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## Educational mismatch and labour mobility in the hospitality industry in Andalusia

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**43<sup>rd</sup> CONGRESS OF THE EUROPEAN REGIONAL SCIENCE ASSOCIATION**

**Jyväskylä, Finland, 27-30 August 2003**

***EDUCATIONAL MISMATCH AND LABOUR MOBILITY IN THE HOSPITALITY  
INDUSTRY IN ANDALUSIA.***

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**ABSTRACT**

The objectives of this work are to analyse the determinants of educational mismatch and the effect of overeducation on workers' occupational mobility in the hospitality industry. The indicator of workers' educational mismatch used is based on the comparison between the worker's level of education and the educational level required to perform his/her job. In order to measure the required education, we used a representative survey of 3,314 workers and 302 employers (in 181 hotels and 121 restaurants with 7 employees or more). The econometric analysis shows that workers can compensate for their shortfall in education with greater amounts of experience and/or on-the-job training. Likewise, our results indicate that educational mismatch has not impact on workers' occupational mobility.

***Keywords:***

Educational mismatch, occupational mobility, human capital, hospitality industry.

## INTRODUCTION

Many studies have analyzed educational mismatch determinants and the relationships existing between educational mismatch and labour mobility in the labour market (Groot & Maassen van den Brink, 2000). This article, however, focuses on the results obtained from research carried out in the hospitality industry exclusively with the purpose to underline the specific impact of educational mismatch on these tourism-associated activities. When the educational mismatch becomes permanent in the firms the productivity of the workforce could be penalize (Tsang, 1987; Rumberger, 1987). Therefore, it is important to identify whether this mismatch is permanent or temporary, analysing the effect of workers' educational mismatch on labour mobility in the hospitality industry.

From a theoretical perspective, the Human Capital Theory (Becker, 1964; Mincer, 1958 and 1974; Schultz, 1961) implicitly assumes that any educational mismatch is a temporary and short-term phenomenon. The origin of this mismatch is a lack of coordination between the mechanisms setting up the characteristics of labour demand and supply. In addition, it can be argued that the educational level of workers provides an incomplete measure of the human capital these workers offer to the market. The worker's human capital, understood as the knowledge and skills contributing to an increase in labour productivity, has other components besides the educational level. Among these additional components, we can include the tenure of the worker in the job, and his/her learning capacity. Therefore, employees with different educational levels might offer the labor market the same human capital: a lack in one of its components (e.g., educational level) might be compensated by a greater amount of other human capital components (e.g. experience, tenure or learning capacity). Therefore, this theoretical approach assumes the existence of substitutability relationships between the different constituents of human capital.

In the Job Screening Model (Spence, 1973; Arrow, 1973), however, education is a sign to identify the more able and productive workers, as it considers the existence of market incentives for workers to increase their level of education independently of the required educational level of the job they aspire to obtain. Moreover, in the Job Competition Model (Thurow, 1975), new workers come into the labor market with a variety of

background skills and characteristics. These characteristics (education, age, gender, etc.) affect the cost of training a worker to fill any given job, but they do not, in general, constitute a set of skills that would allow workers to enter directly into the production process. Thus, in this model, employers will select workers with no job experience — given a market situation where the number of vacancies is lower than the applicants — taking into account the educational level of the worker, among other background characteristics, in order to minimize training costs.

Thus, if we accept, as argued by Job Screening and Job Competition Models, that educational mismatch could be a permanent phenomenon at labour market level, how is this mismatch related to labour mobility? The Career Mobility Theory (Rosen, 1972; Sicherman & Galor, 1990) and the Job Matching Theory (Jovanovic, 1979; Sicherman, 1991), among others, have tried to provide an answer to this question. On the one hand, the Career Mobility Theory suggests that workers might be interested in temporarily taking a job for which they are overqualified — entry job — in order to acquire enough experience so as to move to better paid jobs or with a greater chance of promotion. In this sense, overeducation would involve a temporary mismatch in the firm because it encourages employee mobility. On the other hand, the Job Matching Theory views overeducation as a disadvantageous situation for employees. Therefore, overqualified workers would try to find a better match by changing their job within the firm or by moving to another firm. Consequently, this theory predicts greater voluntary mobility of overqualified workers in the future, and thus overeducation is considered a temporary mismatch. On the other hand, undereducation, insofar as it is an advantageous mismatch for the worker, promotes permanence in the same job and within the same firm. However, from the point of view of the firm, undereducation could mean a bad fit to the job, which could lead to dismissing the employee. Nevertheless, workers might compensate their educational shortfall with other human capital resources specific to the job they perform (which could be related to their experience and tenure in the job). In this sense, investing in human capital specific to the job discourages the breaking up of the labour relationship for both the employer and the employee. Consequently, both theories predict that while overeducation encourages voluntary labour mobility in the future, undereducation could discourage it.

On this basis, this work is organized as follows. In Section 2, we define the mismatch indicator used and provide a brief descriptive analysis. Section 3 focuses on the empirical study of educational mismatch determinants, and Section 4 on the explanatory factors of labour mobility. The paper ends with some final conclusions.

## **DESCRIPTIVE ANALYSIS OF MISMATCH MEASUREMENTS**

The indicator of workers' educational mismatch used derives from comparing the worker's level of education to the educational level required to perform the job<sup>1</sup>. In order to measure the required education of workers, we used two alternative methods: the replies given by 3,314 employees to the question "What kind of education does a person need to perform your job?" and the responses given by employers in 181 hotels and 121 restaurants (with 7 workers or more) to the question "What kind of education does a person need to perform the job in each of these occupations?"<sup>2</sup>. Thus, the comparison between required and attained education lead to three possible worker categories:

- "Adequately educated" refers to those workers whose required education coincides with their attained level of education.
- "Undereducated" refers to those workers whose attained level of education is less than that required to perform the job.
- "Overeducated" refers to those workers whose attained level of education is greater than that required to perform the job.

Table 1 shows that 53.6% of workers consider themselves adequately educated, 30.7% undereducated, and 15.7% overeducated<sup>3</sup>. However, according to employers' responses, there are more cases of undereducation and overeducation (50.1% and 20.9%, respectively). These figures are coherent with the expected results, since workers will tend to assert their suitability in order to avoid recognizing situations of undereducation (Hartog & Jonker, 1997).

This Table also contains several variables, which we expected to be related to educational mismatch: job experience —defined as: worker's age minus years of schooling minus 6—, tenure in the firm, and required on-the-job training. Thus, Table 1 shows that, in the total sample, and according to the responses given by workers and

employers, overeducated workers have less experience, less tenure, and think that less time is needed to perform the job correctly (i.e., the required time of on-the-job training). Undereducated workers have greater job experience and more tenure than those without mismatch. Furthermore, according to workers' responses, undereducated employees state that they need longer on-the-job training in order to do the job properly. The Table 1 also shows that there are differences between the mean values of the variables in the subsamples corresponding to hotels and restaurants. There is wider educational mismatch among restaurant workers than among hotel workers. Furthermore, the percentage of overeducated workers is higher in restaurants than in hotels; tenure and job experience are higher in hotels than in restaurants; and workers at hotels also need shorter on-the-job training.

Table 2 shows the incidence of educational mismatch according to the different educational levels of workers and the sample or subsample under consideration<sup>4</sup>. The greater percentage of undereducated workers (for the total sample) falls among those whose educational level is equivalent to Compulsory Education (this level also being the most frequent among hospitality workers, 45.6% of the total in the whole sample). On the other hand, the highest levels of overeducation are found among workers with a Lower University Degree and with a Vocational Education II level.

## **EDUCATIONAL MISMATCH DETERMINANTS**

In order to analyze potential determinants of workers' educational mismatch quantitatively in *ceteris paribus* conditions, a logit multinomial model was estimated (Amemiya, 1981; Maddala, 1983). In the specification of the model, the dependent variable takes three excluding values: those corresponding to the group of workers adequately educated, overeducated, and undereducated. Adequately educated employees is the reference group. The individual reference characteristics for the covariates are the following: for the hotel sample, 20.7 years of experience and 8.7 years of tenure in the job; and for restaurants 17.4 and 4.7 years, respectively; less than 3 months to carry out the tasks properly; woman, single; full-time open-ended contract; wages of 7.01 euros/hour in hotels and 6.36 euros/hour in restaurants; and belonging to a firm with less than nine workers<sup>5</sup>.

Tables 3 and 4 show the results from the estimation of multinomial logit models<sup>6</sup>. Estimations for both subsamples are presented because the results of the joint estimation indicate that hotel workers have a greater probability of being significantly undereducated and a lower probability of being overeducated when compared to restaurant workers, from the point of view of both employers and employees.

As shown in Table 3, which refers to the hotel sample, undereducated workers have a greater probability than adequately educated workers of accumulating working experience over the average, and a greater relative probability of having a temporary contract when compared to the reference category (i.e., full-time temporary contract). In addition, from a worker's perspective, single males needing more than 3 months training, and with a part-time open-ended contract, have greater probability of being undereducated for the job.

According to occupation categories<sup>7</sup> and from the employers point of view, workers in the functional category Kitchen, levels 1, 2, and 3 (all except kitchen assistant and dishwasher) have a 2.4--5.9 times higher relative probability of being undereducated than the reference group (level 2 in the category Restaurants, RE2). In the category Cleaning, the relative probability of undereducation is 3.3--9.3 times higher in all levels. From the workers' point of view, there are fewer significant results. Only the "entry" job workers in the categories Kitchen and Cleaning (KT4 and CL3) show a relative probability of being undereducated which is significantly lower than in the reference occupation.

On the other hand, overeducated workers have a smaller relative probability of having working experience above the average than overeducated employees. However, an additional year of tenure in the firm increases by 10.2% (13% from the workers' perspective) the probability of being overeducated<sup>8</sup>. Similarly, overeducated workers show a greater relative probability of having a temporary contract (according to the workers' view, a part-time open-ended contract). Finally, with identical individual characteristics, workers in the category Reception and Administration, levels 1 and 2 (RA1 and RA2) (office manager and staff manager, receptionist, and clerk) have between a 37% and 43% probability of being overeducated when compared to the reference group. Similar results are obtained for assistant chef and dishwashers (KT4),

chambermaid (CL3), and assistant barman (RE3). Those workers in management posts show only a 5% probability of being overeducated when compared to the reference occupation. However, the estimation carried out with the mismatch variable obtained from employees' opinions indicate that only the chambermaid (CL3) has a probability of being overeducated, which is 4.8 times higher than the reference job.

In the case of restaurants, estimations do not show any evidence of substituting relationships existing between the different components of human capital. The analysis by occupation, from the employers' perspective, show a very high relative probability of undereducation in the Kitchen category for most levels except kitchen assistant and dishwasher (KT4) and in level 1 of Reception and Administration (RA1) and level 4 of Cleaning (CL4). In addition, for the restaurant chef level (RE1), there is a relative probability of undereducation which is 3.2 times that corresponding to the reference occupation. However, from the employees' view, the probability of being undereducated at the kitchen chef and chef assistant level (KT1) is 2.4 times higher than the probability of belonging to the reference occupation.

To sum up, Figure 1 schematically shows the empirical results of the analysis of the determinants of educational mismatch in all the cases under study.

## **DETERMINANTS OF LABOUR MOBILITY**

Taking as the starting point the theoretical premises outlined in the introduction, we analyze the relationships between voluntary labor mobility — both within the firm (internal mobility) and from one firm to another (external mobility) — and educational mismatch in the job<sup>9</sup>. This analysis is carried out by also bearing in mind the educational mismatch indicators estimated according to workers' and employers' views.

A logit binomial model (Amemiya, 1981; Maddala, 1983) is used as a statistical model to this end. In the specification of logit models for internal/external mobility, the reference value of the dependant variable corresponds to the group of workers who have changed job within the firm (or to another firm). The reference characteristics for the covariates are as follows: compulsory schooling<sup>10</sup>, 36 years old in the case of hotels and 32 years old in restaurants, female, not single, with full-time open-ended contract,



working in a firm with less than 9 employees, belonging to the Restaurants category, level 2 (RE2) (basically, waitress and barman) and adequately educated.

From the labour mobility standpoint, and before reporting the results from the estimations, it is important to point out that hospitality sector workers are mainly characterized by voluntarily moving from one firm to another but not by changing posts within the same firm. Similarly, this feature is especially pronounced in restaurant workers (see Tables 5 and 6).

The results from the estimation of the logit models for the whole sample show that workers from hotels have a significantly greater probability of internal/external mobility than those working in restaurants. For this reason, separate estimations have been carried out for hotels and restaurants. The results from these estimations do not change regardless of whether the mismatch variables included in the estimation are based on the employers' or employees' views. Therefore, we only present the results obtained from the employers' point of view (Tables 5 and 6)<sup>11</sup>.

First, the most important result is the lack of significance of the educational mismatch variables. In both sub-samples, the estimations indicate that educational mismatch (whether under- or over-education) are not determinants of the voluntary mobility of hospitality workers. This result is similar to the one obtained for the Spanish economy as a whole by García Serrano & Malo (1996), but is different from the results reported by Alba-Ramírez (1993).

Second, in the hotel sample, the size of the hotels is directly related to greater internal and external mobility. In smaller hotels the relative probability of internal mobility is low while external mobility is high, contrary to what is found in larger hotels. Consequently, it could be argued that workers in larger firms have greater access to longer term labor relationships than those employed by smaller firms.

Third, in both sub-samples, the age of the worker (and therefore his/her labour experience) is positively related to external mobility. On the other hand, age only has an influence on the internal mobility of hotel workers. In addition, the positive sign of the variable age square obtained is not often observed in mobility studies, and could

indicate that the accumulation of human capital does not decrease in this sector, and so labor relationships last for more time.

Fourth, temporal contracts in both subsamples are significantly related to a greater probability of external mobility. However, workers with temporary contracts in hotels have 2.4 (1.9 in restaurants) times more relative probability of not having changed jobs (and thus company) than workers with an open-ended contract. These results could indicate that temporary contracts aim at entry jobs.

Finally, estimations suggest that in hotels, but with otherwise identical characteristics, the following occupations present a lower probability of external mobility: all those belonging to the categories of Reception and Administration, the entry levels in Kitchen, and Cleaning. Regarding internal mobility, evidence shows that workers in management posts in all business areas show a higher relative probability of having previously done other jobs within the same firm. On the other hand, in the restaurant sample — and with otherwise similar characteristics — the jobs having a significant effect on the probability of not changing firms are the entry levels of Kitchen, and Cleaning.

## **FINAL CONSIDERATIONS**

The purpose of this paper was to analyze the match between the formal education of workers and the educational level required by the job they perform in hospitality firms, taking as the starting point the opinion of employers and employees. To this end, educational mismatch determinants were estimated as well as the impact of such mismatches on voluntary labour mobility.

Our results suggest that workers can make up for their lack of formal education by acquiring more working experience and in-job training, and thus undereducated workers tend to express the need for a longer period of in-house training. However, the relationship predicted by the theories of occupational mobility and labor matching has not been observed. The main implications of this result are that overeducation in workers, in the sense defined here, might constitute a permanent mismatch in the firms, or that the training requirements in hospitality businesses might gravitate mainly around

working experience accumulated by the worker and in-job training. This fact could be related to the mismatch existing between the training requirements of employers and the formal education or training available for workers in this sector.

## FOOTNOTES

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<sup>1</sup> The data available for this study came from a representative survey undertaken in 2000 under the research project entitled “Skills shortage, productivity, and wages in the hospitality industry in Andalusia”. See Marchante, Ortega & Sánchez-Ollero (2003) for a complete description of the sample.

<sup>2</sup> See Hartog (2000) to review different methods used in the literature to assess the education required for the job.

<sup>3</sup> These percentages have been compared to those of the Spanish economy as a whole using the same estimation method of educational mismatch. The results show that the percentage of workers with no educational mismatch is within the variation range reported by Alba-Ramírez (1993) 59.8% and García Serrano & Malo (1996) 41.6%. However, our percentage of overeducated workers is lower than the percentages obtained by these authors (17.1% and 28.4%, respectively).

<sup>4</sup> It must be pointed out that, because of the definition of the educational mismatch indicator used, illiterate workers cannot be considered overeducated or workers with a higher degree be classified as undereducated.

<sup>5</sup> It would not make sense to include in the specification attained education since Illiterate workers cannot be overeducated and workers with Higher University Degree cannot be undereducated (Sloane, Battu & Seaman, 1999, p. 1442).

<sup>6</sup> The results shown refer to those obtained using the levels given by employers as the required education indicator. The results corresponding to the mismatch variables obtained by taking into account the view of workers, which are not included in this paper, are available upon request. In addition, in order to better interpret the results, the odds ratios rather than the coefficients are given. For example, in Table 3, workers with a temporary contract have a 1.9 times higher probability of being undereducated in relation to the reference category (workers with a full-time open-ended contract).

<sup>7</sup> Figure A1 in the appendix shows a classification of occupations according to functional categories and levels except for managing directors.

<sup>8</sup> This result, contrary to the one theoretically expected, is similar to the results obtained by García Serrano & Malo (1996). However, following the line of reasoning of these authors, given that this coefficient is not significant in the equation concerning the probability of being undereducated, we consider that tenure in the firm is not a significant determinant of workers' educational mismatch.

<sup>9</sup> Those workers who were forced to move from one firm to another (e.g., due to termination of the contract or closure of the firm) were excluded from the sample.

<sup>10</sup> Including the variables Schooling years and Age are justified by the need to control the fact, empirically verified in the previous section, that workers with less theoretical work experience (and who

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are younger) have, generally speaking, more schooling years and, consequently, a greater probability of being overeducated.

<sup>11</sup> The results not shown here are available upon request.

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Table 1. Average and standard deviations of the variables.

		FULL SAMPLE						HOTELS						RESTAURANTS					
		Under.		Adeq.		Over.		Under.		Adeq.		Over.		Under.		Adeq.		Over.	
		W	E	W	E	W	E	W	E	W	E	W	E	W	E	W	E	W	E
<i>Experience</i> (= age - years of schooling - 6) (years)		24.0 (12.0)	24.8 (11.5)	20.0 (11.0)	17.5 (10.5)	13.0 (10.0)	11.9 (8.5)	25.0 (12.0)	25.3 (11.4)	20.0 (12.0)	17.1 (10.5)	13.0 (10.0)	12.4 (8.7)	22.0 (12.0)	22.1 (11.8)	18.0 (10.0)	18.4 (10.3)	11.0 (9.0)	10.8 (8.2)
<i>Tenure</i> (years)		9.7 (9.3)	9.7 (9.3)	7.6 (8.2)	6.6 (7.6)	4.9 (6.5)	5.0 (6.2)	10.5 (9.3)	10.4 (9.3)	8.4 (8.5)	7.4 (8.0)	5.8 (7.2)	5.7 (6.5)	6.4 (8.4)	5.9 (7.9)	4.4 (6.1)	4.3 (6.1)	3.2 (4.7)	3.5 (5.2)
<i>Required on the job training</i>	<i>Less than 3 months</i>	0.19	0.34	0.35	0.28	0.42	0.28	0.20	0.35	0.36	0.29	0.43	0.27	0.14	0.27	0.33	0.31	0.40	0.30
	<i>From 3 to 6 Months</i>	0.23	0.20	0.24	0.26	0.26	0.29	0.23	0.20	0.24	0.26	0.27	0.31	0.26	0.21	0.23	0.26	0.24	0.26
	<i>From 6 to 12 Months</i>	0.21	0.16	0.17	0.19	0.16	0.20	0.22	0.17	0.17	0.22	0.16	0.21	0.17	0.15	0.14	0.13	0.17	0.17
	<i>Greater than 12 months</i>	0.37	0.30	0.25	0.27	0.16	0.23	0.36	0.28	0.23	0.26	0.14	0.21	0.43	0.37	0.30	0.30	0.19	0.27
Number of workers in each category of mismatch		990	1649	1726	956	505	687	787	1389	1384	682	322	461	203	260	342	274	183	226
% of workers in each category over the total in each sample		30.7	50.1	53.6	29.0	15.7	20.9	31.6	54.9	55.5	26.9	12.9	18.2	27.9	34.2	47.0	36.1	25.1	29.7

Note: Standard deviation shown in brackets. Four dummy variables are used, all of them related to the experience needed to perform the job properly. (W) includes data obtained from the mismatch variables estimated according to workers' opinions, and (E) data coming from mismatch variables estimated according to the employers' views.

Table 2. Mismatch effects according to the educational levels.  
Percentages of the totals in each column.

	FULL SAMPLE						HOTELS						RESTAURANTS					
	Under.		Adeq.		Over.		Under.		Adeq.		Over.		Under.		Adeq.		Over.	
	W	E	W	E	W	E	W	E	W	E	W	E	W	E	W	E	W	E
<i>Illiterate</i>	7.7	8.1	3.2	0.1	-	-	8.1	8.1	3.5	0.1	-	-	5.9	7.7	2.0	0.0	-	-
<i>Compulsory Schooling</i>	56.1	62.6	49.2	48.1	12.9	3.2	53.2	60.8	45.3	38.0	11.8	0.9	67.5	72.7	64.9	73.4	14.8	8.0
<i>Vocational Education I</i>	11.8	8.6	7.8	7.6	13.9	16.2	11.7	9.0	7.6	6.5	10.9	14.3	12.3	6.5	8.5	10.6	19.1	19.9
<i>Vocational Education II</i>	19.2	16.7	14.2	8.2	21.1	28.8	20.8	17.6	14.9	10.0	20.2	28.0	12.8	12.3	11.5	3.6	23.0	30.5
<i>Upper Secondary Schooling</i>	2.2	2.9	9.3	10.6	18.2	18.9	2.5	3.3	9.0	10.6	16.8	18.0	1.0	0.8	10.5	10.6	20.7	20.8
<i>Lower University Degree</i>	3.0	1.0	14.3	22.7	22.8	23.0	3.7	1.2	17.2	31.2	25.7	26.2	0.5	0.0	2.3	1.5	17.5	16.4
<i>Higher University Degree</i>	-	-	2.0	2.7	11.1	9.9	-	-	2.5	3.7	14.6	12.6	-	-	0.3	0.4	4.9	4.4

Note: (W) includes data obtained from the mismatch variables estimated according to workers' opinions, and (E) data coming from mismatch variables estimated according to the employers' views.

Table 3. Logit multinomial of educational mismatch. Hotels Sample. Employers' perspective.

	Undereducated/ Adequately educated		Overeducated/Adequately educated	
	Exp (Beta)	p-Value	Exp (Beta)	p-Value
<i>Constant</i>		0.020		0.026
<i>Experience (years)</i>	1.137	0.000	0.892	0.000
<i>Experience square</i>	0.999	0.013	1.001	0.308
<i>Tenure (years)</i>	1.033	0.211	1.102	0.008
<i>Tenure square</i>	0.999	0.093	0.998	0.084
<i>=1 if Male</i>	0.859	0.319	0.947	0.752
<i>= 1 if Single</i>	1.233	0.177	0.783	0.183
<i>= 1 if Other contract</i>	1.077	0.814	1.039	0.904
<i>= 1 if Temporary (fixed term) contract</i>	1.933	0.001	1.811	0.011
<i>= 1 if Open-ended part-time contract</i>	1.226	0.533	1.139	0.743
<i>= 1 if Open-ended seasonal contract</i>	0.800	0.187	0.916	0.677
<i>= 1 if Required on the job training from 3 to 6 months</i>	0.992	0.963	1.147	0.497
<i>= 1 if Required time on the job training from 6 to 12 months</i>	0.991	0.961	1.163	0.494
<i>= 1 if Required time on the job training greater than 12 months</i>	1.075	0.700	1.055	0.819
<i>Salary (euros/hour)</i>	1.000	0.630	1.000	0.173
<i>= 1 if Establishment size, from 10 to 25 workers</i>	0.533	0.225	0.424	0.120
<i>= 1 if Establishment size, from 26 to 50 workers</i>	0.689	0.469	0.563	0.293
<i>= 1 if Establishment size, from 51 to 100 workers</i>	0.633	0.370	0.474	0.169
<i>= 1 if Establishment size, greater than 100 workers</i>	0.811	0.688	0.720	0.553
Sample			2111	
% Undereducated in the sample			55.38	
% Overeducated in the sample			18.19	
% Adequately educated in the sample			26.43	
Pseudo R <sup>2</sup>			0.374	
% Prediction			63.6	

Note: (Exp (Beta)) is the odds ratio. The estimations include 18 dummy variables corresponding to the different occupations analyzed except for the reference occupation (Restaurant level 2, RE2).



Table 4. Logit multinomial of educational mismatch. Restaurant Sample. Employers' perspective.

	Undereducated/ Adequately educated		Overeducated/Adequately educated	
	Exp (Beta)	p-Value	Exp (Beta)	p-Value
<i>Constant</i>		0.018		0.075
<i>Experience (years)</i>	1.078	0.145	0.814	0.000
<i>Experience square</i>	1.000	0.674	1.002	0.111
<i>Tenure (years)</i>	0.991	0.881	1.027	0.664
<i>Tenure square</i>	1.000	0.830	1.002	0.414
<i>=1 if Male</i>	0.824	0.561	0.940	0.838
<i>= 1 if Single</i>	1.195	0.605	0.671	0.238
<i>= 1 if Other contract</i>	3.280	0.018	1.207	0.706
<i>= 1 if Temporary (fixed term) contract</i>	0.546	0.052	0.846	0.565
<i>= 1 if Open-ended part-time contract</i>	1.039	0.960	3.538	0.054
<i>= 1 if Open-ended seasonal contract</i>	1.292	0.635	0.700	0.531
<i>= 1 if Required on the job training from 3 to 6 months</i>	1.199	0.615	1.430	0.272
<i>= 1 if Required time on the job training from 6 to 12 months</i>	0.999	0.998	1.874	0.095
<i>= 1 if Required time on the job training greater than 12 months</i>	1.003	0.994	1.286	0.466
<i>Salary (euros/hour)</i>	1.000	0.823	1.000	0.481
<i>= 1 if Establishment size, from 10 to 25 workers</i>	1.188	0.609	1.159	0.663
<i>= 1 if Establishment size, from 26 to 50 workers</i>	0.230	0.001	0.940	0.873
<i>= 1 if Establishment size, from 51 to 100 workers</i>	0.504	0.105	0.829	0.633
<i>= 1 if Establishment size, greater than 100 workers</i>	0.484	0.561	0.314	0.405
Sample			581	
% Undereducated in the sample			35.11	
% Overeducated in the sample			29.09	
% Adequately educated in the sample			35.80	
Pseudo R <sup>2</sup>			0.508	
% Prediction			63.3	

Note: The estimations include 9 additional dummy variables corresponding to the different occupations categories relevant to the Restaurants sample, except for the reference occupation (Restaurant level 2, RE2).

Table 5. Logit of internal mobility and external mobility.  
Hotels Sample. Employers perspective.

	Dependent variable = 1 if no internal mobility		Dependent variable = 1 if no external mobility	
	Exp (Beta)	p-Value	Exp (Beta)	p-Value
<i>Constant</i>	9.929	0.031	75.814	0.000
<i>= 1 if Illiterate</i>	0.935	0.816	0.907	0.772
<i>= 1 if Vocational Education I</i>	1.048	0.826	1.014	0.956
<i>= 1 if Vocational Education II</i>	1.557	0.078	0.599	0.076
<i>= 1 if Upper Secondary Schooling</i>	1.171	0.400	1.187	0.407
<i>= 1 if Lower University Degree</i>	1.330	0.272	0.760	0.335
<i>= 1 if Higher University Degree</i>	1.936	0.087	0.803	0.592
<i>Age (years)</i>	0.877	0.005	0.800	0.000
<i>Age square</i>	1.002	0.004	1.003	0.000
<i>= 1 if Male</i>	0.890	0.436	0.623	0.003
<i>= 1 if Single</i>	1.150	0.357	1.203	0.249
<i>= 1 if Other contract</i>	2.339	0.006	0.491	0.017
<i>= 1 if Temporary contract</i>	2.415	0.000	0.397	0.000
<i>= 1 if Open-ended part-time contract</i>	1.286	0.394	1.008	0.981
<i>= 1 if Open-ended seasonal contract</i>	1.509	0.008	0.594	0.007
<i>= 1 if Establishment size from 10 to 25 workers</i>	3.027	0.015	0.225	0.001
<i>= 1 if Establishment size from 26 to 50 workers</i>	2.290	0.067	0.298	0.007
<i>= 1 if Establishment size from 51 to 100 workers</i>	1.739	0.213	0.467	0.084
<i>= 1 if Establishment size greater than 100 workers</i>	1.973	0.134	0.267	0.004
<i>= 1 if Undereducated</i>	0.980	0.899	0.883	0.482
<i>= 1 if Overeducated</i>	1.111	0.563	1.177	0.403
Sample	1802		1702	
% Dependent variable = 1	63.26		23.15	
Pseudo R <sup>2</sup>	0.236		0.143	
% Prediction	71.3		77.5	

Note: (Exp (Beta)) is the odds ratio. The estimations include 18 dummy variables corresponding to the different occupations under consideration, except the occupation of reference (Restaurant level 2, RE2).

Table 6. Logit of internal mobility and external mobility.  
Restaurant Sample. Employers' perspective.

	Dependent variable = 1 if no internal mobility		Dependent variable = 1 if no external mobility	
	Exp (Beta)	p-Value	Exp (Beta)	p-Value
<i>Constant</i>	0.852	0.929	38.530	0.028
<i>= 1 if Illiterate</i>	2.137	0.491	2.126	0.306
<i>= 1 if Vocational Education I</i>	1.014	0.974	1.598	0.244
<i>= 1 if Vocational Education II</i>	0.542	0.182	1.438	0.446
<i>= 1 if Upper Secondary Schooling</i>	0.626	0.256	0.773	0.574
<i>= 1 if Lower University Degree</i>	0.280	0.046	1.633	0.499
<i>= 1 if Higher University Degree</i>	1.157	0.906	5.407	0.076
<i>Age (years)</i>	1.113	0.235	0.735	0.000
<i>Age square</i>	0.998	0.185	1.004	0.000
<i>= 1 if Male</i>	0.945	0.867	0.947	0.858
<i>= 1 if Single</i>	2.601	0.005	1.440	0.267
<i>= 1 if Other contract</i>	1.285	0.563	0.461	0.077
<i>= 1 if Temporary contract</i>	1.915	0.029	0.571	0.055
<i>= 1 if Open-ended part-time contract</i>	1.252	0.689	0.506	0.279
<i>= 1 if Open-ended seasonal contract</i>	1.917	0.335	0.215	0.059
<i>= 1 if Establishment size from 10 to 25 workers</i>	0.454	0.037	1.213	0.613
<i>= 1 if Establishment size from 26 to 50 workers</i>	0.528	0.155	1.549	0.320
<i>= 1 if Establishment size from 51 to 100 workers</i>	0.780	0.605	4.046	0.001
<i>= 1 if Establishment size greater than 100 workers</i>	0.177	0.021	2.692	0.199
<i>= 1 if Undereducated</i>	1.094	0.790	0.691	0.296
<i>= 1 if Overeducated</i>	1.354	0.413	0.675	0.301
Sample	518		505	
% Dependent variable = 1	79.54		22.57	
Pseudo R <sup>2</sup>	0.155		0.227	
% Prediction	80.1		80.6	

Note: The estimations include 13 dummy variables corresponding to the different occupations analyzed except for the reference occupation (Restaurant, level 2, RE2).

Figure 1. Educational mismatch determinants.

	UNDEREDUCATION		OVEREDUCATION	
	HOTELS	RESTAURANTS	HOTELS	RESTAURANTS
<b>RAISES THE PROBABILITY OF:</b>	<ul style="list-style-type: none"> <li>• Experience over the average (W) (E)</li> <li>• On-the-job training over 3 months (W)</li> <li>• Male &amp; single (W)</li> <li>• Open-ended part-time contract (W)</li> <li>• Temporary contract (E)</li> <li>• Kitchen levels 1, 2, &amp; 3 (E)</li> <li>• Cleaning levels 2, 3, &amp; 4 (E)</li> </ul>	<ul style="list-style-type: none"> <li>• On-the-job training over 3 months (W)</li> <li>• Single (W)</li> <li>• Reception &amp; Administration level 1 (E)</li> <li>• Kitchen level 1 (W) (E)</li> <li>• Kitchen levels 2 &amp; 3 (E)</li> <li>• Cleaning level 4 (W)</li> <li>• Restaurant level 1 (E)</li> </ul>	<ul style="list-style-type: none"> <li>• Open-ended part-time contract (W)</li> <li>• Temporary contract (W) (E)</li> <li>• Cleaning level 4 (W)</li> </ul>	<ul style="list-style-type: none"> <li>• Open-ended part-time contract (W) (E)</li> </ul>
<b>REDUCES THE PROBABILITY OF:</b>	<ul style="list-style-type: none"> <li>• Kitchen level 4 (W)</li> <li>• Cleaning level 3 (W)</li> </ul>	<ul style="list-style-type: none"> <li>• Temporary contract (E)</li> </ul>	<ul style="list-style-type: none"> <li>• Experience over the average (W) (E)</li> <li>• Reception &amp; Administration level 1 &amp; 2 (E)</li> <li>• Kitchen level 4 (E)</li> <li>• Cleaning level 3 (E)</li> <li>• Restaurant level 3 (E)</li> <li>• Management (E)</li> </ul>	<ul style="list-style-type: none"> <li>• Male (W)</li> <li>• Experience over the average (W) (E)</li> </ul>

Note: (W) according to workers' opinion; (E) according to employers' opinion.

## 7. APPENDIX

Figure A1. Most representative occupations by functional categories and professional levels (except for managing directors).

CATEGORIES/ LEVELS	RECEPTION AND ADMINISTRATION RA	KITCHEN KT	RESTAURANTS RE	CLEANING CL	TECHNICAL SERVICES TS
1	Office manager Reception manager Staff manager Reception manager assistant Booking manager	Main chef Second chef	Bar or restaurant manager Maitre Second Maitre		
2	Receptionist Concierge Clerk officer Assistant clerk Accountant Secretary Telephonist	Cook Confectioner Wine cellar and stock officer	Waiter Barman	Head chambermaid manager	Head maintenance officer
3	Assistant receptionist	Assistant cook	Assistant barman	Chambermaid. Laundry worker	Maintenance officer
4	Bellboys	Dishwasher Kitchen boy		Cleaner	Maintenance laborer