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SPATIAL MISMATCH AND NEIGHBOURHOOD EFFECTS: AN ECONOMETRIC ANALYSIS OF UNEMPLOYMENT-TO-WORK TRANSITIONS[1]

Abstract. *This work aims at analyzing how urban organization affects unemployment-to-work transitions by considering spatial indicators. We can capture two effects: "spatial mismatch" and "neighbourhood effects". We implement survival models on a sample obtained from the matching of three French databases. We analyze the duration of the first employment with spatial indicators and we control for three potential biases (endogeneity bias, selection bias and attrition bias).*
Key words: *Survival analysis, unemployment-to-work transitions, spatial constraints, endogeneity bias, selection bias, attrition bias.*

JEL Classification: C41, J61, J64.

1. INTRODUCTION

Various studies in labour economics analyze the effects of individual characteristics and public policies on unemployment-to-work transitions. There is a scarce literature taking into account spatial indicators. Kain (1968) underlines that job accessibility is a main determinant of unemployment-to-work transitions (particularly for minorities, less-skilled workers). As a consequence, analyses on the relationship between town spatial organization and unemployment in local labour markets develop in North-America (Ihlanfeldt and Sjoquist, 1990; Rogers, 1997; Immergluck, 1998). In France, there are few papers on this topic. In 2002, Bouabdallah, Cavaco and Lesueur analyze the impact of spatial constraints on

[1] Acknowledgements: We are grateful to Richard Duhautois for his helpful suggestions. We would also like to thank participants at the CEE "Groupe mobilités" seminar. All remaining errors and shortcomings remain our own.
Data availability: Final database is available on request from the authors and the initial databases can be requested from the institutions which produce them.

unemployment duration. Gaschet and Gaussier (2004) discuss the spatial determinants of the unemployment-to-work transitions in the Bordeaux area and Gobillon et al. (2006) focus their analysis on the Paris region. Finally, in a recent paper, Duguet, Goujard and L'Horty (2007) highlight the importance of taking into account the spatial dimension in the study of unemployment-to-work transitions.

The aim of our research is to analyze how urban organization affects unemployment-to-work transitions and more precisely the duration of the first employment. The main contribution of this paper is the introduction of several spatial indicators. This permits to capture two separate effects. On the one side, we analyze the physical disconnection from jobs (the distance between residence place and working place) which can imply adverse labour market outcomes: The "spatial mismatch" phenomenon. On the other side, we study "neighbourhood effects": Residential segregation has a potentially harmful role on the economic outcomes of poor-area residents. In order to analyze the duration of the first employment, we implement survival models on a file obtained by the matching of three databases: the "Trajectoires des demandeurs d'emplois" survey, the 1999 French census and a database which contains town inventory information. Our analysis aims at controlling for three possible biases: endogeneity bias, selection bias and attrition bias.

The remainder of the paper develops as follows. Section 2 gives a review of the literature. Section 3 presents the data and the database construction. Section 4 outlines our econometric strategy; Section 5 presents our findings and discusses the results. Finally, Section 6 provides conclusion.

2. BACKGROUND

Highlighting the determinants of unemployment-to-work transitions is a recurrent aim in labour economics. The job search theory developed by Mortensen (1986), Lancaster (1990) or Cahuc and Zylberbreg (2004) analyzes the effects of individual characteristics and public policies on the job search process and on the unemployment duration. Nevertheless, job search models do not take into account the effects of individual's environment. For example, Holzer (1991) emphasizes the existence of a negative correlation between residence place and job search process, especially for less-skilled workers or ethnics minorities. This negative correlation hides the so-called spatial mismatch hypothesis. This hypothesis is firstly introduced by Kain in 1968. Kain argues that being disconnected from jobs (living away from jobs) can have important consequences on the unemployment process. Kain's theory led to a rich North-American literature analyzing the relationship between towns' spatial organization and local labour market unemployment. On the whole, this literature identified two broad channels linking the spatial mismatch hypothesis to bad labour market situations (Arnott, 1997).

The first channel is given by commuting costs. A physical disconnection between working place and residence place can lead to substantial commuting

costs, as most suburban locations do not have an appropriate public transportation system. In this case, workers face costs that are often too important in comparison with the salary they are offered. Coulson, Laing and Wang (2001) propose an urban model analyzing relationship between commuting costs and adverse labour-market outcomes. In an empirical paper, Holzer et al. (2003) show that the expansion of the railway system in San Francisco increases employment for minority workers living near the station.

The second channel is given by different features of the job search process. First, a worker residing away from job opportunities may encounter difficulties in obtaining information on jobs (Rogers, 1997). Simpson (1992) argues that metropolitan areas can be considered as a series of "islands" with information about job opportunities (information is free within islands but has a cost among islands). In these conditions, searching a job away from the residence area can be too costly. Jobseekers efficiently search only in a restricted area, near their residence, even if there are only poor-quality jobs (Davis and Huff, 1972). Other empirical studies show that physical distance to jobs reduces information availability regarding to job vacancies (Ihlanfeldt and Sjoquist, 1990, 1991). There are several explanations to this phenomenon: Some firms use spatially limited search modes such as having advertisements published in local newspapers, posting "wanted" signs in shops. Second, another mechanism which can explain unemployment relies on incentives to job search. Residents who pay low rents may feel less pressure to find a well-paid job. An empirical study of Patacchini and Zenou (2006) demonstrates that residential location may affect the job search effort. Using English sub-regional data, these authors confirm that an increase in housing prices raises the intensity of research.

The two channels presented above emphasize that if the residential area is located far from job opportunities, this can imply bad labour-market outcomes. No doubt, this has an impact in terms of social networks. An important part of jobs are usually found through personal contacts. If job seekers live far from jobs, the probability to have contacts in unemployment is high and so they could not rely on their "social networks". An individual residing in disadvantaged neighbourhoods benefits from poor quality social networks. In a recent paper, Selod and Zenou (2006) develop an urban model in which low-quality social networks increase unemployment in a given area.

Residing in neighbourhoods disconnected from jobs and with adverse labour-market outcomes has also consequences in terms of role models. Benabou (1993) shows that in areas where low-ability students are concentrated, human capital externalities can further deteriorate learning process and school achievements. A second consequence is that these neighbourhoods are often exposed to the emergence of social problems that can also deteriorate job seekers' employability. In 1991, Crane develops the epidemic theory of ghettos. His theory shows that the propensity of young people to adopt a given behaviour is strongly correlated with the proportion of individuals already showing this behaviour. For unemployed individuals this phenomenon is also verified: When adults in the

neighbourhood are unemployed, this does not determine young people to search a job. These fragile populations do not provide role models of social success and they do not motivate the others to find a job.

Although the spatial mismatch hypothesis and its consequences on local labour-market outcomes is tested in many North-American empirical studies, in France there are few papers on this topic. In 2004, Gaschet and Gaussier discuss the spatial determinants of the unemployment-to-work transitions in the Bordeaux area. They confirm the existence of spatial mismatch effects. Nevertheless, these effects depend on the distance considered in the construction of spatial indicators. Dujardin and Goffette-Nagot (2006) estimate the effects of living in a deprived neighbourhood on unemployment level in the Lyon area. They have the following result: Living in the 35% more deprived neighbourhoods of the Lyon area increases significantly the probability of being unemployed. Finally, Dujardin et al. (2003) / Gobillon et al. (2007) try to emphasize the determinants of unemployment in the Brussels metropolitan area / in the Paris region. The two papers find out that residential segregation plays an important role on unemployment rate. The results concerning spatial mismatch are more mitigated. Spatial mismatch hypothesis seems to be more valid in the Paris region than in the case of the Brussels metropolitan area.

In this paper, in order to analyze how the urban organization affects the unemployment-to-work transitions we use the French "Trajectoires des demandeurs d'emplois" survey. This survey is also used in some recent empirical studies (Cavaco and Lesueur, 2004; Choffel and Delattre, 2003; Bouabdallah, Cavaco and Lesueur, 2002). On the whole, the authors showed discriminatory effects of spatial constraints on unemployment duration and job search success. Bouabdallah et al. (2002) point out a negative effect of the enlargement of job search area on unemployment duration. In 2003, Choffel and Delattre analyze the impact of living in a sensitive urban area (called ZUS in France) on unemployment duration. They find out that living in a ZUS increases unemployment duration. This relation is partly explained by the transportation difficulties of ZUS residents.

3. DATA AND INDICATORS

In order to analyze unemployment-to-work transitions with spatial indicators, we use a rich statistical dataset obtained from the matching of three French databases.

First, we use *the "Trajectoires des demandeurs d'emplois" (TDE) survey* which is produced by the Statistical Department of the French Labour Ministry (DARES). This survey consists in analyzing trajectories of individuals entering French "Job centre" organisations (Agence Nationale pour l'Emploi – ANPE) between April 1st 1995 and June 30th 1995. Individuals' trajectories begin with a first sequence of unemployment. One of the original points of the survey is that individuals are all entering the ANPE at the same time. Individuals inhabit one of

the following three French regions: Nord-Pas-de-Calais, Ile-de-France and Provence-Alpes-Côtes-d'Azur and they are questioned three times (four for the residents of the Nord-Pas-de-Calais region). Each questioning corresponds approximately to a one year period. From a questioning to another not all the individuals respond, implying that the duration of the trajectory is different from an individual to another: There is a problem of attrition. DARES constructed a synthetic database which corresponds to a summary of individual trajectories after entering ANPE. The trajectory is divided in a number of sequences regarding individuals' situation on the labour market (being employed, unemployed, inactive). Our analysis is based on this specific file. The synthetic file initially contains 8,125 individuals (corresponding to 31,548 observations). All individuals in this file must begin their trajectory with a sequence of unemployment. We erase individuals who begin their trajectory with a non-unemployment episode (326 individuals). For some individuals, the first unemployment sequence is followed by another unemployment episode. We aggregate these two sequences into a unique first sequence of unemployment.

In this work we analyze the duration of the first employment of the trajectory. This represents our principal dependent variable (*first_empl*). We identify the existence and the duration of such a sequence. Depending on its position on the trajectory we construct a censure indicator (*cens_first_empl*). If *first_empl* is observed before the end of the observation period *cens_first_empl* equals to 0. If *first_empl* is observed at the end of the period of observation *cens_first_empl* equals to 1. We say then that the episode of first employment is right censored because we can not observe its end.

As one of the possible determinants of the duration of the first employment is the duration of the unemployment sequence since entering ANPE, we construct two other variables: Unemployment duration of the first sequence of the trajectory (*unempl*) and its right censure (*cens_unempl*). If individual trajectory is represented only by a unique unemployment sequence then *cens_unempl = 1*, otherwise *cens_empl = 0*.

Other potential determinants of the duration of the first employment are the other previous sequences. Before the first employment episode we can have sequences of inactivity, training period, education or unemployment. As the duration of *first_empl* depends not only on the type of the previous sequences but also on their duration, for each type of previous episode (inactivity, training period, education or unemployment) we construct three dummy variables in function of their duration (duration equals to 0, duration inferior to the median duration of the episode and duration superior to the median duration of the episode).

As we want to control for a possible attrition bias we construct an attrition variable (*attrition*) which is defined in the following way:

$$attrition = \begin{cases} 1, \text{ if the individual responded to the three waves of questioning} \\ 0, \text{ otherwise} \end{cases}$$

From the TDE survey we retain other explanatory variables. We first erase observations with missing values for the following variables: geographical region of residence retained at a fine level (the French *commune*), father's nationality, parents' occupational category, number of years since individual is living in his/her house, having driving licence, not having access to any transportation means, being owner of his/her house. For other explanatory variables the number of missing values is too important. We construct then a missing value category in order not to loose too much information. From the TDE survey, we finally use a rich range of indicators:

- *Individual characteristics:* Gender (man versus woman), age (four classes of age: 16-25, 26-35, 36-49, 50 or more), father's nationality (French versus other), individual's born place (France versus other), parents' occupational category when the individual was 16 (seven classes of occupational categories: Farmer; artisan, trader, entrepreneur; executive, engineer, professional, professor; technician, supervisor, travelling salesman, intermediate profession; white-collar worker; blue-collar worker and other-inactive, unemployed, retired and non response), number of years since the individual is living in his/her house, being owner of his/her house, qualification level (five categories: Primary education, secondary education, short technical education, long technical education and higher education), marital status (in couple, divorced and single), number of children (0, 1, 2 and at least 3 children), employment area where individual lives in (8 categories: Cergy-Pontoise, Mantes, Poissy-les-Mureaux, Roubaix, Lens, Aix en Provence, l'Etang de Berre and Marseille).
- *Household characteristics:* Income of the household where the individual lives in (three classes: Non response, inferior to the median household income (9050 francs) and superior or equal to the median household income), number of individuals living in the household, number of individuals having less than 15 years old living in the household, number of unemployed living in the household, number of individuals perceiving a financial benefit from the State.
- *Mobility constraints:* Having driving licence, not having access to any transportation means.
- *Characteristics of the last employment:* Type of contract (five categories: non response, permanent contract, fixed-term contract, temporary work and other contracts), reasons of loosing his/her last employment (five categories: Collective dismissal, other types of dismissal, demission, end of a fixed-term contract, other reasons), type of job (non response, full-time and part-time), occupational category (four categories: Blue-collar worker; white-collar worker; executive, engineer, professional, professor and technician, supervisor, travelling salesman, intermediate profession), duration of the last employment (in months), firm industry (five categories: Non response, agriculture, manufacture industry, tertiary industry and other), firm size (five categories: Inferior to 10 employees, between 10 and 49 employees, between 50 and 200 employees, 200 and more employees, non response).

- *Characteristics of the first unemployment sequence:* Situation before the ANPE unemployment sequence (six categories: Employment, education, training period, unemployment, inactivity and other), job search type (six categories: Network, temporary agency, local organisations, ANPE, school and other), perceiving the French minimum benefit (the French RMI) (three categories: Non response, yes, no), perceiving unemployment benefits (three categories: Non response, yes, no), job search intensity (five categories: Non response, less than 5 hours per week, between 5 and 10 hours per week, between 10 and 20 hours per week, 20 hours and more per week).
- *Characteristics of the first employment sequence:* Type of contract (five categories: non response, permanent contract, fixed-term contract, temporary work and other contracts), time to reach his/her job from residence place (seven categories: Non response, sales rep, less than 15 minutes, from 15 to 30 minutes, from 30 to 45 minutes, from 45 to 60 minutes, more than an hour), occupational category (six classes of occupational categories: Artisan, trader, entrepreneur; executive, engineer, professional, professor; technician, supervisor, travelling salesman, intermediate profession; white-collar worker; blue-collar worker and other – non response included), monthly salary (three categories: Non response, less than the median salary (5048 francs) and more than the median salary).

Second, we use *the 1999 French census*. We focus on population and employment characteristics of the towns where the unemployed individuals inhabit. From the 1999 census we construct two classes of indicators: Aggregated characteristics of the population of the geographical areas unemployed live in (calculated at the level of the French *commune*) and employment accessibility indicators. The first category is usually mobilized to capture "residential segregation" effects and the second category of indicators is traditionally used to control for "spatial mismatch". We also construct an indicator describing households' motorisation rate and another measuring the distance to the nearest railway station (in meters).
- *Aggregated characteristics of the population.* These indicators are calculated at the French *commune* level. We construct the following variables: Part of individuals without a diploma, part of working women, unemployment rate, part of working individuals of less than 30 years old, part of working foreigners, part of working individuals in employment who work in the employment area of the *commune*, ratio of the number of jobs and working people, part of people not having the French "A-level" (called the "Baccalauréat"- BAC) in the population of more than 15 years old.
- *Employment accessibility indicators.* First, we construct a spatial indicator which represents the ratio of the sum of jobs and of the sum of working individuals for all the *communes* that are accessible for an individual within a circle with a variable radius (20, 30 or 40 km) ($dens_i$). Second, we construct a very similar spatial indicator. For a given *commune* we identify using Euclidean distances all other *communes* included in a circle with a 35 km radius. Then we sum the jobs in all

these *communes* and we divide them by the sum of all the employments of the French region where the given *commune* is located ($dens_{35}$)[2]. This indicator gives the part of regional jobs accessible within a circle with a radius of 35 km. And finally, for each *commune*, for all individuals having a job, we calculate the average distance between their residence place and their working place (*avg_dist*).

Third, we use a database produced by the French National Institute of Statistics (INSEE) which contains *town inventory information*. From this database we construct the following variables: the existence of an ANPE in the *commune* (dummy variable), distance to the nearest highway (in km), access time to the nearest highway, distance to the nearest town having at least 10,000 inhabitants (in km).

As variables constructed from the 1999 census and from town inventory files are calculated at the level of the *commune*, we merge them with the TDE survey by the *commune* where the unemployed live in. After merging the three databases our sample is restricted to 7,544 unemployed individuals. Nevertheless, a part of the econometric estimation is made on a sub-sample of this database (only for individuals having a first employment); this reduces the sample to 5,102 individuals.

4. ECONOMETRIC STRATEGY

We analyze the duration of the first employment sequence with spatial indicators by using survival models. To estimate this duration, we use log-location scale models for which we assume a parametric form for the distribution of survival time. We explain the duration of the first employment episode with the following variables: duration of the first unemployment episode since the entrance to ANPE, other previous sequences before the first employment, individual characteristics, characteristics of the last employment before the entrance to ANPE, characteristics of the present employment and spatial indicators. For spatial indicators we retained the part of households where the reference individual is a blue-collar worker and a variable of disconnection from work (the travelling time between home and work). This equation is called the main equation and it is estimated on the sample containing 5,102 individuals.

We suppose that estimating the duration of the first employment can be affected by three biases: an endogeneity bias, a selection bias and an attrition bias. Concerning the endogeneity bias, we exclusively control it for the sequence of unemployment. It is simple to imagine that the first sequence of unemployment is not exogenous to the model. In order to control for it, we estimate in a separate

[2] $dens_{35} = \frac{\sum_j \text{jobs}_j}{\sum \text{jobs for the French region where the commune is located}}$; $dens_{35}$ is calculated for each commune and j represents all the communes that are accessible for an individual from his/her residence place in a circle with a radius of 35 km.

equation the duration of the first sequence of unemployment. We use once again a Weibull survival model and we estimate it on the sample containing 7,544 individuals. Then, we recuperate the estimated *xbetas* and we introduce them in the main equation instead of directly consider duration of the unemployment sequence. Explanatory variables for the duration of the first unemployment are: individual characteristics, characteristics of the last employment, characteristics of the unemployment period and spatial indicators. Concerning spatial indicators, we first make an analysis in terms of correlation. We note that we can not introduce at the same time an important number of such variables because they are highly correlated. We finally retain two variables: average distance residence place and work place (*avg_dist*) and unemployment rate. Our instrumental variables (variables that explain the duration of the unemployment episode but are supposed not to be correlated with the duration of the first employment) are the reasons of the end of last employment. Relationship between these indicators and the duration of the first employment is supposed not to be direct.

There can also be a problem of selection bias. We want to estimate the effects of the determinants of the first employment sequence, but not all individuals have such an episode. So, there is a possible bias related to the fact that having a first employment sequence (*h_first_empl*) is not randomly distributed among the population. With a probit model we explain in a separate equation the probability of having a first employment during the observation period:

$$h\_first\_empl_i = 1[having\_first\_empl*_i > 0] = 1[\phi + w_i\gamma + u_i] \quad (1)$$

h_first_empl* is a latent variable of having a first employment sequence ($h\_first\_empl = 1$) or not ($h\_first\_empl = 0$). 1[.] is the indicator function, i represents the individual and u_i is the error term which follows a normal distribution. This model is estimated on the 7,544 sample by using individual characteristics and some characteristics of the last employment. In order to control for the selection bias we calculate the inverse Mills ratios and we introduce them in the principal equation ($lambda_{first\_empl}$) instead of directly introducing a binary variable saying if an individual has or not a first employment episode. For the probit model it is not necessary to have an exclusion variable because the model is well identified (Maddala, 1974).

Finally, the fact that some people do not respond to the three waves of questioning may hide different realities: maybe they changed their address, maybe they refused to respond because of their situation on the labour market. In a separate equation, we estimate with a probit model the probability that individuals responded to the three waves (with individual characteristics):

$$attrition_i = 1[attrition*_i > 0] = 1[\eta + z_i\delta + v_i] \quad (2)$$

$attrition*$ is a latent variable of having responded to the three waves of questioning ($attrition = 1$) or not ($attrition = 0$). z_i represents the set of exogenous explanatory variables which are mainly individual characteristics. Even

it is not necessary to have an exclusion variable, we can suppose that the number of years since individual is living in his/her house affects the attrition probability. We can imagine that if the number of years is high the individual is attached to his/her residence and so there are less chances to change address and so finally this might increase the probability that an individual responded to the three waves. We can also imagine that there is not direct relationship between the number of years spent in the residence and the duration of the first employment. We then calculate the inverse Mills ratios and introduce them in the main equation ($lambda_{attrition}$).

5. RESULTS

5.1. Descriptive results

We calculate unemployment survival rates with non-parametric Kaplan-Meier estimators. This method permits to assess the instantaneous probability of acceding to a job. Kaplan-Meier estimators can reveal some discriminating effects of the spatial indicators. We analyze the potential effects of three spatial indicators: not having access to any transportation means, an employment accessibility indicator ($dens_{30}$) and unemployment rate. Estimators are calculated for a sub-sample of individuals: young people aged between 16 and 25 years old. We choose to focus on this population for two reasons: they represent a particularly fragile population and we can avoid some bias problems as, in general, young people still live with their parents. Results show that young people not having access to any transportation means are more likely to stay in unemployment for longer periods than individuals having access to at least one transportation means. Not having access to any transportation means seem to be very discriminating as it represents a major obstacle to mobility. So, these young individuals can not prospect for jobs in large areas. This result confirms the spatial mismatch hypothesis: a disconnection from jobs is adverse to an efficient job search process.

Job accessibility is measured with a spatial indicator ($dens_{30}$) which represents the ratio of the sum of jobs and of the sum of working individuals for all the *communes* that are accessible for an individual within a circle with a 30 km radius. We construct a dummy variable *dens30km* which is equal to 1 if $dens_{30}$ is superior to its average accessibility rate and which is equal to 0 otherwise. Results show that young people are more likely to endure important unemployment durations when they live in *communes* with poor job accessibility. Living close to areas rich in terms of employment increases the job accessibility and consequently decreases the unemployment survival rate.

Finally, we emphasize the effect of living in *communes* with an important unemployment rate. It appears that individuals are more likely to be unemployed in *communes* experiencing bad-labour markets outcomes. Individuals living in areas with low unemployment rate (inferior to the average) sensibly reduce their unemployment duration in comparison with others individuals close to areas with higher unemployment rates (superior to the average). This can be explained by the

existence of a residential segregation effect or of a neighbourhood effects. Living in a deprived neighbourhood has consequences in terms of school achievements and it may deteriorate individuals' employability.

5.2 Estimation results

Table 1 describes results of the estimation of the unemployment duration. Concerning mobility variables, we observe that having a driving licence reduces unemployment duration. On the contrary, not having access to any transportation means increases the duration of the first unemployment episode. These effects tend to show the necessity of being mobile during the job search process. Being motorised represents a way to accommodate physical disconnection between work place and residence place. However, the fact that *communes* do not have an appropriate public transportation system appears to be not significantly determining for unemployment duration. The distance to the closest railway station has also no effect on the duration of unemployment. Being a resident of one of the three Paris employment areas seems to be an advantage for the individuals: it diminishes unemployment duration. The explanation is that employment areas in Paris represent more dynamic local labour markets and they probably have a more efficient public transportation system. The previous situations of the unemployment sequence are also important determinants. Occupational categories, reasons for loosing the last job or characteristics of the last firm where the individual worked are also influential variables. An individual having known a collective dismissal or who had a part-time job faces more important unemployment duration. Moreover, the duration depends on the job search strategy. An intensive job search reduces unemployment survival. Finally, unemployment rate of the town where the individual inhabits highly affects unemployment duration. This variable can be seen as an indicator of the neighbourhood composition. Living in a place affected by substantial social problems may have consequences in terms of roles models. Towns with adverse labour-markets may deteriorate learning process, school achievements or job seekers' employability. Concerning the spatial mismatch hypothesis, we note that the average distance from residence place to work place, is "unfavourable" to the unemployment duration. An important distance is a proxy of the disconnection from jobs.

Table 1: Unemployment duration

Variable	Coefficient	Standard Error
Intercept	3,391***	0,1691
Gender - male	-0,1125***	0,0299
Classes of age		
16-25 years old	-0,1745***	0,0336
26-35 years old	ref.	
36-49 years old	0,1906***	0,0335

50 years old and more	0,6151***	0,0695
Born in France	-0,0806**	0,0349
Qualification level		
First school	ref.	
Primary education	0,0768*	0,0514
Secondary education	-0,1006*	0,0571
Short technical education	-0,0688*	0,0438
Long technical education	-0,2207***	0,0572
Higher education	-0,2101***	0,0534
Number of children		
No children	ref.	
1 child	-0,0296	0,0373
2 children	-0,0726*	0,0454
3 children and more	-0,1526**	0,0646
Number of individuals in the household	0,0714***	0,0136
Household's income		
Inferior to 9050 francs	ref.	
Superior or equal to 9050 francs	-0,2591***	0,0269
Having driving licence	-0,2234***	0,0333
Not having access to any transportation means	0,2408***	0,0315
Type of contract during the last employment		
Permanent contract	ref.	
Fixed term contract	-0,2124***	0,0563
Temporary work	-0,4609***	0,0656
Other contracts	-0,1675**	0,0636
Reasons of loosing the last job		
Collective dismissal	*ref.*	
Other types of dismissal	-0,126**	0,052
End of a fixed-term contract	-0,0639	0,0501
Demission	-0,1662**	0,0627
Other reasons	-0,0247	0,0534
Situation before the unemployment sequence		
Employment	ref.	
Education	-0,0996**	0,038
Training period	-0,2027***	0,0605
Unemployment	0,0958*	0,0537
Inactivity	0,3463***	0,041
Other	-0,1923***	0,061
Industry for the last employment		
Non response	-0,2325**	0,1132
Agriculture	-0,2452***	0,0659

Manufacture industry	ref.	
Tertiary industry	-0,0521	0,0971
Other	-0,1398***	0,0425
Firm size for the last employment		
Less than 10 employees	ref.	
10-49 employees	-0,095**	0,0373
50-99 employees	0,0377	0,0437
100-199 employees	-0,0931**	0,0408
More than 200 employees	-0,0436	0,0559
Last job was a part-time job	0,0946**	0,0379
Job search type during unemployment sequence		
Social and professional network	ref.	
Private employment agencies	-0,0648**	0,0319
Unsolicited application	0,0675	0,0492
ANPE	0,1478***	0,0269
Entrance examination	-0,2169**	0,0994
Other	0,123**	0,0622
RMI	-0,5154***	0,0514
Unemployment benefits	-0,5361***	0,0348
Job search intensity (hours/week)		
5 to 10	-0,0155	0,0333
10 to 20	-0,094**	0,0385
more than 20	-0,1889***	0,0434
Spatial constraints		
Average distance from residence place to work place	0,1124**	0,0054
Unemployment rate	0,9945***	0,2861
Weibull Shape	1,1095	0,0112
Log Likelihood	-10084,3	
Number of observations	***7271***	

*Field: Unemployed individuals entering ANPE between April 1st 1995 and June 1st 1995. Results are not reported for the following variables: parents' occupation, being owner, distance to railway station, employment areas, and occupation category of the last employment. * indicates significance at 10%, ** indicates significance at 5% and *** indicates significance at 1%.*

In a second equation we explain the probability of having a first job. Results are not reported in the paper. Most of variables retained have been already used in the previous estimation. Coefficients of this equation are relatively close to those of the unemployment duration model. Being a young man with a high level of diploma and with French parents is more "favourable" to employment access. In addition, it is surprising to see that a blue-collar worker is more likely to find a job than an executive

or a professional. As in the previous equation, living in Paris regions is better in terms of job accessibility than to live in PACA or in Nord-Pas-de-Calais. Finally, having a driving licence or a vehicle is still a consistent determinant to find a job.

Table 2: First employment duration

Variables	Coefficients	Standard Error
Intercept	1,9045**	0,9943
xbeta_unemployment	-0,0553*	0,038
$lambda_{first\_empl}$	-0,1134	0,2012
$lambda_{attrition}$	0,899	1,1726
Gender - male	-0,1453	0,1288
Classes of age		
16-25 years old	-0,1745***	0,0336
26-35 years old	ref.	
36-49 years old	0,0556	0,0048
More than 50 years old	0,1425	0,0695
Born in France	-0,0688	0,0817
Father's nationality (=French)	0,0047	0,0387
Having driving licence	-0,0028	0,0469
Not having access to any transportation means	-0,0257	0,0475
Owner	-0,0261	0,0366
Distance to the railway station	0	0
Number of years in the house	0,0057	0,0052
Occupational category of the first employment		
Worker	ref.	
Employee	0,0582	0,0508
Intermediary profession	0,0658	0,0843
Executive or professional	-0,0516	0,0931
Firm industry for the first employment		
Other	-0,4345***	0,1311
Agriculture	0,095	0,0782
Manufacture	ref.	
Construction	-0,0146	0,107
Tertiary industry	-0,0194***	0,0487
Firm size for the first employment		
Less than 10 employees	ref.	
10-49 employees	-0,1135**	0,0438
50-99 employees	-0,0701*	0,0499
100-199 employees	-0,1662***	0,0469
More than 200 employees	0,0271	0,0668
Part-time job	-0,0228	0,0397

Type of contract for the first employment		
Permanent contract	ref.	
Fixed term contract	-0,6293***	0,0368
Temporary work	-2,0531***	0,2192
Other	-0,0814*	0,0511
Salary for the first employment		
Non response	-0,5154**	0,0514
Salary < median salary	ref.	
Salary > median salary	0,1484***	0,0360
Sequences between the registration to the French Job Centre and the first employment		
No inactivity	ref.	
Inactivity duration < median	0,1209	0,1116
Inactivity duration >median	-0,3039*	0,1791
No training period	ref.	
Training period <median	0,0531	0,0696
Training period >median	0,0691	0,0891
No education	ref.	
Education <median	-0,2716*	0,1835
Education>median	0,2018	0,1694
No unemployment	ref.	
Unemployment duration < median	-0,0263	0,0918
Unemployment duration > median	0,5562***	0,1337
Spatial constraints		
Travelling time (home-to-work) in minutes		
<15 minutes	ref.	
15-30 minutes	-0,0155	0,0371
30-45 minutes	-0,0207	0,0535
45-60 minutes	-0,1247**	0,0615
More than 60 minutes	-0,1512**	0,0566
Part of households where the reference individual is a blue-collar worker	0,4867*	0,2608
Weibull Shape	1,1965	0,0145
Log Likelihood	-6442,619198	
Number of observations	5,102	

*Field: Unemployed individuals entering ANPE between April 1st 1995 and June 1st 1995. Results are not reported for the following variables: parents' occupation, marital status, number of children, employment areas, household income, qualification level, and number of individuals in the household. * indicates significance at 10%, ** indicates significance at 5% and *** indicates significance at 1%.*

In a third equation we assess the determinants of individuals' non-responses to successive interviews. Our aim is to control for of a possible attrition bias. Results are not reported in the paper.

Finally, the main equation explains the duration of the first job (see table 2). We take into account three biases: an endogeneity bias (for the unemployment duration), a selection bias and an attrition bias. Estimates for $lambda_{first\_empl}$ and $lambda_{attrition}$ are not significant. Only *xbeta_unemployment* is significant confirming that unemployment duration is endogenous. We find that long first unemployment sequences imply short first employment episodes. A substantial duration of the unemployment sequence may be interpreted as a negative signal (a loss in terms of experience, knowledge or even sociability). Young people have shorter first employment durations. Variables as educational attainment, marital status or household information are not significant. Information concerning the first employment seems to be determinant for our analysis. Type of contract, firm size or time necessary to go to work are variables strongly influencing employment duration. We remark that an increase in the time between home and job location affects employment duration. Thus, an individual may quit his job in order to save money from transportation. A previous inactivity sequence with a duration superior to the median decreases employment duration. We note that a substantial unemployment sequence is relatively favourable to employment (it increases duration for the first employment). An important number of spatial indicators are tested in this model. We finally retain two variables: for "neighbourhood effects" we use the part of households where the reference individual is a blue-collar worker and for "spatial mismatch" we use a variable of disconnection from work (the travelling time between home and work). We note that living in a town with an important part of blue-collar workers has a positive effect on the duration of employment. We also observe that higher the disconnection between work and home, less are the chances to find an employment with a long duration.

6. CONCLUSIONS

We analyze how urban organization affects unemployment-to-work transitions by considering spatial indicators. We capture two separate effects: "spatial mismatch" and "neighbourhood effects". To study unemployment-to-work transitions, we implement survival models on a sample obtained by the matching of three French databases. We find that spatial indicators matter in the unemployment-to-work transitions, for both unemployment and employment durations. We emphasize that the unemployment rate of the town where the individual inhabits highly affects unemployment duration. This variable can be seen as an indicator of neighbourhood composition. Living in a place affected by substantial social problems may have consequences in terms of roles models. Concerning spatial mismatch hypothesis, we note that the average distance from residence place to work place is "unfavourable" to unemployment duration. An important distance is a proxy of the disconnection from jobs. We also find that living in a town with an important part of blue-collar workers has a positive effect on the duration of the first employment. We observe that higher the disconnection between work and home, less are the chances to have a long employment episode.

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