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by

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Occupational mismatch and moonlighting of Spanish physicians: Do couples matter? (*)

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Abstract

There are important gender differences in the labour-market status of health sciences graduates in Spain: (i) female physicians have lower participation rates than male physicians and, when they work, they are subject to higher occupational mismatch, and (ii) moonlighting is more frequent among male physicians. In this paper we investigate whether such differences are related to the monopsonistic features of the labour market of health-care professionals. Spanish physicians also exhibit another characteristic reducing their geographical mobility in search of a better occupational adjustment: among all university graduates, they are the ones most often coupled to partners with the same educational level and/or same type of studies. Consequently, optimal occupational adjustment of both partners can be a complex process. This stylised fact allows us to provide empirical evidence on a new type of gender discrimination labelled as "within-couple discrimination", which arises when geographical mobility of couples is favourable to men, so that they achieve better occupational adjustment than women despite having the same human capital. Finally, we analyse if moonlighting can be interpreted as a way of avoiding monopsonistic effects by increasing the labour supply elasticity.

JEL Codes: J24, J42, J44, J61 and J70
Keywords: Monopsony, Physicians, Mismatch, Moonlighting, Gender

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1. Introduction

Precarious working conditions in health-care occupations are a common feature in several countries. This may explain shortage of health-care professionals, given the existence of other professional alternatives with higher relative earnings, less heavy working loads and lower needs of initial and on-the-job training. Several pundits have related these precarious working conditions to the existence of monopsonistic characteristics in labour markets of health-care professionals (see Blau et al., 1998, Bhaskar et al., 2002, and Manning, 2003). In fact, an example commonly used in Economics textbooks to illustrate the phenomenon of monopsony is the labour market of nurses. Several economists even go so far as to state that "if no evidence of monopsony is found in this market, it turns out to be difficult to argue that monopsonistic competition is a relevant fact of labour market"[1].

Economic theory often refers to monopsony and its implications when workers have access to scarce occupational alternatives. In this case —unlike competitive labour markets— the labour supplies faced by firms are not perfectly elastic. [2] Thus, a decrease in wages or a worsening of labour conditions in a firm do not entail immediate leaving of their employees towards other firms; in other words, the higher the "monopsony power" of a firm is, the lower its problems regarding workers´ retention are. In these markets, not only the so-called "monopsonistic exploitation" (lower incomes and worse labour conditions than those in competitive markets) exists, but also "monopsonistic discrimination", according to which two groups of equally productive workers, may receive different treatment depending on their outside options.

Occupational alternatives are determined, to a large extent, by mobility of workers from their local markets to other markets seeking for better jobs. The higher both the educational level of an individual and the lower the number of local firms with adequate vacancies are, the greater geographical mobility is required to achieve an optimal occupational adjustment (i.e., a good match of skills and job´s requirements) of such individual. Besides, the more specific the

[1] See Sullivan (1989), Staiger *et al.* (1999), Askildsen et al., 2002, Antonazzo et al. (2003), Shields (2003), and Hirsh & Schumacher (2004)

[2] See Burdett and Mortensen (1998) and Manning (1994, 2003) for the derivation of monopsonistic features in labour markets subject to search frictions.

type of studies she has, the greater her mobility need will be, given that the number of firms with appropriate vacancies will be scarce. It is in this sense that the market for nursing professionals has become the paradigmatic example of monopsonistic markets. That is, due to the scarce number of firms in the health-care sector demanding their services and to the fact that it is a non-generic profession (i.e., not practised in every kind of sector), as it might be the case for economists.

Following such reasoning, it could be argued that, when two people living as a couple seek occupational adjustment, the probability that at least one of them suffers mismatch is greater. In fact, when one of the two members has a higher educational attainment or greater participation in the labour market, maximization of joint household utility may lead the other member of the couple to be displaced out of his/her optimal occupation (see Frank, 1978). This increases the probability of experiencing monopsonistic exploitation and/or discrimination insofar as the alternative jobs offered by the labour market to which he/she has moved are lower. Such would be a possible explanation of why women —with lower educational level and lower labour participation than men in the past— have been traditionally more prone to experience this kind of situations, including non-employment.

Even when both partners have identical educational levels, it might happen that the individual optimal adjustment implies working in a different region from that of origin. Further, if both members of the couple do not only have the same level but also the same type of studies, and such type is specific, maximization of their joint utility may lead to both staying in their current locality of residence, involving a mutual mismatch regarding their individual optimal allocations. In such extreme case, if the mobility of any of the two members leads to the occupational adjustment of one and the mismatch of the other, providing the same joint utility independently of who is and is not mismatched, we may talk of "intra-couple gender discrimination".[3]

[3] See, e.g., Sicherman (1991), McGoldrick y Robst (1996), Hartog (2000) y Dolado et al. (2007). As regards over-education and *commuting*, see Buch y Van Ham (2003) and, for Spain, Sanromá anf Ramos (2004). The topic of over-education in Spain has also been analyzed by Alba-Ramirez (1993) and Dolado et al. (2000).

The goal of this paper is to analyse to what extent we may find empirical evidence favouring the previous theoretical reasoning on gender differences in labour adjustment in the case of health- sciences graduates in Spain. This case study is especially interesting due to the following four stylized facts:

- Health-care has been one of the professions more feminized within the last two decades. Until then, women gathered around medium and low levels of health-care professions;
- Health sciences graduates are those who marry partners with the same level and type of studies;
- The fraction of mismatched workers (i.e., working in occupations differing from health-care professions) is very high, especially in the case of women. Around one-third of such mismatched people is employed in other kind of occupations or simply not employed at all. Such percentage doubles the ratio of mismatched men in each age cohort.
- Apart from higher occupational mismatch, female physicians experience a temporary employment rate much higher than that experienced by their male counterparts, which may also be related to lower degrees of mobility.

Specifically, this paper makes three main contributions to the literature on monopsonistic labour markets. First, we extend the research on possible monopsonistic effects on the labour market of health-care professions to their upper level professionals —essentially to physicians. As mentioned earlier, most of the empirical literature on this issue has focussed on the labour market of nursing professionals (i.e. within a medium educational level) where women's geographical lack of mobility can be explained through lower human capital than men. However, currently the presence of women at the higher levels of health-care professions has already exceeded even that of men, and such women are frequently coupled to other physicians or men with similar educational attainments.

Secondly, we focus on the monopsonistic effects on occupational adjustment, leaving aside issues related to wages. Therefore, our main goal is investigating whether there are gender differences in the factors determining occupational adjustment and its alternatives (distinguishing between temporary and permanent adjustment, mismatch and non-employment),

analysing to what extent the level and type of studies, and the geographical mobility of both members of the couples influence such situations.

Finally, our third contribution is analysing if gender differences can be found in the determinants of simultaneously holding more than one job (moonlighting or pluri-employment). Moonlighting is another peculiar feature of Spanish health-care professionals which may explain the differences on labour earnings between women and men (see García-Prado and González, 2006). The lack of time to practise more than one job, due to unequal distribution of household chores, may also be at the origin of possible earnings differences between men and women. However, moonlighting could also be interpreted as a response to avoid potential monopsonistic effects. [4]For instance, owning a private consultation clinic might make labour supply be more elastic. Therefore, if women are less prone to moonlighting, they will be subject to greater monopsonistic exploitation.

The rest of the paper is organised as follows. In Section 2 we briefly illustrate the stylized facts regarding the above-mentioned issues in the population of health sciences graduates in Spain. Sections 3 and 4 analyse the determinants of educational adjustment and moonlighting, respectively, making use of alternative econometric approaches. Finally, Section 5 summarizes the main conclusions.

2. Stylized Facts for Health Sciences graduates in Spain

2.1 Marital status

One of the most outstanding features of high-skilled professionals in the health-care sector in Spain is their marital status. More precisely, they show the highest ratio of people coupled to others with the same level and type of studies, both in men and women.

Table 1 shows the percentage of couplings between health sciences graduates and people with different qualifications, as well as the levels of

[4] See,e.g., Shisko and Rostker (1996), Krishnan (1990), Paxon and Sicherman (1996), Biglaiser and Mas (2006), Renna and Oaxaca (2006), and Delfgaauw (2007).

education and the fields of study of the partners, for each age group. Tables A1 and A2 display similar information related to fields of study for population younger than 65 years old.

Health sciences male graduates are those who couple more frequently to a partner with the same field of study (health sciences studies), 32 % against an average of 13 % (20 % of the same level and 13 % of lower level). They are also those who couple more frequently to women with such type of studies but lower level. By age, it can be observed that such rates and differences with the average of the remainder qualifications are even higher. That occurs especially in the ratio of people coupled to health-care professionals with the same educational level within the age range between 25 and 44 years old, while within the age range between 45 and 54 years old, such situation takes place in the ratio of those coupled to people with the same type of studies, but lower level of education in this case.

TABLE 1: Graduates living in couple by educational attainment of the partner, for each gender and age group, health science graduates and other types of graduates (% over total population aged less than 65 years)

	Health sciences graduates				**Other graduates**			
		Educational attainment of the partner				Educational attainment of the partner		
Age	All	Same field of study	Same level of education	Same field and level	All	Same field of study	Same level of education	Same field and level
Men								
< 65 years old	**79.6**	**36.4**	**35.6**	**22.5**	**62.1**	**14.6**	**28.4**	**11.3**
25-34	41.2	21.5	24.2	15.1	32.3	8.5	18.2	7.3
35-44	85.0	38.2	44.3	27.9	76.1	20.3	40.8	16.1
45-54	89.5	42.3	37.4	24.4	84.8	18.8	29.9	13.0
55-64	95.3	37.4	28.9	16.2	87.6	11.2	25.2	7.9
Women								
< 65 years old	**61.5**	**21.8**	**37.8**	**20.8**	**53.3**	**12.9**	**30.5**	**11.8**
25-34	43.6	10.2	23.5	8.8	39.0	7.6	17.8	6.9
35-44	70.3	26.3	40.1	25.4	76.4	18.3	42.0	16.6
45-54	82.3	30.8	51.6	30.1	69.8	19.1	43.8	17.8
55-64	58.9	25.4	47.3	25.4	67.4	11.7	43.5	11.4

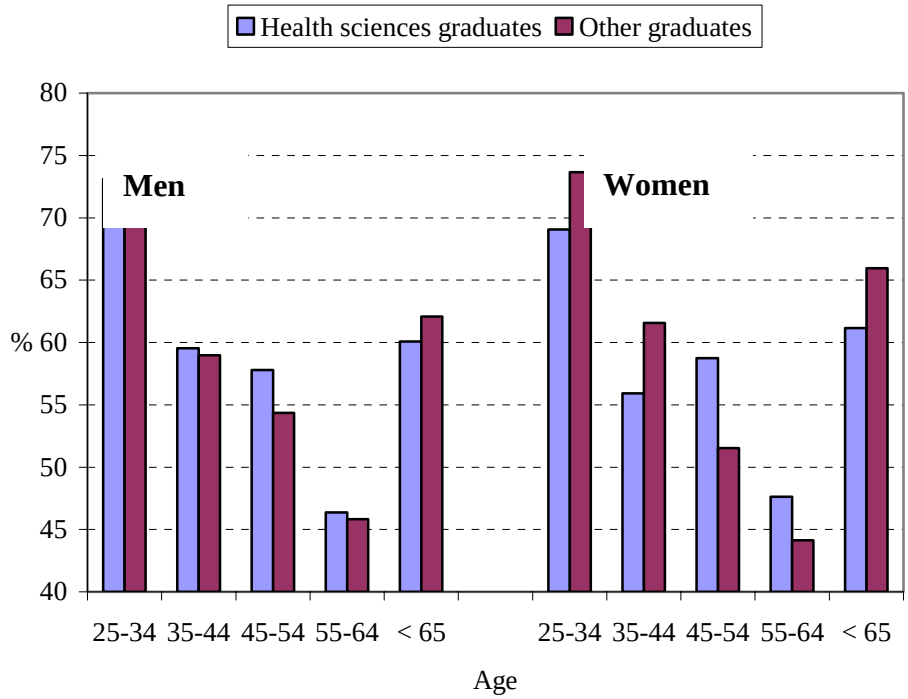
Source: Spanish Labour Force Survey (2004, 2nd quarter)

Health sciences female graduates are also those more frequently coupled to people of the same branch of studies (21 %), only behind certain female engineers (qualifications with longer training-duration than the rest —as it is the case of Medicine). They are also those more frequently coupled to people of the same educational level (37 % against the average of 29 %), only preceded by female mechanic engineers and architects. By age, it is quite striking the percentage of women older than 35 years who are coupled to people of the same educational level in health sciences.

2.2 Geographical mobility

The indicator of geographical mobility we use here is based on comparing current residence province with that of birth. As it can be observed in Figure 1, the percentage of health sciences graduates who remain living in their birth province is lower for men than for women. However, as in the previous section, we find an important composition effect by age. For both genders we observe a positive correlation between mobility and age, as well as for the rest of educational attainments. However, gender differences are different among youth (among whom women are majority) and adults (among whom the percentage of men is higher). In fact, mobility among female health-care professionals, younger than 45 years of age, has become higher than that of men of the same age, while the opposite holds for older women.

FIGURE 1: Percentage of graduates still living in their birth province, for each gender and age group.



Source: Spanish Labour Force Survey (2000, 2002 and 2004, 2nd quarters)

In comparison with the rest of studies, male geographical mobility seems to be lower for each age group although, due to a composition effect, it might be higher among those younger than 65 years of age. However, a different pattern is observed for women. Female mobility is higher than that of the rest of qualifications within the youngest segment (from 25 to 44 years of age) while it is lower within older segments (from 45 to 64 years of age). In fact, mobility is higher among those women between 35 and 44 than among those between 45 and 54 years of age.

Another indicator of labour mobility of health sciences graduates is the number of provinces in which they have worked in such sector during their professional life (such a data can be obtained from the registers of the Spanish Social Security). Table A3 shows the results of estimating a negative binomial model to analyse this variable (number of non-voluntary labour sick-leaves). [5]It can be observed that women seem to show lower geographical mobility than men. However, such difference disappears with the interaction between gender

[5] It is assumed that the number of provinces in which an individual has resided NP has a negative binomial distribution with expected value μ and a variance given by $\mu\ (1+\theta_c)$ where θ is the over-dispersion parameter (the case when $\theta = 0$ corresponds to the Poisson distribution). In turn, the expected value μ is assumed to be a log-linear function of explanatory variables ($\mathbf{x}$), such that $\ln \mu = \delta_p + \beta' \mathbf{x}$ where δ_p is an intercept specific to each province, implicitly controlling for all stable characteristics of each province.

and age. Besides, there is also higher mobility of people between 35 and 44 years of age, although such effect disappears when possible cohort effects are taken into account (estimations for each cohort until 35 and 45 years of age).

Anyhow, it should be noticed that both mobility indicators are not directly comparable. The first one deals with mobility from birth province, while the second deals with labour mobility during the working life, which may have begun outside of the birth province.

The first mobility indicator can also be combined with that of the other member of the couple. Table 2 shows such information for each gender and level/type of studies of the other member of the couple, for health sciences graduates living in couple. It is observed that the situation of complete immobility of both members of the couple (both were born in the same province and live in such province) is the most frequent status for both men and women, and for all levels and types of studies of the other member of the couple, except in the case of women whose partner has health sciences studies at a lower level of education than graduate. In any case, total immobility is higher among men than among women, except when the other member is neither graduated nor has health sciences studies, a case in which the converse phenomenon occurs.

TABLE 2: Geographical mobility of couples of graduates in Health sciences, for each gender and level of education and field of study of the partner

Birth Province (BP) y Province of the current residence (RP); a: individual of reference; b: partner

	Educational attainment of the partner (b)				
	Graduate Health sciences	Graduate Other fields	Non Graduate Health sciences	Non Graduate Other fields	Total
Men (a), partner (b)					
BPa = BPb, RPa = BPa	37.3	45.7	34.8	37.2	38.2
BPa = BPb, RPa ≠ BPa	16.8	14.7	12.4	12.3	14.0
BPa ≠ BPb, RPa ≠ BPa, RPb = BPb	15.4	8.8	16.3	19.4	16.0
BPa ≠ BPb, RPa = BPa, RPb ≠ BPb	13.4	17.3	11.6	16.6	15.0
BPa ≠ BPb, RPa ≠ BPa, RPb ≠ BPb	17.1	13.5	24.8	14.5	16.8
Women (a), partner (b)					
BPa = BPb, RPa = BPa	33.3	34.3	21.7	44.3	37.0
BPa = BPb, RPa ≠ BPa	19.9	16.9	20.7	16.0	17.6
BPa ≠ BPb, RPa ≠ BPa, RPb = BPb	15.6	17.4	28.4	16.0	16.5
BPa ≠ BPb, RPa = BPa, RPb ≠ BPb	14.7	12.0	29.2	10.9	12.8

BPa ≠ BPb, RPa ≠ BPa, RPb ≠ BPb	16.5	19.4	12.9	16.0

Source: Spanish Labour Force Survey (2000, 2002 and 2004, 2nd quarters)

2.3 Temporary adjustment, educational mismatch and non-employment

Another interesting feature is the percentage of these professionals who do not work as such, since they are mismatched (employed in another occupation) or simply non-employed. Tables 3a and 3b show the distribution of health sciences graduates living in Spain for three alternative situations: permanently and temporary adjusted employed, unadjusted employed and non-employed.[6]

TABLE 4a: Occupational adjustment among health sciences graduates, for each gender and year (2000-2004)

	Men			Women		
	2000	2002	2004	2000	2002	2004
Permanently adjusted and self-employed	53.6	58.5	55.1	31.6	35.8	34.6
Temporary adjusted	25.1	25.7	26.2	27.4	31.5	29.0
Unadjusted employees	11.9	11.6	11.5	25.2	18.6	19.7
Non-employed	9.4	4.2	7.2	15.9	14.1	16.8

Source: Spanish Labour Force Survey (2000, 2002 and 2004, 2nd quarters)

TABLE 4b: Occupational adjustment among health sciences graduates, for each gender (averages for the period 2000-2004)

	Men				Women			
	25-34	35-44	45-54	55-64	25-34	35-44	45-54	55-64
Permanently adjusted and self-employed	53.4	69.8	72.3	56.1	40.4	49.9	43.4	36.4
Temporary adjusted	25.2	21.7	16.7	26.1	27.8	25.3	26.9	29.4
Unadjusted employees	18.5	7.4	5.9	11.4	21.0	16.0	9.4	18.9
Non-employed	2.9	1.2	5.0	6.3	10.8	8.8	20.3	15.4

Source: Spanish Labour Force Survey (2000, 2002 and 2004, 2nd quarters)

As it can be inspected from Table 3a, mismatch is more important among women than among men. More than 15 % of men were not adjusted and around 33 % of women were simply not adjusted within the period 2000-2004.

[6] For health science graduates we define here as "health occupations" the following ones: Direction of specialized areas and departments; Physicians and dentists; Pharmacists: Other health professionals of superior level; Professors at Universities and other superior education centres.

Around 12 % of male graduates and 19 % of female graduates were employed in different occupations and the rest, 4 % and 14 %, respectively, were non-employed. During this period, there is also an increase of the degree of adjustment at the expense of a reduction of the ratio of non-employed, holding constant the percentage of people working in other occupations.

By age groups, it can also be noticed that adjustment is lower among youth. The percentage of mismatched employment reaches its maximum within the range between 35 and 44 years of age. Besides, the percentage of adjusted people with temporary contracts, that of unadjusted employed and that of non-employed is higher for women than for men for all age groups. It is also noticeable the high ratio of non-employed women of more than 55 years of age: 20 % (four times higher than that of men).

2.4 Moonlighting

Among all the existing professions in Spain, those related to the health-care sector are those showing higher incidence of moonlighting. According to Spanish Labour Force Survey, the six occupations of health-care professionals are found among the 20 occupations with higher degree of moonlighting —that is, working at the same time as a physician in two jobs. Above the rest, it stands out that of physicians and dentists, with 20 % of their professionals being pluri-employed. In the case of men, it goes even further, since five health-care occupations are among the top six occupations with higher intensity of moonlighting.

Table 5 shows the distribution of health-care professionals according to different situations of exclusivity/ moonlighting in different sectors distinguishing between salaried and self-employed workers. For all occupations, it is observed that the presence of women exclusively working as wage-earners in the public sector is higher, being such difference with men around 20 p. p. Such gender differences are mainly explained through a greater presence of men as self-employed in exclusivity (4 p. p. more than women) and as self-employed and employees in the public sector (11 p. p. more than women). In any case, the percentage of women exclusively working as wage-

earners in the private sector has also been reduced. However, such reduction has been almost completely offset by an increase of the number of self-employed in exclusivity, being the combination of self-employed and wage-earner in the public sector still very residual.

TABLE 5: Distribution of health-care professionals by situations of exclusivity/ moonlighting in different sectors and labour status, Physicians and dentists (1994, 2000 y 2006)

	Men			Women		
	1994	2000	2006	1994	2000	2006
Wage-earner in the public sector only	60	60	45	77	63	64
Wage-earner in the private sector only	10	10	9	8	17	10
Self-employed only	14	15	23	11	12	17
Wage earner the public and private sectors	2	4	7	0	6	3
Wage earner the public sector and self-employed	12	11	14	3	1	3
Wage earner the private sector and self-employed	1	0	2	2	1	1

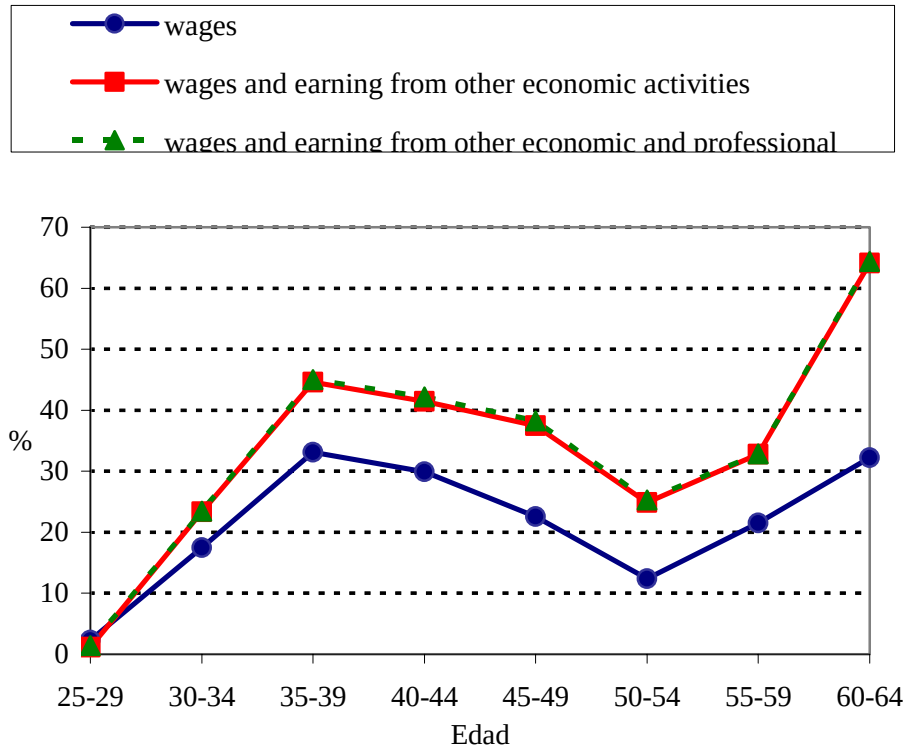
Source: Spanish Labour Force Survey (1994, 2000 and 2006, 2nd quarters)

To evaluate the effect of moonlighting on the differences of labour incomes between male and female health-care professionals, we can turn to the information from the Social Security records (Continuing Sample of Labour Lives from, 2005). Figure 2 shows differences in annual labour earnings between men and women for this type of graduates and each age group. Labour earnings include wages and profits generated by professional activities.

Wages show a different behaviour than that of profits from economic and professional activities[7]. As it can be observed, average annual wage differences are almost zero at the beginning of labour careers and progressively increase until 35-49 years of age. Then, they decrease and increase again, reaching their maximum between 60-64 years of age. In turn, earnings from economic and professional activities provide an additional difference on average wage which remains stable between 35 and 55 years of age.

FIGURE 2: Gender differences in annual earnings among high-skilled professionals in the Health sector (wages and earning from other economic and professional activities (2005,%)

[7] Profit from economic activities, but also from giving courses, conferences, seminars and the like, as well as those coming from the elaboration of literary, artistic or scientific works



(Source: Continuous Sample of Working Lives, 2005)

3. Gender differences in occupational adjustment

In the previous section we have documented the high rates of non-employment, educational mismatch and temporary employment of upper health-care professionals, as well as the important gender differences existing in each of these situations. In this section we analyse to what extent such differences are determined by coupling characteristics and geographical mobility.

To investigate the influence of the relation between the level of studies and labour status of the partner on employment and occupational adjustment, we carry out two kinds of regressions. First, we estimate the determinants of the probability of occupational adjustment. Secondly, we estimate how the probabilities regarding temporary occupational adjustment and non-employment change considering permanent adjustment or self-employment. Estimations have been carried out for men and women separately, with the aim of analysing if gender differences can be found. The sample comes from Spanish Labour Force Survey and contains 3,019 health sciences graduates

younger than 65 years old (1,552 women, 51.4 %), who were interviewed in the second quarter of the years 2000, 2002 and 2004.

We analyse the effects of three sets of independent variables: a) personal characteristics of the reference person (age, living in couple —both if they are married or not—, age difference with the other member of the couple and the presence of underage children at household); b) educational level and status of employment/adjustment of the other member of the couple; and finally c), a geographical-mobility indicator combining birth and residence provinces of the two members of the couple —as it was defined in the previous section.

In turn, the last two sets of explanatory variables give rise to two regression models. In model A, we use level and type of studies of the other member of the couple and —when those are similar to those of the reference person (i.e. when both of them are health sciences graduates)— level of occupational adjustment of the other member of the couple. In models B and C, the variables used are the level of studies of the partner and the geographical mobility indicator (model C also includes the interaction between these two variables). The results of the regressions are shown in Tables 6 and 7.

Table 6 shows the marginal effects (in means) estimated through a probit regression modelling the probabilities of occupational adjustment. The main results obtained are the following:

(i) Age has a positive effect in the case of men for groups between 45 and 64 years of age. On the contrary, the probability of occupational adjustment for women only increases significantly in intermediate age groups (from 35 to 54 years of age); that is, no adjustment differences are observed between the youngest and oldest (55-64 year-olds). However, in both cases the probability of maximum adjustment would be reached within the age range between 45 and 54 years of age.

(ii) Having non-adult children (younger than 18 years of age) living in the household does not affect adjustment of men, but does affect that of women, having a negative effect on their adjustment probabilities.

(iii) Not having a partner (i.e., being single) has a negative effect on the adjustment of women. In the case of men, such variable has different effects depending on models A and B-C. Precisely, in model A, it has a negative effect when compared to the situation in which the other member of the couple is an adjusted health sciences graduate. The signs of this variable are the same independently of the gender of the reference person. However, marginal effect for occupational adjustment is higher in the case of women. On the contrary, in models B and C —where reference does not require the other member of the couple to be adjusted— there is no significant negative effect on occupational adjustment of men.

(iv) The age difference with the partner also has different effects for each gender. For men, the adjustment probability is only higher when both members are the same age. In the case of women, being the same age or being younger does not seem to affect adjustment, whose probability would definitely be reduced when women are older than men.

(v) The fact that the other member of the couple has lower level and/or non-health sciences studies does not seem to have effects on the probability of men. However, negative effects are observed for women independently of their educational level (models B and C).

Regarding the different specifications, in model A —in which the reference partner is a health sciences graduate who is occupationally adjusted- it can be observed that the adjustment of both members of the couple seems to be correlated for both genders. Occupational adjustment of men would decrease up to 54 p. p. when their partner is not adjusted, and that of women would even decrease somewhat more in such case, around 57 p.p.; it would also decrease substantially when the other member of the couple has non-health sciences studies. The last set of variables of model B attempts to gather the possible effects of geographical mobility on occupational adjustment. The reference in this case is the situation in which the two members of the couple were born in the same province and also work in such province (immobility). As shown in Table 6, no significant effects of mobility of the members of the couple are observed in the case of men. By contrast, in the case of women, the adjustment probability would be reduced in case that both members of the couple were born in the same province and have moved to another province,

and would increase when —coming from different native provinces— it is women who have moved to the origin province of men. Interactions between the type of studies of the partner and mobility indicators (model C) point out that the latter case is statistically significant when the other member of the couple has educational level similar to health sciences studies —but in a different type of studies.

Finally, it can be observed that occupational adjustment is not the same in every region (autonomous community). Men see how their adjustment probability rises to a larger extent in Extremadura and Murcia, while it decreases in Asturias and Canarias. In turn, women see how such probability rises in Aragon, Valencia, Galicia and Navarra. However, controlling for characteristics, there seems to be no significant increase of the adjustment probability.

Table 7 shows the results of the regressions of multinomial logit models which, to a large extent, confirm the previous evidence. In comparison with the probit estimations, we separate permanent occupational adjustments or self-employments from temporary adjustments. The case of no adjustment is also split into unadjusted employee and non-employed. The reference category is that of adjusted as employee with a permanent contract or as self-employed. The results are shown as relative-risk ratios.

As it can be observed, the relative probabilities of the two first alternatives decrease with age, to a larger extent in the case of men than in that of women. For instance, the relative probability of temporary adjustment in comparison with permanent adjustment is 0.27 for men while such ratio is more than twice for women: 0.56. The same occurs with older workers. Relative probabilities of unadjusted employment also decrease with age in the case of 45-54 year-old men and women from 35-44 years of age onwards. Relative probabilities of non-employment are more than three times higher for women than for men from 45-54 years of age onwards. In the case of women, no differences are also observed among youth and those of more advanced age.

The educational attainment of the other member of the couple does not affect any relative probability in the case of women, except when they are interacted with mobility indicators. Thus, ratios of relative risk of temporary

adjustment and unadjusted employment are higher than those of permanent adjustment when women have lower level of studies —neither in health sciences— and both members have moved outside their origin region. The opposite takes place with both probabilities when the woman is graduated in a different type of studies and has moved to the origin province of the man.

In the case of women, the level of studies of the other member of the couple does seem to affect their relative probabilities in most of the alternative situations and, in some cases, even independently of mobility. Likewise, mobility indicators also affect these relative probabilities independently of the level of studies of the man. More precisely, if the man has studies of the same level but different field, the relative probabilities of unadjusted employment and non-employment turn out to be significantly higher that those of permanent adjustment, independently of the interaction with mobility indicators. Likewise, if the man has lower educational level and non-health sciences studies, the three alternative situations of mismatch are higher than that of permanent adjustment, in comparison with the situation in which the man has the same educational level in health sciences.

Independently of the level of studies, the comparison of a situation of immobility with another in which both members have moved yields a higher probability of temporary adjustment or non-employment for women. Therefore, if a woman moves to the origin province of the man, this would mean lower probability of unadjusted employment, while the movement of both of them —when they do not come from the same origin province— also leads to a lower probability of temporary adjustment in comparison with permanent adjustment, except in the case that the man has studies of the same level but not in health sciences. In this case, the opposite phenomenon takes place. In fact, it is when men have such educational attainment that health sciences female graduates are more prejudiced regarding permanent adjustment. Thus, their probability of adjustment to a temporary job is higher in all those cases in which she had moved from her origin province, while those others of mismatch and employment also are strengthened.

By regions, the results are different to those obtained with regressions of probit models. For instance, health sciences graduates in Madrid have lower probability of temporary adjustment and non-employment than of permanent

adjustment, for both men and women. Moreover, there is a reduction of the relative probability of non-employment in the case of men and higher relative probability of adjusted employment in the case of women.

In sum, the results obtained in this section point out that temporary adjustment, mismatch and non-employment probabilities of health sciences graduates have different patterns according to gender:

- Having underage children does not affect the adjustment and employment probabilities of men but it does reduces those of women;
- The level and type of studies of the other member of the couple does not affect the adjustment of men, but it does affect that of women; when the other member does not have studies in health-sciences, adjustment probability decreases considerably;
- Geographical mobility only seems to affect the probability of adjustment of women. In the case that both members of the couple were born in the same province, but have moved to another province later on, the relative probability of the woman being non-employed increases in relation with that of occupational adjustment, irrespectively of the education of the man (including graduates in health sciences). In the same situation of mobility, the relative probability of being employed —although unadjusted— also increases when the other member of the couple does not have studies in health sciences. Such probability would also increase in the case in which the person who has moved from his origin province is the man, with qualifications not related to health-sciences; and
- We only find one element of gender similarity: there exists a positive correlation in occupational adjustment when the other member is also a health sciences graduate. In such case, adjustment probabilities increase when the partner is also adjusted and decrease when he/she is not.

TABLE 6: Occupational adjustment of health sciences graduates. Probit regressions for each gender (marginal effects)

	Men			Women		
	(A)	(B)	(C)	(A)	(B)	(C)
25-34 years						
35-44 years	0.008	0.000	0.004	0.117***	0.112	0.115***
45-54 years	0.120***	0.121***	0.111***	0.148***	0.155***	0.159***
55-64 years	0.112***	0.114***	0.110***	0.040	0.042	0.041
Not living in couple	-0.190***	-0.051	-0.079	-0.297***	-0.190**	-0.217**
Same age than the partner [-2 years,+2 years]	0.066**	0.076**	0.080**	-0.015	0.004	-0.006
Older than the partner (> 2 years)*(age diff - 2 years)	0.004	0.003	0.006	-0.049**	-0.041*	-0.040*
Younger than the partner (> 2 years)*(age diff - 2 years)	0.012	0.004	0.002	0.007	0.009	0.010
Underage children	0.034	0.038	0.032**	-0.126***	-0.129***	-0.138***
Level of education, field of study and adjustment of the partner:						
Graduate/health sciences		-	-		-	-
Graduate/health sciences, adjusted in the health sector	-			-		
Graduate/health sciences, adjusted in another sector	-0.547***			-0.571***		
Graduate/other field of study	-0.149**	0.005	-0.124	-0.230***	-0.140***	-0.184*
Not graduate/health sciences	-0.061	0.048	0.102	0.110	0.198	-0.522*
Neither graduate/neither health sciences	-0.186***	-0.004	-0.020	-0.271***	-0.178***	-0.177*
Birth province (BP) y province of current employment (RP) (a: individual i; b: partner)						
BPa = BPb, RPa = BPa		-	-		-	-
BPa = BPb, RPa ≠ BPa		-0.064	0.007		-0.152**	-0.067
** Graduate/other field of study*			0.127			-0.142
** Not graduate/health sciences*			-0.200			
** Neither graduate/Neither health sciences*			-0.334*			-0.189
BPa ≠ BPb, RPa ≠ BPa, RPb = BPb		-0.025	-0.072		0.125**	0.111
** Graduate/other field of study*			0.131			0.101
** Not graduate/health sciences*			-0.084			
** Neither graduate/Neither health sciences*			0.017			-0.085
BPa ≠ BPb, RPa = BPa, RPb ≠ BPb		0.039	0.082		0.005	-0.091
** Graduate/other field of study*						0.247*
** Not graduate/health sciences*			-0.506**			
** Neither graduate/Neither health sciences*			-0.118			-0.043
BPa ≠ BPb, RPa ≠ BPa, RPb ≠ BPb		0.005	-0.039		0.023	-0.029
** Graduate/other field of study*			0.093			0.003
** Not graduate/health sciences*			0.008			
** Neither graduate/Neither health sciences*			0.001			0.179
Partner not employed	-0.202***	-0.065	-0.279**	-0.309***	-0.077	-0.255
** Graduate/other field of study*			0.142**			0.153
** Not graduate/health sciences*			0.030			
** Neither graduate/Neither health sciences*			0.133*			0.164

TABLE 6 (continuing)

	Men			Women		
	(A)	(B)	(C)	(A)	(B)	(C)
Region of Residence						
Andalucía	-	-	-	-	-	-
Aragón	-0,094	-0,079	-0,085	0,164***	0,144**	0,153
Asturias	-0,142*	-0,113	-0,128	0,150*	0,124	0,127
Islas Baleares	0,081	0,091	0,077	0,030	0,049	0,047
Canarias	-0,101*	-0,093*	-0,103*	0,113	0,099	0,104
Cantabria	-0,123	-0,113	-0,099	0,054	0,060	0,064
Castilla-León	0,034	0,030	0,028	0,056	0,048	0,048
Castilla La Mancha	0,019	0,025	0,020	0,052	0,043	0,068
Cataluña	-0,008	0,004	0,004	0,092	0,089	0,088
Comunidad Valenciana	-0,047	-0,045	-0,037	0,104*	0,092*	0,101**
Extremadura	0,095**	0,094**	0,091**	0,014	0,002	0,021
Galicia	-0,044	-0,038	-0,041	0,116*	0,123**	0,125**
Madrid	-0,036	-0,049	-0,030	-0,002	-0,031	-0,027
Murcia	0,102**	0,105**	0,102**	0,082	0,072	0,059
Navarra	-0,042	-0,035	-0,053	0,153**	0,140*	0,144**
País Vasco	-0,002	-0,010	0,014	0,038	0,027	0,041
La Rioja	-0,039	-0,024	-0,016	-0,004	-0,037	-0,068
Ceuta y Melilla	-0,299**	-0,302**	-0,277**	-0,038	-0,052	-0,034
Year dummies						
2000	-	-	-	-	-	-
2002	-0,018	-0,030	-0,035	-0,047	-0,057	-0,058
2004	0,010	0,009	0,010	0,024	0,022	0,022
N	1439	1439	1439	1482	1482	1482
Pseudo R^2	0,129	0,103	0,125	0,081	0,067	0,076
Log pseudo-likelihood	-584,4	-602,0	-581,6	-876,0	-889,1	-875,7
Observ. Prob.	0,823	0,823	0,821	0,657	0,657	0,654
Predict. Prob.	0,858	0,851	0,855	0,671	0,670	0,667

Note: ***, **, * represent significance at 99, 95 and 90%, respectively
Sample: Health science graduates aged less than 65 years old, 2nd quarters of years 2000, 2002 and 2004, Spanish Labour Force survey

TABLE 7: Occupational adjustment of health sciences graduates. Multinomial logit regressions for each gender (relative-risk ratios) (reference category: permantently adjusted as wage-earner or self-employed)

	Men			Women		
	Temporary adjusted	Unadjusted employed	Non-employed	Temporary adjusted	Unadjusted employed	Non-employed
Age						
25-34 years	-	-	-	-	-	-
35-44 years	0,267***	1,170	0,163***	0,558***	0,643**	0,265***
45-54 years	0,194***	0,387**	0,057***	0,367***	0,411***	0,184***
55-64 years	0,152***	0,204***	0,166***	0,328***	0,373**	0,507*
Not living in couple	1,645	1,179	5,591**	1,080	3,766***	1,659
Same age than the partner [-2 years,+2 years]	1,024	0,430***	0,886	0,892	1,323	0,639
Older than the partner (> 2 years)*(age diff - 2 years)	1,054	0,963	0,955	1,101	1,291**	1,194
Younger than the partner (> 2 years)*(age diff - 2 years)	0,987	0,928	1,161	1,000	0,984	0,894
Underage children	1,542**	0,991	0,605	0,613***	1,746***	1,287
Level of education, field of study and adjustment of the partner:						
Graduate/health sciences	-	-		-	-	
Graduate/health sciences, adjusted in the health sector	0,995	2,040	1,508	1,105	2,315**	2,166*
Graduate/health sciences, adjusted in another sector	0,889	0,357				
Graduate/other field of study	1,025	1,098	0,705	1,787*	3,220***	2,366*

TABLE 7 (Continuing)

	Men			Women		
	Temporary adjusted	Unadjusted employed	Non-employed	Temporary adjusted	Unadjusted employed	Non-employed
Birth province (BP) y province of current employment (RP) (a: individual i; b: partner)						
BPa = BPb, RPa = BPa	-	-		-	-	
BPa = BPb, RPa ≠ BPa	1,341	1,113		3,016***	0,922	4,006***
** Graduate/other field of study*	0,989	0,215		0,379	2,564	0,726
** Not graduate/health sciences*	0,974	3,789				
** Neither graduate/Neither health sciences*	5,900*	14,171**		0,271	5,335*	0,352
BPa ≠ BPb, RPa ≠ BPa, RPb = BPb	0,814	1,597		0,798	0,117*	0,901
** Graduate/other field of study*	0,095*	0,083*		3,215**	5,007	0,499
** Not graduate/health sciences*	0,709	1,005				
** Neither graduate/Neither health sciences*	1,376	0,988		0,589	3,877	0,927
BPa ≠ BPb, RPa = BPa, RPb ≠ BPb	0,944	0,151	1,569	1,220	2,360*	0,771
** Graduate/other field of study*	1,861			1,123	0,248*	0,134
** Not graduate/health sciences*	0,867					
** Neither graduate/Neither health sciences*	1,572	6,340	2,399	0,564	0,775	0,698
BPa ≠ BPb, RPa ≠ BPa, RPb ≠ BPb	0,527	1,018	1,045	0,340**	1,140	0,465
** Graduate/other field of study*	1,427	0,661		3,323*	0,591	4,224*
** Not graduate/health sciences*	1,037	0,991				
** Neither graduate/Neither health sciences*	0,210	1,067	2,664	1,123	0,315	0,460
Partner not employed	1,272	5,629*	6,679*	1,745	1,629	6,498**
** Graduate/other field of study*	1,019	0,137*	0,105	3,477	2,684	0,371
** Not graduate/health sciences*	0,776	0,076				
** Neither graduate/Neither health sciences*	0,779	0,253	0,274	0,559	0,950	0,115*

TABLE 7 (Continuing)

	Men			Women		
	Temporary adjusted	Unadjusted employed	Non-employed	Temporary adjusted	Unadjusted employed	Non-employed
Region of residence						
Andalucía	-	-	-	-	-	-
Aragón	0,744	1,923	1,471	1,074	0,662	0,273**
Asturias	0,819	1,697	3,272	0,820	0,116*	0,674
Islas Baleares	0,686	0,685		0,459	0,317	0,763
Canarias	1,531	3,644***	1,133	0,928	0,808	0,416*
Cantabria	0,389	0,758	1,851	0,704	0,945	0,387
Castilla-León	1,256	0,855	0,820	1,280	0,771	1,014
Castilla La Mancha	1,069	1,038	0,642	0,895	0,763	0,610
Cataluña	0,610	1,084	0,538	0,705	0,645	0,483**
Comunidad Valenciana	1,336	2,020*	1,121	1,147	0,992	0,392***
Extremadura	0,470*	0,477	0,086**	0,895	0,707	0,856
Galicia	0,731	1,781	0,615	0,410**	0,408**	0,344**
Madrid	0,393**	1,504	0,379*	0,291***	1,114	0,343***
Murcia	0,491*	0,137*	0,358	1,133	1,389	0,316
Navarra	0,723	1,673	0,747	1,414	1,008	0,221*
País Vasco	0,844	1,070	0,594	1,284	1,197	0,737
La Rioja	0,639	1,498	0,924	1,425	1,993	1,365
Ceuta y Melilla	0,803	7,281**		5,265	5,240	2,739
Year						
2000						
2002	1,011	1,336	1,326	1,110	1,950***	0,893
2004	1,001	1,228	0,471*	1,210	1,270	0,762
N	1439			1482		
Pseudo R^2	0,158			0,105		
Log likelihood	-1329,68			-1763,98		

Note: ***, **, * represent significance at 99, 95 and 90%, respectively

Sample: Health science graduates aged less than 65 years old, 2nd quarters of years 2000, 2002 and 2004, Spanish Labour Force survey

4. Gender differences in moonlighting

As shown in Section 2, one of the most important characteristics of the labour status of health-care professionals is moonlighting, i.e., non-exclusive dedication to a single employer or being able to combine different jobs in the same or different sectors (for instance, in public and private sectors, in health-care and teaching activities, as wage-earner or self-employed). Despite this fact, there is scarce evidence on the determinants of this phenomenon among physicians. Therefore, the goal of this section is to provide evidence regarding such a fact, paying special attention to gender differences and —like in the previous section— to the effects which labour market status, studies of the other member of the couple, and geographical mobility of both members have on the probability of moonlighting.

The econometric approach followed here is similar to that of the previous section. First, we analyse the determinants of moonlighting by estimating probit models for each gender. Next, such analysis is supplemented for those people living in couple; this time through multinomial logit models in which we estimate the relative probabilities of different alternative situations of second job in comparison with the case of reference (having a single job). The sample used also comes from Spanish LFS and has 3,583 individuals of less than 65 years old with their main job as physician or dentist (1,445 of these are women: 40.3 %), who were interviewed in the second quarters of the even years within the time-period between 1996 and 2006[8].

To a large extent, controls are similar to those described in Section 4 and can be divided into four blocks: a) individual characteristics of the reference person —age, living in couple (both if they are married or not), age difference with the other member of the couple and the presence of underage children at household; 2) labour status and characteristics of the main job —seniority, type of contract, working week and labour status as wage-earner in public or private health-care services, self-employed or wage-earner in another sector (for instance, as university professor); 3) educational level and labour status of the other member of the couple; and finally 4) the indicator of geographical

[8] The sample size is larger than in Section 4, since —unlike the classification of studies used in such section— the classification of occupations has not changed along this period in the Spanish LFS.

mobility which uses birth and residence provinces of the two members of the couple as indicators.

Table 8 presents the results of estimating probit regressions for each gender. Model A refers to all physicians of the sample, while models B and C only consider physicians living in couple. Thus, their individuals of reference are: (Model A) a wage-earner in public health-care services with permanent contract who does not live in couple and works 40 hours a week; (Model B) the same kind of wage-earner is considered, but this time he/she lives with a partner who is full-time wage-earner in public health-care services; and (Model C) a wage-earner with permanent contract in public health-care services, working 40 hours a week and whose partner is a health sciences graduate and also works as a wage-earner in public health-care services.

The main results obtained can be summarized as follows:

(i) Individual characteristics only seem to affect men, so that their probability of moonlighting increases linearly along with age and underage children living in household. Besides, for men living in couple, it is observed that such probability also increases with age difference within the couple when men are older than women.

(ii) The working week in the main job seems to be the variable which influences most the probability of moonlighting for both genders, although the increase of the probability in relation with a normal working week is much higher in the case of men. For instance, in comparison with a man employed with a working week of 40 hours, it increases the probability in 52 and 56 p.p. for an employee with less than 20 hours. It is also significant the increase of probability (between 7 and 9 percentage points) for those working from 30 to 40 hours, although most of them work full-time.

(iii) The labour status in the main job shows quite similar patterns between men and women. Taking as reference situation that of an wage-earner with permanent contract in public health-care services, the probability of having more than one job increases for both genders if one is a steady wage-earner in the private sector (to a larger extent for men) and decreases if one works as self-employed (also to a larger extent for men). The only outstanding

gender difference is found in the fact that temporary employment does not seem to affect men, but it does seem to affect women, whose probability of moonlighting falls when they are temporary wage-earners in public health-care services.

(iv) The type of studies and labour status of the partner has different effects by gender. For men, the type of studies does not seem to have influence on holding more than one job, although such probability does increase if his partner works as a wage-earner in health-care private sector or as self-employed, especially if she is a self-employed in her second job. However, no significant effects are found if his partner does not have a university degree or, if he has it, the degree is not in health sciences. In the case of women, those whose partner also has a university degree have higher probability of moonlighting, especially if her partner is a self-employed in the health-care sector in any of his first or second job. On the other hand, this probability for female physicians also increases when their partners have non-health sciences qualifications, and decreases when their partner is non-employed.

This last result seems to show again the presence of within-couple differences which could be interpreted either as discrimination or, alternatively, as a way to avoid the presence of monopsonistic effects. In fact, for women, the fact that probability of moonlighting increases when their partner also has a non-health sciences university degree may be due to their attempt to avoid monopsonistic effects stemming from the greater capability of adjustment of their male partners. In this sense, it is useful to remember that —in the previous section— we also observed that these health science graduates were less adjusted than the rest.

Finally, the indicator of geographical mobility is only significant in the case of women —when both members have moved from their origin provinces (between –3 and –4 p.p.)—, while in the case of men it increases more than 9 p.p. when they have moved to the origin province of the women.

On the other hand, these results also seem to show the presence of agglomeration economies when both members of the couple share the same type of occupation: the probability of moonlighting by a member of the couple increases this probability for the other, and if the other member is a self-

employed (in his/her first or second job), it increases significantly the probability of holding more than one job of the reference person. [9]In this case, one might think that the person who avoids monopsony effects through, for example, opening a private consultation clinic the man who has moved to the province of origin of his partner.

Table 9 shows the estimations of a multinomial logit model taking as reference an exclusive job and other four types of situations as a moonlighter: the first three ones refer to the health-care sector as wage-earner of the public and private sectors and as self-employed, respectively, while the fourth considers second jobs outside the health-care sector. The main results obtained can be summarized as follows:

(i) As in the probit models, personal characteristics only seem to affect men: age reduces relative probability (in relation with not having a second job) of having a second job in public health-care services and increases the relative probability of having a second job as a self-employed.

(ii) The lower the number of weekly hours worked in the main job, the higher that relative probability of each of the four moonlighting alternatives is. Besides, for men, working overtime increases the relative probability of having a second job as a wage-earner in private health-care services and reduces the relative probability of such second job to be as a self-employed. Also in this case, having a main job as a self-employed in health-care services increases the relative probability of having a second job in public health-care services. For women, the relative probability of being a self-employed in their second job raises considerably when the other member of the couple is not a salaried health-care professional. This happens not only when he is a self-employed in the health-care sector, but also when he has non-health sciences qualifications or when he does not have a university degree.

(iii) As in the probit models, the mobility indicators point out that —for men— moving to the origin province of their partners increases the relative probability of being a self-employed in health-care services in his second job. On the contrary, for women, moving to the origin province of the man reduces

[9] See Costa and Khan (2000), and Compton and Pollak (2004).

such relative probability, as it also happens when both move outside their different origin provinces.

TABLE 8: Moonlighting among physicians and dentists
Probit regressions for each gender (marginal effects, 1996-2006)

	All (A)		Living in couple (B)		(C)	
Individual characteristics:	Men	Women	Men	Women	Men	Women
Age	0,023**	0,005	0,025*	-0,010	0,026*	-0,009
Age^2 x 100	-0,017	-0,004	-0,019	0,012	-0,020	-0,011
Not living in couple	-	-				
Partner not employed	0,023	-0,029	0,021	-0,031	0,012	-0,073***
Partner employed	0,034	0,016	-	-	-	-
Same age than the partner [-2 years,+2 years]	0,031	0,001	-	-	-	-
Older than the partner (> 2 years)*(age diff - 2 years)	-0,003	-0,005	-0,006*	-0,004	-0,006*	-0,006
Younger than the partner (> 2 years)*(age diff - 2 years)	-0,020	0,003	-0,027	0,003	-0,029	0,003
Underage children	0,015*	-0,007	0,019*	-0,009	0,019*	-0,007
Characteristics of the main job:						
Tenure in the main job (years)	-0,002	-0,003	-0,003	0,000	-0,003	-0,001
(Tenure in the main job)^2 x100	0,012	0,012	0,016	0,000	0,016	0,000
Weekly hours (main job):						
< 20 hours	0,523***	0,171***	0,552***	0,213***	0,559***	0,238***
[20-30 hours[	0,362***	0,124***	0,467***	0,175***	0,464***	0,167***
[30-40 hours [	0,073***	0,034**	0,088***	0,047**	0,087***	0,046**
40 hours	-	-	-	-	-	-
> 40 hours	-0,019	-0,011	-0,007	0,013	-0,008	0,015
Working status (main job)						
Wage-earner in the public Health sector/ permanent contract	-	-	-	-	-	-
Wage-earner in the public Health sector/ temporary contract	-0,052	-0,033**	-0,035	-0,046**	-0,032	-0,047**
Wage-earner in the private Health sector/ permanent contract	0,077**	0,038*	0,070*	0,052*	0,095**	0,043*
Wage-earner in the private Health sector/ temporary contract	-0,124	-0,021	-0,141		-0,137	
Self-employment in the Health sector	-0,106***	-0,029*	-0,161***	-0,057***	-0,160***	-0,058***
Employed in another sector	0,044	0,000	0,042	-0,010	0,047	-0,013

TABLE 8(Continuing)

	All (A)		Living in couple (B)		Living in couple (C)	
	Men	Women	Men	Women	Men	Women
Working status (main job) and education attainment of the partner:						
Wage-earner in the public Health sector			-	-		
Wage-earner in the private Health sector			0,175***	0,007		
Self-employed in the Health sector			0,147**	0,212***		
Employed in another sector			0,036	0,023		
Partner moonlights			0,243***	0,081***		
Graduate, Wage-earner in the Health sector					-	-
Graduate, Wage-earner in another sector					0,062	0,071***
Not graduate, employed					0,022	0,028
Self-employed in the Health sector (main job)					0,125**	0,233***
Self-employed in the Health sector (secondary job)					0,586***	0,089*
Birth province (BP) y province of current employment (RP) (a: individual i; b: partner)						
BPa = BPb, RPa = BPa			-	-	-	-
BPa = BPb, RPa ≠ BPa			-0,018	-0,019	-0,016	-0,259
BPa ≠ BPb, RPa ≠ BPa, RPb = BPb			-0,036	-0,017	-0,037	-0,016
BPa ≠ BPb, RPa = BPa, RPb ≠ BPb			0,073	-0,026	0,094*	-0,024
BPa ≠ BPb, RPa ≠ BPa, RPb ≠ BPb			-0,012	-0,038*	-0,012	-0,038*
N	2135	1445	1811	892	1811	892
Pseudo R^2	0,115	0.124	0,124	0,195	0,120	0,194
Log pseudo-likelihood	-981,4	-334,0	-858,9	-212,9	-863,0	-213,3
Observ. Prob.	0,214	0,074	0,232	0,087	0,232	0,087
Predict. Prob.	0,186	0,051	0,204	0,049	0,206	0,048

Note: ***, **, * represent significance at 99, 95 and 90%, respectively. All regressions include year and regional dummies.
Sample: Health science graduates employed as physicians or dentists, aged less aged less than 65 years old, 2nd quarters of even years, 1996-2006, Spanish Labour Force Survey.

TABLE 9: Moonlighting among physicians and dentists living in couple. Multinomial logit regressions for each gender (relative-risk ratio, 1996-2006) (reference category: those not moonlighting)

	Working status in the secondary job							
	Men				Women			
	Wage-earn. public Health sect.	Wage-earn. private Health sect.	Self-employed Health sect.	Other employ-ments	Wage-earn. public Health sect.	Wage-earn. private Health sect.	Self-employed Health sect.	Other employ-ments
Individual characteristics:								
Age	0,63*	1,07	1,60*	1,05	0,44	0,62	0,62	1,17
Age^2 x 100	1,00*	1,00	1,00*	1,00	1,01	1,01	1,01	1,00
Same age than the partner [-2 years,+2 years]	-	-	-	-	-	-	-	-
Older than the partner (> 2 years)*(age diff - 2 years)	0,87*	0,94	0,99	0,86**	0,00	0,00	1,15	0,69
Younger than the partner (> 2 years)*(age diff - 2 years)	0,95	0,50	0,86	0,48	0,72	1,17	1,10	1,03
Underage children	1,17	1,04	1,13	1,15	0,55	1,24	1,05	0,52**
Characteristics of the main job								
Tenure in the main job (years)	1,03	0,97	0,96	1,00	1,13	0,89	1,21***	1,04
(Tenure in the main job)^2 x100	1,00	1,00	1,00	1,00	0,98	1,00	1,00	1,00
Weekly hours (main job):								
< 20 hours	37,09***	23,75***	23,49***	3,41	126,65**	44,66***	7,74*	4,13
[20-30 hours[	33,83***	9,19***	8,66***	4,99***	99,97**	0,00	9,78***	6,03**
[30-40 hours [	6,21***	2,90***	1,60***	1,03	11,14*	4,09*	2,17	1,55
40 hours	-	-	-	-	-	-	-	-
> 40 hours	0,90	2,16*	0,60*	1,48	0,00	1,69	2,16	0,95

TABLE 9 (Continuing)

	Working status in the secondary job							
	Men				Women			
	Wage-earn. public Health sect.	Wage-earn. private Health sect.	Self-employed Health sect.	Other employ-ments	Wage-earn. public Health sect.	Wage-earn. private Health sect.	Self-employed Health sect.	Other employ-ments
Working status (main job)								
Wage-earner in the public Health sector/ permanent contract	-	-	-	-	-	-	-	-
Wage-earner in the public Health sector/ temporary contract	0,81	1,27	0,89	0,43	0,00	0,61	0,37	0,16
Wage-earner in the private Health sector/ permanent contract	29,68***	0,83	0,98	2,58**	0,37	2,68	3,22*	0,95
Wage-earner in the private Health sector/ temporary contract	0,00	3,90	0,00	0,00	0,00	0,00	0,00	0,00
Self-employment in the Health sector	5,15***	0,08**	0,03*	0,87	0,18	0,36	0,00	0,28
Employed in another sector	2,85	1,44	1,26	1,33	1,54	2,66	0,65	0,31
Working status (main job) and education attainment of the partner:								
Graduate, Wage-earner in the Health sector	-	-	-	-	-	-	-	-
Graduate, Wage-earner in another sector	1,18	0,77	1,76*	1,55	36,99***	1,36	7,37***	1,21
Not graduate, employed	0,40	0,58	1,54 *	1,22	17,57	0,29	4,05*	2,96
Not employed	0,31	0,59	1,83*	0,92	-	0,00	0,00***	0,00*
Self-employed in the Health sector (main job)	0,00	0,00	4,04***	2,42	0,00	9,92**	21,81***	9,74**
Self-employed in the Health sector (secondary job)	22,90**	0,00	24,41***	8,37***	0,00	0,00	12,86***	8,38**

TABLE 9 (Continuing)

	Working status in the secondary job							
	Men				Women			
	Wage-earn. public Health sect.	Wage-earn. private Health sect.	Self-employed Health sect.	Other employ-ments	Wage-earn. public Health sect.	Wage-earn. private Health sect.	Self-employed Health sect.	Other employ-ments
Birth province (BP) y province of current employment (RP) (a: individual i; b: partner)								
BPa = BPb, RPa = BPa	-	-	-	-	-	-	-	-
BPa = BPb, RPa ≠ BPa	0,79	1,20	1,05	0,79	1,29	0,26	0,71	0,13
BPa ≠ BPb, RPa ≠ BPa, RPb = BPb	0,31	0,73	0,96	0,89	1,27	1,80	0,14**	0,47
BPa ≠ BPb, RPa = BPa, RPb ≠ BPb	0,77	1,44	2,78***	0,78	1,62	0,00	0,75	0,69
BPa ≠ BPb, RPa ≠ BPa, RPb ≠ BPb	0,40	0,59	1,40	0,75	2,53	0,68	0,10**	0,14
N	1811				892			
Pseudo R^2	0.183				0,357			
Log lilkelihood	-1169,3				-237,1			

Note: ***, **, * represent significance at 99, 95 and 90%, respectively. All regressions include year and regional dummies.
Sample: Health science graduates employed as physicians or dentists, aged less aged less than 65 years old, 2nd quarters of even years, 1996-2006, Spanish Labour Force Survey.

5. Conclusions

Educational specialization —adjusted to a scarce number of firms demanding such qualifications— is a salient characteristic of several professions such as physicians or researchers. In both cases a high ratio of couplings between individuals with same profession can take place, due to the larger duration of their training periods and the high concentration of firms where they can work. These case-studies are very interesting to investigate the determinants of gender differences, both in initial occupational adjustments and subsequent professional paths, which allow testing the possible presence of monopsonistic and intra-couple discrimination related to geographical mobility. To our knowledge, such an issue has not been yet tackled empirically in the literature on monopsony.

In this paper, using Spanish data, we show that there are important gender differences in the labour status of health sciences graduates: women practise their profession in a lower degree than men. On the contrary, men supplement the practise of their profession with second jobs (moonlighting) to a higher degree than women.

On the other hand, we also provide evidence showing that health sciences graduates have a personal characteristics which may strengthen other potential monopsonistic effects (like, e.g., exploitation in the form of lower wages and worse labour conditions), given the scarce number of employers with vacancies adjusted to their human capital. In fact, among all graduates, those in health sciences are the ones who more frequently couple to other persons of the same educational level and/or the same type of studies. In this sense, the optimal employment adjustment of each person (which is already complex by itself, due to the specific characteristics of health sciences studies) gets even more complicated when both members of the couple have similar educational levels and type of studies. In this case, geographical mobility —which might be one of the necessary conditions for optimal occupational adjustment at the individual level— may hamper the adjustment of the other member of the couple, while at the same time geographical immobility —favoured by coupling— may decrease the adjustment probabilities of both of them.

Furthermore, the high proportion of couples in which both members have health-care qualifications also allows examining alternative explanations of gender differences —which cannot be interpreted through differences in the productivities of men and women and are due to intra-couple discrimination— according to which geographical mobility of couples where both members have the same level of human capital would result in better occupational adjustment of men.

Another interesting hypothesis to examine consists of considering the phenomenon of moonlighting to be a way of lessening the effects of monopsonistic labour markets when firms face an increasing elasticity of supply, and as an instrument to get an alternative job to the main one when there is geographical mobility.

The results obtained point out that —when both members of the couple are health sciences graduates— there is a high positive correlation between the occupational adjustment status and the probability of moonlighting of both of them. That is, when the other member of the couple is occupationally adjusted, the probability that the reference person also be adjusted is higher than in any other circumstance (adjustment or educational level/type of studies of the other member of the couple). By contrast, lower occupational adjustment of the other member is also related to a lower probability of future adjustment, even lower than that of being coupled to a person with different level and/or type of studies. Although we lack of information about the moment in which the couple was initiated, such evidence may be related to the fact that the adjustment probability of both members will be higher when the starting date of the couple has been posterior to that of the adjustment. When the latter occurs earlier, the adjustment probability is even lower than in those couples in which the other member does not have health sciences studies.

The probability of holding more than one job —and especially that of working as a self-employed in a second job also— increases when the partner is also a self-employed either in his/her first or second job, which can be interpreted as a possible evidence of agglomeration economies in the opening and maintenance of an own consultation room.

When we ignore the occupational adjustment of the other member, the adjustment and moonlighting probabilities of men are, in general, not affected by the level of education and/or field of study of their female partners. On the contrary, in the case of women, adjustment probabilities decrease substantially when her partner does not have health sciences studies (especially, in situations of unadjusted employment and non-employment), insofar as the probability of moonlighting (as a self-employed or wage-earner in public health-care services) also increases considerably.

Likewise, geographical mobility only seems to affect occupation adjustment of women. In the case that both members of the couple were born in the same province but have moved to another province, the relative probabilities of adjustment through temporary contracts or non-employment increase significantly, independently of the educational level of men (including health sciences graduates). Additionally, in the same situation of mobility, it also increases the relative probability of mismatch when the other member does not have studies in health sciences. When it is the man (with non-health sciences qualifications) who has moved to the origin region of the woman, the woman also has a higher relative probability of mismatch.

Finally, geographical mobility only seems to affect the probability of moonlighting for men. When they move to the province of origin of women, this probability increases. This can also be interpreted as a response to possible monopsonistic effects stemming from moving to the province of origin of the partner.

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APPENDIX: TABLES

TABLE A.1 Graduates who are married and those who are living in couples by field of study (% of total graduates aged less than 65 years old)

	Men		Women	
	Married	Living in couple	Married	Living in couple
Education science	57,6	61,7	51,1	51,7
Arts	50,7	55,3	46,6	50,0
Humanities	51,9	53,0	52,4	57,6
Social and behavioural science	60,8	63,4	49,1	53,2
Journalism and information	47,4	54,5	32,8	43,6
Business and administration	55,4	56,6	45,6	48,4
Law	64,2	65,2	51,5	51,3
Life sciences	53,9	57,7	50,3	52,3
Physical sciences	65,4	63,2	50,4	57,0
Mathematics and statistics	68,7	70,2	56,1	64,0
Computing	38,0	40,3	38,9	49,7
Engineering and engineering trades	56,3	61,6	45,4	48,4
Manufacturing and processing	60,1	68,6	43,3	37,5
Architecture and building	66,7	68,6	47,2	51,7
Agriculture, forestry and fishery	55,9	60,1	38,0	37,9
Veterinary	67,4	77,2	49,1	53,6
Health sciences	**77,7**	**79,6**	**60,1**	**61,5**
Social services	19,7	19,7	36,9	60,3
Personal services	57,2	52,0	46,0	49,4
TOTAL	60,1	62,1	50,0	53,3

Source: Spanish Labour Force Survey (2004, 2nd quarter)

TABLE A.2 Graduates living in couple by field of study and level of education of the partner, for each field of study.
(% of total graduates aged less than 65 years old, including those not living in couple)

	Health sciences graduates						Other graduates					
	Men			Women			Men			Women		
	Same field of study	Same level of education	Same field and level	Same field of study	Same level of education	Same field and level	Same field of study	Same level of education	Same field and level	Same field of study	Same level of education	Same field and level
Education science	18,7	19,5	7,7	5,8	16,3	2,8	23,4	60,2	21,0	7,9	13,1	7,1
Arts	18,1	27,4	15,9	11,7	29,6	11,3	0,0	2,9	0,0	3,5	2,5	0,0
Humanities	14,6	25,5	13,6	8,2	32,1	8,1	1,9	7,0	0,8	6,0	2,9	0,6
Social and behavioural science	14,8	28,0	13,1	7,2	26,4	7,0	9,2	19,2	6,6	5,3	7,7	2,2
Journalism and information	10,1	31,9	9,5	8,6	30,0	7,9	7,0	2,0	0,0	1,9	5,7	0,0
Business and administration	14,3	21,8	7,5	12,6	21,8	8,6	13,8	13,6	5,8	8,8	12,1	5,0
Law	13,1	26,9	12,3	14,5	28,8	14,2	5,3	12,2	3,9	6,1	8,1	2,9
Life sciences	20,0	38,6	20,0	13,6	29,2	13,6	0,0	0,0	0,0	0,0	10,5	0,0
Physical sciences	9,3	28,0	8,6	12,9	29,8	12,9	0,0	7,7	0,0	82,5	6,7	5,8
Mathematics and statistics	11,8	49,5	11,8	12,6	33,3	12,6	4,5	12,9	4,5	71,3	7,9	4,0
Computing	3,8	13,1	1,9	7,8	27,6	7,8	3,8	13,2	2,8	11,3	19,3	8,1
Engineering and engineering trades	5,4	24,0	4,2	30,7	39,2	29,9	2,4	15,1	2,2	25,3	19,1	16,7
Manufacturing and processing	2,7	17,5	2,7	32,5	25,9	25,9	2,2	12,5	1,8	29,7	11,7	0,0
Architecture and building	9,2	31,3	7,5	14,5	38,0	12,8	3,4	11,7	2,5	10,4	12,7	6,9
Agriculture, forestry and fishery	2,9	22,6	2,9	15,6	27,6	10,3	2,8	17,3	1,7	5,6	6,7	4,7
Veterinary	12,9	34,3	12,9	16,3	33,3	16,3	0,0	0,0	0,0	0,0	0,0	0,0
Health sciences	**32,2**	**32,9**	**19,6**	**20,8**	**36,5**	**19,9**	**19,2**	**22,8**	**12,5**	**9,1**	**11,2**	**3,4**
Social services	19,7	19,7	19,7	2,9	11,2	2,9	8,9	25,2	8,9	2,0	11,7	2,0
Personal services	16,0	25,2	16,0	15,0	29,8	15,0	7,4	15,0	7,4	3,8	12,0	2,7
TOTAL	13,3	26,2	10,2	12,0	28,6	11,0	9,8	16,4	7,1	7,7	11,8	5,1

Source: Spanish Labour Force Survey (2004, 2nd quarter)

TABLE A.3: Geographical mobility of high-skilled health professionals: number provinces in which they have worked as wage-earners until 35, 45 and 55 years old.
Negative binominal regressions (ratios de incidente rates)

	All		Until 35 years old	Until 45 years old	Until 55 years old
Woman	0,96*	0,97	0,92	0,94	0,98
30-34 years	1,34***	1,27			
35-39 years	1,52***	1,55***			
40-44 years	1,50***	1,56***	0,87		
45-49 years	1,47***	1,51***	0,91		
50-54 years	1,46***	1,40**	0,75**	0,87	
55-59 years	1,45***	1,46**	0,70**	0,86	
60-64 years	1,38***	1,33	0,83	0,76	0,94
Woman x 30-34 years		0,11			
Woman x 35-39 years		0,10			
Woman x 40-44 years		0,10	1,03		
Woman x 45-49 years		0,10	0,99		
Woman x 50-54 years		0,11	1,03	1,07	
Woman x 55-59 years		0,12	1,07	1,04	
Woman x 60-64 years		0,16	1,06	1,06	0,99
Age at first employment as wage earner in the Health sector	0,98***	0,98***	0,90***	0,96***	0,97***
N	5613	5613	4151	2685	778
Adjusted R^2	0,018	0,018	0,113	0,045	0,033

Notes: all regressions include provincial dummies
***, **, * represent significance at 99, 95 and 90%, respectively.
Source: Continuous Sample of Working Lives (2005)