ANALES DE ECONOMÍA APLICADA

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ANALES DE ECONOMÍA APLICADA
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Tiempo de desplazamiento al trabajo y desajuste educativo en el mercado de trabajo español

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Resumen

En este trabajo se analiza cómo el tiempo de trayecto y las características de los mercados laborales locales influyen en el desajuste puesto de trabajo- nivel educativo del individuo, basado en la hipótesis de que los individuos que tienen un mayor tiempo de trayecto al trabajo y mejores condiciones en mercado laboral se asocian a una menor incidencia de la sobreeducación. La sobreeducación afecta a 17 % de los trabajadores en España, y se eleva al 22,4 % para los trabajadores menores de 35 años. El análisis se basa en los datos individuales de los trabajadores españoles que se refiere al período inicial de la crisis económica mundial (2007-2010). La variable dependiente, desajuste educativo-puesto se mide mediante el método subjetivo, basado en las respuestas del individuo a la pregunta de cómo ajusta su nivel de educación a las necesidades del trabajo que actualmente ocupan. La variable de interés son: (a) el tiempo de trayecto, es decir, el tiempo que tarda el individuo en llegar a su trabajo, y (b) dos variables que tienen en cuenta de las condiciones del mercado local: la tasa regional de desempleo (esta variable se refieren a la división territorial de España a nivel NUTS 2 y desglose por sexo y nivel de educación de cada Comunidad Autónoma sobre la base de las cifras medias anuales de la Encuesta de Población Activa española (EPA) para el período 2007-2010) y el tamaño del municipio. Se incluyen las variables de control habituales relativas al puesto de trabajo y variables dummy de los años de la muestra. Los resultados sugieren que las difíciles condiciones de trabajo regionales en términos de altas tasas de desempleo pueden actuar contra el efecto hipotético de la movilidad en la reducción del desajuste educativo, por lo tanto, se obtiene a una conclusión opuesta a la planteada en algunos trabajos anteriores.

Palabras clave: Sobreeducación, commuting, mercados laborales locales.

Área Temática: 3 Distribución de la Renta y la Riqueza, Cohesión territorial y problemas sociales.

COMMUTING AND EDUCATION-JOB MISMATCH IN SPANISH LABOUR MARKET

Abstract

This paper analyses how commuting time and local labour markets' characteristics influence individual's job-education mismatch, based on the hypothesis that both higher commuting times and better labour market conditions are associated with a lower incidence of over-education. Over-education affects 17% of employed workers in Spain, and it rises to 22,4% for workers under 35. The analysis is based on Spanish workers' individual data referred to the initial period of the global economic crisis (2007-2010). The dependent variable, education-job mismatch is measured through the subjective method, based on the individual's responses to the question of how well does his/her education level fit the needs of the job they

currently occupied. The variable of interest are (a) commuting time, i.e., the time spend by the individual on his/her typical one-way travel-to-work, and (b) two variables that account for local market conditions: the regional unemployment level (this variables is referred to the NUTS 2 division of Spain and disaggregated by sex and level of education for each autonomous community based on the average yearly figures from the Spanish Labour Force Survey (EPA) for period 2007-2010) and the size of town. The usual set of individual and job-related variables, and controls for sample years are also considered. The results suggest that difficult regional working conditions in terms of both high unemployment rates and job densities might act against the hypothesized effect of mobility on the reduction of educational mismatch, therefore leading to a conclusion that opposes some precedent works.

Key Words: Overeducation, commuting, local labour markets.

Thematic Area: 3 Income distribution and wealth, territorial cohesion and social problems.

1. INTRODUCCIÓN

Commuting is a very relevant phenomenon in contemporary societies and as such it has deserved much attention from research. More recently some authors have investigated the relationship between this form of geographical mobility and education-job mismatch both internally (Hensen et al, 2008; Huber, 2012) and internationally (Huber, 2012).

We add to this literature in several ways: firstly we use a large dataset that includes the international crisis period (2008-2010) that has resulted in significant employment losses in all EU economies, something that might have altered workforce search behaviour and therefore impacted the education-job mismatches in a significant way unexplored until now; secondly, by using commuting time instead of commuting distances to capture geographic daily mobility: which is a more accurate measure than commuting distances due to its closer relationship to the opportunity cost of commuting (Stutzer and Frey, 2008); thirdly, by using a set of variables that tries to adapt the empirical exercises conducted until now to the reality of Southern European countries in what regards to family structure (wider-than-average cohabitating families including older children, parents and other dependent members), and the measurement of regional market conditions in terms of unemployment and the density of local competence (a crucial question in Spain[1] due to the high average level of unemployment –the largest among OECD's members- and its regional dispersion throughout the country). Finally, we consider all educational levels in our analysis, what allows expanding the conclusions of previous research.

2. DATA AND VARIABLES

The data derive from the Quality of Life at Work survey (*Encuesta de Calidad de Vida en el Trabajo*, ECVT), which is held annually in Spain by the Ministry of Education and Social Security. Four waves of the survey (2007-2010) have been pooled to build the data set. The dependent variable, education-job

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[1] Overqualification affects 17% of employed workers in Spain, and it rises to 22,4% for workers under 35.

mismatch is measured through the subjective method, based on the individual's responses to the question of how well does his/her education level fit the needs of the job they currently occupied (appropriately educated, overeducated, undereducated, in need of a different training are the possible answers, although we have selected only workers in the two first categories - appropriately educated and overeducated - for our study)[2].

The variable of interest is commuting, which thanks to the characteristics of the statistical source is measured as commuting time, i.e., the time spend by the individual on his/her typical one-way travel-to-work (and the same variable squared, in order to analyse non-linear effects). Previous research has typically included gender as a significant regressor to explain both commuting behaviour and over-education. In both cases the ultimate logic of this inclusion is, above all in Southern European countries, the fact that women have wider family responsibilities than their male counterparts. In this article we try to individualize the different components of this effect by using a typology of situations and therefore we include gender and, having at least one child aged 2 or less. The rest of individual's characteristics considered are number of persons in the household, age (categorised), level of education (lower-level secondary education, higher-level secondary education and university degrees; individuals with primary education or lower have been excluded as it is very unlikely that they are over-educated), and a variable distinguishing between native and immigrant workers. With regard to job characteristics we difference between public and private sectors; we also consider the type of contract (part/full time and temporary/permanent) and a dummy variable for job-related residence change; finally a set of variables were considered to account for regional market conditions: the regional unemployment level and job density (as suggested by Hensen et al, 2009). Both the regional unemployment rate and job density (proxied as the number of occupied workers per square kilometre) have been adapted with regards to their original formulation by these authors: we calculate these indicators by sex and level of education for each autonomous community based on the average yearly figures from the Spanish Labour Force Survey (EPA) for period 2007-2010. A control for the survey year is also included[3]).

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[2] The approach effectively adopted in different studies to measure education mismatch is typically restricted by data availability (see for example McGuinness, 2006). All methods have their own disadvantages, the main one affecting the approach adopted here being the risk of underestimation of the extent of overeducation, since these workers could be less likely to respond to the questionnaires, due to job apathy, and a measurement error derived from the lack of sufficient benchmarks against which to assess own workers' job requirements in cases where the organizations are smaller and/or less structured (McGuinness, 2006: 396). In any case, it has been recognized that in terms of for example estimating the incidence of overeducation or its economic returns "the various approaches generate broadly consistent evidence" (McGuinness, 2006:399)

[3] A multiplicative specification for the variable "survey year" was tried, but it did not offer additional explanatory power. Other alternate models included interactions between commuting and age, job density and unemployment rate (categorised), but most of them were non-significant and they did not increase the model's explanatory power. We also tried a specification where the individuals' disturbance terms were correlated depending on their gender, residence region and education level, but the results were substantially similar to the simpler, non-correlation specification, so they are not displayed here.

3. EXPECTED RESULTS

Most theoretical and empirical studies consider that increased *commuting time* means a larger search radius and, thus, a larger probability of a job match (Simpson, 1992; Büchel and van Ham, 2003; Büchel and Battu, 2003; Croce and Ghignoni, 2011; Devillanova, 2011; Huber, 2012; Ramos and Sanromà, 2011; McGuinnes, 2006). On the other side, Cahuzac and di Paola (2004) consider that strong competence and scarce jobs can generate a positive relationship between commuting and overqualification. Hensen et al (2009) consider that the effect of commuting on overqualification is ambiguous.
We can expect that many *residence changes* have been caused by a good job offer, so we expect a negative relationship with overqualification (Büchel and van Ham, 2003; Croce and Ghignoni, 2011; Jauhiainen, 2011 and Zax and Kain (1991)), although Devillanova (2012) finds the opposite result.
Butchel and van Ham (2003), Büchel and Battu (2003), Croce and Ghignoni (2011) consider that there is no relationship between *unemployment rate* and overqualification, although Hensen et al (2009) find a positive relationship. We consider that a high unemployment rate may force workers to accept low-qualification jobs (as an alternative to unemployment), thus having a positive relationship with overqualification.

It is reasonable to consider that a higher *density of workers* has a positive relationship with overqualification (Devillanova, 2011; Ramos and Sanromà, 2011; Van Ham, 2002), although a negative relationship has also been specified (Croce and Ghignoni (2011); Hensen et al (2009); Jauhiainen (2011); Linsley (2005) –only for women-), considering that the density of workers and the density of jobs are highly correlated. McGoldrick and Robst (1996) consider that this variable has no influence in overqualification.

Women who take care of others have a tight time restriction and thus, a reduced search radius, which makes overqualification more likely (Büchel and van Ham, 2003; Büchel and Battu, 2003; McGuinness, 2006; Frank (1978); Huber (2012); Hensen et al (2009)), although Linsley (2005) and Jauhiainen (2011) (for older women) find the opposite result.

Age is highly correlated with experience. Some authors (Büchel and van Ham, 2003; Frank, 1978; Linsley, 2005) consider that the probability of overqualification increases with experience, while other (Büchel and Battu (2003); Devillanova (2011), Huber (2012); Alba-Ramírez (1993); Duncan and Hoffman (1981), Sicherman (1991), Sloane et al (1996), Kiker et al (1997), Cohn and Ng (2000), Daly et al (2000)) consider that age and experience allow a better job match, and thus, reduce the probability of overqualification. Groot (1996) believes that the relationship between age and overqualification is caused by the different conditions in the labour market found by different generations.

While some authors (Butchel and van Ham (2003); Croce and Ghignoni (2011)) consider that *education years* decrease the probability of overqualification, other (Devillanova, 2011; Hensen et al, 2009; Sanromà and Ramos, 2011) find a

positive relationship. It is very unlikely that a low-education worker is overqualified, while it can happen for better-educated workers. Croce and Ghignoni (2011) find that workers with a bachelor's degree have a larger probability of being unemployed than workers with vocational education.

Immigrants are usually brought in to take the jobs that are unattractive for nationals. Also, they usually find it difficult to homologate their education level in the destination country, so we expect them to have a higher overqualification probability (Büchel and van Ham, 2003; Büchel and Battu, 2003; Croce and Ghignoni, 2011; Devillanova, 2011; Battu and Sloane, 2002;), although Hensen et al (2009) find the opposite result.

Croce and Ghignoni (2011) think that, for better-educated workers there is a trade-off between wages and job stability, but the conditions of the labour market in Spain lead us to think that workers with a *temporary contract* have a higher probability of overqualification.

4. ESTIMATION AND RESULTS

As commented in II, we have eliminated from our sample undereducated workers and workers in need of a different training. We have eliminated also those who have only primary education or less. The final sample has 19.104 observations. The dependent variable takes the values of 0 (baseline category) for appropriately educated workers and 1 for overeducated workers, so a binary logit was chosen as the functional form. The results show a reasonable fit (Nagelkerke's R^2 is 0,071). We have estimated the model for all the observations and then we have estimated separated models for men and women. Then we have restricted our sample to workers with an university degree and we have repeated the process (first, all of them, then, separated models for men and women). As we cannot control for self-selection bias (all the observations in our sample being employed), we expect the "men only" sub-samples to be less affected by self-selection.

We find that *gender* has a significant influence in overeducation (men have lower overeducation probability than women, (both for the complete sample and for the university-degree sample, although the magnitude of this effect seems smaller for women with an university degree). The family size also affects overeducation (workers in larger families have lower overqualification probability). We expected *workers who take care of children under 3* to have higher probability of overeducation than the rest, but the result turns out to be the opposite. Our hypothesis is that such workers tend to quit the labour market when they cannot find a good offer. This effect is stronger for women than for men. The probability of being overqualified decreases with age (workers over 50 have the lowest probability). *Workers living in their parents' home* have higher probabilities of overeducation than the rest, although this effect seems stronger for men than for women.

The education level is highly related to overqualification: workers with a university degree are the ones with higher probability of being overqualified, while workers with a bachelor's degree have higher probabilities than those with vocational training (Ghignoni, 2011). Those in the *public sector* are the workers with lower probability of being overqualified.

Both the unemployment level and the density of workers are significant and relate positively to overqualification. Also, immigrant workers have, *ceteris paribus*, higher probabilities of being overqualified than national workers. As expected, workers with a *temporary contract* have higher probability of overeducation than the rest.

The *residence change* variable shows that workers who have changed their residence recently have higher overeducation probability than those who have not.

Finally, commuting time has a positive and significant influence on overqualification. Thus, *ceteris paribus*, workers with larger commutes are more likely to be overqualified. The reason for this behaviour might be the relative scarcity of jobs, thus, longer commutes are an alternative to unemployment, and not to overqualification in the Spanish labour market. On the other side, the effect of the *squared commuting time* is negative, meaning that the total effect of commuting in the probability of workers being overeducated is not linear: when the commuting time is very large, the trend reverses, so workers will only undertake very long commutes in exchange for jobs that are matched to their education level. There are differences between the type of workers: the "turning point" for the commuting time is the lowest for the women with an university degree (the negative effect of the squared commuting variable is stronger than the positive sign of the commuting for commutes longer than 45 minutes), while for men with an university degree the turning point comes for commutes longer than 80 minutes. For the whole sample, the point the negative effect of the squared commuting variable is stronger than the positive sign of the commuting is found for commutes longer than 60 minutes (see Graphic 1).

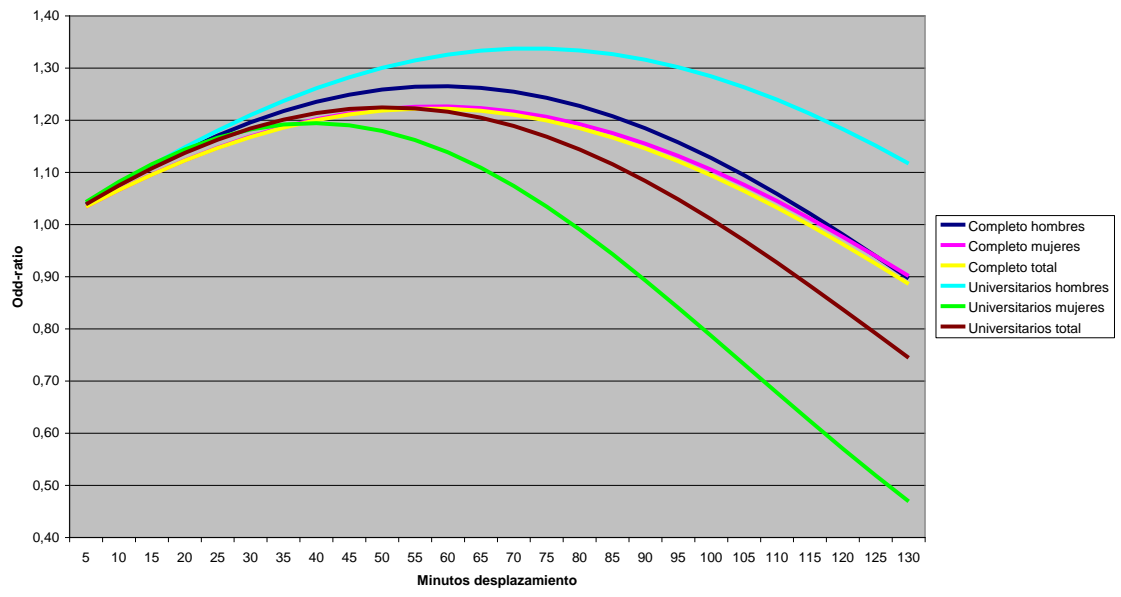**Graphic 1: Combined effect of commuting and squared commuting**

Table 1 Logistic regresions

Variable	todos		solo hombres		solo mujeres		solo universitarios		universitarios hombres		universitarios mujeres	
	B	Sig.	B	Sig.	B	Sig.	B	Sig.	B	Sig.	B	Sig.
aencuesta	---	,000	---	,031		,004	---	,005	---	,187	---	,007
aencuesta(1) 2008	,231	,000	,209	,016	,245	,001	,309	,001	,259	,105	,357	,004
aencuesta(2) 2009	,094	,040	,139	,033	,045	,486	,116	,132	,183	,112	,060	,564
sexo(1) Mujer	,334	,000	---	---	---	---	,260	,000	---	---	---	---
Edad_recodificada		,000		,000		,000		,000		,006		,064
Edad_recodificada(1) <30	,445	,000	,421	,000	,449	,000	,342	,004	,401	,029	,271	,095
Edad_recodificada(2) 30-39	,326	,000	,335	,000	,336	,000	,372	,000	,454	,000	,322	,011
Edad_recodificada(3) 40-49	,204	,000	,236	,002	,177	,025	,264	,002	,236	,059	,284	,021
V24(1) Cambio residencia por motivos laborales	,284	,000	,279	,000	,285	,000	,070	,294	,101	,293	,054	,562
Estudios_5cat		,000		,000		,000	---	---	---	---	---	---
Estudios_5cat(1) Estudios Secundarios - 2	,792	,000	,807	,000	,782	,000	---	---	---	---	---	---
Estudios_5cat(2) Estudios universitarios	,980	,000	,931	,000	1,050	,000	---	---	---	---	---	---
Sector_publico	-,375	,000	-,050	,466	-,635	,000	-,440	,000	-,092	,358	-,696	,000
commuting_minutos	,007	,001	,008	,011	,007	,020	,008	,050	,008	,146	,009	,111
commuting_cuadrado	-,000061	,009	-,000068	,030	-,000060	,089	-,000079	,085	-,000055	,393	-,000114	,088
tasa_paro	,017	,000	,012	,100	,022	,000	,028	,030	,024	,307	,032	,044
densid_activos	,002	,017	,003	,017	,002	,267	,001	,282	,002	,271	,001	,563
Número total de miembros de la vivienda	-,049	,002	-,075	,001	-,012	,543	-,050	,049	-,073	,054	-,019	,585
muj1 hijos menores de 3 años	-,198	,030	-,185	,045	-,270	,006	-,269	,045	-,240	,134	-,331	,024

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vive_con_los_padres	,081	,138	,240	,002	-,122	,114	,221	,014	,426	,003	,045	,702
contrato_temporal_1	,570	,000	,672	,000	,510	,000	,282	,001	,378	,005	,256	,022
Constant	-2,779	,000	-2,741	,000	-2,511	,000	-1,757	,000	-1,866	,000	-1,445	,000
N	19104		10647		8457		6063		2860		3203	
R^2 (Nagelkerke)	,071		,066		,068		,038		,035		,049	

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