



## Equilibrium search unemployment with explicit spatial frictions<sup>☆</sup>

Etienne Wasmer<sup>a,\*</sup>, Yves Zenou<sup>b</sup>

<sup>a</sup>UQAM, CIRPEE, CEPR and IZA, University du Quebec a Montreal (UQAM), Département des Sciences Economiques, Case Postale 8888, Succursale Centre-Ville, Montreal (Quebec), Canada H3C 3P8

<sup>b</sup>IUI, GAINS (Université du Maine) and CEPR, IUI, The Research Institute of Industrial Economics, Box 5501, 114 85 Stockholm, Sweden

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### Abstract

Assuming that job search efficiency decreases with distance to jobs, workers' location in a city depends on spatial elements such as commuting costs and land prices and on labour elements such as wages and the matching technology. In the absence of moving costs, we show that there exists a unique equilibrium in which employed and unemployed workers are perfectly segregated but move at each employment transition. We investigate the interactions between the land and the labour market equilibrium and show under which condition they are interdependent. When relocation costs become positive, a new zone appears in which both the employed and the unemployed co-exist and are not mobile. We demonstrate that the size of this area goes continuously to zero when moving costs vanish. Finally, we endogenize search effort, show that it negatively depends on distance to jobs and that long and short-term unemployed workers coexist and locate in different areas of the city.

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\* Corresponding author.

*E-mail addresses:* [wasmer.etienne@uqam.ca](mailto:wasmer.etienne@uqam.ca) (E. Wasmer), [yvesz@iui.se](mailto:yvesz@iui.se) (Y. Zenou).

## 1. Introduction

It has been recognized for a long time that distance interacts with the diffusion of information. In his seminal contribution to search, [Stigler \(1961\)](#) puts geographical dispersion as one of the four immediate determinants of price ignorance. The reason is simply that distance affects various costs associated with search. In most search models, say for example [Diamond \(1981, 1982\)](#), distance between agents or units implies a fixed cost of making another draw in the distribution. In other words, a spatial dispersion of agents creates more frictions and thus more unemployment. Conventional labour economics faces difficulties in thinking about these spatial differences because it is biased towards the notion of a spaceless marketplace ruled by the walrasian auctioneer.

This is a weakness of the analysis since empirical evidence supports the idea of a clear *spatial dimension of labour markets* (see for example the literature survey by [Crampton, 1999](#)). There are in fact several channels through which space affects the labour market. First, workers who live further away from jobs may have poorer labour market information and be less productive than those living closer to jobs ([Seater, 1979](#)). This is particularly true for younger and/or less-skilled workers who rely heavily on informal search methods for obtaining employment ([Holzer, 1987](#)).<sup>1</sup> The reliance on these informal methods of job search suggests that information on available job opportunities may decay rapidly with the distance from home ([Ihlanfeldt and Sjoquist, 1990](#)). Second, distance also implies higher commuting costs for the unemployed, which directly affect the search process ([Van Ommeren et al., 1997](#)). Third, workers residing too far away from jobs may quit their job more frequently because of too long commuting distances ([Zax and Kain, 1996](#)). Finally, employers may discriminate against applicants living in remote areas because of lower productivity ([Zenou, 2002](#)). As a result it is commonly observed that unemployment rates differ strongly across as well as within local labour markets (see e.g. [Blanchflower and Oswald, 1994](#); [Marston, 1985](#); [Topa, 2001](#)).

The interaction between space and labour markets is thus complex. We have divided our research questions into two parts. In a companion paper ([Wasmer and Zenou, 2002](#)), the focus was mainly urban and we have explicitly studied all possible urban configurations in a job-matching framework. We have in particular shown how a public transportation policy strongly depends on which type of urban equilibrium prevails.

The aim of the present paper is to focus instead on the labour market aspects of urban equilibria. To this purpose, we focus on the most relevant urban equilibria of [Wasmer and Zenou \(2002\)](#), the one in which the unemployed reside far away from jobs. Within this urban equilibrium, we systematically explore the role of space, and notably the spatial dimension of search. We have more specifically three questions in mind: Does search equilibrium strongly depend on these spatial terms? Do relocation costs strongly affect the equilibrium? Is long term unemployment a phenomenon interacting with space? Our answers are yes to these three questions.

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<sup>1</sup> In [Holzer \(1988\)](#), it is shown that among 16–23 years old workers who reported job acceptance, 66% used informal search channels (30% direct application without referral and 36% friends/relatives), while only 11% using state agencies and 10% newspapers.

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