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OVEREDUCATION, UNDEREDUCATION AND EXPECTED PROMOTIONS (*)

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SUMMARY

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I. INTRODUCTION

This paper aims at analysing the potential relationship between educational mismatch (overeducation and undereducation) and internal mobility (in fact, the subjective probability of being promoted). The definition of mismatch we follow is that used in most previous empirical work (DUNCAN and HOFFMAN, 1981; VERDUGO and VERDUGO, 1989; SICHERMAN and GALOR, 1990): the possession by workers of different educational skills than their jobs require.

The relationship between mismatch and external mobility has been previously analysed by different authors (see, for instance, HERSCH, 1991, and SICHERMAN, 1991). For the Spanish case, ALBA-RAMÍREZ (1993) and GARCÍA-SERRANO and MALO (1996) carry out empirical studies on the influence of educational mismatch on external mobility. Here, we follow the approach proposed by BÜCHEL and MERTENS (2000) to consider jointly overeducation and undereducation.

Traditionally, the literature on mismatch has been mainly focused on overeducation, introducing undereducation as a mere additional control variable. However, as BÜCHEL and MERTENS (2000) underline, the empirical findings concerning undereducation are often very difficult to interpret jointly with the results obtained for overeducation. For instance, the theory of career mobility predicts that overeducated workers will experiment higher mobility (internal or external) than those adequately educated. But it does not provide any explanation about the negative effects of undereducation on external mobility detected by some authors (as ROBST, 1995) or the positive effects obtained by others (as SICHERMAN, 1991). Therefore, we will evaluate our results considering the «two faces» of mismatch: overeducation and undereducation.

Whilst there is a huge amount of literature linking external mobility with educational mismatch (specially, with overeducation), there are very few published articles about internal mobility and educational mismatch: HERSCH (1995) for the US labour market and DEKKER *et al.* (2002) for the Netherlands are the exceptions. The former, using data from an individual firm, finds that over-qualified workers receive less training and more promotions. The latter shows that, in the Dutch economy, overeducation is not an important variable for internal labour markets [1]. Considering such contradictory results, we try to provide an additional analysis of the relationship between educational mismatch and internal mobility, or in other words, promotions [2].

Up to our knowledge, there are no models devoted explicitly to consider together educational mismatch and promotions, but we can make reasonable inferences using existing theories which try to explain mobility. In this sense, the SICHERMAN-GALOR theory of labour career predicts that overeducation should be related to more promotions (although it its difficult to obtain a prediction about undereducation). But under the segmentation theory, overeducation (undereducation) should have a negative (positive) effect on promotions. In this paper, we obtain evidence supporting that overeducation has a negative effect on the probability of being promoted and undereducation a positive effect, in accordance with segmentation theory and against the SICHERMAN-GALOR theory of career mobility.

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(1)   The coefficients of overeducation on upward mobility are positive but in general not significant.

(2)   Promotions is a feature of labour markets that has been scarcely analysed in the past, even in studies on internal labour markets. Some relevant previous works on promotions and internal labour markets are TOPEL and WARD (1992), McCUE (1996), JONES and MAKEPEACE (1996), FRANCESCONI (2001), and GARCÍA-CRESPO (2001).

The structure of the paper is as follows. In the second section, we present the theoretical framework. In the third section, we describe the main features of our data base, focusing on the information about mismatch and promotions. In the fourth section, we estimate some logit models to check the relationship between educational mismatch and expected promotions. Finally, the last section summarizes the main results.

II. THEORETICAL FRAMEWORK: OVEREDUCATION, UNDEREDUCATION AND PROMOTIONS

As we have outlined in the introduction, there are no theories focusing exclusively on the relationship between mismatch and promotions (understood as upward internal mobility), but we can make reasonable inferences using existing theories on labour mobility: the career mobility and the segmentation theories.

Following SICHERMAN and GALOR (1990) and SICHERMAN (1991), overeducation might be an indication for a bad match in the sense that the worker's education might qualify him for a better paid job. From a career mobility perspective, the overeducated workers are more likely to move to a higher-level occupation either within the same firm or to a different firm (because they receive better offers from outside). Therefore, the prediction is that we should expect a positive effect of overeducation on expected promotions. But, what about undereducation? As SICHERMAN (1991) recognises, there is no prediction at all. Anyway, as undereducation is a bad match in the opposite direction, a possible intuition would be that its effects on mobility should be the opposite too (a negative effect on the probability of being promoted).

From other perspective, promotions have been considered long ago as key elements of internal labour markets. They are linked to the primary segment of the labour market where long-term employment relationships domain (DOERINGER and PIORE, 1971). In spite of their name, internal labour markets are allocative mechanisms different from market forces, mainly a set of administrative rules (WILLIAMSON *et al.,* 1975). The existence of internal labour markets implies the existence of a set of jobs protected from external competition: the result is that the only way to reach them is to accept a job located in an «entry port». Therefore, from a worker point of view, to accept a job with an educational requirement lower than that attained could be an strategy to get the desired job (that for which the worker would be correctly qualified). In this sense, overeducation can be considered as an individually rational strategy under the segmentation theory. In this situation, overeducation will affect positively the expectation of being promoted if workers assume that firms' promotions policy comprises overeducation as a good signal [3].

However, the empirical evidence shows that overeducated workers are less motivated and have lower productivity than adequately educated workers (see

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[3]   In other words, workers have rational expectations and consider all the available information about the promotions policy of the firms where they are currently working in order to evaluate their subjective probabilities of being promoted.

TSANG and LEVIN, 1985, and BÜCHEL and MERTENS, 2000). Therefore, it seems a better assumption to consider that firms' promotions policy considers overeducation as a bad signal and, consequently, workers will expect that their overeducation affects negatively their probability of being promoted (other things equal) [4].

Undereducation might be a side result of the existence of professional ladders in internal labour markets: following a popular saying workers would be promoted until the requirements of the job exceed their aptitudes. As in internal labour markets there are long-term employment relationships, we can assume that firms know very well the aptitudes of their workers. Then, it would be rational to promote an undereducated worker, because it would be a riskier choice to hire an outsider worker whose productivity is not known with the same level of certainty. In addition, if undereducated workers have a higher level of experience and training (as the empirical evidence widely confirms) the skills mismatch will not be as large as the difference between the required and the existing educational levels reveals.

To conclude, the segmentation theory is able to provide predictions for both types of mismatch: a positive influence of undereducation on promotions and a negative one of overeducation.

III. DATA BASE AND MAIN VARIABLES

For the empirical analyses, we make use of the data from the «Structure, Consciousness and Class Biography Survey» (*Encuesta de Estructura, Conciencia y Biografía de Clase*) launched in Spain in 1991. The objective of this survey is the study of the Spanish social structure using a similar questionnaire to that used in other different countries in order to obtain international comparable results. As we are interested in analysing the matches between individuals and jobs, we have selected those individuals who are wage and salary workers, have a permanent contract, are able to offer information about their current job, and are working in an organization which are expected to have internal labour markets (we have excluded workers in private firms with 25 or less workers) [5]. The sample originally comprises 6,632 individuals (currently and previously employed), but the aforementioned selection leaves us with a sample of 1,153 individuals.

The ECBC data base allows to analyse the subjective probability of being promoted in the current firm using the answers of interviewees to the following question: «From 1 to 4 (1 means very likely, 4 very unlikely), what do you think about your probability of being promoted in the future?». In order to proceed later in the econometric analysis, we transform the answers to that question into a dichotomous variable: it takes value 1 if the interviewee answers 1 or 2 (the individual

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(4)   Under such circumstances, can be rational being overeducated? If there is a surplus of educated workers in relation with the educational requirements of available jobs, overeducation would be as a sort of «second best» for individuals. See DOLADO *et al.* (2000) for a model in this vein.

(5)   DEKKER *et al.* (2002) put the cut-off point in 50 workers.

expect that the probability of being promoted in the future is high) and value 0 if the interviewee answers 3 or 4 (the individual has a low expectation of being promoted in the future).

Regarding educational mismatch, one usual way to measure it consists of obtaining information from the individuals on their educational level attained so far and on the level required by jobs [6]. In the case of the ECBC, at the beginning of the interview individuals are asked what is the higher educational level they have attained. Only those who have ever had a job are asked a question in relation to their opinion on the schooling level required by their jobs. In particular, that question is asked as follows: «What educational level is now the most appropriate to carry out your current job?». Respondents to that question may choose among twelve possible educational qualifications to indicate. The same applies to the question on the educational level attained by individuals. Their responses can be used to create two new variables on attained and required education, with eight levels: illiterate; able to read/write; basic studies; O-level; A-level and vocational studies; pre-university; university degree; and post-graduate.

Comparison between attained and required schooling levels brings about three possible measures of mismatch. The first measure (DIF) consists of three possible situations: if workers have the same/higher/lower level of education as that required by jobs, they are classified as adequately educated/overeducated/undereducated individuals.

The second measure (DIFLEVEL) tries to measure the extent of over/undereducation, so it is constructed using all the previous values. Therefore, we have a 15-point variable ranging from -7 for the most undereducated through to +7 for the most overereducated. For instance, a value of +7 means that the individual has a post-graduate degree but his/her job requires no qualifications at all.

The third measure of mismatch requires a previous transformation of the basic classifications, ranking the educational level attained by workers and that required by jobs into years: illiterate (0 years), able to read/write (2 years), basic studies (5 years), O-level (8 years), A-level and vocational studies (12 years), pre-university (15 years), university degree (17 years), and post-graduate (19 years). By comparing the two resulting classifications in years, we obtain a new measure of mismatch taking values +19 through -19. This variable has been recodified in order to have its

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(6)   This is called the «subjective method». However, there are other ways to measure mismatch. One consists of using information from occupations (obtained by job analysts), such as the *US Dictionary of Occupational Titles;* then, these job requirements are compared with the individual schooling level in order to get a more objective measure of mismatch (see RUMBERGER, 1981; VERDUGO and VERDUGO, 1989). This is the «objective method». Another way is to compare the actual level or years of education of the workers with the average level or years of education of the socio-economic group the worker belongs to. It usually uses the mean or the modal value plus/minus one standard deviation as the threshold to classify a worker as over/undereducated (see GROOT, 1996; KIKER *et al.,* 1997; BAUER, 1999). This is labelled the «statistical method».

information contained in seven categories ranging from many years of undereducation to many years of overeducation (DIFYEAR): -10 or more, -9 through -5, -4 through -1, 0, +1 through +4, +5 through +9, and +10 or more [7].

Table 1 displays the distribution of individuals over those three measures of mismatch in our sample. Two aspects are worth to be mentioned. First, the proportion of workers who have attained an educational level equal to that required to perform their jobs correctly is 41.5 percent of the total sample, being the overeducated 20 percent and the undereducated 38.5 percent. As in other countries, it seems that educational mismatch makes up an important feature of the Spanish labour market. Second, the degree of mismatch for the majority of those not correctly matched is not very large: in fact, around 35 percent of total workers (and 60 percent of mismatched workers) have an over/undereducation equivalent either to one educational level or to 1-4 years of education. Thus, the proportion of workers having a large degree of over/undereducation is less than 25 percent, which is distributed almost fifty-fifty considering DIFYEAR, but with more undereducation using DIFLEVEL.

TABLE 1

Distribution for different mismatch measures

DIFLEVEL	%	DIF	%	DIFYEAR	%
Under (> 3 levels)	1,7				
Under (3 levels)	3,2			Under (> 9 years)	3,7
Under (2 levels)	13,3			Under (from 5 to 9 years)	13,5
Under (1 level)	21,5	Undered.	38,5	Under (from 1 to 4 years)	21,3
Adequately educated	41,3	Adequat.	41,5	Adequately educated	41,5
Over (1 level)	13,7	Overed.	20,0	Over (from 1 to 4 years)	14,2
Over (2 levels)	4,2			Over (from 5 to 9 years)	5,3
Over (3 levels)	0,7			Over (> 9 years)	0,5
Over (> 3 levels)	0,4				
Total	100,0	Total	100,0	Total	100,0

Note: There is a small difference in the category «adequately educated» because some individuals have the same educational level but they have obtained their educational certificates under different educational systems (mainly before and after 1970). Therefore, their required years were slightly different. The required years of education were attributed following the educational certificates alleged by individuals to perform adequately their jobs.

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(7) The ECBC dataset provides two additional subjective measures of the mismatch quality (one on the educational level and the other on qualifications). We have estimated all models with both variables as well. Results are very similar and the general conclusions remain unchanged.

Table 2 provides the characteristics of the individuals included in the sample, broken them down among those adequately, under- and over- educated. We have considered two groups of variables: those related to demographic characteristics of the workers and those related to the firm where they work and to the job they perform. Among the first group of variables, we have included: gender, marital status, age, date of entry into the labour market [8], and attained educational level. Among the second group, type of organization, job seniority, number of promotions in the current firm [9], on-the-job training, and time required to perform correctly the job [10].

The information shown in the table suggests that the group of overeducated has a set of differential characteristics: they are younger; the proportion of females, singles and those with university degree is higher; they have lower tenure in their current job; they report less time is necessary to perform their tasks correctly (less than two months for almost 50 percent of the overeducated); they are less likely to have received any specific training for their jobs; and they are less likely to have attained a given number of promotions in the past.

TABLE 2

Statistical description of variables (means)

VAR	ALL	OVER	ADEQ.	UNDER
Subj. Prob. Promotion (1 = yes)	0,31	0,27	0,33	0,30
Male	0,72	0,66	0,68	0,79
Single	0,23	0,31	0,21	0,21
Age (years)	40,37	37,12	39,82	42,65
Seniority (years)	15,41	12,44	15,24	17,14
No. Promotions	1,20	0,72	1,25	1,39
Training (1 = yes)	0,47	0,31	0,58	0,43

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(8)   Regarding the date of entry into the labour market, we note that our sample contains individuals who started working in many different dates. Therefore, to take account of this fact we have built a variable with five categories: before 1960, 1960-75, 1976-82, 1983-86, and 1987-91, each one corresponding to major socio-economic and/or legislative transformations in the Spanish economy.

(9)   Information on previous promotions comes from interviewees' answers to the following question: «Knowing that having a promotion means moving to a higher level position with more responsibilities or authority, how many times have you been promoted in the period of time you have been working for your current firm?».

(10)   Interviewees are asked to take into account job characteristics and their own abilities for this time evaluation (this fact means that different answers may hide very different individual and professional situations).

VAR	ALL	OVER	ADEQ.	UNDER
ATTAINED SCHOOL LEVEL				
No schooling	0,06	0,05	0,02	0,11
Basic Schooling	0,30	0,22	0,19	0,46
O-Level	0,10	0,10	0,06	0,15
A-Level/Vocational Training	0,28	0,24	0,40	0,17
University	0,25	0,40	0,32	0,11
TYPE OF ORGANIZATION				
Public Administration	0,35	0,38	0,36	0,33
Public firm	0,14	0,11	0,17	0,12
Private very large firm (> 999)	0,17	0,14	0,16	0,19
Private large firm (100-999)	0,17	0,18	0,14	0,20
Private medium firm (25-99)	0,17	0,19	0,17	0,16
REQUIRED TIME				
Less than 1 week	0,12	0,23	0,10	0,07
From 1 to 7 weeks	0,19	0,24	0,18	0,18
From 2 to 3 months	0,15	0,12	0,17	0,14
From 4 to 11 months	0,12	0,15	0,11	0,12
From 12 to 23 months	0,17	0,08	0,17	0,22
More than 23 months	0,25	0,17	0,27	0,26
DISTRIBUTION (row %)	100,0	20,0	41,5	38,5

Therefore, the basic descriptives of the sample suggest that there is a sort of inverse relationship between overeducation and tenure, time to proficiency, on-the-job training and past promotions. These results are not different from previous work on educational mismatch in Spain (see ALBA-RAMÍREZ, 1993, and GARCÍA-SERRANO and MALO, 1996). Therefore, our sample selection does not distort the most common characteristics related to educational mismatch.

In order to separate the effects of schooling level, experience, and time required to perform the job, on mismatch, we have estimated a multinomial logistic model. The dependent variable (DIF) takes three mutually excluding values: adequate education, overeducation and undereducation. We have selected the first one as the default group, so the results show the probability of an individual being over-(under) educated relative to the probability of being adequately educated. The base characteristics are the following: female, non-single, illiterate/no schooling, working in a public firm, working in a clerical occupation, not having received specific job training, thinking that less than one week is necessary to perform the job properly, and having entered the labour market in the period 1987-91.

The multinomial logistic estimates are shown in table 3. To better understand the results, we offer the relative risk ratio (RRR) instead of the coefficients [11]. For instance, an individual who only differs from the reference in that he/she has a university degree instead of no schooling has a probability seven times higher of being overeducated; but an individual who only differs from the reference in that he/she has basic studies instead of no schooling has a probability of being undereducated nearly three times (1/0.35) times lower than the reference.

TABLE 3

Multinomial logistic estimates on the probability of being over/undereducated

	Overeducated/adequately educated		Undereducated/adequately educated	
	RRR	t-ratio	RRR	t-ratio
Male	0,76	-1,46	1,33	1,56
Single	1,25	0,95	1,53	1,90
Age	0,93	-0,86	1,22	2,22
Age^2	1,00	0,85	1,00	-2,14
Seniority	1,00	-0,04	1,01	0,18
$Seniority^2$	1,00	-0,19	1,00	-0,43
Promotions	0,94	-0,85	1,15	1,97
$Promotions^2$	1,00	0,55	0,99	-0,96
Training	0,46	-4,03	1,28	1,25
ATTAINED SCHOOLING LEVEL				
Basic Schooling	0,64	-0,65	0,35	-1,88
O-Level	1,15	0,18	0,20	-2,55
A-Level/Vocational Training	0,85	-0,22	0,02	-6,41
University	7,20	2,64	0,01	-7,33
TYPE OF ORGANIZATION				
Public Administration	1,35	1,10	1,60	1,84
Private very large firm (> 999)	1,24	0,63	1,49	1,34
Private large firm (100-999)	1,24	0,60	2,05	2,34
Private medium firm (26-99)	1,32	0,83	1,29	0,80

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(11) Those interested in examining the coefficients can obtain them from authors on request.

	Overeducated/adequately educated		Undereducated/adequately educated	
	RRR	t-ratio	RRR	t-ratio
REQUIRED TIME				
From 1 to 7 weeks	0,71	-1,05	1,68	1,32
From 2 to 3 months	0,60	-1,47	2,28	2,07
From 4 to 11 months	0,65	-1,20	3,47	2,99
From 12 to 23 months	0,31	-3,21	3,41	3,13
24 months or more	0,48	-2,30	3,34	3,16
DATE OF ENTRY				
Before 1960	0,94	-0,10	0,56	-0,93
1960-75	1,19	0,33	0,49	-1,29
1976-82	1,26	0,52	0,44	-1,66
1983-86	1,29	0,58	0,41	-1,73
OBSERVATIONS	1.153			
PSEUDO R^2	20,95			
CHI-SQUARED (Signif. Level)	505,73 (0,00)			

Notes:

— Estimations include occupational and industry dummies.

— Reference: female, non-single, not having received training, illiterate or without studies, working in a public firm, in a job which requires less than one week to be adequately performed, and the date of entry in the labour market was after 1986.

These estimates partially support what we know about the characteristics of over/undereducated workers. Non-university level workers, those requiring more time to perform their tasks correctly, and those having received specific training are less likely of being overeducated and more likely of being undereducated. In fact, the training and the time to proficiency terms are the most statistically significant for the overeducated, while the educational level (A-level or vocational training), the time to proficiency and the age terms are the most statistically significant for the undereducated.

Taken together, all findings coming from the simple cross-tabulations and the multinomial logistic model estimates drive to the following conclusions. On the one hand, it seems that there is some sort of substitution between formal education and specific job training; hence, experienced workers are in jobs for which they are *ceteris paribus* undereducated. On the other hand, the lack of significance of seniority variables seems to indicate that overeducated workers remain within firms with the same probability of those adequately educated [12].

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(12) This lack of relationship between overeducation and seniority was firstly stressed in GARCÍA-SERRANO and MALO (1996) as a specific characteristic of Spanish overeducation in the 1990s. This feature would be behind the crowding effect between educated and non-educated young workers in the Spanish labour market (DOLADO *et al.,* 2000).

IV. EMPIRICAL RESULTS ON EXPECTED PROMOTIONS

In this section, we investigate the influence that demographic and economic variables may have on the expectations of being promoted. In particular, we are interested in detecting the effect of mismatch on the individuals' career expectations within the same firm.

As we explained above, the dependent variable (the subjective probability of being promoted) takes on two values (0/1) depending on the individual's expectations about the chances of being promoted in the future. Hence, we have estimated a logistic model and tried three different specifications, one for each measure of educational mismatch, namely, DIF, DIFLEVEL and DIFYEAR.

We have also included some other demographic and economic variables. On the one hand, we consider the influence of characteristics such as gender, marital status, and educational level. On the other hand, we distinguish two groups of economic variables: those related to the task the individual is performing and to the firm he/she is working for (seniority, required time for doing the job properly, occupation, type of organization, and whether the individual has received any specific job training), and the date of entry into the labour market. We have also built five interactions to be included in the models: age*mismatch, age*gender, gender*marital status, specific job training*mismatch, and seniority*mismatch.

The base characteristics are the following: female, non-single, no schooling, working in a public firm, working in a clerical occupation, not having received specific job training, thinking that less than one week is necessary to perform the job properly, and having entered the labour market in the period 1987-91. Table 4 reports all estimates in terms of the Relative Risk Ratios as before [13].

TABLE 4

Logistic regressions on the subjective probability of being promoted

	RRR		RRR		RRR	
Male	1,86		1,63	*	1,70	
Single	1,94	*	1,84	*	1,88	*
Age	1,03		1,05		1,03	
Age^2	1,00		1,00		1,00	
Seniority	0,95		0,95		0,95	
Seniority^2	1,00		1,00		1,00	
Promotions	1,43	***	1,43	***	1,43	***
Promotions^2	1,00	**	1,00	**	1,00	**
Training	0,90		0,94		0,90	

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   (13) Those interested in examining the coefficients can obtain them from authors upon request.

	RRR		RRR		RRR	
ATTAINED SCHOOLING						
Basic Schooling	1,66		2,10		1,96	
O-Level	1,24		1,54		1,45	
A-Level/Vocational Training	1,19		1,56		1,39	
University	1,06		1,32		1,21	
TYPE OF ORGANIZATION						
Public Administration	1,23		1,25		1,23	
Private very large firm (> 999)	1,40		1,38		1,41	
Private large firm (100-999)	1,06		1,06		1,06	
Private medium firm (26-99)	0,53	*	0,54	*	0,53	*
REQUIRED TIME						
From 1 to 7 weeks	1,06		1,11		1,03	
From 2 to 3 months	1,47		1,63		1,42	
From 4 to 11 months	2,88	***	3,26	***	2,84	***
From 12 to 23 months	1,50		1,61		1,49	
24 months or more	1,42		1,57		1,38	
MISMATCH						
Overeducation	0,39	***				
Undereducation	1,68	*				
Under (>3 levels)			1,40			
Under (3 levels)			5,08	*		
Under (2 levels)			1,25			
Under (1 level)			2,06	**		
Over (1 level)			0,45	**		
Over (2 levels)			0,44			
Over (3 levels)			0,70			
Over (>3 levels)			1,21			
Under (>9 years)					6,00	
Under (5 to 9 years)					2,11	
Under (1 to 4 years)					2,03	*
Over (1 to 4 years)					0,32	***
Over (5 to 9 years)					0,32	*
Over (>9 years)					0,27	
OBSERVATIONS	1.153		1.153		1.153	
CHI-SQUARED (Sig. level)	142,135 (0,000)		150,176 (0,000)		144,312 (0,000)	

Notes:

— Estimations include occupational and industry dummies, dummies for the date of entry in the labour market, and five interactions of mismatch with other variables.

— Reference: female, non-single, not having received training, illiterate or without studies, working in a public firm, in a job which requires less than one week to be adequately performed, adequately educated and the date of entry in the labour market was after 1986.

— *** indicates statistical significance at the 1 percent level, ** indicates significance between 2 and 5 percent level, and * indicates significance between 6 and 10 percent level.

Our results indicate that variables trying to measure the educational mismatch play a significant role in explaining the dependent variable (except interactions, which are not significant and not reported in table 4). When mismatch is measured using the conventional dummies, we obtain that overeducated workers have a significant lower subjective probability of being promoted in the future: they have a probability of being promoted 2.6 times (1/0.39) lower than the probability of a similar adequately educated worker. An undereducated worker has a probability 1.7 times higher than a similar adequately educated worker (this difference is statistically significant at the 10 percent level).

However, when the degree of mismatch is disaggregated in either levels or years of over/undereducation, only those dummies signalling a slight degree of over/undereducation are statistically significant above the 5 percent level. Higher levels of mismatch are significant around the 8 percent level.

Considering the three definitions of mismatch, in general the subjective probability of promotions increases with undereducation and decreases with overeducation. Therefore, our results provide evidence supporting an interpretation in terms of the segmentation theory rather than the career mobility theory. Overeducated workers perceive themselves as less *promotionable*. If expectations are rational, we can assume that the subjective estimations of workers reflect on average the true promotion policy of the firm. For overeducated workers, the firms' policy would be not promoting people with an educational level above the level required by their jobs. The firm would be estimating that overeducation is not a «good signal» for a promising career within it. On the contrary, the career of undereducated workers would be more attached to their current firm, if firms considered being undereducated a «good» signal. As BÜCHEL and MARTENS (2000) highlight, firms usually expect that undereducated workers have above-average abilities: compared to their (relatively) low educational attainment, they would have performed a successful career (they are in a job beyond their educational level). Their successful career path is used as a means to select the new candidates to future promotions. And assuming rational expectations, this is reflected in the subjective probability of being promoted [14].

We also observe that the number of attained promotions increases very significantly the subjective probability of being promoted. Hence, those promoted in the past are more likely to believe that they will get more promotions in the future. In other words, the past success in the internal labour markets reinforces expectations on future success (other things equal). However, this effect decreases with additional promotions (the coefficient for the squared promotions is negative).

The estimation results indicate that the attained educational level itself do not affect the subjective probability of promotion; in other words, the variable measuring the individual level of education is not specially relevant for promotions. This is an expected result, since education is usually an important feature for the selection and hiring process, being education a proxy for future productivity (unknown when

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(14)   Note that in table 3 we showed that more promotions in the past increases the probability of being undereducated. Therefore, those currently undereducated have had a successful career path (*ceteris paribus*).

the worker is hired by the firm). But in the case of promotions (when the worker and the firm are involved in a long-term relationship), the firm possesses good information on the worker and, therefore, does not need to use the education level as a proxy for productivity.

Finally, we briefly comment the results on the rest of variables. Assessment on promotion probabilities does not differ among individuals for whom characteristics such as gender, age, seniority, schooling level, specific job training, or date of entry into the labour market (not reported in the table) are different. Single individuals have a higher subjective probability of being promoted (almost the double). Regarding the type of organization, only those working in private medium firm (with 26-99 employees) have a lower subjective probability of being promoted than the rest. As for the interaction terms (not reported), only the interaction between gender and marital status turns out to be statistically significant sometimes, showing that for single males the probability of being promoted in the future is lower (but this effect is not robust).

V.　CONCLUSIONS

In this work, we have performed an empirical analysis on the influence of overeducation and undereducation on the subjective probability of being promoted, topic which has been rarely analysed in the previous literature on educational mismatch. Following the proposal by BÜCHEL and MARTENS (2000), we have tried to provide a coherent explanation for the findings concerning overeducation and undereducation as a whole.

Our results from the estimates on the subjective probability of being promoted in the future within the same firm show that there is a negative effect of overeducation on that probability, and a positive one for undereducation. Assuming rational expectations, this subjective probability reflects on average the true promotions policy of the firm. Therefore, these results do not support the predictions of the career mobility theory and give support to an interpretation in terms of the segmentation theory.

As the empirical evidence shows that overeducated workers are less motivated, have lower productivity than adequately educated workers, higher willingness to quit and less specific training, it seems a reasonable assumption to consider that firms' promotions policy would consider overeducation as a bad signal and (assuming rational expectations) workers will expect that their overeducation will affect negatively their probability of being promoted (other things equal). Regarding undereducation, the firm will promote an undereducated worker, because it would be a riskier choice hiring an outsider worker whose productivity is not known with the same level of certainty. Therefore, the segmentation theory can predict exactly what we have found: a positive influence of undereducation on promotions and a negative one of overeducation.

On the one hand, our results are in line with those reported by BÜCHEL and MERTENS (2000) who, analysing together the effects of overeducation and undereducation on external mobility, find that career mobility theory fails to explain their results, although they are supported by a reasoning based on segmentation and signalling theories.

On the other hand, these results are different from those previously obtained by other authors. Our findings are in contradiction with those obtained by HERSCH (1995), who finds, for an individual firm (but with longitudinal information for workers), evidence on a positive effect of overeducation on promotions. He interprets that overeducated workers would be a pool from which promotions are made. However, he does not provide a symmetric explanation for undereducation. In addition, our results are not coincident with DEKKER *et al.* (2002) who do not find a significant effect of overeducation on upward mobility in internal labour markets [15]. Therefore, additional research with new data from other countries is needed in order to go beyond the current contradictory evidence, but accepting that overeducation and undereducation are two faces of the mismatch phenomenon and that we need comprehensive explanations for both.

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(15) Their empirical analysis does not include undereducation variables.

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