URBAN LABOR ECONOMICS

The aim of this book is to study the links between urban economics and labor economics. Different models of urban labor economic theory are examined in the initial two parts of this book: first urban search-matching models (Part 1) and then urban efficiency wages (Part 2). In Part 3, we apply these models to analyze urban ghettos and their consequences for ethnic minorities in the labor market. Professor Zenou first provides 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. He then explores social networks, which tend to be affected by spatial factors, as workers who are physically close to jobs can be socially far away from them. Based on these models, the author offers different policies aiming at fighting high unemployment rates experienced by ethnic minorities residing in segregated areas.

Yves Zenou is Professor of Economics at Stockholm University and a Senior Research Fellow at the Research Institute of Industrial Economics (IFN). He is also affiliated with the Groupe d'Analyse des Itinéraires et Niveaux Salariels (GAINS, Le Mans, France), the Centre for Economic Policy Research (CEPR, London), and the Institute for the Study of Labor (IZA, Bonn). He was previously Professor of Economics at the University of Southampton, UK, and a Research Fellow at the Center for Operations Research and Econometrics (CORE, Belgium). He is editor of Regional Science and Urban Economics and associate editor of the Journal of Urban Economics. His publications have appeared in leading journals such as Econometrica, Review of Economic Studies, Journal of Economic Theory, International Economic Review, Journal of Labor Economics, and the Journal of Public Economics.
Urban Labor Economics

YVES ZENOU
Stockholm University
Till Tina, Julie, Emma och Oliver

Tack för er kärlek
Contents

Preface and Acknowledgments

Introduction

PART 1. URBAN SEARCH-MATCHING

1. Simple Models of Urban Search-Matching
   1. Introduction
   2. The Benchmark Model
   3. Search Effort as a Function of Distance to Jobs
   4. Endogenous Search Intensity and Housing Consumption
   5. Discussion
   6. Notes on the Literature

2. Extensions of Urban Search-Matching Models
   1. Introduction
   2. Workers' Heterogeneity in Training Costs
   3. Endogenous Job Destruction
   4. Positive Mobility Costs
   5. Very High Mobility Costs
   6. Wage Posting
   7. Notes on the Literature

3. Non-Monocentric Cities and Search-Matching
   1. Introduction
   2. Rural-Urban Migration and Search
   3. Job Matching and Search in Multicentric Cities
   4. Job Matching and Assignment in a System of Cities
   5. Notes on the Literature
Contents

PART 2. URBAN EFFICIENCY WAGES 167

4. Simple Models of Urban Efficiency Wages 171
   1. Introduction 171
   2. The Benchmark Model 172
   3. Endogenous Housing Consumption 183
   4. Open Cities and Resident Landlords 190
   5. City Structure 195
   6. Long-Run Equilibrium with Free Entry 203
   7. Endogenous Unemployment Benefit 206
   8. Notes on the Literature 210

5. Extensions of Urban Efficiency Wage Models 212
   1. Introduction 212
   2. Effort as a Function of Distance to Jobs 213
   3. Effort and Leisure 221
   4. High Relocation Costs 229
   5. Effort, Leisure, and Relocation Costs 239
   6. Notes on the Literature 245

6. Non-Monocentric Cities and Efficiency Wages 248
   1. Introduction 248
   2. Rural-Urban Migration: The Harris-Todaro Model with a Land Market 249
   3. Migration between Cities of Different Sizes 255
   4. Migration within Cities: Dual Labor Markets in a Duocentric City 264
   5. Endogenous Formation of Monocentric Cities with Unemployment 286
   6. Notes on the Literature 297

PART 3. URBAN GHETTOS AND THE LABOR MARKET 301

7. The Spatial Mismatch Hypothesis: A Search-Matching Approach 309
   1. Introduction 309
   2. Access to Job Information 310
   3. Different Entry Costs 319
   4. Different Transport Modes 330
   5. Notes on the Literature 346

© Cambridge University Press www.cambridge.org
## Contents

8. The Spatial Mismatch Hypothesis: An Efficiency-Wage Approach
   1. Introduction 347
   2. The Firms’ Perspective 348
   3. The Workers’ Perspective 354
   4. A More General Model 367
   5. Notes on the Literature 375

   1. Introduction 376
   2. Social Networks as Externalities 379
   3. Social Networks as Dyads 395
   4. Social Networks as Explicit Graphs 404
   5. Discussion 419
   6. Notes on the Literature 421

General Conclusion 423

A. Basic Urban Economics
   1. The Basic Model with Identical Agents 427
   2. The Basic Model with Heterogenous Agents 447

B. Poisson Process and Derivation of Bellman Equations
   1. Poisson Process 453
   2. An Intuitive Way of Deriving the Bellman Equations 457
   3. A Formal Way of Deriving the Bellman Equations 459

C. The Harris-Todaro Model
   1. A Simple Model with Exogenous Wages 462
   2. The Harris-Todaro Model with Minimum Wages 467
   3. The Harris-Todaro Model with Efficiency Wages 470
   4. The Harris-Todaro Model with Urban Search Externalities 476

Bibliography 481
Author Index 501
Subject Index 506
Preface and Acknowledgments

The intended reader of this text 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 included various appendices, which should help the reader understand the different chapters.

This book is the outcome of my research, which 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, from both a theoretical and empirical perspective. 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 the University of Pennsylvania. As a junior researcher, working in 1995 with Masa and Jacques, two well-established urban economists, was a very challenging experience for me. I learned a great deal from this collaboration. My meeting with Tony E. Smith was also decisive. He taught me about the rigor of mathematics and how 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, such as differential topology. Diving into the world of general equilibrium, with its infinite dimensions and manifolds, was a very important experience. It helped me understand how a general equilibrium is calculated and how one proves its existence and uniqueness. I then collaborated with Jan K. Brueckner, who helped me fathom how 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 these researchers was particularly important to me: Antoni Calvó-Armengol. I met him in 1998, when we were both researchers at Centre d’Enseignement et de Recherche en Analyse Socio-Economique (CERAS) in Paris. Even though Toni was very young (nine years younger than me), I was extremely impressed by his energy, curiosity, creativity, and 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 published 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.

I have also gained enormously from research collaborations with (in alphabetic order): Olof Åslund, Coralio Ballester, Gérard Ballot, Philippe Batifolier, Harminder Battu, Marcus Berliant, Alberto Bisin, Nicolas Boccard, Jan K. Brueckner, Antonio Cabrales, Antoni Calvó-Armengol, Joan de Martí, Chengri Ding, Louis Eeckhoudt, Masahisa Fujita, Frédéric Gannon, Pieter Gautier, Laurent Gobillon, Florence Gofette-Nagot, Jonathan Hamilton, Mohamed Jellal, Maurice Kugler, John Öst, Eleonora Patacchini, Stephen Ross, Maria Saez-Marti, Paul Seaman, Harris Selod, Anna Sjögren, Tony
Preface and Acknowledgments

E. Smith, Yan Song, Sebastien Steinmetz, Jacques Thisse, Isabelle Thomas, Thierry Verdier, Jackline Wahba, Etienne Wasmer, and Xavier Wauthy.

I have taught urban economics for a number of years. I am therefore grateful for all constructive comments received over the years from students at Southampton University, UK; Université du Maine, France; Uppsala University, Sweden; and Beijing University, China. I also thank Marcus Berliant, Antoni Calvó-Armengol, and Joan de Martí for extensive comments on earlier drafts.

I have been extremely privileged in the support, funding, and hospitality I received from the Research Institute of Industrial Economics (IFN), where most of this book has been written. I am also indebted to the Department of Economics at Stockholm University for the stimulating environment provided when the last part of this book was written.

Scott Parris at Cambridge University Press has been a supporter of this book since the very beginning. I thank him for his constant encouragement. I am also very grateful to the four anonymous readers who made extensive and very helpful comments on an early draft of the book.

This book has been a long journey, and I am not sure it would have ended without the support and love of 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.