industry[b]	0.20	0.40
Construction	0.19	0.39
Trade, restaurants, hotels, repairs, transport, and communications	0.27	0.47
Financial institutions, insurance, business activities, and renting	0.07	0.40
Other services[c]	0.21	0.40
Occupation		
Skilled occupations[d]	0.50	0.50
Administrative occupations	0.09	0.29
Other occupations	0.16	0.37
Unskilled occupations	0.25	0.43
Tenure		
Less than 1 years	0.40	0.49
1 to 3 years	0.30	0.46
More than 3 years	0.30	0.46
Training		
Financed by employer	0.08	0.28
Financed by individual	0.06	0.24
Working time		
Full-time	0.90	0.31
Part-time	0.10	0.31
Permanent worker in 1996	0.23	0.42
Monthly wage in 1995 (10^4 pts. 1992)	94.67	5.6
Regional unemployment rate	20.59	6.57
Number of observations	959	

a. People in the higher education group are separated into two groups: those with a degree from an Escuela Universitaria (two to three years of post-secondary education) and those with a degree from a Facultad or Escuela Técnica Superior—ETS (five to six years of post secondary education).
b. This activity includes energy and water, extraction and transformation of non-energy ores and derivative products, metal transformation industries, precision mechanics, other manufacturing industries.
c. This activity includes public administration, defence, social security, health activity, and other social services.
d. This occupation includes management, technical, and skilled occupations.
Source: *(INE 1996).*