Urban Labor Economics

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Abstract. The aim of this book is to study the links between urban economics and labor economics. Many issues in urban economics can be analyzed in a new and deeper way when the labor market is introduced. Similarly, introducing a land market in a labor-market analysis allows us to address standard issues in a different way. Bringing together labor and urban economics is not an easy task since we need to study two different branches of economics. Thus, different models of urban labor economic theory are exposed in the first two parts of this book, first introducing urban search-matching models (Part 1) and then urban efficiency wages (Part 2). After these first two parts, the reader should be able to master the main tools and have a clear understanding of the way urban labor economic models work. In Part 3, we apply these models to analyze urban ghettos and their consequences for ethnic minorities in the labor market. It is indeed difficult to understand these issues if not both the land market and the labor market are integrated since space is often a constraining factor for various actors in the labor market, especially for racial minorities. We provide different mechanisms for the so-called spatial mismatch hypothesis which postulates that housing discrimination introduces a key frictional factor that prevents minorities from improving access to job opportunities by relocating their residences closer to jobs. We also study social networks, which tend to be affected by space since workers who are physically close to jobs can be socially far away from them. Indeed, if few ethnic minorities are employed in certain jobs**,** then other minorities have difficulties in obtaining these jobs because of the lack of connections with employed workers. Based on these models, we provide different policies aiming at fighting the high-unemployment rates experienced by ethnic minorities residing in segregated areas.

Key words: urban economics, labor economics, search frictions, efficiency wages, urban ghettos, spatial mismatch hypothesis, social networks.

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Preface

The reader is typically a last-year undergraduate, a graduate student in economics or a researcher. People in connected fields (sociology, geography, urban planning, regional science, transportation, etc.) as well as policy makers with some background in economics should also be interested, especially in the last part of the book. Indeed, the techniques used in this book are not complicated and are now quite standard, and the main requirement is to be interested in the issues and have a good ability to use simple models and algebraic manipulations. I have homogenized the different models and the different chapters of this book by using the same notations and the same type of approach throughout. So the reading should be quite smooth. I have also added various appendices which should help the reader understand the different chapters.

Acknowledgments

This book is the outcome of my research that started twenty years ago. It has thus been a long time in the making. In August 1987, when I finished my Master's Degree in Economics and Econometrics at Université de Paris 10 (Nanterre), I was looking for a possible dissertation topic for a PhD. I had the chance to meet Gerard Ballot, professor at Université Pantheon-Assas (Paris 2), who suggested that the analysis of spatial labor markets could be an interesting and challenging topic. I decided to embark on this journey, having for sole reference the seminal paper of Harris and Todaro published in *American Economic Review* in 1970. In my dissertation, I studied the spatial aspects of labor markets, both from a theoretical and empirical perspectives. I then met Jacques Thisse, professor at CORE in Belgium, who really taught me how to do research. My intellectual debt to him is immense. We wrote several articles together on the theory of local labor markets, some of which are included in this book. Jacques introduced me to Masahisa Fujita and Tony E. Smith, the leaders of the regional science group at University of Pennsylvania. For me as a junior researcher in 1995, working with Masa and Jacques, two well-established urban economists, was a very challenging experience. I learned a great deal from this collaboration. My meeting with Tony E. Smith was also decisive. He taught me the rigor of mathematics and the way to prove theorems. Simplicity, kindness, and complexity are certainly good ways of describing Tony. At that time, I also worked with Marcus Berliant who taught me mathematical tools I had never heard of before: differential topology. Diving into the world of general equilibrium with its infinite dimensions and manifolds was a very important experience. It helped me understand the way a general equilibrium is calculated and how one proves its existence and uniqueness. I then collaborated with Jan K. Brueckner who helped me fathom the way to write simple models in order to capture complex economic situations. After having had these different mentors, I was able to work on my own and collaborate with younger researchers.

One of them was particularly important to me: Antoni Calvó-Armengol. I met him in 1998 where we were both researchers at Centre d'Enseignement et de Recherche en Analyse

Socio-Economique (CERAS) in Paris. Even if Toni was very young (nine years younger than me), I was extremely impressed by his energy, curiosity, creativity and his way of solving complicated mathematical problems. He taught me how to use the "right" model for the "right" question. He also introduced me to graph and social network theory, which is an important part of my research today. We wrote eight papers together and we still have papers in progress. I was very close to him. Unfortunately, he tragically died at the age of 37 on November 3, 2007. I will miss him immensely. Two younger researchers have also influenced me, Etienne Wasmer and Eleonora Patacchini. Etienne has basically introduced me to search-matching theory. Thanks to Eleonora I am now writing a lot of empirical papers. Our endless discussions on how to write a model that can be tested have helped me think differently about theory.

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This book has been a long journey and I am not sure it would have ended without the support and love from my family. My wife, Tina, was always by my side. Her critical mind helped me phrase my research questions in a simpler way. My children, Julie, Emma and Oliver helped me focus on other things than research. This is the best motivation for writing a book.

Introduction

It is commonly observed in OECD countries that unemployment is unevenly distributed among cities. The incidence of unemployment varies between the regions of a country (Isserman, Taylor, Gerking, and Schubert, 1986; Gordon, 1987; Blanchflower and Oswald, 1994), cities of different sizes and functions (Marston, 1985), inner and outer areas of cities and between urban and rural areas. There are also stark spatial differences in incomes. For example, in the United States, the median income of central city residents is 40 percent lower than that of suburban residents. This has renewed the interest in the spatial dimension of unemployment and, more generally, of the labor market.

If consulting the U.S. Bureau of the Census, it is observed that in large U.S. cities, the unemployment rate is much higher in the city center than in the suburbs. This is, in particular, due to the fact that U.S. city centers are generally characterized by ghettos and poverty. Even if the European situation is more complex and not uniform, the general tendency is similar but reverse. Indeed, poor and unemployed workers tend to reside on the outskirts of the city while rich workers tend to live close to the city center. The spatial concentration of unemployment and poverty makes the workings of urban labor markets a vital concern for urban residents.

The labor market is therefore *not* a global market in which the labor force is homogeneous. Quite the opposite. There is an increasing heterogeneity of the labor force as well as a thinner segmentation of this market into sub-markets characterized by a fairly weak mobility between segments. For example, the existence of regional/urban labor markets is a well-established fact: workers and firms only interact in local labor markets whose size is much smaller than that of the national market, and few people move from one market to another (Armstrong and Taylor, 1993; Bartik, 1996; Hughes and McCormick, 1994; Topel, 1986). Yet, in the standard neoclassical model, economic agents do not choose with whom they exchange goods or labor. They are supposed to operate in an impersonal market where nobody needs to know the identity of the other party in the transaction. Therefore, explaining the existence of local labor markets is beyond the reach of the standard paradigm. A new approach is

thus required that explicitly accounts for the possibility of local markets pulling sub-groups of agents together. Such an extension should also allow for the determination of the size of these markets, since it is precisely their geographical extension that limits the reality of the global market.

Very few theoretical attempts have, in fact, been made to better understand the workings of urban labor markets. Indeed, traditionally, labor economists do not directly incorporate space into their studies (see e.g. Layard, Nickell, and Jackman, 1991; Pissarides, 2000; Cahuc and Zylberberg, 2004), even though there are some well-known empirical studies of local labor markets (see e.g. Holzer, 1989; Eberts and Stone, 1992). Similarly, despite numerous empirical studies, the theory of urban labor economics has been relatively neglected in urban economics. In most advanced urban textbooks (see, in particular, Fujita 1989; Fujita, Krugman and Venables, 1999; Fujita and Thisse, 2002), it is mainly assumed throughout perfect competition in the labor market and the issue of urban unemployment is not even discussed. One of the aims of this book is to bring labor economics to urban economists and urban economics to labor economists.

I believe that we need to fathom the way labor markets work in cities, in particular the way wages and unemployment are locally determined. This will eventually help us better understand urban ghettos and design adequate policies aiming at fighting against these urban problems.

This book is mainly based on my own research over the last twenty years, even though I am also discussing other related urban labor models. It must be clear that this book is focusing on *urban* labor economic theory, i.e. papers that explicitly model both the land/housing market (where both the location of workers and the price of land/housing are endogenous) and the labor market (where both wages and unemployment are endogenous) and analyze their interactions. There are also regional models (like, for instance, in the migration and economic geography literatures) that deal with regional labor markets, where a city/region is a point in space. This is not what this book is about.

This book is about urban labor market theory and, as such, deals with two different markets. This is a difficult task because it brings together two different branches of economics: labor and urban economics. This is why it is crucial for the reader to master the modeling of these two markets. This takes a large part of the book, namely the first two parts. Indeed, in Parts 1 and 2, we focus on search-matching and efficiency wage models, respectively, which are the main theories in labor economics because they have the strongest empirical support. Each part has exactly the same structure. We start with the standard urban framework

of monocentric cities and see how the labor market affects and is affected by this urban structure. Both Chapters 1 and 4 describe the standard models of urban labor economics, focusing either on search matching (Chapter 1) or efficiency wages (Chapter 4). Then, in Chapters 2 and 5, we expose the different possible extensions of these benchmark models, keeping the same spatial monocentric City structure. Finally, in the last chapter of each part (Chapters 3 and 6), we deal with non-monocentric (or polycentric) cities. In particular, we show how this polycentric structure, which is increasingly common in modern cities (e.g. Los Angeles), affects the labor market outcomes of workers which, in turn, affect the spatial structure of the city. In these chapters, we also deal with agglomeration economics and**,** in particular, with the endogenous formation of a monocentric city with endogenous wages and unemployment.

After these first two parts, the reader should be able to master the main tools and have a clear understanding of the way urban labor economic models work. It is only then that we deal with applied and policy-relevant issues. Indeed, as already noted above, (big) cities are characterized by uneven distributions of unemployment and poverty. In particular, some areas (inner-cities in the US) accumulate poverty, low-skilled workers, few jobs and a high proportion of ethnic workers. This is particularly true in most American cities, which exhibit a high level of racial segregation and stark socioeconomic disparities between neighborhoods. In general, white city dwellers experience much better labor-market outcomes than inner-city black workers. An important debate has focused on the existence of a possible link between residential segregation and the adverse labor-market outcomes of racial minorities. Empirical studies have shown such a link to exist (see, for instance, Cutler and Glaeser, 1997). However, it remains unclear which economic mechanisms account for the link. It is thus crucial for policy makers to understand the causes and consequences of these poverty pockets and how they can be dealt with appropriately. For this purpose, we need a proper theoretical approach that incorporates both land and labor markets. Indeed, it is because they are located in specific areas that these groups of workers (minorities) experience adverse labor market outcomes. Moreover, it is because they experience high unemployment rates and earn low wages when employed that they are "forced" to live in these rundown areas. So any policy that would like to address these issues should be based on urban labor economic models. Therefore, we will use the tools and models exposed in the first two parts of this book to address the issue of poverty and adverse labor market outcomes of ethnic minority workers in ghettos.

Indeed, as expressed by Eberts (1994): "Urban labor markets are characterized by the spatial proximity of households and businesses, which offers firms and workers advantages that lead to more efficient markets, enhanced productivity, and greater economic success." But, by offering the greatest opportunity for economic success, cities attract both the most talented and successful individuals and the most disadvantaged (Glaeser, Kahn, and Rappaport, 2008). This is the paradox of cities since they stand as a stark dichotomy between those who have succeeded and those who have not. This is particularly true for ethnic minorities, like Blacks and Hispanics in the US, Indians, Pakistanis and Bangladeshis in the UK, North Africans in France, etc., whose earning gap to Whites is quite large (for example, in the US, in 1991, black household median income was 60 percent of white household income). One popular explanation is that, for minorities and low-skill workers, access to the urban labor market is impeded by physical barriers of spatial isolation. This is what we investigate in the first two chapters of Part 3 (Chapters 7 and 8) by analyzing the so-called spatial mismatch hypothesis, initiated by Kain (1968). It stipulates that residing in urban segregated areas distant from and poorly connected to major centers of employment growth, minority workers face strong geographical barriers to finding and keeping well-paid jobs. In the U.S. context, where jobs have been decentralized and blacks have remained in the central part of cities, the main conclusion of the spatial mismatch hypothesis is putting forward distance to jobs as the main reason for the high unemployment rates and low earnings among blacks. Since the study of Kain, hundreds of studies have been carried out trying to test the spatial mismatch hypothesis (see, in particular, the literature surveys by Holzer, 1991, Kain, 1992, Ihlanfeldt and Sjoquist, 1998). The weight of the evidence suggests that bad job access indeed deteriorates labor-market outcomes, especially for ethnic minorities, thus confirming the spatial mismatch hypothesis.

In Chapter 7, we will use the search framework developed in Part 1 to give some microeconomic foundation for the spatial mismatch theory. In particular, we will show that workers' job search efficiency may decrease with the distance to jobs and, in particular, workers residing far away from jobs may have few incentives to search intensively. In that case, distance to jobs can be harmful because it implies low search intensities. In Chapter 8, using the efficiency wage approach exposed in Part 2, we will show that workers may refuse jobs that involve commutes that are too long because commuting to that job would be too costly in view of the proposed wage. We will also show that if workers' productivity negatively depends on distance to jobs, employers may discriminate against residentially segregated workers because of the stigma or prejudice associated with their residential location.

Clearly, distance to jobs is crucial for understanding why ethnic minorities experience adverse labor market outcomes. But this is not the whole story. There are other elements at stake since even when black workers live close to jobs (like e.g. in New York City), they still have problems in finding a job. Social networks are obviously an important part of the story and are not always related to the distance to jobs. There is indeed strong empirical evidence showing that social networks play an important role in the job search and job finding processes. Individuals seeking jobs read newspapers, go to employment agencies, browse on the web and mobilize their local networks of friends and relatives. In Chapter 9, we focus on the relationship between non-market interactions (or peer effects and social networks) and urban economics through the labor market. In particular, we will study how residential location determines social interactions which, in turn, affect labor market outcomes.

In a nutshell, the way this book has been written can be described by the following figure.

[*Insert Figure* I.1 *here*]

In Parts 1 (urban search-matching models) and 2 (urban efficiency wage models), I give the main theoretical ingredients for understanding the way urban economic theory works. Once the reader has mastered these theoretical tools, we show in Part 3 how these tools can be used to address the issue of urban ghettos. In Chapters 7 and 8, using both the efficiency wage and the search matching approaches, I give some theoretical foundations for a well-established empirical fact: spatial mismatch between ethnic minorities' residence and job locations. Finally, in the last chapter of the book, I highlight the role of labor market networks in cities.