centrA:

Fundación Centro de Estudios Andaluces

Factors affecting quits and layoffs in Spain[*]

Antonio Caparrós Ruiz   **Mª. Lucía Navarro Gómez**
Universidad de Málaga   **Universidad de Málaga**

RESUMEN
Durante la última década, las tasas de paro en la Unión Europea y, especialmente en España, han sido más altas que en los Estados Unidos, por ejemplo. El diferente grado de movilidad laboral existente en los respectivos mercados laborales ha sido una de las causas señaladas para explicar dicha divergencia. Este artículo, basado en el modelo de McLaughlin (1991), arroja evidencia empírica sobre los determinantes de la movilidad laboral externa voluntaria frente a la involuntaria en España, bajo un contexto teórico de rotación eficiente y flexibilidad salarial. Los datos utilizados provienen del Panel de Hogares de la Unión Europea para España (PHOGUE), realizado por el Instituto Nacional de Estadística (INE 1995). Como principales resultados obtenidos cabe destacar, por una parte, que las características de los individuos ejercen una significativa influencia sobre la probabilidad de cambiar de empresa. Por otra parte, se ha contrastado que los factores que afectan a la movilidad laboral tienen un distinto efecto según que el cambio de empleo haya sido voluntario o involuntario.

Palabras clave: abandono voluntario, despido, revisión salarial y probit bivariante.

ABSTRACT
During the last decade, unemployment rates in the European Union have been higher than in other regions, e.g., the United States, and these are even higher in Spain. It has been argued that the different degrees of labour mobility between the European and the American labour markets can account for the differences in the pattern observed. This paper follows the McLaughlin's model (1991) and provides empirical evidence regarding the factors determining quits and layoffs due to contract termination and non-renewal in Spain, following the efficient-turnover theory and wage flexibility. The data was obtained from the Spanish Household Panel Survey (PHOGUE) conducted by the *Instituto Nacional de Estadística* (INE 1995). Our evidence, on the one hand, indicates that workers' characteristics influence on the probability of changing job. On the other hand, the influency of the factors affecting labour mobility is different depending on whether job separation was triggered by quits or layoffs.

Keywords: quit, layoff, wage revision and bivariate probit.
JEL classification: J63 y J31.

Factors affecting quits and layoffs in Spain

Antonio Caparrós Ruiz
Mª Lucía Navarro Gómez
Departamento de Estadística y Econometría
Universidad de Málaga
Campus de El Ejido s/n, 29071 Málaga
E-mail: L_Navarro@uma.es
E-mail: Antonio@uma.es

Resumen

Durante la última década, las tasas de paro en la Unión Europea y, especialmente en España, han sido más altas que en los Estados Unidos, por ejemplo. El diferente grado de movilidad laboral existente en los respectivos mercados laborales ha sido una de las causas señaladas para explicar dicha divergencia. Este artículo, basado en el modelo de McLaughlin (1991), arroja evidencia empírica sobre los determinantes de la movilidad laboral externa voluntaria frente a la involuntaria en España, bajo un contexto teórico de rotación eficiente y flexibilidad salarial. Los datos utilizados provienen del Panel de Hogares de la Unión Europea para España (PHOGUE), realizado por el Instituto Nacional de Estadística (INE 1995). Como principales resultados obtenidos cabe destacar, por una parte, que las características de los individuos ejercen una significativa influencia sobre la probabilidad de cambiar de empresa. Por otra parte, se ha contrastado que los factores que afectan a la movilidad laboral tienen un distinto efecto según que el cambio de empleo haya sido voluntario o involuntario.

Abstract

During the last decade, unemployment rates in the European Union have been higher than in other regions, e.g., the United States, and these are even higher in Spain. It has been argued that the different degrees of labour mobility between the European and the American labour markets can account for the differences in the pattern observed. This paper follows the McLaughlin's model (1991) and provides empirical evidence regarding the factors determining quits and layoffs due to contract termination and non-renewal in Spain, following the efficient-turnover theory and wage flexibility. The data was obtained from the Spanish Household Panel Survey (PHOGUE) conducted by the *Instituto Nacional de Estadística* (INE 1995). Our evidence, on the one hand, indicates that workers' characteristics influence on the probability of changing job. On the other hand, the influency of the factors affecting labour mobility is different depending on whether job separation was triggered by quits or layoffs.

I.   Introduction

During the last decade, unemployment rates in the European Union have been higher than in other regions, e.g., the United States, and these are even higher in Spain. It has been argued that the different degrees of flexibility between the European and the American labour markets can account for the differences in the pattern observed. For example, American workers show a high degree of labour mobility during their active life compared to Spain, Great Britain or Germany (Booth, Francesconi and García Serrano 1997; Jung and Winkelman 1993).

This possible positive relationship between mobility and lower unemployment rates can be explained in terms of efficient allocation of resources. This means that the ongoing technological changes, the fluctuations in product demand, and the increase in the individual's knowledge creates the need to adapt and reallocate workers to jobs where they can increase their productivity. This would help to reduce the negative effects of labour market imbalances on economic growth (OCDE 1995).

Not much research has been done on the Spanish labour market regarding mobility, mainly due to the scarcity of statistical data suitable to analyze this phenomenon. Nevertheless, there are some works dealing with different aspects of mobility in Spain.

For example, García and Malo (1996a), and García-Crespo (2001) studied intra-firm mobility, using the information provided by the Survey of Social Status (INE 1991). The same survey was used by García and Malo (1996b) to analyze inter-firm mobility. Sánchez, Peraita and Huguet (1995) also studied the same phenomenon using the Survey of Life and Work Conditions (Ministerio de Trabajo y Seguridad Social 1985). Concerning geographical mobility, the most relevant work is that of Ahn, Rica

and Ugidos (1998) carried out by use of the Active Population Survey (INE 1992-1995). More recently, Caparrós, García and Navarro (1999) presented new empirical evidence on the relationship between inter-firm mobility and upward mobility determinants[1] using the first wave of the PHOGUE (INE 1994).

However, none of the Spanish studies on inter-firm mobility carried out an explicit analysis of the factors determining whether job separation was triggered by quits — that is, the worker initiated separation in order to find a better job — or layoffs — that is, firm-initiated separation[2].

Early economic research based on turnover (Becker 1962; Parsons 1972) made a distinction between quits and layoffs, but only from the standpoint of wage rigidity, where the fundamental variable was the investment in specific human capital made by either the company or the worker. Starting from these models, it was first empirically verified that if investment in specific training fell mainly on the worker, the probability of quitting decreased. Second, it was also found that the lower the company investment in specific training, the greater was the probability of separation initiated by the company (layoff).

Later on, using a new approach of labour mobility based on efficient turnover and flexible wages (Burdett 1978; Jovanovic 1979; McLaughlin 1987; Mortensen 1988), the distinction quit-layoff was not made. In this literature, optimizing workers and firms creates and dissolves employment relationships if they are jointly optimal.

---

[1] Upward mobility is understood as a change to a better job.
[2] Involuntary mobility includes workers who change job because of the business closing down or bankruptcy. However, literature on labour turnover does not deal with this specific instance, as this phenomenon is independent of job matching, workers' productivity, and their wish to change. The determinant factors for this type of mobility are market conditions and the management policies of the firm.

However, empirical evidence shows that the characteristics of the job gained after moving are different depending on whether the worker quit to find a better job or whether he/she is laid off due to contract termination without renewal. The same applies to the personal characteristics of the workers, that is, there are differences in the personal characteristics of quitters and laidoff workers. To take these facts into account, McLaughlin (1991) modeled quits and layoffs using efficient turnover and flexible wages, and argued that quits would occur when the working opportunities improve elsewhere, while layoffs were related to the worsening of the previous working conditions.

This paper follows the McLauglin's model and provides empirical evidence regarding the factors determining quits and layoffs. In the Spanish labour market, if the activity of the firm is not strictly temporal, layoffs can be compared with job separation by ending of the contract without renewal ever that the activity of the firm is not strictly temporal.

The authors use the Spanish Household Panel Survey's first and second wave (PHOGUE) conducted by the *Instituto Nacional de Estadística* (INE 1995). The main results show that workers' characteristics influence on the probability of changing job, and the influency of the factors affecting labour mobility is different depending on whether job separation was triggered by quits or layoffs.

The paper is structured as follows: Section II includes the econometric model; section III describes the data source and the variables used in this paper; the results of the estimations are analysed in section IV; finally, section V presents the most relevant conclusions.

II.   **Econometric model**

The factors governing job separation and whether it is considered a quit or layoff are based on the theoretical model introduced by McLaughlin (1991). The model assumes a heterogeneous group of workers and firms. In every period t, workers are employed by some of the firms, their productivity is known to the employer, and can vary within the different firms and over time.

Focussing on a single worker and two firms[3], the individual will receive from his/her employer a wage, W_t, in the period t. In the following period, t+1, the worker's productivity with his/her current employer is w_{t+1}, while with the other firm it will be r_{t+1}. Such productivity values are random variables drawn from a joint density function $g(w_{t+1}, r_{t+1})$; for the worker, the value of his/her productivity is unknown. Wage offers for each period (W_{t+1}, R_{t+1}) are related to the productivity values (w_{t+1}, r_{t+1}).

Under these premises, either the worker or the firm can initiate wage revisions during period t+1. If the worker left his/her job after he/she initiated the revision (that is, he/she asked for an increase), we consider that he/she quit. On the other hand, if the separation took place after the firm tried to reduce his/her wage, we consider it a layoff. However, if neither the firm nor the worker initiate a wage revision, job separation will not occur and the wages will remain the same, $W_t = W_{t+1}$, and $W_{t+1} < w_{t+1}$.

Wage revision will be initiated by the worker if the other firm's offer at period t+1, R_{t+1}, is higher than his/her wage W_t in the current job at period t. If $R_{t+1} < w_{t+1}$, the company accepts the revision and counteracts the other firm's offer by paying the worker a wage higher than W_t, being at the most w_{t+1}. If $R_{t+1} > w_{t+1}$, the company refuses

---

3. The predictions obtained from this model will not vary if the analysis is extended to N firms and N workers (McLaughlin 1991).

the wage increase requested and so the worker will quit. On the other hand, if the worker's productivity drops, the company might also decide to revise the wage. In period t+1, the firm would offer the worker a wage lower than in t[4], if the drop in productivity is such that $w_{t+1} < W_t$. In such situations, the worker would leave the job if $R_{t+1} > w_{t+1}$. However, in this case R_{t+1} is lower than W_t; otherwise the worker would have initiated the process of wage revision.

Therefore, the variables to analyze job separation for each worker i are: W_{it+1}, R_{it+1}, and W_{it}. However, we also have to evaluate the costs involved in job separation, Z_{1it+1}, derived from family circumstances, the uncertainty about success in the new job or the problems to adapt to a new working environment. Nevertheless, the greater the need of the worker to find a better source of income, the more the costs will be taken on or the more they will be ignored. On the other hand, other determinants of turnover labels are represented by Z_{2it+1}.

Thus, we can define the following functions for each individual i in the period t+1:

$$(1) \quad I^1_{i\,t+1} = R_{i\,t+1} - W_{i\,t+1} - Z_{1it+1}$$

$$(2) \quad I^2_{i\,t+1} = R_{i\,t+1} - W_{i\,t} - Z_{2i\,t+1}$$

where the values for W_{it+1}, R_{it+1}, and W_{it} are known to the workers and the firm. On the other hand, the researcher only knows the wages in t, $W_{it,}$ for all workers whether stayers or movers. However, we can assume that the values for W_{it+1} and R_{it+1} in the sample were obtained from the following expressions:

$$(3) \quad W_{it+1} = X'_{1it}\,\beta_w + \varepsilon_{1it+1}$$

$$(4) \quad R_{it+1} = X'_{2it}\,\beta_r + \varepsilon_{2it+1}$$

---

[4] In the Spanish labour market, this situation could be equivalent to worsening of labour conditions, smaller probability of promotion than the rest of workers with similar tasks or freezing wage.

where X_{1it} is a vector representing the characteristics of the worker and the labour market by the end of period t. The workers' characteristics include: educational level, labour experience, investment in firm-specific training, wages in the previous job[5] , sex, and marital status. Vector X_{2it} represents the previous variables, except specific training, since this variable will not have an influence on the wage offer of the new job.

Regarding the costs associated with changing jobs, these are determined by the following function:

$$(5) \qquad Z_{1it+1} = F'_{it} \beta_f + \varepsilon_{3it+1}$$

where F_{it} describes personal (sex and marital status) as well as household characteristics (household income, dependent children or other household members).

Finally, a lineal function describes other factors related to the quit-layoff distinction such as his/her job separation record, which could be a sign of labour quality:

$$(6) \qquad Z_{2it+1} = G'_{it} \beta_g + \varepsilon_{4it+1}$$

Therefore, equations (1) and (2) can be now expressed as:

$$(7) \qquad I^1_{i\,t+1} = X'_{2it} \beta_r - X'_{1it} \beta_w - F'_{it} \beta_f + \theta_{1it+1}$$

$$(8) \qquad I^2_{i\,t+1} = X'_{2it} \beta_r - W_{it} - G'_{it} \beta_g + \theta_{2it+1}$$

where $\theta_{1it+1} = (\varepsilon_{2it+1} - \varepsilon_{1it+1} - \varepsilon_{3it+1})$ and $\theta_{2it+1} = (\varepsilon_{2it+1} - \varepsilon_{4it+1})$.

---

[5] This variable is included because it's a proxy of the worker's productivity, and then, it influences on the new wage offers.

It is assumed that $(\varepsilon_{1it+1}, \varepsilon_{2it+1}, \varepsilon_{3it+1}, \varepsilon_{4it+1})$ follows the multivariate normal distribution with zero means and a covariance matrix equal to Σ. Therefore, $(\theta_{1it+1}, \theta_{2it+1})$ is a bivariate normal distribution function with zero means and covariance matrix equal to:

$$\begin{pmatrix} \sigma_{11} & \sigma_{12} \\ \sigma_{21} & \sigma_{22} \end{pmatrix}$$

Finally, it is assumed that the pair $(\theta_{1it+1}, \theta_{2it+1})$ is identically and independently distributed over time and across workers.

Job separation is defined by the following rules:

1. The individual will move jobs, $S_{it+1} = 1$, if $I^1_{it+1} > 0$; otherwise he/she will stay in his/her current job, $S_{it+1} = 0$.
2. The worker will quit , $Q_{it+1} = 1$, if $I^1_{it+1} > 0$ and $I^2_{i\,t+1} > 0$; otherwise, $Q_{it+1} = 0$.
3. The worker will be laid off, $L_{it+1} = 1$, if $I^1_{it+1} > 0$ and $I^2_{it+1} < 0$; otherwise, $L_{it+1} = 0$.

The probit functions associated with this job separation are as follows:

(9) $\Pr(S_{it+1} = 1) = \Pr(I^1_{i\,t+1} > 0) = 1 - \Phi\,(K^1_{it+1})$

(10) $\Pr(Q_{it+1}=1) = \Pr(I^1_{it+1}>0 \text{ and } I^2_{it+1}>0) = 1 - \Phi\,(K^1_{it+1}) - \Phi\,(K^2_{it+1}) + \Phi\,(K^1_{it+1}, K^2_{t+1})$

(11) $\Pr(L_{it+1}=1) = \Pr(I^1_{i\,t+1}>0 \text{ and } I^2_{it+1}<0) = \Phi\,(K^2_{it+1}) - \Phi\,(K^1_{it+1}, K^2_{it+1})$

with $K^1_{it+1} = (F^{'}_{it}\beta_f + X^{'}_{1it}\beta_w - X^{'}_{2it}\beta_r) / \sigma^{1/2}_{11}$, $K^2_{it+1} = (G^{'}_{it}\beta_g + W_{it} - X^{'}_{2it}\beta_r)) / \sigma^{1/2}_{22}$.

$\Phi(.)$ and $\Phi(.,.)$ are the univariate and bivariate standard normal distribution functions, respectively.

For a sample of N individuals, the log likelihood function for each period t+1 is:

$$(12)\log L_{t+1} = \sum_i^N (1-S_{it+1})\log\Phi(K_{it+1}^1) + \sum_i^q Q_{it}\log\left[(1-\Phi(K_{it+1}^1)-\Phi(K_{it+1}^2)+\Phi(K_{it+1}^1,K_{it+1}^2)\right]$$
$$+ \sum_i^l L_{it+1}\log\left[(\Phi(K_{it+1}^2)-\Phi(K_{it+1}^1,K_{it+1}^2)\right]$$

where q is the number of workers voluntarily moving jobs and l the number of layoffs.

Maximizing the previous expression, which corresponds to the likelihood function of a bivariate probit with sample selection, will enable us to estimate the unknown parameters.

III. Data

The data are obtained from the PHOGUE (INE 1995), which gathers information about the living standards of the population and the changes and transitions of an individual's social status. This panel is highly suitable for this type of study, because it includes information about the career of individuals at different stages of their working life. Our study focuses on the 1995 and analyses employed workers and their relationship to job mobility. The sample includes 4,697 employed individuals working 15 or more hours per week, and representing 75.5 percent of all the working people in the survey for that year. This survey allows us to identify the individuals who changed jobs between 1993 and 1995 and their reason for taking this decision. Indeed, as shown in table 1, between 1993 and 1995, 21.3 percent of employed workers changed jobs at least once. The reasons for mobility varied, but the highest percentage of moves was due to contract termination (48.9 percent of movers), followed by a better or more suitable job (21.5 per cent).

Table 1
Distribution of employed workers in 1995 according to their mobility status between 1993 and 1995

Decision to stay or leave	Number of workers	Percentage
Woker decided to change firms	1,000	21.3
Reasons:		
Worker took a better job	215	21.5
Worker was laidoff (involuntary discharge or business closing)	135	13.5
Contract ended	489	48.9
Worker closed or sold his or her own business	28	2.8
Worker needed to care for children	7	0.7
Worker left to pursue further education or enter military service	25	2.5
Other reasons	101	10.1
Worker decided not to change firms	3,697	78.7
Total	4,697	100

Source: PHOGUE (INE 1995)

As stated earlier, the definition of job separation we have adopted in this study excludes leaving the job for reasons which are not directly related to the worker-firm relationships. Thus, quitting to take care of children, take on further education, or fulfilling military or social service obligations are excluded. Similarly, we have adopted does not consider mobility due to involuntary discharges or business closing. In conclusion, the sample is composed by workers who took a better jobs (quitters) and workers leaving the firm due to labour contract termination (layoffs).

For movers, the time frame for the data included in the explanatory variables is the period immediately before the beginning of the new job. For stayers, these variables refer to the beginning of the period under analysis, that is 1993, except for those starting their job in 1994 or 1995, when the data for these years will be used, respectively.

The statistical description of the variables used in the estimations appears in Table 2. Most of these are dummy variables, except for those referring to potential experience

in the labour market, per capita household income, wages in the previous or current job
(if there is no change), and the unemployment rate in the Spanish region of residence.

Table 2
Descriptive statistics of the variables used in the estimations

	Total		Do not change		Change		Quit		Layoff	
	Mean	St.Dev	Mean	St.Dev	Mean	St.Dev	Mean	St.Dev	Mean	St.Dev
Sex										
Male	0.66	0.29	0.65	0.48	0.71	0.46	0.73	0.44	0.70	0.46
Female	0.34	0.29	0.35	0.48	0.29	0.46	0.27	0.44	0.30	0.46
Education										
Primary education	0.33	0.47	0.30	0.46	0.42	0.49	0.34	0.48	0.47	0.50
Lower secondary education	0.26	0.44	0.25	0.43	0.28	0.45	0.23	0.42	0.31	0.47
Upper secondary education	0.14	0.35	0.15	0.35	0.13	0.32	0.19	0.38	0.08	0.27
Upper vocational and technical training	0.08	0.27	0.08	0.09	0.05	0.22	0.08	0.26	0.04	0.20
Higher education[a]										
Escuela Universitaria	0.09	0.30	0.10	0.31	0.07	0.24	0.06	0.25	0.06	0.24
Facultad/ETS	0.10	0.30	0.12	0.31	0.05	0.23	0.10	0.31	003	0.16
Marital status										
Stable relationship	0.67	0.47	0.70	0.46	0.54	0.50	0.50	0.50	0.56	0.50
No partner	0.33	0.47	0.30	0.46	0.46	0.50	0.50	0.50	0.44	0.50
Family characteristics										
Childless couple	0.08	0.27	0.08	0.27	0.07	0.25				
Couple with children	0.47	0.49	0.49	0.50	0.40	0.49				
Couple living with other household members	0.12	0.34	0.13	0.34	0.07	0.26				
Household income per capita(10^4 ptas from 1992)	4.56	4.72	4.67	4.71	4.01	4.72	5.00	5.10	3.41	4.40
Experience (in years)	19.61	12.42	20.39	12.44	15.40	11.49	13.87	10.80	16.36	11.80
Specific training										
Financed by employer	0.06	0.24	0.07	0.26	0.00	0.07				
Financed by individual	0.03	0.17	0.03	0.17	0.04	0.20				
Wage (10^4 pesetas from 1992)	13.62	8.08	13.98	8.03	11.69	8.08	13.25	11.10	10.74	5.32
Unemployment rate	0.21	5.65	0.21	5.56	0.23	5.86	0.21	5.32	0.23	6.09
More than one change from 1993 to 1995										
Yes										
No							0.20	0.40	0.27	0.45
							0.80	0.40	0.73	0.40
Sample size	4,054		3,415		639		241		398	

a. People in higher education group are separated into two groups: those from *Escuela Universitaria* (two to three years of post-secondary education), and those from *Facultad or Escuela Técnica Superior-ETS* (five years of post secondary education).
Source: PHOGUE (INE 1995), Consumer Prices Index (INE 1993-1995) and Spanish Labour Survey (INE 1993-1995).

Experience in the labour market has been calculated as the difference between the
individual's age at the moment of deciding to move and the age of starting his/her

working life. Household income — reflecting the impact of other earnings on the household apart from the individual's job — is calculated by subtracting from the household's monthly income the individual's monthly income before deciding to change firm. The Oxford scale used by the Organization for Economic Cooperation and Development is then applied to the differences[6]. Household income and the individual's monthly income are given in 10,000 pesetas from 1992.

Table 2 shows how the initial sample of employed people drop to 4,054 individuals in the initial sample of employed people. This is due to the criteria used for selecting the workers who are changing employment, but also to some missing values of the explanatory variable especially those corresponding to the worker's wages while employed.

We could underline the fact that men change jobs more than women (71% men compared to 29% women), but they also represent a greater proportion of stayers. In addition, workers with a lower educational level change company more than others, but they do so as layoffs rather than as quits. Indeed, 78% of laidoff workers have an educational level equivalent to or lower than the first stage of secondary education, 21 percentual points above the people who quit. Similarly, this group of layoffs shows the highest rate of individuals changing jobs more than once in the period under analysis.

Regarding specific training[7], if the employer finances the training, most workers did not move to another firm but no definite pattern developed when the worker invested in his/her own training. Concerning wages and per capita household income

---

[6] This scale weighs family members differently in order to detect the possible existence of scale economies in consumption. The scale can be expressed as follows: $1+ 0.7*(N_1-1) + 0.5*(N_2 - N_1)$, where N_1 is the number of family members older than 14 years living at home, and N_2 the number of people living in the household.

[7] Specific training might or might not be financed by the employer. Two dummy variables represent the two financing modalities.

before taking the decision to stay in the firm, stayers generally had greater returns. On the other hand, the unemployment rate per region is higher in the movers group.

Finally, individual who change jobs generally have less potential experience in the labour market than those who do not change. Figure 1 shows the behavior of this variable regarding labour mobility. In the first years of the individual's working life, the percentage of workers changing jobs is much greater than that of people who do not change company. As labour experience increases, this difference drops until the pattern reverts and the ratio of individuals staying in the firm is greater than the number of people changing jobs.

Figure 1

Percentage of individuals according to years of experience and mobility
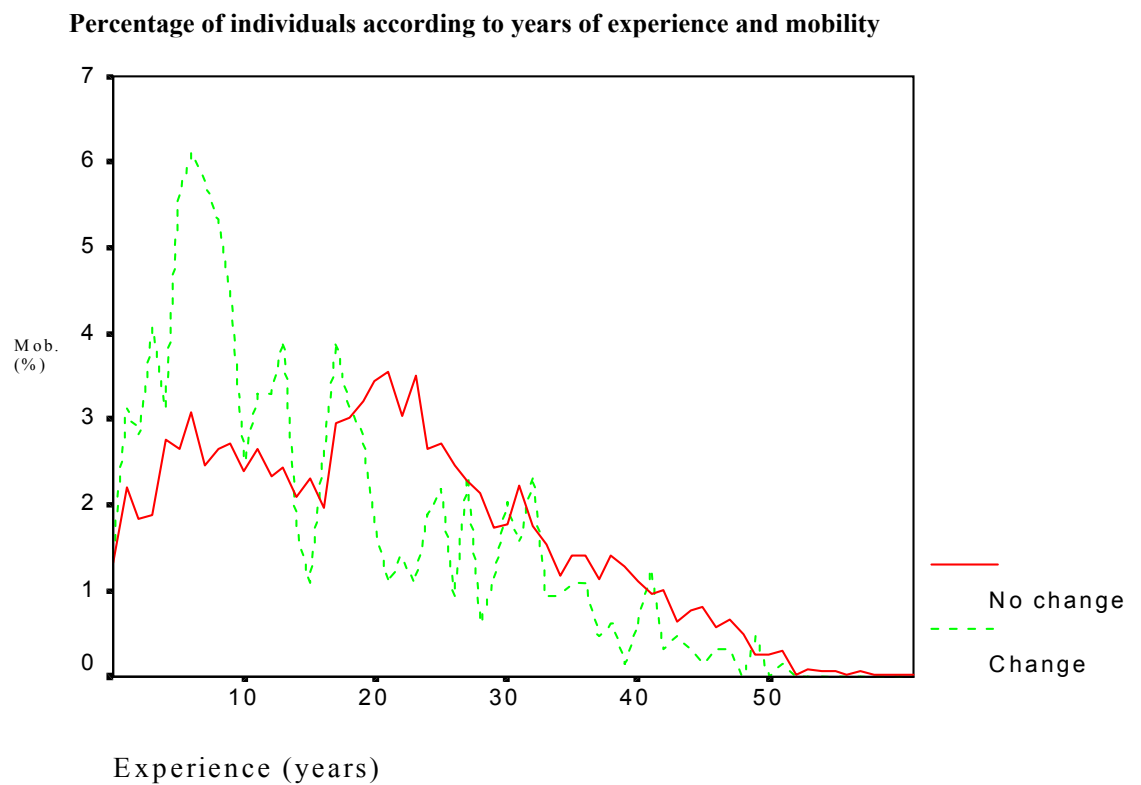
Source: PHOGUE (INE 1995)

In order to better capture the influence of labour experience on the probability of changing, we split this variable into three categories. Thus, we divide working

14

individuals into the following: those with fewers than 10 years working experience, those with between 10 and 30 years experience, and those with more than 30 years[8] experience.

IV. Results

Table 3 shows the results from the bivariate probit estimation model with the sample selection as described in Section III. We can appreciate that most explanatory variables are significant and have the expected sign.

According to our results, men show greater probability of job separation. In this sense, the economic literature reports contradictory results about the influence of gender on labour mobility, mainly due to the differences in the behavior of males and females in the course of their working lives. On the one hand Beeson (1998), Blau and Kahn (1981) and Viscusi (1980) report that women show a greater tendency to quit because they tend to be paid less well than men. On the other hand, Meitzan (1986) obtains similar results to ours, reporting that women are less likely to quit than men. Such results could be accounted for by the job matching theory (Jovanovic 1979). According to this, men become part of the labour market earlier than women, and probably do not use of the best selection procedures in their first jobs. In contrast, women might filter out jobs more efficiently than men because they bear in mind the labour discrimination to which they tend to be exposed. To these factors, we also have to add that women tend to have more problems adapting to the labour market that men, because their domestic and childcare tasks restrict the time spent at work and the distance involved in traveling, which might lead to a less intense search for new jobs. However, as regards the

---

[8] The creation of these categories is based on a chi-square test of independence between the different experience categories and the dependent variable showing whether the individual changes firm or not. All the results obtained rejected equality of means between the mover and the stayer groups.

distinction between quitting and layoff, sex is not a determinant variable. This is so because the distinction established between both kinds of mobility was dependent on loss of productivity, and so sex cannot be a determinant variable.

Table 3
Probit bivariate estimation with selection

Variables	Probability of changing[a]		Probability of quitting	
	Coefficient	Standard Deviation	Coefficient	Standard Deviation
Constant	-0.5771***	0.1714	1.1151***	0.2199
Sex				
Female	-0.2582***	0.0570	0.0562	0.1071
Education				
Lower secondary education	-0.2540***	0.0659	0.0919	0.1040
Upper secondary education	-0.4120***	0.0900	0.6045***	0.1392
Upper vocational and technical training	-0.6065***	0.1150	0.6365***	0.1735
Higher education				
Escuela Universitaria	-0.4854***	0.1130	0.3484**	0.1639
Facultad/ETS	-0.6085***	0.1201	0.8007***	0.1897
Marital status				
Partner	-0.0745	0.0896		
Experience				
Between 10 and 30 years	-0.4064***	0.0652	0.2209*	0.1217
More than 30 years	-0.6289***	0.0908	0.3141*	0.1945
Family characteristics				
Couple with children	-0.0517	0.0896		
Couple living with other household members	-0.2697**	0.1202		
Household income per capita (10^4 ptas from 1992)	0.0024	0.0097		
Household income squared	0.0001	0.0003		
Specific training				
Financed by employer	-0.9748***	0.2409		
Financed by individual	0.2207*	0.1251		
Wage (10^4 pesetas of 1992)	-0.0351***	0.0079	0.0177***	0.0068
Wage squared	0.0007***	0.0001		
Unemployment rate	0.0251***	0.0045	-0.0309***	0.0068
More than one change from 1993 to 1995			-0.12181	0.0848
ρ_{12}			-0.8456***	0.1340

Log-Likelihood: -1993.955
Sample size: 4,054
(a) The reference is a male individual, with either primary school education, no education or illiterate, without partner, with less than ten years work experience and no specific training
(***) The variable is significant at 1%. (**) The variable is significant at 5%. (*) The variable is significant at 10%

Concerning the influence of the workers' educational level on the probability of changing jobs, the literature once again presents very different views. On the one hand,

if higher education is matched by highly specialized skills, the more educated individuals are less likely to move. In addition, some jobs require a greater level of human capital investment, and so job searching might well begin at the moment of choosing a particular field of study. The job searching theory (Burdett 1978) is ambiguous concerning the effect of education on mobility. However, the theory of career mobility (Sicherman 1990) suggests that if the careers of workers with higher education show fewer occupational changes correlation between mobility and education is negative.

Our results on education reveal a negative relationship with inter-firm mobility. For example, people from all the educational levels studied presented a lower probability of moving than the reference group, that is when individuals with a higher educational level receive offers from another firm, their own employer will try to keep them. The results are coherent with the estimations obtained by Klein, Spady and Weiss (1991). They suggest that the heterogeneous and unobserved factors driving the individual to stay longer within the educational system are the same as the ones leading workers to stay longer in the same job. One of these factors is the greater level of fulfillment workers with higher education obtain from their jobs. On the one hand, workers with less education would be more prone to experience productivity losses and so they would be exposed to downward wage revisions.

Education is equally significant to differentiate between quits and layoffs. Thus, all individuals with an education level above lower secondary education have more probability of quitting. This is expected, because those with a greater level of education have more probability of requesting an upward wage revision as new offers arrive.

Likewise, although marital status is not significant explaining the probability of changing, it has a negative sign. In fact, given the uncertainty and costs associated with job changing, individuals in a stable relationship will show more aversion to the possible risks involved in moving than people outside a relationship. However, if they become movers, they are likely to be quitters. This is so probably because the greater financial needs of these individuals make them more pro-active in job searching. Moreover, it is interesting to note that within the group of individuals in a stable relationship, those living with other family members — who are not dependent children[9] — show less probability of changing. This might be so because they have lower financial needs due to the contribution of the other family members to household expenses.

For purely statistical reasons, mobility is expected to decrease as the worker's time in the labour market increases. Indeed, independently of how wage offers are generated, the expected value for the highest offer (current job) is higher for the individuals who search more (Burdett 1978). This result, predicted by the job searching theory, is not consistent with the view of employment as an experience good (Jovanovic 1979), because if ex-ante information about potential jobs is the same as before, the new jobs are not necessarily more stable than the previous ones. However, the longer is the worker in the job, the better is the job matching; this fact, is consistent with this concept of experience good — otherwise the professional relationship would have terminated earlier. Similarly, the models assuming that the tendency of workers to change their job

---

[9] According to the survey used, children are economically dependent if they fulfil some of the following conditions: they are less than 16 years old or they are between 16 and 25, they are not employed, economically inactive or discouraged, and live in the same house as at least one of the parents.

is heterogeneous do not take into consideration the effect that labour experience has on the probability of changing jobs (Blument, Kogen, McCarthy 1955).

The estimations obtained here are consistent with the job searching theory, side the greater the experience in the labour market the less probability there is for change. However, the probability of quitting increases because a less experienced worker is likely to be less productive and so he/she will be subject to layoffs.

Firm-specific training financed by the employer is significant. The negative sign is consistent with theoretical predictions (Hashimoto 1981; Parsons 1972). Indeed, on the one hand, the employer tries to keep workers trained by the firm because of the learning and production costs involved getting new employees. On the other hand, the workers are less mobile because the low applicability of firm-specific skills to new jobs means that they receive fewer offers. However, when workers pay for their training, they usually acquire less specific knowledge, which is generally applicable to other firms, which increases their probability of moving.

Our results are coherent with those reported, for example, by Topel and Ward (1992), regarding wages before individuals decide to change firms. In their work, they show that higher salaries increase the job value and the reservation wages of the individual, and so the probability of receiving offers for better-paying jobs decreases. However, although the best-qualified workers have very high salaries, they are likely to have opportunities to change companies (Lazear 1986). The positive sign of the wages squared variable demonstrates this fact and means that competitor firms try to recruit highly productive employees by offering them higher than current ones (Garen 1989). On the other hand, the relationship between the variable wages and the probability of quitting is positive, which means that those workers with greater wages are also the

most productive and so the probability of the change being driven by a loss of productivity is less.

Regarding the quality of the workers, we appreciate that those who had moved more than once between 1993 and 1995 have more probability of having moved at least once due to layoffs. This variable might indicate a lack of productivity in the worker, which could have caused a firm-initiated separation. However, this variable is not significant in our study.

Finally, the characteristics of the labour market in the area of residence show that a high unemployment rate in the region increases the probability of separation. This is probably so because in these regions the balance between labour demand and supply is unstable, and so the probability of poor job matching increases. On the other hand, the probability of quitting is negative which further confirms our previous argument, since the regions with lower unemployment rates are likely to be richer and will offer better opportunities to find good employment and fewer possibilities of market unbalances.

V. Conclusions

This study analyses the factors determining labour mobility and the distinction between quits and layoffs (contract termination without renewal) by applying discrete multivariate models with selection.

Our labour mobility approach is based on the model proposed by McLaughlin (1991). According to this approach, quits or worker-initiated separations occur when the move is caused by a request for a wage increase on the part of the workers, while layoffs or involuntary leaving occur when the firm initiates a downward wage revision.

We can draw several conclusions from the results. First, men are more likely to move from one job to another than women, although the variable sex does not affect the distinction between quits and layoffs. Second, individuals with low educational levels are more likely to move, although those with a greater educational level are more likely to quit rather than being laid off. Third, labour experience has a positive influence on the probability of staying in the same job. However, within the group of movers, those with greater experience are more likely to change their job voluntarily. Fourth, when the firm finances the training, the probability of the worker to move decreases, while it increases when he/she invests in his/her own training. Furthermore, the probability of mobility decreases if the wages in the previous job are high. On the other hand, in the group of movers, high wages translate into greater probability of a voluntary move. Finally, labour market conditions in the region of residence have an effect on the decision to break a given labour relationship and on whether the separation is firm-or worker-initiated.

Bibliography

Ahn, N., S. Rica, and A. Ugidos. 1998. "Willingness to Move for Work and unemployment Duration in Spain." Working Paper 9801. Centro de Estudios Monetarios y Financieros (CEMFI), Madrid.

Becker, G. 1962: "Investment in Human Capital: A Theoretical Analysis". *Journal of Political Economy*, 70 (1): 9-49.

Beeson, A. 1998: "Job-to-job and job-to-nonemployment turnover by Gender and Education Level". *Journal of Labour Economics*, 16 (2): 392-443.

Blau, F., and L. Kahn. 1981 . "Race and Sex Differences in Quits by Young Workers." *Industrial and Labour Relations Review* 34 (July):563–77.

Blumen, I., M. Kogen and P. McCarthy 1955. *The Industrial Mobility of Labour as a Probability Process.* Cornell Studies in Industrial and Labour Relations 6. Ithaca, N.Y.: Cornell University.

Booth, A., M. Francesconi and C. García Serrano. 1997 "Job tenure: Does history matter?". Working Paper, nº 1531. Center for Economic and Policy Research (CEPR), Washington.

Burdett, K. 1978. "A Theory of Employee Job Search and Quit Rates." *American Economic Review* 68 (March): 212–20.

Caparrós, A., D. García, and M.L. Navarro. 1999. "Movilidad Voluntaria: alguna Evidencia Empírica para el Mercado de Trabajo Español." *Ekonomiaz* 43 (1): 118–34.

Dirección General de Informática y Estadística (1985). *Encuesta de Condiciones de Vida y Trabajo*. Ministerio de Trabajo y Seguridad Social, Madrid.

García, C., and M. A. Malo. 1996a. "Desajuste Económico y Movilidad Laboural." *Revista de Economía Aplicada* 4 (11): 105–31.

———. 1996b. "Mismatch and Internal Labour Markets; Is There Any Relationship?" Working Paper. ESRC Centre on Micro-Social Change, University of Essex.

García Crespo, D (2001): "Promotions in the Spanish labour market: differences by gender". *Oxford Bulletin Economics ad Statistics* vol 63, nº5, pp. 599-615.

Garen, J. 1989. "Job Match Quality as an Error Component and the Wage-Tenure Profile: A Comparison and Test of Alternative Estimators." *Journal of Business and Economic Statistics* 7: 1–19.

Hashimoto, M 1981: "Firm-Specific Human Capital as Shared Investment". *American Economic Review*, 71 (June): 475-82.

INE (Instituto Nacional de Estadística), Madrid:

———1991. *Encuesta de Conciencia y Biografía de Clase.*.

———1992.I-1994.IV. *Encuesta de Población Activa Enlazada.*

———1992-1995. *Encuesta de Población Activa.*

———1993-1995. *Indice de Precios de Consumo.*

———1994. *Panel de Hogares de la Unión Europea para España* (1º ciclo).

———1995. *Panel de Hogares de la Unión Europea para España* (1º y 2º ciclo).

Jovanovic, B. 1979: "Job Matching and the Theory of Turnover". *Journal of Political Economy*, 87 (5): 153-61.

Jung, R. y R. Winkelman 1993:"Two aspects of Labour Mobility. A Bivariate Poisson Regression Approach", *Empirical Economics*, 18 (3): 543-56.

Klein, R., R. Spady and A. Weiss (1991): "Factor Affecting the Output and Quit Propensities of Production Workers". Review of Economic Studies, 58 (5): 929-54.

Lazear, E. 1986: "Raids and Offer Matching" in Research in Labour Economics, 8, part A, edited by Sherman, R. University of Chicago Press, Chicago: 141-65.

McLaughlin, K. 1987: "The Quit-Layoff Distinction in a Joint Wealth Maximizing Approach to Labour Turnover". Ph. D. Dissertation, Univ. Chicago.

McLaughlin, K. 1991: "A Theory of Quits and Layoffs with Efficient Turnover", *Journal of Political Economy*, 99 (1):1-29.

Meitzan, M.1986: "Differences in Male and Female Job-Quitting Behavior". *Journal of Labour Economics,* 4 (2): 151-67.

Mortensen, D. 1988: "Wages Separations, and Job Tenure: On the Job Specific Training or Matching?" *Journal of Labour Economic*, 6 (4): 445-71.

OECD 1995: The Jobs Study, Paris.

Parsons, D. 1972: "Specific Human Capital: An Application to Quit Rates and Layoff Rates". *Journal of Political Economy*, 80 (6): 1120-43.

Sánchez, M., C. Peraita y A. Huguet. 1995. "Análisis Estructural de la Movilidad Ocupacional en España." *Primeras Jornadas de Economía Laboural.* Universidad de Alcalá de Henares.

Sicherman, N. 1990. "Education and Occupational Mobility." *Economics of Education Review* 9 (2): 163–79.

Topel, R., and M. Ward. 1992. "Job Mobility and the Careers of Young Men." *Quarterly Journal of Economics* 107 (May): 439–79.

Viscusi, W. 1980. "A Theory of Job Shopping: A Bayesian Perspective." *Quarterly Journal of Economics* 94 (May): 609–14.

Winkelmann, R. y K. Zimmerman.1998: "Is job stability declining in Germany? Evidence from count data models". *Applied Economics*, 30 (11): 1413-20.