STAY or MOVE?
The determinants of jobseekers' mobility

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ABSTRACT:

Based on the 2006 French National Household Survey, this article focuses on the determinants of mobility of unemployed individuals. Existing works do not agree on the effect of unemployment on mobility. We show that unemployed chiefs of household have a lower propensity to move outside the city (or the employment area) than employed ones, confirming one side of the literature. As they have a lower propensity to move, we then focus on the determinants of mobility for mobile jobseekers. We control for some classical elements like housing characteristics, family situation and eventual changes in their professional situation in order to examine specifically the role of land characteristics. The idea is to check whether mobility can be induced by push or pull elements than can play a locking-in or an appealing role. We show that these latter do not have any impact while they have one for employed individuals, and that individual and unobservable characteristics drive jobseekers' mobility. Finally we conclude by examining the determinants, and also locking-in or segregation effects, in the case of immobile jobseekers. The results are really close. Individual characteristics also play a major role.

KEYWORDS: residential mobility, unemployment, migration, segregation, Household Survey.
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INTRODUCTION

Individuals' mobility, defined as a change of dwelling, is estimated to be around 10% in France (Donzeau, 2009). It is often seen as a mean to lessen disparities between territories, in particular unemployment rate and its duration (Debrand, 2005). It is often supposed that individuals move out when they have an expected utility in terms of employment, wages and way of life superior to the one in their current location and when the associated costs are smaller than expected benefits.

However, results do not converge about issues of mobility. The difficulty is that measuring the specific effect of mobility on the probability of finding a job generates an endogeneity bias since mobile individuals may form a specific group. And one cannot compare their situation to the one that would have happened without migration. Some studies show that unemployed people who move also have a greater probability of finding a job.

From the "Generation Survey" (*Enquête Génération*), which investigates newly graduated students' career-path, some authors argue that geographical mobility almost systematically increases chances of finding a job (Arrighi et alli, 2008). Two-third of young people who have migrated between 2001 and 2003 or between 2003 and 2005 have experienced a change related to employment: they have changed their occupation, or have found/lost a job (unemployment, training, inactivity). And only 21% of young people who did not migrate, worked in a new firm, whereas 35% of those who migrated found a job.
But one can be skeptical about this result because of the selection bias: only a certain kind of jobseekers with particular characteristics or motivation migrate and find employment. Other works like the one of Pekkala and Tervo's (2002) do not find any evidence of a relationship between migration and probability of finding a job. They claim that the chances to get a job are a lot more related to the unobservable characteristics of migrants. Mobile unemployed individuals would form a specific group and have specific characteristics that enhance their employability.

In this article, we are interested in the determinants of the mobility of individuals and especially unemployed individuals. The idea has been developed that mobility enlarges the area in which a jobseeker can look for jobs, and thus increases their chances of finding a job. Jobseekers should then be more likely to move, but as we show, research does not converge and agree on the effect of unemployment on migration. After a short literature review and based on the National Housing Survey of 2006 for France, we study residential trajectories of unemployed people. We investigate their moving probability in a basic way first, and then qualify the migration as ascending or descending according to the quality of their arrival city and we explain it. We test if the trajectories of mobility are driven by land considerations. These latter can also constitute a large part of explanations when jobseekers are not mobile.
In detail, this article is organized as follows: After having presented the literature review in a first part, the data and some stylized facts in a second section, we check for the existence of a relationship between mobility and unemployment. We try to infirm or confirm existing conclusions by looking at if unemployment decreases or increases the risk of changing the residential location of unemployed people.

Descriptive statistics show that the trajectories of mobility of jobseekers are rather descending. They tend to locate in more unfavorable areas which let think that land characteristics play a role in their lower propensity to move. We investigate in a fourth section the role of land characteristics. Controlling for occupational aspects, we analyze what determinants pay a major part in explaining unemployed individual moves. In the last section, we focus on immobile jobseekers and we look for some elements explaining choices of location.

I- Literature Review

1.1. Residential location of unemployed individuals

Since Alonso (1964) and the development of the new Urban Economics, many papers have focused on the structuration of cities and on location decisions of individuals. Basically, cities are considered as following a monocentric pattern, in which activities are concentrated in the city-center mostly because of positive externalities relative to accessibility and economies of scale. Individual location choices are generally the result of equilibrium between accessibility, amenities and housing price. Distance between home and work thus remains one of the main factors. Households try to be close to the city-center where all jobs are. As a consequence, housing prices increase in the Central Business District and decrease as the distance from it increases (Fujita, 1989). However, as one gets further from the center, transportation costs increase, so that income net of transport costs is inversely proportional to distance. As we suppose that households all look for the same level of satisfaction, the result is that richer people tend to live close to the city-center while poorer people live in peri-urban areas, at least in European configurations.

Many articles have focused on and developed analysis of the consequences of this residential distribution (Gobillon, Selod, Zenou, 2007). Wealthier people live together in areas close to employment, well connected and where a lot of amenities are present, whereas people with low skills and unemployed people live far away from any attractive area. An unemployed individual cannot easily live close to the city and the center of employment because housing prices are too high. Phenomena of segregation thus appear and feed themselves. People localizing in areas where housing prices are lower have generally lower skills and less chance to get a job. Living in such deprived areas slows down human capital accumulation, because individuals are surrounded by others who resemble them (Crane, 1991). And it has been shown that their probability to be unemployed increases (Wasmer et al, 2003). Some explanations are found in the spatial mismatch theory (Kain, 1969). Low skilled people live in segregated and distant areas. They are generally poorly connected to employment centers. When looking for a job, unemployed people living in deprived neighborhood get only little information on vacancies existing out of their area and the identification of potential employers is harder. Job search process takes more time. Davis and Huff (1972) have shown that their job search takes only place in a limited area, confirming the greater difficulty to get out of this situation. Then as the deprived neighborhood are further and disconnected, the costs of employment increase with distance (Ortega, 2000). Employers may, for instance, be afraid of delays when employees come from far away. Finally, the last mechanisms explaining segregation and the reinforcement of the situation are redlining and discrimination from employers who might not want to hire employees coming from neighborhoods having a bad reputation (Boccard and Zenou, 2000).

From these analyses, two kinds of propositions have been developed. One would affect job demand and consists in attracting firms in deprived neighborhoods by exonerating them from some costs. That is the aim of programs such as the creation of Zones Franches urbaines in France. Another way to open up deprived neighborhoods is to favor the mobility of its inhabitants. In this article we focus only on this aspect. Moving to Opportunity programs were, for example, developed in that logic. In order to favor social diversity, better environment and accessibility for unemployed people, they were given housing vouchers that were decreasing the price of better located dwellin. The first programs

partly reached their goal, except for some categories of people (black people in the first MTO) who feared discrimination in the proposed place of residence (Rosenbaum, 1995, Wasmer et al 2003).

Unemployed people thus live mostly in deprived area and can suffer from phenomena of locking-in. One suitable proposition would thus be to encourage them to be mobile. But the preceding mechanisms highlight the difficulties: unemployed people need to find a job that would help them to leave deprived neighborhoods, but as long as they leave in such neighborhoods, their job search may remain not efficient.
Programs like MTO show that unemployed people are somewhat ready to move if they have an incentive to, but the question is not totally solved when they don't.

1.2. The determinants of mobility and the effect of unemployment on migration

Classical determinants of residential migration are generally known: young age, small family size, high education tend to increase the probability to migrate (Jayet, 1996). Housing characteristics, life-cycle events like studies or the formation of a couple also play a role in migration behavior. However, the impact of being unemployed on the probability of being mobile is still not totally defined. Decressin and Fatas (1995) find that housing and household characteristics have a stronger effect on the probability to move than economical characteristics. Gobillon (2001) shows that jobseekers have a lower probability to move whereas Baccaini (2007) and Arrighi and al (2008) explain that unemployed individuals have a stronger probability to move compared to people employed with short or long-term contract and compared to couples in which at least one of the individuals has a job.

Mobility can be seen as the result of a utility function which equals the difference between the sum of benefits associated with the moving process and its associated costs (Mc Fadden, 1978, Anas, 1982). Marginal benefit relative to mobility depends on the characteristics of the actual dwelling, on those of the future one, on the residential location and on the characteristics of the household. The costs are related to the characteristics and the composition of the households, on its financial situation and on distance between actual and future dwelling. If benefits are higher than the costs then the household will move out of its current location. Costs are generally lower when the distance between current and future dwelling is short. The determinants of short and long distance mobility are not the same (Gobillon, 2001, Debrand and Taffin, 2005). In France and from different sources and methods, residential mobility is estimated between 9 et 12,5% (Donzeau and Pan Ké Shon, 2010). It tended to go down from 1973 to 2006 and then started to increase again. From the 2002 French national Housing Survey, the estimated annual mobility rate is estimated to be around 7,4%. 5,3% are short distance and 2,1% are long distance (Authier et alii, 2010). Recent evolutions report changes in the nature of mobility: mobility inside the cities decreases, whereas mobility between jurisdictions increases. Short distance mobility is most of the time related to a mismatch between housing and household's needs (following a change in its composition for example), while long distance moves are generally related to professional reasons. One can also imagine that marginal benefits generated by a short distance move are smaller since they do not enable unemployed people to enlarge their job-searching area nor to reduce their financial constraint (as housing

prices would probably be around the same in neighboring areas). 9% of outside city (20% of outside county) mobility are the result of finding a job. 23% (city level) and 42% (county level) are related to another job reason, like getting closer. When the scale grows, reasons of moving are mainly related to employment.

The former analysis in terms of utility function can be refined by the theory of human capital which sees migration as a way to improve human capital (see Harris and Todaro 1970). Migration is an investment that enhances employment and higher wage perspectives. Migration occurs when an individual has an expected utility in the place of arrival bigger than the utility of the place of residence plus the costs of migration (financial and psychological like the loss of social network). Younger people forecast net earnings related to migration higher on average than older people for instance (Puig, 1981a, 1981b, Baccaini, 1993). Migration costs can so be smaller for unemployed people than for employed ones. As unemployment benefits fall within State responsibility, they are the same everywhere and unemployed individuals can move without losing them (Pissarides and Wadsworth 1989). When looking for a job in another place, they tend to migrate if their expected wage is higher than the actual unemployment benefits. Nevertheless, if these models show well that unemployed people have a greater probability to move if they still earn unemployment fees in the arrival location, they also highlight the fact that mobility can be slown down because unemployed people have less access to capital and housing market, or information (Da Vanzo 1978, Schlottman, Herzog 1981 and Pissarides et Waldsworth, 1989). These two opposed aspects justify the fact that both results exist in the literature.

1.3. The effect of migration on unemployment

Some studies show that jobseekers' migrations improve their professional inclusion (Roux, Arrighi, and Gasquet 2008) but other results show no relationship between migration and employment (Pekkala and Tervo 2002), (Schlomer and Bucher 2001).

Wasmer and Rupert (2009) base their model on Mortensen Pissarides' one (1999) and develop the idea according which job offers are located at different distances from their home. Individuals can move or not conditionally to the job offers they receive. Their main result is that they explain some differences in unemployment rates between Europe and the United States by smaller levels of mobility in Europe, caused by higher mobility costs and higher frictions on the housing market.

Following the same idea, many articles have focused on the impact of housing occupation status on mobility and unemployment. The Oswald hypothesis is the idea that a higher share of home owners impacts negatively unemployment rate. The mechanisms are the following: higher costs of mobility, more tensed housing markets when the share of owners is higher, and which in return decrease the quality of the match for renters. Then firms settle further, out of residential places. This increases the average distance to employment and generates transport congestion. There are many works trying to check the consistency of the Oswald hypothesis (Coulson and Fisher, 2009, Garcia and Hernandez, 2004). While Coulson and Fisher (2009) refute the hypothesis, Brunet and Lesueur (2004) have confirmed the phenomena. They show that the share of home-owners is correlated to higher unemployment rates and that home-owners stay more time unemployed. Another occupation status can infer negatively on the probability to move and thus indirectly on the probability of finding a job, if we follow all the preceding

theories, is living in social housing (called “HLM” in French for *Moderate Rent Housing*). Rents are on average 40% lower in this kind of housing. On average in French cities, 28% of accommodations are social housing, but there are huge variations according to the cities (Verdugo, 2013). The demand is three times higher than the supply; waiting time to get one accommodation is thus really long. This can generate or immobility among social housing inhabitants in which unemployed are generally overrepresented or forced mobility when individuals finally get an accommodation. It has also been shown that being renter in the social housing sector increases unemployment duration.

At a macro-economic level, migration is often presented as a mean to harmonize and decrease the regional disparities in migration rate and duration at an aggregated level (J. Decressin and Fatas 1995, Blanchard and Katz, 1992). Some studies find that people tend to migrate from low employment regions to high ones (J. W. Decressin 1994) and Windzio (2004) suggests that people leaving in high employment regions have a lower probability to migrate. The underlying idea is that jobseekers migrate out of depressed regions towards localities that offer better employment perspectives. In that direction, Dos Santos (2013) shows, in a two level model that contracted migration decrease the regional unemployment rate in both regions and average unemployment rate in the long-run.

The aim of this article is to explore the effect of being unemployed on mobility using the National Housing Survey and controlling for the endogeneity bias, to understand the specific role of individual and land characteristics.

II- Data and stylized facts

The main database used in this article, the National Housing Survey made in 2006, is a complement of the Current Population Survey. This study is realized at the household scale, considering the chief of household and their husband or spouse, which represents 36 950 observations. We focus on the reference individual and we only take into account the partner when necessary. We complete the analysis by using three other databases in order to characterize location place. We use the Current Population Survey of 2006, the Permanent Facilities Database of 2007 and the Corinne Land Cover database. CPS gives a lot of information on the composition of the cities. We gather data at two different levels; at the city level and at the neighborhood level which enables us to have a really acute idea of the area in which job seekers live. The Permanent Facilities Database provides details on available services, and facilities at the city and neighborhood levels, like stores, public establishment and administrations, elementary schools. They are classified in three categories according to the proximity needed. The CLC is used to compute the urbanization rate.

The National Housing Survey gives information on individual and household situation, in 2006 and four years before in 2002. It also informs on many characteristics of the current and former accommodation, on the quality of the neighborhood, the solvability and holdings of the households. When it is the case, it questions about reasons of change of professional, occupational and family related situations.

4,2% of individuals of reference are unemployed in 2006, and 3% in 2002. Among them, 39.5% have been mobile (against 33% of employed people). Their mobility is rather long distance: 24.3 % have moved out of their city of residence, whereas 16, 1 % of them have changed accommodation within the same city[3]. When looking at their situation in 2006 and in 2002, we observe that 53, 7 % of those who have found a job have left their former accommodation, and for 34, 4 % of them, the mobility was at least in the neighboring city. 72% of long-distance movers have found a job. When asked about the reasons of moving, employment is the first given motive for long distance mobility.

Basic descriptive statistics tend thus to show that unemployed individuals move and that this mobility increases their chances to get a job. But other results moderate this statement.
They are a lot more numerous to express the wish of moving without being able to do it: 46% of them declare they would like to change accommodation (25% in the same city and 21% in another city). One fact that could explain the gap between the wish and the realization is that they are a little overrepresented in social housing sector: 34 % of them are living in a social housing, and 14 % of them are on the waiting lists (versus 5 % of employed individuals).

We have made a typology of the different residential locations from the Current Population Survey in order to qualify the nature of the move, ascending or descending. We compute a score from six variables well representing the favorable or unfavorable aspects of a city. We pick the share of houses, the share of social housing, the share of non-educated individuals (having less than the baccalaureat), the share of individuals having a stable job (long-term contract), the unemployment rate and a variable indicating how uniformly unemployment rates are distributed according to the socio-demographic affiliation of the individuals[4]. It represents the unequal repartition of the groups and its unequal sensitivity towards unemployment. The use of these variables is complementary in that they give an idea of the diversity of the composition of a city regarding several aspects. A city can have a high unemployment rate and a high share of houses or of professionally stable individuals for example. We compute a score for each city in the database and for each one of these variables going from 0 to 100. We then compute an average of these scores. We thus obtain an average for all cities in 2002 and in 2006. From this basis we can characterize the cities of departure and of arrival of all the individuals and see if their residential path is rather ascending or descending[5].
For the whole sample, 60 % of people living in a neighbor having a bad score have moved in the same kind of area. 17 % has moved in a more favorable place. For unemployed individuals, 79% of them have stayed in a neighborhood with poor characteristics. Only 7% have an ascending mobility. Employed people have the same behavior as the average of the population (58% have changed location for one with a bad score, 17% for one with a good score). On the whole, when we characterize jobseekers' mobility, it is clearly more frequently towards areas that are less favorable (see table 1). These results tend thus to moderate the former statements. Mobile unemployed people move

[3] Mobility are called long-distance when the individual moves out of the city he lives in, in 2002.
[4] The JLS indicator is computed as follows represents half times the variance of the unemployment rate of each socio-demographic group in the city.
[5] People move towards similar cities when the difference between departure and arrival cities is more or less the standard deviation of the average score.

rather towards more unfavorable locations, which means generally, in accordance to the preceding literature revue, more obstacles in job-access. In the following sections, we implement a ceteris paribus strategy in order to take into account all effects in the unemployed individuals' moving behavior.

Table 1. Characterization of employed and unemployed individuals' mobility

Move towards more/less favorable place				
Occupational status in 2002	Nature of the move			
	- favorable	similar	+ favorable	Total
Employed	1198	6202	1377	8777
	0,1445	0,6859	0,1696	1
	0,9226	0,9426	0,9727	0,9446
Unemployed	88	531	55	674
	0,2066	0,7123	0,0811	1
	0,0774	0,0574	0,0273	0,0554
Total	1286	6733	1432	9451
	0,148	0,6874	0,1647	1
	1	1	1	1

III- Unemployed individuals have a lower propensity to move.

We first want to analyze the effect of being unemployed on the probability of moving. We follow Gobillon's article (2001) and try to get as close as possible to his method. He uses the European Household Panel from 1994 to 1996 to understand the determinants of mobility. His work is not only focused on unemployed people but looks at all the explaining factors of mobility. He estimates the joint probability of moving inside and outside the city with a multinomial logit model. His results for the unemployment variable are only significant for mobility between different cities and show that the risk of moving out the city is lower than those of not moving, when unemployed.

The multinomial logit model is an extension of the logit model when there are several mutually exclusive alternatives: not moving out (j=0), moving inside the same city (j=1) and moving outside the city (j=2). The multinomial logit model compares the probability of occurrence of short and long distance moves to the probability of not moving.

$$\frac{P(y_i = j|X_i)}{P(y_i = 0|X_i)} = \exp(X_i, \beta_{kj})$$

Where X_i is the vector of covariates for each household and β the vector of the parameters to estimate. The probability of moving is estimated by maximum likelihood.

The marginal effects relative to the probability of moving $j = \{0,1,2\}$ of the k^{ith} explanatory variable of the average individual of the sample is given by :

$$ME_{i,j,k} = \frac{\partial P(y_i = 1)}{\partial x_{i,k}} = \frac{\partial F_j(x_i, \theta)}{\partial x_{i,k}}$$

We run several multinomial logit models on different subsamples to test the robustness of our results: we make the subsamples according to the gender, age, the fact of being in couple, and the diploma of the chief of housing (see Annex 1).

The main result show that being unemployed lessens the chances of being mobile like Gobillon (2001) whichever the scale, at the city or at the employment area level[6]. If the chief of household was unemployed in 2002, his probability of moving out of his city decreases by 8,5 % compared to employed chief of household. When looking at the results at the employment area level, being unemployed also decreases the probability of changing accommodation inside the same area (-6,2 %) even more than outside the area (-3,4 %) compared to employed people, which could be interpreted as the fact that unemployed individuals when moving, rather go to places in nearby cities. Unemployment has a stronger effect on short-distance mobility than on long-distance one. People are ready to bear mobility costs when these are lower than expected benefits. Control variables have the expecting effects and confirm usual results obtained in the literature.

Multinomial logit models have also been run on subsamples to see if unemployment has different effects according to some specific characteristics. Separated analyses have been computed according to the gender of the chief of household, his age, his family situation and education level. On the whole, unemployment always reduces the propensity of moving. However, the effect is weaker for female (-6% compared to -10% for male). When analyzed according to the age of the chief of household, it appears that younger unemployed individuals have a lower probability to move in another city (-17%) than other age groups. The effect is almost the same for single jobseekers or those who are in couple (-9% and -8%).

Finally the effect of unemployment on short-distance moves is never significant except for high educated unemployed individuals (-7%) and the effect on long-distance moves is not significant. High qualified unemployed individuals are probably the category the more ready to move at least outside their own city.

[6] Results are presented in annex 2

Table 2. Multinomial logit model at the municipality level on the propensity to move.

		Moving	
	Not Moving	Inside the same city	Towards another city
Age *(ref: 25-29)*			
30-34	0,048***	-0,012	-0,037***
	(0,009)	(0,006)	(0,007)
35-44	0,133***	-0,033***	-0,100***
	(0,009)	(0,006)	(0,007)
45 and more	0,200***	-0,061***	-0,139***
	(0,009)	(0,007)	(0,008)
Family status *(ref:Living as a couple)*			
Man, living alone	0,035***	-0,007	-0,028***
	(0,009)	(0,007)	(0,008)
Woman, living alone	0,058***	0,001	-0,058***
	(0,007)	(0,005)	(0,006)
Number of children	0,005	0,004	-0,008**
	(0,003)	(0,002)	(0,003)
Country of birth *(ref: France)*			
Foreign country	0,061***	-0,006	-0,055***
	(0,008)	(0,006)	(0,008)
Education *(ref: no diploma)*			
Technical/professional formation	-0,034***	-0,005	0,039***
	(0,007)	(0,005)	(0,007)
Bac to bac+2	-0,079***	0,003	0,076***
	(0,008)	(0,006)	(0,007)
More than bac+2	-0,114***	0,021***	0,093***
	(0,008)	(0,006)	(0,007)
Professional status *(ref: worker)*			
Unemployed individuals	0,100***	-0,016	-0,085***
	(0,013)	(0,009)	(0,013)
Professional stability *(ref: permanent contract)*			
Provisional contract	0,031***	0,014***	-0,045***
	(0,005)	(0,004)	(0,005)
Occupational status *(ref: tenant)*			
For free	-0,023	-0,010	0,033**
	(0,013)	(0,010)	(0,011)
First-time buyer	0,305***	-0,140***	-0,165***
	(0,008)	(0,007)	(0,007)
Owner	0,160***	-0,082***	-0,078***
	(0,007)	(0,006)	(0,007)
Housing occupational duration	0,003***	-0,001***	-0,002***
	(0,001)	(0,001)	(0,001)
Opinion about the dwelling *(ref: unsatisfied)*			
Satisfied	-0,002	0,015**	-0,013*
	(0,007)	(0,005)	(0,006)

Lecture: workers and unemployed in 2002 (20953 observations. *** significant at 1% level, ** at 5% level, * at 10% level. Being unemployed increases not to move probability about 10%.

Source: National Housing Survey, 2006, INSEE.

Estimation results are thus different from what we expected from the stylized facts. It seems that, on the whole, unemployment decreases long-distance mobility. Nevertheless it is noteworthy that the effect on short-distance migration is not significant.

We now deepen the analysis focusing exclusively on unemployed individuals and explore the determinants of mobility for mobile jobseekers. We wonder why some unemployed individuals are mobile whereas others are not, especially if unemployment decreases the propensity to move.
One noteworthy fact is that when unemployed individuals move, it is more often towards a less favorable location compared to employed ones.

IV- Personal and unobservable characteristics play a major role in jobseekers' mobility

In this section we only focus on the determinants of mobility experienced between 2002 and 2006 by unemployed individuals. We run the same analysis on employed individuals to highlight some noteworthy aspects.
From existing literature, determinants of mobility are assumed to belong to three kinds. Mobility can be driven by housing considerations, family change or can be related to employment. Nevertheless these explanations have been well documented already. Our objective is not to comment them but to control for them and to focus on the role of land characteristics. Falling in with the theory on spatial mismatch and segregation (see Zenou, 2006 for example), we want to analyze if land has rather some attractive or locking-in effects, called push and pull effects. Controlling for some housing, family and job-related characteristics, the remaining determinants of mobility are land or individual (and unobservable) characteristics.

Housing characteristics are taken into account thanks to a question about the satisfaction expressed by the chief of household about his accommodation. We consider that this variable summarizes most of the reasons that could provoke a move. If the answer is positive, that means that the housing fits the household needs. We also have information on the housing status[7]. We include family characteristics thanks to a variable in 2006 relative to the changes that may have occurred in the family in the last four years. Finally, using job-related variable generates an endogeneity bias. The use of a simple probit model estimating the odds of moving is not possible as we are confronted to a simultaneity issue generated by the fact that employment and mobility are highly correlated. It is really hard to disentangle between the effect of moving between 2002 and 2006 on finding a job between those two dates and the opposite: the effect of finding a job between 2002 and 2006 on changing one's residential location. Endogeneity bias is also reinforced by the fact that mobile unemployed individuals may have specific characteristics that enhance their probability of finding a job.

[7]Unfortunately, the item "social housing" is not available in the 2002 survey.

In such a case, the use of a bivariate probit model is a way to control for the endogeneity bias. The two interest variables, the probability of moving and the probability of getting a job are not independent variables. $cov(\varepsilon_1, \varepsilon_2) \neq 0$, so their joint probability is not only the product of their marginal probabilities. We thus use a bivariate normal distribution which gives the following joint density:

$$\phi(u_1 u_2) = \frac{1}{2\pi\sigma_{u1}\sigma_{u2}\sqrt{1-\rho^2}} \exp\left[-\frac{1}{2}\left(\frac{u_1^2 + u_2^2 - 2\rho u_1 u_2}{1-\rho^2}\right)\right]$$

ρ represents the correlation coefficient between the two error terms.

To make the model estimable, we need some instrumental variables that are used for the identification of the parameters of interest. We use several of them. They have to be correlated with the endogenous variable but not with the dependent one. We first use here the declared judgment about the accommodation, a variable on the family changes that have occurred during the period and the characteristics of the arrival area.
Four situations can occur: the jobseeker has moved and found a job $(P1i)$, the jobseeker has moved but is still searching a job $(P2i)$, the jobseeker has not moved and found a job $(P3i)$ and last, the jobseeker has not moved and not found a job $(P4i)$.

Our two probit equations are a *mobility equation* estimating the probability of moving and the *job equation*. In order to take into account the effect of land characteristics on the risk of moving we need to use both characteristics of the departure city in 2002 and those of the arrival city in 2006 for individuals who have moved. The first equation estimates the probability for an unemployed individual of having changed her residential location between 2002 and 2006. We use individual characteristics such as the age, the country of birth, the level of education and the family status (fam). We control for the satisfaction about their accommodation ($hous$), and the potential change in the family (ch_{fam}). The land characteristics are those of the city of departure. They include the average score of the city ($land02$)[8], the number and quality of the amenities ($facilities02$), the urbanization rate (urb) to discriminate between rural and urban environment, the share of individuals commuting with public transports ($transp$), to qualify the accessibility of the city, and the share of jobs belonging to the secondary sector in the employment area ($jobsec$) to characterize the local job market

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The estimation is written as follows:

$$\begin{aligned}\Pr\{demgt_i = 1\} &= \beta_0 + \beta_1 age02 + \beta_2 birthcoun + \beta_3 diploma + \beta_4 fam + \beta_5 hous + \beta_6 urb \\ &+ \beta_7 transp + \beta_8 ch_{fam} + \beta_9 satisf + \beta_{10} job02 + \beta_{11} land02 + \beta_{12} facilities02 \\ &+ \beta_{13} jobsec + \varepsilon_1\end{aligned}$$

[8] As presented in section II.

For the second equation, the dependent variable takes the value 1 or 0 according to the fact that a jobseeker in 2002 has found a job in 2006. The equation takes a probit form and is written as below:

$$\Pr\{job06_i = 1\} = \beta_0 + \beta_1 age06 + \beta_2 birthcoun + \beta_3 diploma + \beta_4 child + \beta_5 land06 + \beta_6 facilities + \beta_7 transp06 + \beta_8 hous06 + \beta_9 jobsec + \varepsilon_2$$

Land characteristics now concern the city of arrival.

As in a classical probit model, the probabilities of moving and finding a job depend on two latent variables $demgt_i$ and $job06_i^*$ defined by:

$$demgt_i = \beta_0 + \beta_1 age02 + \beta_2 birthcoun + \beta_3 diploma + \beta_4 fam + \beta_5 hous + \beta_6 urb + \beta_7 transp + \beta_8 ch_{fam} + \beta_9 satisf + \beta_{10} job02 + \beta_{11} land02 + \beta_{12} facilities02 + \beta_{13} jobsec + \varepsilon_1$$

$$job06_i = \beta_0 + \beta_1 age06 + \beta_2 birthcoun + \beta_3 diploma + \beta_4 child + \beta_5 land06 + \beta_6 facilities + \beta_7 transp06 + \beta_8 hous06 + \beta_9 jobsec + \varepsilon_2$$

which follow a normal distribution N(0,1).

Results show that our three control variables are significant. Then, controlling for the endogeneity bias, we find that, except the urbanization rate, no land characteristics are significant. Jobseekers tend to move more when initially living in more rural areas, but the average score of the city in 2002 has no effect nor the number and quality of the amenities of the city, the share of jobs belonging to secondary sector, or the accessibility of the city. All of these observations converge to note that there seem to be no kind of push effect that could be related to unfavorable characteristics of the original location place.

The simultaneity issue is well confirmed as unemployed individuals' mobility has a significant and positive effect on the probability of finding a job. Land characteristics have also no significant effect in the second equation, confirming our interpretation.

To summarize, controlling for job, family and housing characteristics, it appears that jobseekers' mobility is more drawn by individual and especially unobservable characteristics. Staying in an accommodation for free increases the probability of moving whereas becoming owner decreases it as expected (having an accommodation for free includes living in her employer's accommodation). Being born in a foreign country reduces the propensity to move.

Table 3.Bivariate probit estimation on the determinants of mobility – Unemployed individuals

Probability of Moving (Equation 1)		
	Coeff.	Std. Dev.
Age	-0,022***	(0,005)
Country of birth ***(ref: France)***		
Foreign country	-0,262**	(0,122)
Professional change	0,522***	(0,098)
Education ***(ref: less than baccalaureat)***		
Baccalaureat and more	0,236	(0,151)
Family status ***(ref: living as a couple)***		
Man, living alone	-0,194	(0,140)
Woman, living alone	-0,099	(0,102)
Occupational status ***(ref:tenant)***		
For free	0,504**	(0,251)
First-time buyer	-0,596***	(0,202)
Owner	-0,289	(0,183)
Opinion about the dwelling ***(ref: unsatisfied)***		
Satisfied	0,390***	(0,107)
Changes in family structure	0,348***	(0,098)
Municipality average score	0,005	(0,005)
Facilities ***(ref.: none)***		
Proximity pole	-0,073	(0,298)
Intermediary pole	0,128	(0,297)
Superior pole	0,252	(0,320)
Urbanization rate	-0,549***	(0,187)
Public transport	0,000	(0,000)
Share of jobs in the secondary sector	-0,060	(0,873)
Constant	-0,431	(0,511)
Probability to find a job (Equation 2)		
Moving	1,421***	(0,178)
Age	-0,015***	(0,006)
Country of birth ***(ref: France)***		
Foreign country	0,097	(0,102)
Family status ***(ref: living as a couple, partner does not work)***		
Living as a couple, partner works	0,697***	(0,177)
Man, living alone	0,043	(0,132)
Woman, living alone	-0,121	(0,116)
Number of children	-0,020	(0,038)
Housing status ***(ref: tenant)***		
For free	-0,441*	(0,268)
First-time buyer	0,457***	(0,174)
Owner	0,103	(0,163)
Social housing	-0,099	(0,088)
Municipality avera score	0,004	(0,003)
Public transport	-0,000	(0,000)
Share of jobs in the secondary sector	-0,704	(0,692)
Constant	0,235	(0,323)

Population: Head of households unemployed in 2002 (927 observations).

Lecture: *** significant at 1% level, ** 5%, * 10%. Moving significantly increases the probability to find a new job.

Source: National Housing Survey, 2006, INSEE.

As a test of robustness, when running the same model on the subsample of employed individuals, we find totally different results, confirming the specificity of the behavior of the unemployed population (annex 3). Control variables for job, family and housing characteristics are also significant and positive. The average score of the city of departure is significant, but the coefficient is very low. Then, having different types of amenities increases the probability of being mobile as well as living in an area with a high number of industrial jobs. This could be explained by the fact that mobile employed individuals tend to leave cities and move towards more remote areas. Workers' mobility is not only depending on their individual characteristics but also by those of their residential location unlike unemployed individuals.

Finally, in a last section, we focus on immobile jobseekers to explain the opposite side of mobility. We discriminate between individual, local and characteristics relative to segregation thanks to an OLS model. In the next section, we detail the method we use and the results.

V- Individual and unobservable characteristics play a major role in jobseekers' immobility

For the last part of the analysis, we only keep jobseekers who have not moved between 2002 and 2006 and we analyze the duration of their stay in the accommodation in years. All variables of interest are computed at the neighborhood level, except the urbanization rate, the share of jobs belonging to the secondary sector and the indicator of segregation.
We compute almost the same average score at the neighborhood level. The only difference is that we omit the unemployment rate in the classification as we use it in a different way in the segregation indicator.

We thus run an OLS estimation with the time spent in the dwelling in years as the dependent variable:

$$Y_i = \beta_0 + \beta_1 indiv + \beta_2 land + \beta_3 segreg + \varepsilon_i$$

where we use the age, the number of children, the country of birth, the family status, any professional change, education and housing status as individual covariates ($indiv$). To characterize the accommodation areas, we include opinion about the housing and the neighborhood, the average score of the neighborhood, the number and quality of the amenities and the urbanization rate in the $land$ variable. And we compute an indicator of heterogeneity in the unemployment rates, based on the literature on segregation (Apparicio, 2000, Duncan and Duncan, 1955).

$$IS = \frac{1}{2}\sum_{i=1}^{n}\left|\frac{x_i}{X} - \frac{t_i - x_i}{T - X}\right|$$

where x_i represents the number of long-time jobseekers (more than one year) in the neighborhood i. X represents the total number of jobseekers in the city. T_i represents the population of neighborhood i and T represents the total population of the city. It is used to compare the distribution of unemployed people of each

neighborhood to that of the city. It gives an idea of the concentration of a high rate of long-term unemployment in some areas and thus an idea of the quality of the city.

Once more, it seems that only individual characteristics are significant and play a role in the immobility of jobseekers. Knowing a change in the professional situation as well as staying unemployed does not have an effect on mobility strategies. Significant individual characteristics are the age: the older a jobseeker is, the less he moves; the number of children : having children increases the propensity to move.
The more educated jobseekers are, the more mobile they are. Finally we confirm that living in an accommodation for free, owning her accommodation or living in social housing increases the time spent in the dwelling. This result goes in the same direction than existing literature, showing that people living in social housing tend to stay there.

Table 4. OLS regression on the determinants of jobseekers' immobility

	Time spent in the dwelling	
	Coeff.	Std. Dev.
Age	0,214***	(0,024)
Number of children	-0,776***	(0,194)
Country of birth *(ref: France)*		
Foreign country	-0,649	(0,561)
Family status *(ref: living as a couple, partner does not work)*		
Living as a couple, partner works	-0,064	(0,899)
Man, living alone	0,972	(0,691)
Woman, living alone	-0,345	(0,599)
Occupational change *(ref: yes)*		
Staying unemployed	-0,363	(0,462)
Education *(ref: no diploma)*		
Professional or technical formation	-0,563	(0,504)
Baccalaureat to bac+2	-2,133***	(0,731)
More than bac+2	-2,588***	-0,790
Housing status *(ref: tenant)*		
For free	5,161***	(1,419)
First-time buyer	0,420	(0,810)
Owner	7,650***	(0,777)
Social housing	2,262***	(0,575)
Opinion about the housing	-0,006	(0,105)
Opinion about the neighborhood	0,253**	(0,105)
Average score of the neighborhood	0,010	(0,019)
Facilities	-18,974	(12,792)
Employment rate in the secondary sector	-4,579	(3,600)
Urbanization rate	0,063	(0,842)
Unemployment Segregation Indice	-2,332	(2,855)
Constant	1,815	(2,128)

Lecture: *** significant at the 1% level, ** 5%, * 10%. Number of observations: 965. R-squared:0,3266. Adjusted R-squared: 0,3116. A good opinion about the neighborhood significantly increases the time spent in the dwelling.

The only significant variable of land characteristics is the judgment of the chiefs of household on the neighborhood. When their opinion is good, households stay a longer time in the accommodation. One interesting fact is the gap between the perception of the quality of the neighborhood and its objective nature, as computed by the average score. Jobseekers stay longer in the neighborhood when they have a good opinion about it, but their judgment might not be totally based on objective favorable elements.

CONCLUSION

This study, made from the National Housing Surveys of 2006, confirms well some results found in the literature, like those of Gobillon (2001). Unemployment has a negative impact on residential mobility, especially on long-distance mobility (which is outside the city or the employment area). If the chief of household is unemployed, his probability of moving is clearly less than the one of an employed one. Next, we have noticed that when jobseekers are moving, it is often towards areas that are at best the same in terms of characteristics, but often less favorable. We thus have focused on mobile jobseekers and observed the determinants of their mobility. Controlling for some classical explanations like the characteristics of the dwelling, a change in the family situation or in the professional situation, we find that their moving behavior is not driven by land considerations. On the opposite, individual characteristics like age or country of birth and probably unobservable characteristics generate mobility. And moving increases the probability of finding a job. Based on existing literature, this result could seem in contradiction with the fact that they often settle in less favorable areas. But considering these results, seeing that land characteristics have no effect on the probability of moving or on the probability of finding a job, it does not look so surprising.

When focusing on immobile jobseekers, the main result is close. We also find that individual and unobservable characteristics play the major part in their (im)mobility behavior. Land characteristics have no effect, except the opinion on the neighborhood which goes in a positive direction.

Finally, in terms of public policies we contradict a little some common results that tend to show some locking-in effects of the territory. In our analysis, jobseekers move less and toward areas that are not always better, but bad characteristics do not prevent them from moving or on the opposite staying at their place. They do not even reduce the probability of finding a job.

Annex 1A Multinomial logit model according to the age

	<30 years old (1)			30-49 years old (2)			>49 years old (3)		
		Moving			Moving			Moving	
	Not moving	Inside the same city	Towards another city	Not moving	Inside the same city	Towards another city	Not moving	Inside the same city	Towards another city
Family status *(ref:Living as a couple)*									
Man, living alone	0,170***	-0,057*	-0,113***	0,075***	-0,019	-0,056***	-0,019	0,012	0,007
	(0,026)	(0,027)	(0,030)	(0,014)	(0,011)	(0,013)	(0,011)	(0,008)	(0,009)
Woman, living alone	0,166***	-0,034*	-0,132***	0,086***	-0,0099101	-,0756966***	0,002	0,018**	-0,020*
	(0,021)	(0,021)	(0,025)	(0,011)	(0,008)	(0,010)	(0,009)	(0,006)	(0,008)
Number of children	0,008	0,011	-0,019	0,007	-0,001	-0,006	0,007	0,006**	-0,013***
	(0,012)	(0,010)	(0,013)	(0,004)	(0,003)	(0,004)	(0,004)	(0,002)	(0,004)
Being born in a foreign country	0,108***	-0,019	-0,090**	0,071***	-0,007	-0,064***	0,033**	-0,003	-0,030***
	(0,027)	(0,028)	(0,034)	(0,012)	(0,009)	(0,011)	(0,011)	(0,007)	(0,009)
Education *(ref: no diploma)*									
Technical/professional formation	-0,073**	-0,031	0,103**	-0,042***	-0,006	0,048***	-0,020*	0,000	0,020**
	(0,025)	(0,024)	(0,031)	(0,011)	(0,008)	(0,010)	(0,009)	(0,006)	(0,008)
Bac to bac+2	-0,166***	-0,057*	0,223***	-0,081***	0,003	0,078***	-0,045***	0,011	0,034***
	(0,027)	(0,027)	(0,033)	(0,013)	(0,010)	(0,011)	(0,011)	(0,007)	(0,009)
More than bac+2	-0,204***	-0,024	0,228***	-0,128***	0,030**	0,097***	-0,069***	0,016*	0,053***
	(0,029)	(0,027)	(0,033)	(0,013)	(0,010)	(0,011)	(0,011)	(0,008)	(0,009)
Being unemployed *(ref: worker)*	0,146***	0,020	-0,166**	0,114***	-0,023	-0,091***	0,055***	-0,008	-0,048**
	(0,040)	(0,042)	(0,055)	(0,019)	(0,015)	(0,019)	(0,017)	(0,010)	(0,015)
Having provisional contract	0,019	0,044**	-0,062**	0,035***	0,018**	-0,053***	0,029***	0,001	-0,030***
	(0,018)	(0,017)	(0,020)	(0,008)	(0,006)	(0,007)	(0,007)	(0,005)	(0,006)
Occupational status *(ref: owner)*									
Tenant	0,003	0,000	-0,004	-0,079**	0,055***	0,025*	-0,208***	0,103***	0,104***
	(0,035)	(0,030)	(0,036)	(0,011)	(0,009)	(0,010)	(0,011)	(0,008)	(0,009)
For free	0,026	-0,094	0,068	-0,080***	0,050**	0,030	-0,258***	0,100***	0,158***
	(0,052)	(0,052)	(0,055)	(0,021)	(0,016)	(0,018)	(0,018)	(0,013)	(0,014)
First-time buyer	0,708***	-0,241**	-0,467***	0,389***	-0,151***	-0,238***	-0,159***	0,059***	0,100***
	(0,049)	(0,075)	(0,077)	(0,015)	(0,015)	(0,015)	(0,011)	(0,009)	(0,009)
Housing occupational duration	-0,006*	0,006**	0,000	0,004***	-0,001*	-0,002**	0,001**	-0,001*	-0,001
	(0,002)	(0,002)	(0,003)	(0,001)	(0,001)	(0,001)	(0,000)	(0,000)	(0,000)
Having a satisfying opinion about the dwelling	-0,126**	0,009	0,116***	-0,022*	0,019*	0,003	0,053***	0,010	-0,063***
	(0,020)	(0,020)	(0,024)	(0,011)	(0,008)	(0,009)	(0,010)	(0,007)	(0,008)

Population: Workers and unemployed in 2002, (1): less than 30 years old (2227 observations); (2):30-49 years old (10413 obs.); (3) more than 49 years old (8313 obs.).

Lecture: *** significant at 1% level, ** at 5% level, * at 10% level. Being unemployed increases the probability to move about 14,6% for the less than 30 years old, about 11,4% for the 30-49, and about 5,5% for the more than 49 years old.

Source: National Housing Survey, 2006, INSEE.

Annex 1B Multinomial logit model according to the gender

	Male (1)			Female (2)		
		Moving			Moving	
	Not moving	Inside the same city	Towards another city	Not moving	Inside the same city	Towards another city
Age *(ref: 25-29)*						
30-34	0,049***	-0,017*	-0,032***	0,088***	-0,027*	-0,061***
	(0,010)	(0,007)	(0,009)	(0,015)	(0,011)	(0,012)
35-44	0,138***	-0,033***	-0,105***	0,158***	-0,055***	-0,103***
	(0,010)	(0,007)	(0,009)	(0,014)	(0,011)	(0,012)
45 and more	0,202***	-0,063***	-0,139***	0,228***	-0,079***	-0,149***
	(0,010)	(0,008)	(0,009)	(0,015)	(0,012)	(0,013)
Family status *(ref:Living as a couple)*						
Living alone	0,055***	-0,007	-0,048***	0,029**	0,006	-0,035***
	(0,008)	(0,007)	(0,008)	(0,011)	(0,008)	(0,009)
Number of children	0,012***	0,002	-0,013***	-0,004	0,007	-0,003
	(0,003)	(0,002)	(0,003)	(0,006)	(0,004)	(0,005)
Being born in a foreign country	0,064***	-0,003	-0,062***	0,068***	-0,019	-0,049***
	(0,010)	(0,007)	(0,009)	(0,015)	(0,011)	(0,013)
Education *(ref: no diploma)*						
Technical/professional formation	-0,045***	0,002	0,043***	-0,020	-0,011	0,031**
	(0,008)	(0,006)	(0,008)	(0,013)	(0,010)	(0,012)
Bac to bac+2	-0,087***	0,009	0,079***	-0,064***	-0,004	0,068***
	(0,010)	(0,007)	(0,009)	(0,014)	(0,011)	(0,012)
More than bac+2	-0,125***	0,015*	0,109***	-0,100***	0,027*	0,073***
	(0,010)	(0,007)	(0,009)	(0,015)	(0,012)	(0,013)
Being unemployed *(ref.:worker)*	0,110***	-0,009	-0,102***	0,092***	-0,026	-0,066***
	(0,017)	(0,012)	(0,017)	(0,018)	(0,014)	(0,016)
Having provisional contract	0,035***	0,012*	-0,047***	0,026**	0,015*	-0,041***
	(0,006)	(0,005)	(0,006)	(0,010)	(0,007)	(0,008)
Occupational status *(ref: owner)*						
Tenant	-0,188***	0,090***	0,097***	-0,113***	0,071***	0,042***
	(0,008)	(0,007)	(0,008)	(0,014)	(0,011)	(0,012)
For free	-0,178***	0,061***	0,117***	-0,192***	0,099***	0,093***
	(0,016)	(0,013)	(0,014)	(0,026)	(0,019)	(0,020)
First-time buyer	0,166***	-0,067***	-0,100***	0,094***	-0,040*	-0,054***
	(0,011)	(0,011)	(0,011)	(0,018)	(0,016)	(0,016)
Occupational duration	0,004***	-0,002***	-0,002***	0,002**	-0,001*	-0,001
	(0,000)	(0,000)	(0,000)	(0,001)	(0,001)	(0,001)
Having a satisfying opinion of the dwelling	-0,051***	0,025***	0,025**	0,061***	0,001	-0,063***
	(0,009)	(0,006)	(0,008)	(0,012)	(0,009)	(0,009)

Population: Workers and unemployed in 2002, (1): men (14577 observations); (2): women (7210 observations).

Lecture: *** significant at 1% level, ** at 5% level, * at 10% level. Being unemployed increases the probability to move about 6,4% for men, and about 6,8% for women.

Source: National Housing Survey, 2006, INSEE.

Annex 1C Multinomial logit model according to the family situation

	Couple (1)			Single (2)		
		Moving			Moving	
	Not moving	Inside the same city	Towards another city	Not moving	Inside the same city	Towards another city
Age *(ref: 25-29)*						
30-34	0,058***	-0,019**	-0,039***	0,084***	-0,027*	-0,057***
	(0,010)	(0,007)	(0,008)	(0,017)	(0,012)	(0,013)
35-44	0,145***	-0,039***	-0,106***	0,143***	-0,043***	-0,100***
	(0,009)	(0,007)	(0,008)	(0,015)	(0,011)	(0,012)
45 and more	0,236***	-0,074***	-0,162***	0,169***	-0,060***	-0,109***
	(0,010)	(0,008)	(0,010)	(0,015)	(0,012)	(0,012)
Number of children	0,011***	0,003	-0,014***	-0,003	0,005	-0,001
	(0,003)	(0,002)	(0,003)	(0,006)	(0,005)	(0,005)
Being born in a foreign country	0,058***	-0,002	-0,056***	0,072***	-0,016	-0,056***
	(0,009)	(0,007)	(0,009)	(0,016)	(0,012)	(0,013)
Education *(ref: no diploma)*						
Technical/professional formation	-0,045***	0,000	0,045***	-0,011	-0,011	0,022
	(0,008)	(0,006)	(0,008)	(0,013)	(0,010)	(0,011)
Bac to bac+2	-0,086***	0,011	0,074***	-0,054***	-0,012	0,066***
	(0,009)	(0,007)	(0,009)	(0,015)	(0,012)	(0,012)
More than bac+2	-0,117***	0,020**	0,097***	-0,103***	0,018	0,085***
	(0,009)	(0,007)	(0,009)	(0,016)	(0,012)	(0,013)
Being unemployed *(ref.: worker)*	0,089***	-0,012	-0,077***	0,110***	-0,022	-0,088***
	(0,018)	(0,013)	(0,018)	(0,018)	(0,013)	(0,016)
Having provisional contract	0,027***	0,011*	-0,038***	0,039***	0,018*	-0,057***
	(0,006)	(0,005)	(0,006)	(0,010)	(0,008)	(0,008)
Occupational status *(ref: owner)*						
Tenant	-0,197***	0,094***	0,103***	-0,073***	0,058***	0,015
	(0,007)	(0,007)	(0,008)	(0,015)	(0,012)	(0,013)
For free	-0,168***	0,061***	0,107***	-0,185***	0,089***	0,096***
	(0,016)	(0,013)	(0,015)	(0,024)	(0,019)	(0,019)
First-time buyer	0,167***	-0,057***	-0,110***	0,040*	-0,033	-0,007
	(0,011)	(0,010)	(0,011)	(0,020)	(0,017)	(0,016)
Occupational duration	0,003***	-0,001	-0,002**	0,005***	-0,003***	-0,002***
	(0,001)	(0,000)	(0,001)	(0,001)	(0,001)	(0,001)
Having a satisfying opinion of the dwelling	-0,096***	0,046***	0,050***	0,110***	-0,027**	-0,083***
	(0,009)	(0,007)	(0,008)	(0,011)	(0,009)	(0,009)

Population: Workers and unemployed in 2002, (1): the head of household living as a couple (14577 observations); (2): the head of household living alone (7210 observations).
Lecture: *** significant at 1% level, ** at 5% level, * at 10% level. Being unemployed increases the probability to move about 8,9% for couples, and about 11% for singles.
Source: National Housing Survey, 2006, INSEE.

Annex 1D Multinomial logit model according to the diploma

	< baccalaureat			baccalaureat - bac+2			> bac+2		
		Moving			Moving			Moving	
	Not moving	Inside the same city	Towards another city	Not moving	Inside the same city	Towards another city	Not moving	Inside the same city	Towards another city
Age *(ref: 25-29)*									
30-34	0,049***	-0,027***	-0,022*	0,090***	-0,019	-0,071***	0,076***	-0,001	-0,075***
	(0,011)	(0,008)	(0,009)	(0,019)	(0,014)	(0,017)	(0,021)	(0,015)	(0,018)
35-44	0,133***	-0,044***	-0,089***	0,172***	-0,041**	-0,131***	0,173***	-0,028	-0,145***
	(0,010)	(0,007)	(0,008)	(0,018)	(0,014)	(0,017)	(0,021)	(0,016)	(0,019)
45 and more	0,196***	-0,073***	-0,123***	0,243***	-0,047**	-0,197***	0,268***	-0,075***	-0,193***
	(0,010)	(0,008)	(0,009)	(0,020)	(0,017)	(0,020)	(0,022)	(0,018)	(0,021)
Family status *(ref:Living as a couple)*									
Man, living alone	0,038***	-0,002	-0,036***	0,070**	-0,016	-0,054**	0,033	-0,015	-0,018
	(0,010)	(0,008)	(0,009)	(0,021)	(0,016)	(0,021)	(0,022)	(0,017)	(0,020)
Woman, living alone	0,049***	0,005	-0,054***	0,078***	-0,021	-0,057***	0,092***	0,001	-0,093***
	(0,009)	(0,006)	(0,008)	(0,016)	(0,012)	(0,015)	(0,018)	(0,013)	(0,017)
Number of children	0,007*	0,003	-0,0010***	0,003	0,007	-0,010	-0,000	0,001	-0,001
	(0,003)	(0,002)	(0,003)	(0,007)	(0,006)	(0,007)	(0,007)	(0,006)	(0,007)
Being born in a foreign country	0,057***	-0,005	-0,052***	0,129***	-0,021	-0,108***	0,060**	-0,001	-0,058**
	(0,010)	(0,007)	(0,009)	(0,020)	(0,015)	(0,021)	(0,020)	(0,015)	(0,019)
Being unemployed *ref.: worker)*	0,101***	-0,015	-,086***	0,100**	0,001	-0,102**	0,121**	-0,072*	-0,049
	(0,014)	(0,010)	(0,013)	(0,033)	(0,024)	(0,033)	(0,039)	(0,036)	(0,038)
Having a provisional contract	0,026***	0,004	-0,030***	0,049***	0,018	-0,067***	0,028*	0,043***	-0,071***
	(0,006)	(0,005)	(0,006)	(0,013)	(0,009)	(0,012)	(0,013)	(0,011)	(0,012)
Occupational status *(ref: owner)*									
Tenant	-0,148***	0,099***	0,049***	-0,157***	0,057***	0,100***	-0,209***	0,080***	0,129***
	(0,010)	(0,008)	(0,008)	(0,017)	(0,014)	(0,017)	(0,016)	(0,014)	(0,017)
For free	-0,190***	0,096***	0,095***	-0,154***	0,046	0,108***	-0,182***	0,046	,0,136***
	(0,017)	(0,013)	(0,014)	(0,031)	(0,024)	(0,029)	(0,033)	(0,027)	(0,031)
First-time buyer	0,133***	-0,035**	-0,098***	0,216***	-0,126***	-0,090***	0,135***	-0,062**	-0,073**
	(0,013)	(0,012)	(0,012)	(0,023)	(0,023)	(0,024)	(0,021)	(0,020)	(0,022)
Occupational duration	0,004***	-0,001**	-0,003***	0,005***	-0,003**	-0,002	0,001	-0,001	-0,000
	(0,005)	(0,000)	(0,000)	(0,001)	(0,001)	(0,001)	(0,001)	(0,001)	(0,001)
Having a satisfying opinion of the dwelling	-0,034***	0,037***	-0,003	0,028	-0,019	-0,009	0,096***	-0,047***	-0,0485**
	(0,008)	(0,006)	(0,007)	(0,018)	(0,013)	(0,016)	(0,020)	(0,014)	(0,018)

Population: Workers and unemployed in 2002, (1): no diploma or less than baccalaureat (4009 obs.), (2): bac to bac+2 (4009 obs.), (3): more than bac+2 (3852 obs.).

Lecture: *** significant at 1% level, ** at 5% level, * at 10% level. Being unemployed increases the probability to move about 10,1% for head of households having no diploma or baccalaureat, about 10% for those having bac to bac+2 and about 12,1% for those having more than bac+2.

Source: National Housing Survey, 2006, INSEE.

Annex 2: Multinomial logit model at the Employment Area level on the propensity to move.

Determinants of mobility - Employment Area level			
		Moving	
	Not moving	Inside the same Emp. Area	To another Emp. Area
Age *(ref: 25-29)*			
30-34	0,050***	-0,035***	-0,014**
	(0,009)	(0,008)	(0,005)
35-44	0,134***	-0,098***	-0,036***
	(0,009)	(0,008)	(0,005)
45 and more	0,201***	-0,144***	-0,056***
	(0,009)	(0,008)	(0,006)
Family status *(ref:Living as a couple)*			
Man, living alone	0,035***	-0,028***	-0,006
	(0,009)	(0,008)	(0,006)
Woman, living alone	0,057***	-0,024***	-0,033***
	(0,007)	(0,006)	(0,005)
Number of children	0,005	0,002	-0,006**
	(0,003)	(0,003)	(0,002)
Country of birth *(ref: France)*			
Foreign country	0,059***	-0,043***	-0,016**
	(0,008)	(0,008)	(0,005)
Education *(ref: no diploma)*			
Technical/professional formation	-0,032***	0,019**	0,013*
	(0,007)	(0,007)	(0,005)
Bac to bac+2	-0,077***	0,027***	0,050***
	(0,008)	(0,008)	(0,006)
More than bac+2	-0,111***	0,044***	0,067***
	(0,008)	(0,008)	(0,006)
Professional status *(ref: worker)*			
Unemployed	0,096***	-0,062***	-0,034***
	(0,013)	(0,012)	(0,009)
Professional stability *(ref: permanent contract)*			
Provisional contract	0,031***	0,017***	-0,048***
	(0,005)	(0,005)	(0,004)
Occupational status *(ref: tenant)*			
For free	-0,022	-0,005	0,028***
	(0,013)	(0,012)	(0,008)
First-time buyer	0,305***	-0,235***	-0,070***
	(0,008)	(0,008)	(0,006)
Owner	0,159***	-0,125***	-0,035***
	(0,007)	(0,007)	(0,005)
Housing occupational duration	0,003***	-0,002***	-0,001***
	(0,000)	(0,000)	(0,000)
Opinion about the dwelling *(ref: unsatisfied)*			
Satisfied	-0,003	0,017**	-0,014**
	(0,007)	(0,007)	(0,004)

Population: Workers and unemployed in 2002 (20 953 observations).
Lecture: *** significant at 1% level, ** at 5% level, * at 10% level. Being unemployed increases the probability to move about 9,6%.
Source: National Housing Survey, 2006, INSEE.

Annex 3. Biprobit model on the probability of moving –Employed individuals

Moving probability		
	Coeff.	Std. Dev.
Age	-0,037***	(0,001)
Country of birth *(ref: France)*		
Foreign country	-0,207***	(0,035)
Professional change	0,184***	(0,029)
Education *(ref: less than baccalaureat)*		
Baccalaureat and more	0,354***	(0,028)
Family status *(ref: living as a couple)*		
Man, living alone	-0,062*	(0,036)
Woman, living alone	-0,164***	(0,029)
Occupational status *(ref:tenant)*		
For free	0,000	(0,055)
First-time buyer	-1,266***	(0,034)
Owner	-0,560***	(0,030)
Opinion about the dwelling *(ref: unsatisfied)*		
Satisfied	0,059**	(0,030)
Changes in family structure	0,420***	(0,023)
Municipality average score	0,002**	(0,001)
Facilities *(ref.: none)*		
Proximity pole	0,103**	(0,047)
Intermediary pole	0,170***	(0,052)
Superior pole	0,204***	(0,059)
Urbanization rate	-0,076	(0,048)
Public transport	0,000	(0,000)
Share of jobs in the secondary sector	1,131***	(0,206)
Constant	0,537***	(0,118)
Probability to find a job		
Moving	-0,549***	(0,124)
Age	-0,006**	(0,003)
Country of birth *(ref: France)*		
Foreign country	-0,301***	(0,042)
Family status *(ref: living as a couple, partner does not work)*		
Living as a couple, partner works	0,550***	(0,052)
Man, living alone	0,096**	(0,048)
Woman, living alone	-0,137***	(0,046)
Number of children	-0,019	(0,015)
Housing status *(ref: tenant)*		
For free	0,566***	(0,115)
First-time buyer	0,575***	(0,052)
Owner	0,469***	(0,058)
Social housing	0,326***	(0,042)
Municipality avera score	0,008***	(0,001)
Public transport	0,000	(0,000)
Share of jobs in the secondary sector	0,838***	(0,266)
Constant	1,053***	(0,158)

Population: Head of households having a job in 2002 (17640 observations).
Lecture: *** significant at 1% level, ** at 5% level, * at 10% level. Moving between 2002 and 2006 reduces the probability to have a job in 2006.
Source: National Housing Survey, 2006, INSEE.

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