

# WAGE MOBILITY, JOB MOBILITY AND SPATIAL MOBILITY IN PORTUGUESE ECONOMY<sup>1</sup>

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## ABSTRACT

This paper intends to analyse to what extent does a worker who, along with a job move undergoes a spatial move, gain a wage increase. For that matter, a sample of *Quadros de Pessoal* is used with information gathered regarding all the workers that are part of those tables, simultaneously for the years 1997 and 1998 as well as their working places. This information is initially used to carry out a bivariate analysis allowing characterizing the workers that change jobs, those who change working places and those who experience both changes. Afterwards, a wage equation is estimated, namely an Augmented Mincer Equation, taking into account both the hourly wage and the wage, making it possible to verify the influence of spatial mobility (through three levels of mobility, according to the distance between the old and new jobs) on the wage. In fact, the results of these estimations suggest that the longer the distance between the old and the new job, higher wage the moving worker will get.

## KEYWORDS

Wage mobility, job mobility, spatial mobility, Portugal

JEL Classification: J31, J61, J62, R23

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## **1. INTRODUCTION**

In a context of increasing globalization, knowing which factors determine worker mobility is an interesting issue as it has several implications for regional development, the behaviour of labour markets and social cohesion.

Mobility may be studied from different perspectives. In this paper our goal is to study the relationship between job mobility, spatial mobility and wage mobility. For that we have to integrate models from labour economics, which analyse the issues of job mobility and wage mobility, and regional economics, which consider topics of spatial and wage mobility, in order to be able to address the question that we intend to study. We will consider both theoretical results concerning mobility and the results of empirical analyses of the determinants of mobility.

The paper is organized as follows. In the next section a summary of major theoretical and empirical results concerning determinants of mobility are presented. In section 3 we study the determinants of job, spatial and wage mobility in Portugal.

## **2. SUMMARY OF THEORETICAL AND EMPIRICAL RESULTS ON JOB, WAGE AND SPATIAL MOBILITY**

This section aims at presenting the major results of studies on job, spatial and wage mobility. Job mobility is defined as a situation where the workers change employer and spatial mobility as a situation where the workers change workplace.

Studies on job mobility have been mainly concerned with issues such as the effect of mobility on wages, the relationship between tenure and wages and the effects of factors such as age, skills, or the business cycle on mobility. Theoretical models such as human capital (see Becker (1962, 1964) or Mincer (1958, 1962, 1974)), *shirking* (see Lazear (1979, 1981)) or *search and matching* (see Stigler (1962) Mortensen (1970), McCall (1970) e Gronau (1971)) provide explanations for job mobility in which mobility is usually seen as decreasing with age, tenure, experience.

In the Human Capital Models, the increases in wages arise from individual market experience (measured by the age of worker) – this market experience could be correlated with tenure due to specific human capital – and from schooling/formation. Generally it is considered two different types of human capital: i) General Human

Capital (obtained from investment in schooling and/or learning on the job); ii) Specific Human Capital (learning on the firm or get through specific formation).

Another models used in the study of job mobility are the so-called Shirking Models, which arise from the incapacity of firms in doing a close monitoring of their workers, what leads to the decrease of productivity and to its associated costs (including firing costs). These models are based in the theory of deferred payment, leading to the decrease of worker's incentive to shirking and promoting a long term relationship between firm and worker.

At last, the Search & Matching Models. In these models, the positive relation between tenure and wages is justified by a longer duration of good matching firm/worker leading to highest wages due to their experience and tenure (similar to the human capital models). The search models predict that workers set a reservation wage – which maximizes their expected lifetime earnings – that tells them when to stop the search (optimal search).

Empirical analyses of the determinants of job mobility, usually using Mincer wage regressions, have shown the relevance of factors such as schooling, experience, tenure or industry specific human capital. Relevant studies may be found in Psacharopoulos (1985), Hubler (1984) e Schmidt e Zimmermann (1991), Willis e Rosen (1979), Borjas e Rosen (1980), Bartel e Borjas (1981), Borjas (1981), Abraham e Farber (1987), Altonji e Shakotko (1987), Addison e Portugal (1989), Kletzer (1989).

On the other side spatial mobility has been a relevant topic on regional economics. Both theoretical and empirical analysis has been developed. On neoclassical type models spatial mobility arises from regional differences in wages that motivate workers to move. Much attention has been given to determinants of spatial mobility on empirical studies. Studies such as Borjas (2000), Bartel (1979), Widerstedt (1998), Andrienko and Guriev (2001), Goetz (1999) or Peixoto (1998), have identified a set of reasons that make spatial mobility more likely to occur. Among those factors are age, schooling, distance and demographic characteristics such has marital status or number of children. On average, the worker that experience spatial mobility is young (below 35 years), above average years of schooling and single.

Summarizing, the literature described above has presented the characteristics of workers that experience both job and spatial mobility and the potential effects on wages.

Evidence shows that wages are positively correlated to tenure (due to increasing experience, firm-specific human capital, or efficiency wages), potential experience, and schooling. On the other side, spatial mobility is negatively correlated to age, and distance, and positively correlated to schooling.

### 3. JOB MOBILITY, SPATIAL MOBILITY AND WAGE MOBILITY

In this section we analyse job, spatial and wage mobility in the Portuguese economy. We are concerned with the joint effects of a worker experiencing several types of mobility. Figure 1 summarizes the possible situations.

**Figure 1**  
**Types of mobility**

		Spatial mobility	
		No	Yes
Job mobility	No	I	II
	Yes	III	IV



In cell I we have the situation of a *stayer* that maintains her professional *status quo*. In cell II we have situations of workers that stay in the same employer but change workplace, either because they were relocated among firm different locations or because the firm relocate its activity. More relevant situations for this paper are cells 3 and, mainly, 4 where there is job mobility and in some cases conjugated with spatial mobility.

The hypothesis that we intend to test is *whether workers that experience both job and spatial mobility earns higher wage*.

#### 3.1.Data

To address the question we use data from a Longitudinal Matched Employer-Employee Micro-data Set (LMEEM) that was constructed to analyse job and worker flows in the

Portuguese economy based on a administrative data set formally called the SISED data set, but more commonly known as the *Quadros de Pessoal (QP)*, which is gathered since 1982 by the Portuguese Ministry of Labour and Solidarity and includes extensive information on firms, establishments and workers, for 1982 to 2000 inclusive.

The data set covers all business units with wage-earners in the Portuguese economy that have to fill annually a questionnaire referring to the month of March. The fill in of this questionnaire is mandatory.

Probably the main strength of the data set concerns the amount of information it reports and the number of units considered in the analysis as it cover most of private sector of the economy.

The information gathered in *Quadros de Pessoal* data set is organised in three different levels, firms, establishments and workers, each one covering specific information. The three levels are matched, which gives this data set its linked employer – employee nature, allowing for analysis in which both sides of labour market can be considered separately.

At the firm level (the unit is the firm) there is information reported for name of the firm; address of the firm; postcode; year of constitution; tax number; location – using statistical codes for *Distrito* and *Concelho*; industry – 6-digit Portuguese classification of economic activities (Firms are classified by main activity of the firm (that yields the highest sales or the one involving more workers)); employment, including wage earners and unpaid workers engaged in the firm during the last week of March, including those on temporary leave; number of establishments; legal setting – type of organisation; equity capital and % of private, public or foreign capital; and sales volume – yearly sales.

At the establishment level (the unit is the establishment) the data covers information on the address; location, (using statistical codes for *Distrito* and *Concelho*; industry, using the 6-digit Portuguese classification of economic activities compatible with NACE rev.1 from 1995; and on employment, including wage earners and unpaid workers engaged in the establishment during the last week of March, including those on temporary leave.

At the worker level (the unit is each individual worker) the data set reports information on gender; age; professional situation; occupation, using the 5-digit Portuguese classification of occupations; schooling – considering ISCED-compatible codes; tenure;

nationality; skill, with workers classified into top managers and professionals, other managers and professionals, foremen and supervisors, highly skilled personnel, skilled personnel, semiskilled personnel, unskilled personnel and apprentices; base wage; tenure indexed subsidies; other regular subsidies; irregular subsidies; overtime pay; normal hours of work; and overtime work.

The construction of the LMEEM consists to link longitudinally the annual returns of *Quadros de Pessoal* and a description of the procedures used can be found with more detail in Escária (1999).

In this paper we use a panel of full-time workers that are present both in 1997 and 1998. The total number of workers in the panel is 1.236.803 and we consider information on gender, age, schooling, tenures, skills of the worker and location, industry, size, size change, and age of the employer.

We start then by defining the situations of mobility. Job mobility is defined as a change of employer between 1997 and 1998. Given that we have information on characteristics of employer both before and after the mobility we are able to control for specific aspects of the mobility, namely if occurred inside a given industry, is related to a closure, or is a move into a new firm, that may influence the results.

We evaluate afterwards whether a worker experienced spatial mobility. The analysis of this question is based on whether the location, at city council level, has changed. We considered three levels of spatial mobility considering situations where the move is inside a 50km range, is between 50 and 100 km or is over 100 km.

### **3.2. Basic figures for job, spatial and wage mobility in Portugal**

After finishing building the variable we are able to analyse patterns of mobility in the Portuguese economy.

Table 1 reports basic figures for mobility between 1997 and 1998. Around 12.3% of the workers (152.304) experienced at least one of the types of mobility. Of them 69.267 (5.6% of the total of workers) changed employer whereas 41.735 (3.4%) changed location without changing employer. 41.302 workers (3.3%) experienced both, job and spatial mobility.

**Table 1**  
**Worker mobility 1997/1998**

		Spatial mobility			
		No	%	Yes	%
Job mobility	No	1.084.499	87,7	41.735	3,4
	Yes	69.267	5,6	41.302	3,3

Source: LMEEM(2000)

The analysis of mobility by gender (Table 2) reveals that men are more likely to move. Among those that change the location of the workplace, male workers are about 70%.

**Table 2**  
**Mobility and gender**

		Job mobility							
		No				Yes			
		Spatial mobility				Spatial mobility			
		No	%	Yes	%	No	%	Yes	%
Gender	Male	652.239	60,1	28.730	68,8	41.959	60,6	28.752	69,6
	Female	432.260	39,9	13.005	31,2	27.308	39,4	12.550	30,4
Total		1.084.499	100,0	41.735	100,0	69.267	100,0	41.302	100,0

Source: LMEEM(2000)

**Table 3**  
**Mobility and age in 1997**

	Job mobility			
	No		Yes	
	Spatial mobility		Spatial mobility	
	No	Yes	No	Yes
Average age	37,0	36,4	34,1	31,8

Source: LMEEM(2000)

Workers that move are on average younger (see table 3) with lower tenure (see table 4) and workers with higher levels of schooling are more likely to experience mobility (table 5).

**Table 4**  
**Mobility and tenure in 1997**

		Job mobility			
		No		Yes	
		Spatial mobility		Spatial mobility	
		No	Yes	No	Yes
Tenure	(Avg)	8.8	7.2	6.3	3.1

Source: LMEEM(2000)

**Table 5**  
**Mobility and schooling**

		Job mobility							
		No				Yes			
		Spatial mobility				Spatial mobility			
		No	%	Yes	%	No	%	Yes	%
Schooling	0	15.238	1.4	599	1.4	1.222	1.8	1.086	2.6
	1	25.316	2.3	1.207	2.9	1.632	2.4	641	1.6
	2	414.13	38.2	14.023	33.6	21.248	30.7	11.81	28.6
	3	230.538	21.3	8.115	19.4	15.347	22.2	9.07	22
	4	130.529	12	5.328	12.8	9.825	14.2	5.988	14.5
	5	268.748	24.8	12.463	29.9	19.993	28.8	12.707	30.8

Source: LMEEM(2000)

Levels of schooling:

- 0 – No formal education
- 1 – Primary education (4 years)
- 2 – Primary education (6 years)
- 3 – Lower secondary
- 4 – Upper secondary
- 5 – Tertiary education

**Table 6**  
**Mobility by skill level – 1997**

		Job mobility							
		No				Yes			
		Spatial mobility				Spatial mobility			
		No	%	Yes	%	No	%	Yes	%
<b>Skills</b>	<b>Unknown</b>	29.172	2,7	1.545	3,7	3.299	4,8	1.351	3,3
	<b>Top managers</b>	36.882	3,4	1.767	4,2	2.791	4,0	1.788	4,3
	<b>Other managers</b>	88.319	8,1	5.098	12,2	5.072	7,3	3.105	7,5
	<b>Highly skilled</b>	75.956	7,0	2.972	7,1	3.729	5,4	2.317	5,6
	<b>Skilled workers</b>	494.919	45,6	19.349	46,4	31.045	44,8	18.035	43,7
	<b>Specialised workers</b>	190.825	17,6	5.040	12,1	9.569	13,8	5.413	13,1
	<b>Unskilled</b>	104.386	9,6	3.937	9,4	7.205	10,4	5.346	12,9
	<b>Apprentices</b>	64.040	5,9	2.027	4,9	6.557	9,5	3.947	9,6

Source: LMEEM(2000)

With respect to skills (table 6), managers seem to have a higher mobility rate. By industry (table 7) workers from Construction, Wholesale and retail trade; repairs; Financial intermediation and Real estate are more likely to move.

**Table 7**  
**Mobility, according to industry– 1997**

		Job mobility							
		No				Yes			
		Spatial mobility				Spatial mobility			
		No	%	Yes	%	No	%	Yes	%
<b>ISIC codes</b>	<b>Agriculture, Hunting, Forestry</b>	16.378	1,5	577	1,4	1.043	1,5	768	1,9
	<b>Fishing</b>	1.228	0,1	12	0,0	27	0,0	13	0,0
	<b>Mining and Quarrying</b>	6.640	0,6	219	0,5	325	0,5	313	0,8
	<b>Manufacture</b>	420.554	38,8	11.074	26,5	21.800	31,5	11.219	27,2
	<b>Electricity, gas and water supply</b>	14.873	1,4	235	0,6	45	0,1	60	0,1
	<b>Construction</b>	84.926	7,8	9.321	22,3	5.912	8,5	6.167	14,9
	<b>Wholesale and retail trade; repairs</b>	204.753	18,9	8.345	20,0	14.660	21,2	9.841	23,8
	<b>Hotels and Restaurants</b>	57.675	5,3	1.585	3,8	5.861	8,5	2.568	6,2
	<b>Transport, storage and communications</b>	86.954	8,0	3.209	7,7	3.564	5,1	2.159	5,2
	<b>Financial intermediation</b>	56.298	5,2	3.333	8,0	8.053	11,6	1.212	2,9
	<b>Real estate, renting and business activities</b>	50.180	4,6	2.408	5,8	5.269	7,6	5.314	12,9
<b>Other Services</b>	84.040	7,7	1.417	3,4	2.708	3,9	1.668	4,0	

Source: LMEEM(2000)

**Table 8**  
**Mobility, according to firm size – 1997**

		Job mobility							
		No				Yes			
		Spatial mobility				Spatial mobility			
		No	%	Yes	%	No	%	Yes	%
<b>Size</b>	<b>0 to 9</b>	235.389	21,7	9.133	21,9	18.686	27,0	10.713	25,9
	<b>10 to 49</b>	345.071	31,8	14.721	35,3	21.965	31,7	14.387	34,8
	<b>50 to 249</b>	313.152	28,9	11.877	28,5	16.944	24,5	11.052	26,8
	<b>250 to 500</b>	81.784	7,5	2.734	6,6	5.429	7,8	2.687	6,5
	<b>Over 500</b>	109.103	10,1	3.270	7,8	6.243	9,0	2.463	6,0

Source: LMEEM(2000)

**Table 9**  
**Wage gains from mobility – 1997/1998**

		Job mobility			
		No		Yes	
		Spatial mobility		Spatial mobility	
		No	Yes	No	Yes
<b>Wage</b>	<b>(Avg)</b>	0,06	0,06	0,08	0,10
<b>Hourly wage</b>	<b>(Avg)</b>	0,09	0,09	0,12	0,13

Source: LMEEM(2000)

By firm size (Table 8), we find higher levels of mobility for smaller firms. Analysing the wage change from 1997 to 1998 both for the total and hourly wage (table 9) we find that workers that move have higher wage gains. Workers that change employer increase the wage by 8% against 6% for stayers and those that change employer and workplace increase their wage by 10%.

**Table 10**  
**Job mobility, spatial mobility and industry mobility**

		Job mobility			
		No		Yes	
		Spatial mobility		Spatial mobility	
		No	Yes	No	Yes
<b>Moving into a new establishment</b>	<b>(Total)</b>	20.862	8.607	31.201	9.999
<b>Moving out of a closed establishment</b>	<b>(Total)</b>	23.665	8.641	27.990	8.913
<b>Changing industry</b>	<b>(Total)</b>	15.565	1.108	27.680	24.963

Source: LMEEM(2000)

Trying to specify more the patterns of mobility, Table 10 allows to classifying movers into those that move into a new establishment, those that move out of a closed establishment and those that change industry

**Table 11**  
**Wage gains from industry mobility, job mobility and spatial mobility**

				Job mobility				Total
				No		Yes		
				Spatial mobility		Spatial mobility		
				No	Yes	No	Yes	
Changing industry	No	Wage	(Avg)	0.06	0.06	0.07	0.08	0,06
		Hourly wage	(Avg)	0.09	0.09	0.10	0.11	0,09
	Yes	Wage	(Avg)	0.07	0.09	0.10	0.11	0,10
		Hourly wage	(Avg)	0.09	0.11	0.13	0.13	0,13
Total	Wage		(Avg)	0,06	0.06	0.08	0.10	0.06
	Hourly wage		(Avg)	0,09	0.09	0.12	0.13	0.09

Source: LMEEM(2000)

Table 12 reports wage gains for those that change and do not change industry. Wage gains of workers that change industry are not lower than those that do not change. There are also no big differences in terms of wage gains for those that move into a new establishment (table 12).

**Table 12**  
**Wage gains of worker moving into a new establishment**

				Job mobility				Total
				No		Yes		
				Spatial mobility		Spatial mobility		
				No	Yes	No	Yes	
Moving into a new establishment	No	Wage	(Avg)	0.06	0.06	0.09	0.10	0,06
		Hourly wage	(Avg)	0.09	0.09	0.12	0.13	0,09
	Yes	Wage	(Avg)	0.06	0.06	0.07	0.09	0,07
		Hourly wage	(Avg)	0.09	0.08	0.11	0.12	0,10
Total	Wage		(Avg)	0,06	0.06	0.08	0.10	0.06
	Hourly wage		(Avg)	0,09	0.09	0.12	0.13	0.09

Source: LMEEM(2000)

**Table 13**

**Wage gains for workers that move out of a closed establishment**

				Job mobility				Total
				No		Yes		
				Spatial mobility		Spatial mobility		
				No	Yes	No	Yes	
Move out of a closed establish.	No	Wage	(Avg)	0.06	0.06	0.09	0.10	0,06
		Hourly wage	(Avg)	0.09	0.09	0.12	0.12	0,09
	Yes	Wage	(Avg)	0.07	0.06	0.07	0.12	0,07
		Hourly wage	(Avg)	0.09	0.08	0.11	0.15	0,10
Total	Wage		(Avg)	0,06	0.06	0.08	0.10	0.06
	Hourly wage		(Avg)	0,09	0.09	0.12	0.13	0.09

Source: LMEEM(2000)

When a worker move out of a closed establishment and change employer it has lower wage gains, but if change location it receives more.

**3.3.Multivariate analysis of wage mobility, job mobility and spatial mobility in the Portuguese economy**

In the previous section we analysed patterns of mobility. It is also interesting to measure the joint effect of all variable on wages, which can be performed by estimating a wage equation..

The model estimated is derived from a Mincer equation in which two dependent variables are considered: the wage and the hourly wage both for 1998 and in logarithms.

The model estimated is:

$$y = X' \beta + Z' \sigma + \alpha.mobemp + \theta.mobsec + \lambda_1.mob1 + \lambda_2.mob2 + \lambda_3.mob3 \quad \text{Eq.4.1}$$

where y is the logarithm of wage in 1998, X the matrix of individual worker characteristics (including gender, schooling, tenure, potential experience), Z the matrix of workplace characteristics (including location, industry, and size). Mobemp stands for job mobility, mobsec for industry mobility, and mob1, mob2, and mob3 account for the three levels of spatial mobility.

The results of the estimation considering the wage as the dependent variable are reported in Table 15.

**Table 14**  
**Estimation Results for Wage Model**

Source	SS	df	MS			
Model	248043.914	61	4066.29367	Number of obs = 1236803		
Residual	151778.2241236741		.122724341	F( 61,1236741)=33133.55		
Total	399822.1371236802		.323270934	Prob > F = 0.0000		
				R-squared = 0.6204		
				Adj R-squared = 0.6204		
				Root MSE = .35032		

  

lsal98	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
sexo	-.2082559	.0006997	-297.65	0.000	-.2096273	-.2068846
mob1	.0241476	.0015536	15.54	0.000	.0211026	.0271925
mob2	.077264	.005193	14.88	0.000	.0670859	.0874421
mob3	.0987891	.0034433	28.69	0.000	.0920404	.1055378
mobsec	-.0252569	.0017056	-14.81	0.000	-.0285998	-.0219141
mobemp	.0229967	.001574	14.61	0.000	.0199116	.0260817
saimor	-.015432	.0016559	-9.32	0.000	-.0186775	-.0121865
entnov	.049663	.0016788	29.58	0.000	.0463725	.0529535
antig98	.0098432	.0001138	86.46	0.000	.0096201	.0100664
qsup98	.7953185	.0023545	337.79	0.000	.7907039	.7999332
qmed98	.5320795	.0018837	282.47	0.000	.5283875	.5357715
pqua98	.2175058	.0015231	142.80	0.000	.2145205	.2204911
pesp98	.0913745	.0016478	55.45	0.000	.0881449	.0946042
pnqua98	.002509	.0018047	1.39	0.164	-.0010282	.0060461
school98	.0140561	.0004011	35.04	0.000	.0132699	.0148423
pexp98	.0047937	.0000358	133.78	0.000	.0047235	.0048639
small98	.1433129	.0008993	159.37	0.000	.1415504	.1450755
medium98	.2391344	.0009726	245.88	0.000	.2372282	.2410406
big98	.3021693	.0011439	264.15	0.000	.2999273	.3044114
ant2	-.0001295	3.40e-06	-38.08	0.000	-.0001362	-.0001228
school2	.0017435	.0000225	77.56	0.000	.0016994	.0017875
_cons	11.09669	149.7557	0.07	0.941	-282.4194	304.6128

Note: 28 regional dummies and 12 industry dummies were included.

The overall quality of the model seems to be good. The results shown seem to be in line with what was expected. The results confirm the effect of characteristics such as tenure, experience, and skills and also the effect of spatial and job mobility on wages.

Female workers earn lower wages. There is a premium for tenure but at diminishing rates given the signal for ant2 (tenure squared). There is also a premium for schooling, at increasing rates, and for skills. The size of firms has an effect on wages as workers of larger firms earn higher wages.

With respect to the effects of the variables that account for mobility, we see that workers that move out of a closing establishment receive lower wages. Moving into a new establishment seems to have a positive effect on wages.

With respect to the variables that account for the effects of the different types of mobility on wages we found that industry mobility (*mobsec*) has a negative effect on

wages, which may be related to the effect of loosing industry-specific human capital. With respect to job mobility (*mobemp*), it seems that there are some small gains (around 2.3%) from changing employment.

Finally, the effect of spatial mobility on wages seems to be positive and higher distances have higher effects on wages (see variables *mob1*, *mob2* and *mob3*).

The estimation considering the hourly wage as the dependent variable yielded very similar results, reported in Table 15.

**Table 15**  
**Estimation Results for Hourly Wage Model**

Source	SS	df	MS			
Model	271666.235	61	4453.54484	Number of obs = 1236803		
Residual	155853.9831236741		.126019904	F( 61,1236741)=35340.01		
				Prob > F = 0.0000		
				R-squared = 0.6354		
				Adj R-squared = 0.6354		
Total	427520.2181236802		.345665853	Root MSE = .35499		

  

lsalh98	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
sexo	-.2039149	.000709	-287.61	0.000	-.2053045	-.2025253
mob1	.0197531	.0015743	12.55	0.000	.0166675	.0228386
mob2	.069235	.0052623	13.16	0.000	.0589211	.0795488
mob3	.0910055	.0034892	26.08	0.000	.0841667	.0978442
mobsec	-.0240299	.0017283	-13.90	0.000	-.0274174	-.0206425
mobemp	.0256757	.001595	16.10	0.000	.0225495	.028802
saimor	-.0162422	.001678	-9.68	0.000	-.019531	-.0129534
entnov	.0567738	.0017012	33.37	0.000	.0534395	.0601082
antig98	.0103981	.0001154	90.13	0.000	.010172	.0106242
qsup98	.7898299	.0023859	331.05	0.000	.7851537	.7945061
qmed98	.5419032	.0019088	283.90	0.000	.538162	.5456444
pqua98	.2201656	.0015435	142.64	0.000	.2171405	.2231907
pesp98	.0890699	.0016698	53.34	0.000	.0857972	.0923426
pnqua98	.0020034	.0018288	1.10	0.273	-.001581	.0055877
school98	.0125375	.0004065	30.84	0.000	.0117409	.0133342
pexp98	.0047903	.0000363	131.93	0.000	.0047192	.0048615
small98	.1448104	.0009113	158.91	0.000	.1430244	.1465965
medium98	.2419112	.0009855	245.46	0.000	.2399796	.2438429
big98	.3024705	.0011592	260.93	0.000	.3001986	.3047425
ant2	-.0001374	3.45e-06	-39.85	0.000	-.0001441	-.0001306
school2	.001967	.0000228	86.35	0.000	.0019224	.0020116
_cons	5.985716	151.7531	0.04	0.969	-291.4452	303.4167

Note: 28 regional dummies and 12 industry dummies were included.

#### 4. CONCLUSION

The main goal of this paper was to test whether a spatial relocation in addition to a job change induces additional wage gains.

Determinants of job mobility and spatial mobility from labour economics and regional economics were considered in the analysis. The empirical analysis for Portugal confirmed results from theoretical models. Namely, younger, male, above average

schooled workers that work in small and medium sized firms are more likely to experience mobility and those workers that move are more likely to earn higher wages and if experience both a spatial mobility and job mobility the wage is likely to be even higher.

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## APPENDIX 1 – Definition of the variables

lsal98	Wage in 1998 (logarithm)
lsalh98	Hourly wage in 1998 (logarithms)
sexo	Gender
mob1	Change workplace (50 km).
mob2	Change workplace (50 to 100 km).
mob3	Change workplace (over 100 km).
mobsec	Change industry
mobemp	Change employer
saimor	Displaced worker
entnov	Move into a new firm
antig98	Tenure in 1998
qsup98	Top manager
qmed98	Other manager
pqua98	Skilled worker
pesp98	Specialised worker
pnqua9	Unskilled worker
school98	Schooling
pexp98	Potential experience (age – schooling - 6)
ant2	Squared tenure
school2	Squared schooling
small98	Working in small sized firms
medium98	Working in medium sized firms
big98	Working in big firms
_cons	Constant