

Job Search, Spatial Constraints, and Unemployment Duration: An Empirical Analysis of the Cameroonian Case

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Abstract

The individual transition from unemployment to employment is conditioned by various elements. If some of them concern directly the individual characteristics of workers, while others implicate indeed their environment when searching for a job. The residential location, housing status, and high travel distances to each labor market area are factors that can influence the exit rate of unemployment. This paper aims to integrate, in a job search model with endogenous intensity, the spatial horizon of prospecting. This horizon is introduced through the prospecting distance, which influences both the arrival rate of offers and the search costs. The equilibrium properties of the model lead to an indeterminate effect of the prospecting distance on the unemployment duration. The micro econometric estimation of the structural model allows us to deal with this ambiguity. The method adopted takes into account not only the selection rule on access to employment but also the endogeneity of the choice of spatial mobility. Results highlight that the exit from unemployment is shorter as the prospecting distance increases, but the increase in this prospecting distance does not lead to a decrease in the reserve wage.

Keywords: Job Search, Unemployment Duration, Prospecting Distance

JEL Classification: C41, J61, J64

1. Introduction

For several years in Cameroon, the problem of unemployment, particularly among young people, has fueled debates in the political field and is at the same time the subject of reflection in the academic field. Indeed, the duration of unemployment is, according to Roubaud and Torelli (2013), estimated at 35 months in Cameroon. Compared to those observed in developing and developed countries, this duration of unemployment is quite long. That said, it is four times longer than in South Africa (9 months), nine times longer than in Brazil (4 months), and six times longer than in the United States (ILO, 2014). Faced with the difficulties of integrating and returning to employment, the literature has identified several potential factors that can reduce the duration of unemployment. The first factors, widely studied, are individual characteristics (Edwin, 2021 ; Issoufou, 2015). They are, for the most part, socio-demographic (gender, age, family status), and socioeconomic (initial training, qualifications, parents' social background). The second factors are cultural. These include the influence of the "Bamileké" ethnic group on entrepreneurial socialisation (Meliki, 2015), and the dominant modes of transition (the informal environment) (Fambeu, 2018). The third factors are institutional. They highlight the public policies carried out by the government over the recent decade (Avom and Nguekeng, 2019). Finally, spatial factors, which are more recent but less studied, especially in Africa, focus on the search environment, including spatial constraints encountered by job seekers during their search (Anderson et al., 2018 ; Bastiaanssen et al. 2020 ; Dong Liu and Mei-Po Kwan, 2020 ; Fan et al., 2014 ; Gobillon et al., 2011, Marinescu and Rathelot, 2018 ; Matas et al., 2010 ; Rupert and Wasmer, 2012).

For these spatial factors, the econometric studies that have accompanied the discussions have, however, made a significant contribution since the work of Mortensen (1986) and Lancaster (1990) to shedding light on the conditions for a return to employment. In these studies, it is shown that the decision rule for accepting a job is reduced to the determination of the reservation wage. The purpose of the latter is to make predictions about the variation of the search distance on the unemployment exit rate. Thus, in general, if the role of imperfect information and heterogeneity of agents (characteristics of job offers and job applications) has been particularly emphasised in the literature, on the other hand, the influence of the spatial component of the job search in Cameroon has been relatively less developed in both theoretical (De Lesdain, 1999) and econometric (Bougna and Nguimkeu, 2018) works. Yet, it is possible to consider that the place of residence (centre or suburb), the travel cost for the employment area, or the possibility of collecting information on employment using the internet are all variables likely to influence success in prospecting.

The study of return to work from the perspective of bringing together job search theory and spatial economics to account for the spatial mismatch is not new. Holzer et al. (1994), for example, found a relationship between job search, commuting, and job location for young black and white job seekers in the United States. Roger (1997) analysed the relationship between unemployment duration and the spatial distribution of jobs in Pennsylvania. Van Den Berg and Gorter (1997) establish, in the Dutch case, a more original relationship in which the job seeker's utility function explicitly takes into account both wage and commuting time. Wasmer and Zenou (2004) reveal the interactions between residential location and the labour market in the United States, and Bouabdallah et al. (2002) explain in the French case the effect of the choice of the spatial search horizon on the duration of unemployment.

Overall, the model analysed is sequential and the widening of the spatial search horizon is explained either by the owner of a transport vehicle, or by the Housing tenure status, or by the labour market prejudices of some employers concerning the reputation of the residential area. These past studies have confirmed the existence of the influence of spatial constraints encountered by job seekers during their search on the duration of unemployment. However, to our knowledge, no study on this relationship has been conducted in Africa in general and in Cameroon in particular. This paper aims to extend beyond standard search models to integrate prospecting distance in a job search model with endogenous intensity. This objective contributes in two ways to extending the existing literature on the country's spatial economy. First, by explicitly addressing the choice of the spatial horizon of job search and the effect of this choice on unemployment duration, we develop a structural model of a job search adapted to the Cameroonian context. The reason for this is that the location of jobs and households makes the configuration of Cameroon's urban space particular, resulting in high unemployment rates in the centres and suburbs of Cameroon's large cities¹. Moreover, this configuration of space seems to manifest one of the specificities of the Cameroonian spatial mismatch. Secondly, we empirically report on the conditions under which the extent of the spatial horizon of the search conditions the duration of unemployment in Cameroon.

The paper is organised as follows: Section 2 presents a structural model in which the choice of spatial search horizon affects the unemployment exit rate. Section 3 presents the methodology used to assess the influence of search distance on unemployment duration. Section 4 highlights the main results. The final section concludes the article.

2. Structural Model of Job Search

2.1 The Assumptions of the Model

We consider a partial equilibrium job search model that incorporates the main assumptions of the Mortensen (1986) endogenous search intensity model. The structure presented in this paper is an extension of the model developed by Sabatier (2002). The environment is stationary, the spatial area of exploration and the reservation wage are endogenous. Individuals are assumed to be risk-neutral, their time horizon is infinite and their rate of preference for the present is noted r . The characteristics of the vacancies are known to all the job seekers except

¹ Due to the potential for business location, the large cities of Cameroon have a polycentric configuration of spaces, i.e., on the one hand, disparate and multiple locations of employment areas (primary and secondary markets). On the other hand, city centres are juxtaposed with old, overcrowded old districts and high-standard districts. This configuration therefore leads to differences in the daily commute to work and even in hourly wage rates.

for the wage offered, noted w . This one is defined as a random variable with density function $f(w)$ and distribution function $F(w)$ known.

Job search behaviour is modelled through the effort made by each job seeker. And as Kahn and Low (1990) point out, this effort is mainly a search for information. In this respect, the collection of information on job vacancies, made indispensable by the tension of unemployment in the labour market, depends on the search channel used by individuals (national employment fund (FNE), internet, social network, personal initiative...), and on the spatial area of prospecting d . As Bouabdallah et al. (2002), we consider that the prospecting distance is, on the one hand, always positive in the case of a first insertion and, on the other hand, greater than the previously occupied commuting distance (\bar{d}), i.e. : $0 < \bar{d} < d$. This leads to considering the possibility that an individual who has already experienced a transition in employment characterised by a journey \bar{d} , will retain in his next unemployment period a prospecting area (d) greater than the one already agreed.

For each search sequence of duration h , the job seeker receives at most one job offer according to a Poisson process of parameter λ . The arrival rate of offers is given by the relation :

$$\lambda(s, d) = s + d^{1+\alpha}$$

It therefore depends positively on both the search channel (s) and the prospecting distance (d). This means that job seekers may mobilise the same search channel, but have different prospecting distances and thus not have the same probability of receiving a job offer. In other words, a large investment in the search and a large prospecting area ensure a higher probability of receiving a job offer. The influence of the prospecting distance on the arrival rate of offers is, however, more or less important depending on the efficiency effects linked to the search channel through the scale parameter α . These effects can occur before and after contact with an employer.

In the first case (*before*), they are related to the very nature of the search channel. For example, going through a social network (family, friends, acquaintances, etc.) can position the first person contacted as a relational bridge whose responsibility is to disseminate the information to other individuals. These last ones are then again, links in the chain of relationships that widen the spatial horizon of information gathering. These unobservable externalities make it possible to increase the efficiency of the social network by circumventing the spatial friction problems of unemployment. Similarly, existing bilateral cooperation agreements between the FNE and business promoters, or private placement firms and business promoters, allow for a wider and faster diffusion of the spatial horizon of information.

In the second case (*after*), when the search channel and the prospecting distance result in a meeting between a job offerer and a job seeker, even if this meeting does not lead to hiring, the interview provides the job seeker with new information. They may relate to an aspect of the skills to be acquired for the future position to be filled, or more broadly to the company's economic sector (Sabatier, 2002). In both cases, the job seeker can adjust his spatial search horizon according to the latest collected information.

Ultimately, both before and after, these efficiency effects make it possible to redirect the search channel by favouring the expansion of the prospecting distance. The parameter α is understood, for this purpose, as the average probability that the search channel adopted at the outset leads to the expansion of the prospecting area ($0 \leq \alpha \leq 1$).

The search cost function is a convex and increasing function of the search channel. It also increases with the distance of the prospecting. The more the job seeker mobilises channels that extend his prospecting distance on the labour market, the more the associated cost increases.

It is written: $C_R(s, d) = s^2 d^{1-\alpha}$

With $C_R(0) = 0$; $C'_R(0) = 0$; $C'_R(s) > 0$; $C''_R(s) > 0$; $C'_R(d) > 0$; $C''_R(d) > 0$

As Bouabdallah et al. (2002), the effective travel cost incurred for each job corresponds to the value taken by the search cost function for the commuting distance \bar{d} of the accepted job after matching with the vacancy, i.e. $\bar{C} = C_R(\bar{d})$. We assume therefore that the cost of travel in prospecting and the cost of travel in employment are characterised by the same functional form. In sum, if d^* is the optimal prospecting distance determined by the job seeker, we can write :

$$\bar{C} = C_R(\bar{d}) < C_R(d^*) \quad \forall 0 < \bar{d} < d^*$$

Finally, at each search sequence h , the individual receiving the offer has the choice to accept and stop prospecting or to refuse and continue looking for a job.

2.2 Reserve wage and optimal prospecting distance

To stop searching, the job seeker compares the benefit of continuing to prospect with that of stopping searching. Thus in the stationary state, the expected utility of the job seeker accepting a job with a wage W and a commute \bar{d} is given by the relation :

$$W(w - \bar{C}, \bar{d}) = \frac{1}{1 + rh} [(w - \bar{C})h + W(w - \bar{C}, \bar{d})] \quad (1)$$

Where $w - \bar{C}$ is its instantaneous income net of costs (travel and research) associated with prospecting. Thus, relation (1) shows that the utility expectation associated with taking a job is defined as the discounted sum of wages received during the time interval h and the discounted expectation of future earnings.

Multiplying equation (1) by $1 + rh$ we obtain the relation :

$$rW = w - \bar{C} \quad (2)$$

At the same time, in the stationary state, the expected utility of a job seeker verifies :

$$V = \frac{[b - C_R(s, d)]h}{1 + rh} + \frac{1 - \lambda(s, d)h}{1 + rh} V + \frac{\lambda(s, d)h}{1 + rh} E_w[Max(V, W)] \quad (3)$$

Where b is the utility of the leisure activity.

Relationships (3) shows that the utility expectation of a job seeker is the sum of the discounted instantaneous income net of the instantaneous cost of searching ($b - C_R(s, d)$), the instantaneous costs of accepting a job at a wage (W) higher than the reservation wage, and the discounted gains from continuing to search (V).

Multiplying equation (3) by $1 + rh$ and rearranging the terms gives :

$$rV = b - C_R(s, d) + \frac{\lambda(s, d)}{r} H(w) \quad (4)$$

Where $H(w) = \int_{w^*}^{+\infty} [1 - F(w)]dw$

Thus, given that individuals maximise their expected revenue streams under the assumption that their decisions at all future search sequences are optimal (Bellman's optimality principle), we define the reservation wage, w^* , and the optimal prospecting distance d^* (see demonstrations in the Appendix).

$$w^* = b + \bar{C} - \frac{2\alpha r s^2 d^{1-\alpha} - (1 + \alpha)s}{r(1 + \alpha)} \quad (5)$$

And

$$d^* = \left[\frac{(1-\alpha)s^2 r}{1+\alpha} \right]^{\frac{1}{2\alpha}} [H(w)]^{-\frac{1}{2\alpha}} \quad (6)$$

With a simple comparative statics exercise, it is possible to assess the total effect of increasing the prospecting distance on the unemployment exit rate. This rate, denoted θ , is defined as the product of the offer arrival rate and the probability of being offered a wage above the reservation wage. Thus we have :

$$\theta = \lambda(s, d)(1 - F(w)) \quad (7)$$

As Rogers (1997) points out, calculating the derivative concerning d , the total effect of the unemployment exit rate is ambiguous :

$$\frac{d\theta}{dd} = \underbrace{(1 - F(w^*)) \frac{d\lambda}{dd}}_{\text{direct effect } (<0)} + \underbrace{\lambda F'(w^*) \frac{dw^*}{d\lambda} \frac{d\lambda}{dd}}_{\text{indirect effect 1 } (>0)} + \underbrace{-\lambda F'(w^*) \frac{dw^*}{d\bar{C}} \frac{d\bar{C}}{dd}}_{\text{indirect effect 2 } (<0)} + \underbrace{\lambda F'(w^*) \frac{dw^*}{dC_R} \frac{dC_R}{dd}}_{\text{indirect effect 3 } (>0)} \quad (8)$$

This result emphasises first that a distance to jobs that is accompanied by a reduction in the arrival rate of job offers (*direct effect*) leads to a decrease in the reservation wage and reduces the duration of unemployment (*indirect effect 1*). Second, cumulatively, up to a certain threshold, the increase in the cost of commuting with the distance to jobs leads to an increase in the reservation wage, which harms the duration of the exit from unemployment (*indirect effect 2*). And finally, when the distance travelled during the search increases, ceteris paribus, this leads the job seeker to reduce his reservation wage, which reduces his unemployment duration (*indirect effect 3*). To remove this ambiguity, we propose to estimate econometrically the structural parameters of the model.

3. Data and Methodology

3.1 Data and Variables Presentation

The analyses are conducted using data from the fourth Cameroonian household survey (ECAM 4) of 2014. This is a budget-consumption survey that allows the government and its development partners to assess progress in improving the living conditions of the population and to make adjustments to economic policies. It covers topics such as household composition and characteristics, economic activities and income of household members, housing characteristics, household environment, etc., and follows on from the 2007 ECAM3 survey.

The study concerns urban residents, aged between 15 and 65. The sample used includes 13522 individuals from all over the country. The originality of this sample lies in the selection of individuals whose highest diploma obtained is at least 10 months old. In this perspective, the dependent variable "*duration of unemployment*" is calculated based on the question "*how long (Name) has he/she been working in this job*" as a difference between the duration of the current job and the age of the diploma. It allows us to evaluate, in months, the unemployment episodes of the individuals in the sample. It should be noted that we are reasoning about stocks and that we are interested in the job found after a complete episode of unemployment. There is therefore no left censoring of unemployment duration. One of the variables of interest in the model is the spatial area of prospecting. For its construction, it is necessary to specify its content since it is endogenous in the structural model.

The main difficulty in constructing it is that it is indirectly observable from the locations of homes and workplaces. However, according to the survey information, it is possible to observe the reasons for the mobility of individuals since the end of 2007. Thus, for those individuals in the population whose return to work was accompanied by a move to a location other than the one in 2007, the prospecting area is considered to have been expanded. The same applies to those who did not move to the same borough, but whose acceptance of the new job led them to change locality. For individuals with an ongoing unemployment episode, the widening of the prospecting distance is assessed by the fact that they consider moving to a new locality for a job or the search for a job. From this information, a PROSPECT variable is constructed as a binary variable that takes the value of unity for individuals in the sample whose return to employment is accompanied by an increase in prospecting distance and zero otherwise. We note that for 24.23% of individuals, spatial mobility accompanied access to the new job (see Table 1).

The control variables are the demographic variables (age, gender, education level, household size), the job search channel (social network, FNE, internet...), the standard of living variables (housing status and means of transport), and the spatial variable measuring the distance to the workplace.

As shown in Table 1, more than 40% of the population covered is young, female, and under 25 years of age. This population is relatively uneducated, with 28% holding a BEPC/CAP or less and 33% having no more than primary education. Nearly 98% of people found a job after a complete episode of unemployment. The average duration of an unemployment episode is between 67 and 68 months, i.e. more than 5 years. Given the context, this duration should be interpreted as an episode where the unemployed do not have access to a real permanent job rather than as some duration during which the individuals did not engage in any activity, even the most marginal.

During the unemployment spell, the most used job search channels are the social network (95.27%), followed by personal initiatives (2.14%). Three times less (0.31%) used the FNE and private employment agencies as well as advertisements on the internet, radio, and television (0.54%). It is tempting to conclude that the unemployed are pessimistic about the capacity of FNE agencies and private employment agencies to help them enter the labour market.

Table 1: Description of Data Used

	Observations
The staff concerned (urban area)	13522
Percentage of people employed	2,17 %
The average duration of unemployment	67,98 months
Individual characteristics (%)	
15-25 years	40,19
25-35 years	28,08
35-65 years	32,75
Is female	51,30
Average household size	5,72 people
Is without level	9,13
Primary level	23,81
Lower secondary level	28,34
Upper secondary level	24,7
Higher level	14,02
Channel and means of Job search (%)	
FNE and private employment agencies	0,31
Personal initiative	2,14
Internet, television, radio	0,54
Social network	95,27
Has a transport vehicle	21,26
Housing tenure status (%)	
Owners	49,84
Tenants	41,24
Receives housing allowance	8,91
Distance from home to workplace (%)	
Less than one hour	91,76
Between one and two hours	3,29
More than two hours	4,95
Spatial area of prospecting (%)	
PROSPECT	24,23

In addition to information on individual attributes and the search channel, some variables make it possible to understand, directly or indirectly, the travel and mobility constraints encountered by the researchers during the prospecting. In this respect, while more than 21% of the population own a transport vehicle, almost 50% own their home, 41.24% are tenants and only 8.91% receive a housing allowance. Van Den Berg and Gorter (1997) have also shown that family situation is a particularly discriminating criterion in the wage/commuting time trade-off. In our sample, we note that the majority of individuals come from households with more than five people.

Finally, the model assumes that the arrival rate of job offers varies with the place of residence according to proximity to jobs. In this study, workplaces are approximated to food markets. The distance (time) to the local food markets closest to the place of residence makes it possible to evaluate the proximity of individuals to job opportunities in their districts. This measure makes it possible, to account for the multicentric nature of areas, from the point of view of commuting. Thus, for almost the entire population (91.76%), the marginal cost of travelling to the workplace is less than one hour.

3.2 The Empirical Model

The structural model described in Section 2 assumes that the exit rate of unemployment depends exclusively on the search behaviour and the wages offered. Therefore, we are interested in how the choice of search distance influences the unemployment duration of a job finder. The proposed empirical model aims in this respect to estimating the survival time in the unemployment states conditional on the decision to enlarge the prospecting area. To do so, it is important to take into account the sources of bias relating firstly to the selection rule governing the probability of access to employment and secondly to the endogeneity of the decision to increase the prospecting distance. To do this, we apply in a first step Heckman's (1979) procedure by selecting the persons having had a job with the following Probit equation:

$$y_i^* = \beta_0 + \beta_1'X_i + \varepsilon_i$$

Where

$$y_i = \begin{cases} 1 & \text{if } y_i^* \geq 0 \text{ (the individual has a job)} \\ 0 & \text{otherwise (unemployment)} \end{cases}$$

X_i is the vector of individual characteristics and search channels. From the predicted value of y_i^* , the inverse of mill's ratio is calculated and introduced as the second variable of interest in the duration equation through the following relationship:

$$Imr = \frac{\phi(\hat{\beta}_0 + \hat{\beta}_1'X_i)}{\Phi(\hat{\beta}_0 + \hat{\beta}_1'X_i)}$$

Furthermore, since the mobility choice is influenced by several attributes, the endogeneity of the prospecting distance is treated according to the suggested procedure of Heckman and Robb (1985). This procedure consists in instrumenting the PROSPECT variable on the variables controlling the constraints perceived by individuals on their mobility possibilities. Given the discrete nature of PROSPECT, the instrumentation is carried out using the estimation of a Probit model. The predictor $\widehat{PROSPECT}$ is then introduced into the final estimation of the following lognormal duration model:

$$DURCH_i = \gamma'X_i + \delta'\widehat{PROSPECT}_i + \alpha'Imr_i + v_i$$

Whereas X_i is a vector of control variables for the model. The parametric estimation of the duration model under this specification provides the estimators $\hat{\gamma}$, $\hat{\delta}$ and $\hat{\alpha}$. The selection rule will be acceptable in this context if the estimator $\hat{\alpha}$ is statistically significant that is, if $E(\varepsilon_i, v_i) \neq 0$.

4. Results and Discussions

4.1 Econometric analysis

The econometric results are reported in Tables 2, 3, and 4. The estimation of the selection Probit equation in Table 2 leads to robust results at 76.25%. The calculation of the marginal effects leads to three main conclusions. First, compared to men, women's chances of access to employment decreased by 14.2%. This result reflects the strong discrimination against women in the process of insertion into the urban labour market in Cameroon. Secondly, referring to the uneducated, the probability of access to employment also increases as age and level of education

increase. We note that this probability is greater for primary school graduates (17.1%) than for secondary school graduates (6%) and higher education graduates (8.2%).

The reason for this could be that primary school graduates face lower financial burdens and thus have lower expectations regarding the wages offered in the urban labour market. Finally, for the search channel during the prospecting, the institutional intermediaries are abandoned by the graduates in favour of the social network (58.3%) and personal initiative (13%). This could be due to their greater sensitivity to the risk of deterioration of human capital. Therefore, they are more likely to turn to family and friends, who seem to provide more success or to directly canvass employers, rather than to institutional intermediaries, whose weaknesses include their inability to reduce the extent of discrimination.

Table 2: Probit on access to employment

VARIABLES	ACCESS	Margins
Age	0.041***	0.012***
	(0.001)	(0.0003)
Gender (ref. Male)		
Female	-0.460***	-0.142***
	(0.024)	(0.007)
Level of education (ref. No level)		
Primary	0.564***	0.171***
	(0.052)	(0.016)
Secondary	0.187***	0.06***
	(0.046)	(0.015)
Higher	0.258***	0.082***
	(0.054)	(0.017)
Size of household	-0.052***	-0.016***
	(0.004)	(0.001)
Job search channel (ref. No)		
Social network	2.234***	0.583***
	(0.162)	(0.020)
Personal initiative	0.472**	0.130**
	(0.204)	(0.049)
Public and private placement institutions	0.309	0.088
	(0.363)	(0.097)
Network, television, radio	0.308	0.088
	(0.286)	(0.077)
Constant	-2.778***	
	(0.177)	
Observations	13522	
Wald chi2(10)	1844.07	
Prob > chi2	0.0000	

Correct prediction percentage	76.25 %
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.	

Regarding the enlargement of the spatial prospecting area, Table 3 does not refute the static properties of the structural model. It provides results that are robust to almost 76%. We note that the propensity to move is an increasing function of age. Concerning the gender of individuals, being a woman tends to reduce the propensity to increase the spatial prospecting area by 2.2 points. It is also noted that referring to homeowners, tenants, and those receiving housing allowances, who generally bear less of the higher costs of mobility, have a higher propensity (28.4% and 15.2% respectively) to increase the prospecting area.

And, as in the spatial mismatch work (Bastiaanssen et al. 2020; Dong Liu and Mei-Po Kwan,2020) the constraints on search costs experienced by individuals who increase their prospecting area are mitigated for those who have a vehicle. The highly significant influence of these variables shows that the expansion of the prospecting area is associated with residential status.

Table 3: Probit on extending the prospecting distance

VARIABLES	PROSPECT	MARGINS
Age	0.002*	0.0005*
	(0.001)	(0.003)
Gender (ref. Male)		
Female	-0.079***	-0.022***
	(0.025)	(0.007)
Size of household	-0.002	-0.0007
	(0.001)	(0.001)
Log Distance Home-market	-0.013	-0.004
	(0.010)	(0.003)
Have a car or motorbike (ref. No)		
Yes	0.083***	0.024***
	(0.029)	(0.009)
Housing status (ref. owner)		
Tenant	0.956***	0.284***
	(0.029)	(0.008)
Housing allowance	0.587***	0.152***
	(0.045)	(0.013)
Constant	-1.192***	
	(0.059)	
Observations	13473	13473
Wald chi2(7)	1361.62	
Prob > chi2	0.0000	
Correct prediction percentage	75.73%	

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

The estimation also shows that individuals whose commute time to work is considered high are generally less mobile. However, while the expected sign supports expectations from the economic point of view², the insignificance of this variable does not seem to provide conclusive information.

Finally, the findings in Table 4 show the influence of the distance measured by the increase in the spatial prospecting area on the unemployment exit. A lognormal parametric estimation of the duration model has been carried out controlling for possible selection and endogeneity biases.

Table 4: Lognormal estimation of unemployment exit

VARIABLES	DURCH
Age	0.002***
	(0.001)
Gender (ref. Male)	0.000
Female	(0.007)
Level of education (ref. No level)	
Primary	0.003
	(0.013)
Secondary	0.010
	(0.012)
Higher	0.016
	(0.014)
Invers of Mill's ratio	0.069*
	(0.037)
Predictor of the PROSPECT variable	-0.003
	(0.008)
Job search channel (ref. No)	
Social network	0.927***
	(0.084)
Personal initiative	-0.080
	(0.117)
Public and private placement institutions	-0.028
	(0.190)
Network, television, radio	-0.563***
	(0.167)
Sigma	0.371***
	(0.011)
Constant	3.034***
	(0.126)
Observations	13473
Wald chi2(11)	507.10

² The less affluent unemployed canvass only in a limited area around the dwelling.

Prob > chi2	0.0000
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1	

The statistical significance of the inverse of Mill's ratio clearly shows that there is a selection bias that justifies the use of the three-step method. Also, the statistically significant value of the *sigma* coefficient, which is less than unity, allows us to conclude that the instantaneous probability of exiting the unemployment state increases with its duration. The coefficient of the predictor of the PROSPECT variable has a negative sign, which reinforces, *ceteris paribus*, the idea that the duration of the unemployment episode is shorter as more individuals invest in mobility.

However, the insignificance of this variable seems to predict that the positive direct effect of the increase in the offer arrival rate that is associated with the enlargement of the spatial area of prospection does not, on average, sufficiently offset the negative induced effect of the increase in the reservation wage net of the associated commuting cost. This is probably due to the size of the informal sector in the urban labour market which, given the vulnerability of workers in this sector, is unable to offer wages that cover all costs.

Finally, we note that among the search methods used to get out of unemployment, the active procedure of looking for advertisements on the internet, television, and radio is more effective than that mobilizing personal or family relations. This may be due to the informal environment of the urban habitat in Cameroon, highlighted by Kobou et al. (2021), which tends to offer small jobs that, although accepted, do not stop the search. Our results confirm that, as in other studies in the field (Avom and Nguekeng, 2019; Cavaco and Lesueur, 2004; Sabatier, 2002), procedures involving intermediation (public or private) are less effective in reducing the duration of unemployment than other procedures.

4.2 Discussion

In Cameroon, unemployment is very long-term. While its measurement in the study may seem trivial, it is nonetheless an indicator of the extreme difficulty encountered by the unemployed in integrating and/or reintegrating into the urban labour market. Given the context, it is obvious that for a way out of unemployment, the social network and the search for classified ads on the internet reveal the existence of a large economy. They allow for a significant increase in the production of information and transcend the effect of the costs associated with the distance one would have to travel. Moreover, they even seem to be perfectly complementary insofar as searching for advertisements on the Internet makes it possible to collect a large quantity of information, and activating the social network then makes it possible to select a limited number of job offers by acquiring more precise information on each of them. Thus, to think in this context that the distance to jobs of a well-informed unemployed individual does not encourage him to reduce his reservation wage is trivial.

This finding is quite robust among young people. Overall, this is more the case for less educated women with children and first-time claimants in higher education. The latter may modify their behavior to target several job categories and change the expected economic outcome. Our results on the female unemployed are thus in line with those obtained by Avom and Nguekeng (2019) on Cameroonian data, Cavaco and Lesueur (2004), Brunet et al. (2007) on French data, and Van Den Berg and Gorter (1997) on Dutch data.

5. Conclusions and Policy Implications

This article aimed to highlight the conditions in which the extent of the spatial horizon of the job search conditions the exit rate of unemployment. For this purpose, we first integrated the search distance into an endogenous search partial equilibrium model. This modifies simultaneously the arrival rate of offers and the instantaneous income of the job seeker. The equilibrium properties of the theoretical model led to an ambiguous effect of the spatial search horizon on the unemployment duration.

Considering the sources of bias relating, firstly, to the selection rule governing access to employment and, secondly, to the endogeneity of the decision to increase the prospecting distance, a three-stage structural model estimation procedure made it possible to remove this indeterminacy. As in the American studies on spatial mismatch, spatial mobility factors (residential status and ownership of a transport vehicle) play a significant role in the propensity to extend the prospecting horizon. The results on the duration of unemployment lead to the conclusion that, while the shorter the exit from unemployment, the more individuals invest in mobility, the wider the spatial search area does not seem to lead to a lower reservation wage. They also highlight economies and diseconomies of scope and scale. Finally, active search on the internet, television and/or radio and, to a lesser extent, the social network, are the two most effective ways to get out of unemployment quickly. The social network (mainly family and friends) favours rapid access to supported jobs only but does not guarantee satisfaction with the employment conditions.

The results converge to show that beyond individual attributes, the cultural environment, and the nature of public policies, the spatial area of prospecting also plays a determining role in the conditions of return to employment. In terms of recommendation, this means that future policies regarding public transport improvements should be more concerned with job seekers living in areas distant from the employment areas. However, we recognise the limitation of estimating job accessibility in a framework of spatial units that are more easily interpreted by policy makers at different levels of government agencies to facilitate the decision-making process. To this end, we hope that our results will stimulate further research efforts that can assist in the early identification of individuals who may need additional assistance and interventions that maximise the probability of finding the desired new job.

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Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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