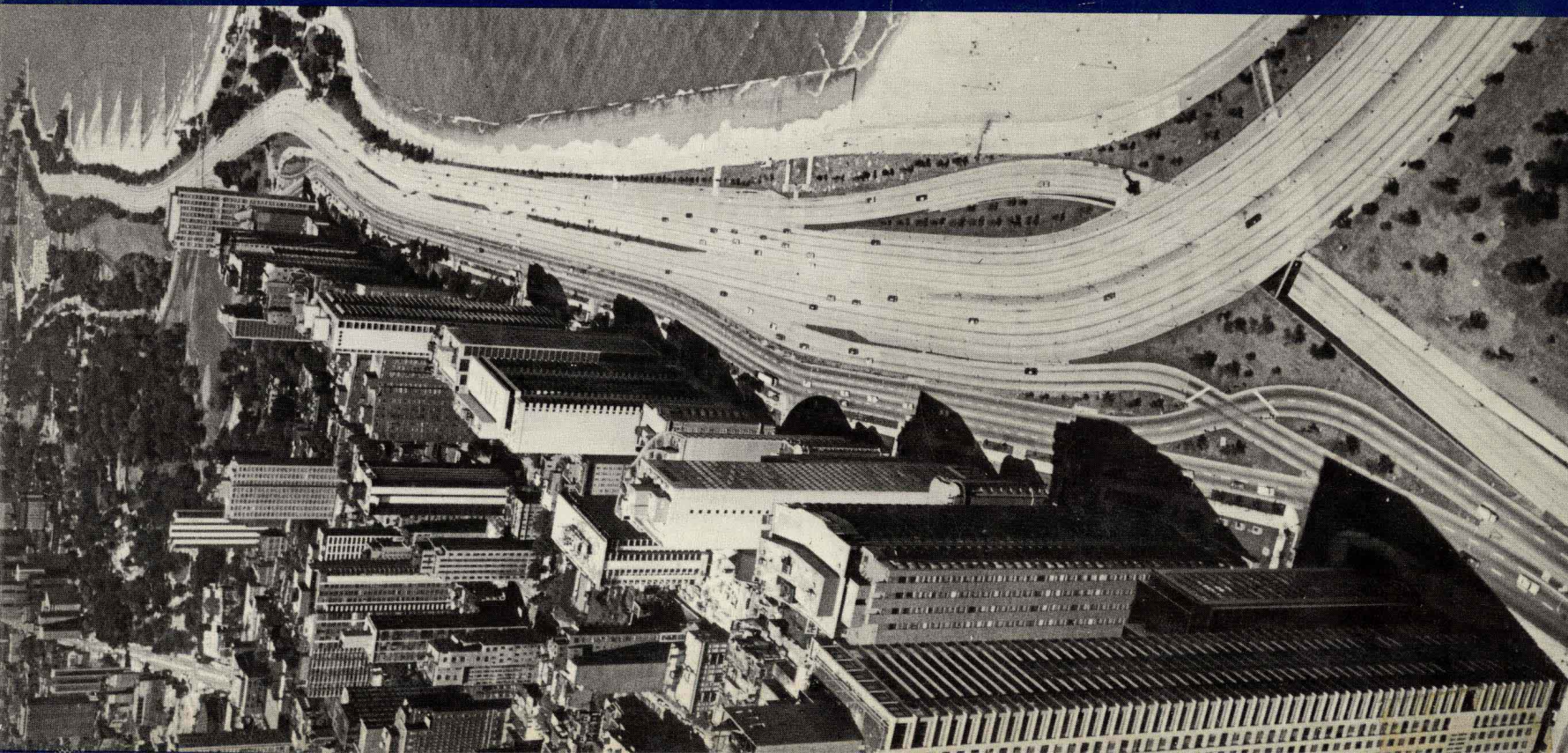
Urban Economics

Second Edition

Edwin S. Mills



Urban Economics

Second Edition

Edwin S. Mills

Professor of Economics
Princeton University

Scott, Foresman and Company
Glenview, Illinois Dallas, Tex. Oakland, N.J.
Palo Alto, Cal. Tucker, Ga. London

For Susan and Alan

Cover photograph by Jean-Claude Lejeune

Acknowledgements:
From A. V. Kneese, et al., *ECONOMICS AND THE ENVIRONMENT*—A Materials Balance Approach, page 10. Copyright © 1970, by Resources for the Future, Inc.

From Edwin S. Mills and Katsutoshi Ohta, "Urbanization and Urban Problems," in *Asia's New Giant—How the Japanese Economy Works,* page 691. Copyright © 1976, The Brookings Institution.

From John L. Palmer and Joseph J. Minarik, "Income Security Policy," in *Setting National Priorities—The Next Ten Years,* page 508. Copyright © 1976, The Brookings Institution.

From Morgan Reynolds and Eugene Smolensky, "Further Results: Gini Concentration Ratios and Lorenz Curves," from *Public Expenditures, Taxes, and the Distribution of Income—The United States, 1950, 1961, 1970,* page 74. Copyright © 1977 by the Regents of the University of Wisconsin System on behalf of the Institute for Research on Poverty.

Library of Congress Cataloging In Publication Data
Mills, Edwin S
Urban economics.
Includes bibliographies and index.
1. Urban economics. I. Title.
HT321.M53 1980 330.9173'2 80–13385
ISBN 0–673–15264–2

2 3 4 5 6 - VHJ - 85 84 83 82 81 80

Preface to the Second Edition

The purpose of the second edition of *Urban Economics,* as of the first, is to introduce the study of urban economics. Part One provides a conceptual and historical background for analyzing the urban economy. Part Two provides basic theoretical models of urban spatial structure, linking urban economics to the content of microeconomics courses. Part Two also presents the elements of welfare economics needed to analyze urban problems. Part Three applies the tools of analysis developed in Part Two and the background presented in Part One to several of the most urgent urban problems of the 1980s.

In the second edition, as in the first, my intention has been to present a unified thread of analysis useful in understanding a variety of urban phenomena and problems. I believe it is important, in a textbook, to present a coherent view of the subject. The price paid for the strategy adopted is that students are left with an inadequate sense of the richness and diversity of the urban economics literature. Thus, I have kept the book short, so that it can be supplemented with readings that present alternative viewpoints. Some suggestions for additional readings, with brief annotations, are listed at the end of each chapter.

This book is intended to be used as a core text in upper-division undergraduate courses in urban economics. It can also be used as a supplementary text in graduate-level urban economics courses. If desired, the book can also be used for supplementary reading in intermediate microeconomics courses. Chapters in Part Two systematically apply to an urban context most of the important topics in the microeconomic theories of production, consumer behavior, and equilibrium.

Any student who has mastered a modern microeconomics text should be able to understand the book without difficulty. With help from an instructor, students who have had only a one-semester introduction to microeconomics should also be able to use the book. High school algebra and diagrammatic analysis are used freely, but calculus is restricted to the Appendix. Students with an understanding of elementary calculus can follow the Appendix, but those without a calculus background should skip it.

In gathering material for the second edition, I have been impressed with the progress of urban economics since the first edition was published in 1972. Much new theoretical analysis has appeared, but most of it is too advanced for an introductory text. What is of fundamental importance is

that every applied topic has been the subject of important new research during the 1970s. Poverty, housing, and other urban problems have by now been much better documented and analyzed than they had been when *Urban Economics* was first written. Thus, each chapter of Part Three has been substantially rewritten, partly to bring census data, etc., up to date, but mostly to incorporate results of recent research.

The book has been slightly reorganized for the second edition. Part One now consists of three chapters. Chapter 3, which is new, presents historical background on the sizes and spatial structures of urban areas. In Part Two, some rewriting has been undertaken to improve the presentation, but the major change is the removal of what was formerly Chapter 5 to the Appendix. In Part Three, Chapter 12 is new and presents welfare and government policy analysis of issues relating to sizes and spatial structures of urban areas.

In writing and rewriting this book I have of course drawn on the work of many scholars. I hope I have properly acknowledged my debt to them in the appropriate places. I have also learned much from students to whom I have taught urban economics at Johns Hopkins and Princeton. Many professors and students who used the first edition have kindly sent suggestions for the second edition. Most importantly, I would like to thank the following reviewers for their valuable suggestions:

Gordon Bagby, University of Illinois, Urbana
Jerald Barnard, University of Iowa
Louis Cain, Loyola University, Chicago
Leslie Daniels, Washington University, St. Louis
John Gemello, San Francisco State University
Vernon Henderson, Brown University
David Marcinko, College of Saint Rose, New York
John McDonald, University of Illinois, Chicago Circle
Richard Muth, Stanford University
James Prescott, Iowa State University
Jon Sonstelie, University of California, Santa Barbara
W. Edward Whitelaw, University of Oregon
Anthony Yezer, George Washington University

Thomas Raubach provided assistance in updating the material in the first edition, and Arthur Sullivan provided helpful critiques of recent literature on urban problems. I am indebted to George Lobell of Scott, Foresman and Company for his efficiency and patience in every aspect of the revision. Annmarie Ritz Carney has typed this edition with her usual intelligence and skill.

Princeton, N.J.
January 1980

Edwin S. Mills

Contents

1
Basic Ideas and Historical Background

"WHAT ARE URBAN AREAS AND WHY DO THEY EXIST?" IS CER-tainly the most fundamental question an urban specialist can ask. Most people make intuitive distinctions between urban and rural, and between big cities and small towns. For many purposes, the intuitive distinctions are adequate. Nevertheless, it is worthwhile to start with some careful definitions and distinctions, because data sources depend on them. The second part of the question is much harder to answer than the first, and answers given by scholars in one academic discipline are likely to be disputed by scholars in other disciplines. But ideas about the reasons for the existence of urban areas color all thoughts about their organization and functions, and about the causes and cures of their problems. It is important to ask to what extent economic concepts can account for the existence of urban areas. Then, after a review in the rest of Part One of historical and statistical trends in urbanization and urban size and structure, it will be possible to proceed to the theoretical analysis presented in Part Two.

1

The Nature of Urban Areas

WHAT ARE URBAN AREAS?

There are many urban concepts: town, city, metropolitan area, and megalopolis are examples. Some have legal definitions. Towns, municipalities, and cities are built-up areas designated as political subdivisions by states, provinces, or national governments. Practices in designating urban government jurisdictions vary greatly from country to country and, in the United States, from state to state. What is designated a city in one country or state may be designated a town in another. More important, the part of an urban area included in a city or other political subdivision varies from place to place and from time to time. In 1970, the city of Boston contained

only 23 percent of the 2.8 million people in the metropolitan area, whereas the city of Austin contained 85 percent of the 295,000 people in its metropolitan area. In U.S. metropolitan areas, the largest city contains only about half the residents of the metropolitan area on the average. In other countries, the tendency is to expand city boundaries as the metropolitan area expands so that the city includes all or nearly all of the metropolitan area.

To the political scientist studying local government, the legal definitions of local government jurisdictions are of primary importance. They are also important to the economist studying economic aspects of local government. Much of Chapter 10 is about causes and effects of arrangements of local government jurisdictions. But local government jurisdictions were chosen largely for historical and political reasons, and they have little to do with the economist's notion of an urban area. They are therefore of secondary concern in urban economics.

Much more fundamental for urban economists than legal designations is variability in population and employment density from one place to another. A country's **average population density** is the ratio of its population to its land area. In 1970, average population density was about 57 people per square mile in the United States. It is conceivable that every square mile in the country might have about the same number of residents. The beginning of urban economics is the observation that population density varies enormously from place to place.

In 1970, there were about 250 places in the United States where population density reached extremely high levels relative to the average and relative to levels a few miles away. In New York City, to take the most dramatic example, population density was more than 26,000 people per square mile. Fifty miles away, in Sussex County, New Jersey, it was 147. A less dramatic, but instructive, example is Wichita, Kansas. In 1970, its population density was 3197 people per square mile. The remainder of Sedgwick County, which contains Wichita, had a population density of 81. The adjoining county of Kingman had a density of only 10. New York and Wichita are clearly urban areas. Such places contain more than half the country's population and constitute the popular image of a metropolitan area. But they do not exhaust the list of urban areas. There are hundreds of small cities and towns many of whose population densities exceed those of surrounding rural areas by factors of 50 or 100. They are also urban areas.

Thus, the fundamental and generic definition of an **urban area** is a place with a much higher population density than elsewhere. At least a few urban areas have existed since the beginning of recorded history, and they are now found in every country in the world. For some purposes, this crude definition is adequate. But for purposes of data collection and analysis, more careful definitions are needed.

The generic definition of an urban area is a relative concept. A place whose population density is high relative to average density in one region or country might not be high relative to the density in another region or country. To take an extreme example, the average population density in Japan was 755 people per square mile in 1970. That is higher than the densities of many metropolitan areas in the United States. Thus, a minimum density that would define an urban area would need to be higher in Japan than in the U.S. Similar problems arise within the United States. The average population density in the Phoenix metropolitan area is less than one third that of the entire state of New York. Thus, urban areas cannot be defined exclusively by population density.

To be designated urban, a place must have not only a minimum density but also a minimum total population. An isolated half-acre lot lived on by a trapper and his family in Alaska may have as great a density as many urban areas, but no one would call it a one-family urban area. There are many small places with densities that are high relative to surrounding areas. Official statistics necessarily employ an arbitrary population cutoff in defining urban areas, usually between 2500 and 25,000.

A final problem arises in counting urban areas. As urban areas grow, they frequently come to encompass places that were formerly separate urban areas. Metropolitan areas come to encompass what were formerly separate small towns. On a larger scale, metropolitan areas gradually grow together. The New York–Northeastern New Jersey area encompasses several metropolitan areas, and the Chicago–Gary area encompasses two metropolitan areas. Such amalgamations give rise to no problems in counting the urban population, but they do cause problems in counting the number of urban areas. When metropolitan areas grow together, the U.S. Census Bureau wisely presents data separately for each metropolitan area, so that users can put the data together as they please. Then the Census Bureau also uses its criteria as to what metropolitan areas are sufficiently integrated so that they can be thought of as one large area, and it publishes the combined data. For example, several metropolitan areas across the Hudson River from New York are closely related to the New York metropolitan area, although they are in some ways distinct.

A NOTE ON STATISTICAL DATA

Much of the U.S. data available to the urban economist, and most of that which is comparable among urban areas on a nationwide basis, comes from the U.S. censuses of population and housing, manufacturers, business, and government. Every student of urban economics should get to know these data sources. Despite their many inadequacies, there are none better in the world.

Most U.S. federal government data pertaining to urban areas are now based on the same set of definitions regarding the area covered. But the federal government distinguishes among several urban concepts, depending on the way data became available and the purposes for which measures are intended.

An **urban place** is any concentration, usually in an incorporated town, borough, or city, of at least 2500 people. But since an urban place is usually defined by political boundaries, it does not correspond to the economist's notion of an urban area. Data pertaining to urban places are therefore of relatively little value to the urban economist. In fact, an urban area usually contains many urban places. In the 1970 U.S. census of population, there were 7062 urban places containing 149 million people, about 73 percent of the country's population of 203 million at that time.

The concept that corresponds to the economist's notion of an urban area is called an **urbanized area** by the federal government. An urbanized area consists of one central city (or sometimes two) of at least 50,000 residents, and the surrounding closely settled area. The urbanized area is thus the physical city, defined without regard for political boundaries. In 1970, the U.S. census identified 246 urbanized areas in the United States. They contained 118 million people, or 58 percent of the country's population.

A geographically more inclusive concept is the **standard metropolitan statistical area**, or SMSA. An SMSA includes one central city (or possibly two) of at least 50,000 residents, and one or more contiguous counties that are metropolitan in character, as determined by the percentage of the labor force that is nonagricultural and by the amount of commuting between the county and the city. Thus SMSAs do not include parts of counties. Although the list of SMSAs is virtually the same as the list of urbanized areas, the SMSAs include nonurbanized parts of contiguous metropolitan counties. Not surprisingly, SMSAs have somewhat greater populations than urbanized areas and much more land. In 1970, 139 million people, 69 percent of the country's population, lived in 243 SMSAs —18 percent more people than in urbanized areas. But the SMSAs contained 11 times as much land. Some SMSA counties, particularly in the west, contain large amounts of land, although their nonurbanized parts contain few people. A dramatic example is the San Bernardino SMSA in California, which extends through the desert to the eastern boundary of the state.

The urbanized area corresponds much more closely to the generic concept of an urban area than does the SMSA. Then why should an economist be interested in SMSA data? The answer is easy: more data are available for SMSAs than for urbanized areas, because some data become available by county and can therefore be put together for SMSAs, but not for urbanized areas.

The largest urban concept recognized by the federal government is the ***standard consolidated statistical area***, or SCSA, which consists of several contiguous SMSAs. By the mid-1970s, the government had recognized 13 SCSAs. The largest were the New York–New Jersey–Connecticut and Los Angeles–Long Beach–Anaheim SCSAs, which contained 17.2 million and 10.2 million people in 1974. The smallest were the Cincinnati–Hamilton and Milwaukee–Racine SCSAs, each containing 1.6 million people. The largest SCSAs are larger than the largest SMSAs, but many SMSAs are larger than the smallest SCSAs.

The term **megalopolis** is sometimes applied to the part of the eastern seaboard from Boston to Washington or Richmond. It is also applied to the Pacific coast of Japan from Tokyo to Osaka and to the stretch of England from London to Manchester. The term is popular and somewhat descriptive, but it is unofficial. It is also somewhat unreal. The three megalopolises do indeed contain many people. The Japanese megalopolis is the largest of the three, with more than 40 million residents. Yet the term is unreal in that the metropolitan areas within a megalopolis are not united by the usual criteria of commuting from one to another. It is also unreal in that each of the three megalopolises, especially the U.S. one, contains large amounts of rural land.

That the urbanized area is a significant urban concept is indicated by overall density data. In 1970, population density for the United States was 57 people per square mile. In urbanized areas it was 3376. By contrast, in SMSAs it was 360.

In this book the term **urban area** refers generically to places of high population density. The term **city** refers to the legal city. The terms **urban place, urbanized area, SMSA,** and **SCSA** refer to the concepts used in federal government data sources.

WHY URBAN AREAS?

If the urban area is defined by dramatically high population densities relative to those found elsewhere, the next question is, "Why do we have urban areas?" There is no single answer. Historians, geographers, sociologists, political scientists, and economists tend to emphasize different sets of causes in explaining why urban areas exist. We can begin with the proposition that urban areas exist because people have found it advantageous to carry on various activities in a spatially concentrated fashion.

Most of the differences of opinion about the reasons for urban areas result from the fact that these activities may be of very different kinds: military activities, religious practice or religion administration, government, and private production and distribution of goods and services. At various times in history, many urban areas had defense as their major

function. It was simply more economical and effective to defend a large group of people if they were spatially concentrated. The word "was" is used intentionally, because weapons technology in the nuclear age may make it easier to defend a dispersed than a concentrated population. In such urban areas, people commuted out of the city to carry on the predominant economic activity, farming. Some urban areas began as cathedral towns or centers for religion administration. Finally, some cities grew because they were seats of civil government. Washington, D.C., is the most obvious U.S. example.

However, most urban areas do not owe their existence or size to military, religious, or governmental activities. In countries where economic decisions are mainly privately made, *the sizes of most urban areas are mainly determined by market forces.* Households have found that income and employment opportunities, and prices and availability of consumer goods, are more favorable in urban than in other areas. And business firms have found that returns are higher on investments made in urban than in rural areas.

In the United States, seats of government are almost the only substantial exceptions to the determination of urban sizes by market forces. Washington, D.C., is a clear exception. So, to some extent, are most state capitals. But most state capitals were intentionally located in small towns away from major centers, and many have remained small towns. European national capitals, such as London, Paris, and Rome, are harder to classify. They certainly owe part of their size to their being seats of government. But the opposite is also true. They were made seats of government partly because they were major cities.

People unsympathetic to economic location theory sometimes claim that historical, rather than economic, forces have determined the locations of major urban areas. They claim, for example, that a certain urban area is where it is because some settlers happened to land there first. But this idea assumes that settlers or other founders were unresponsive to the advantages and disadvantages of alternative locations. Much more important, the map is dotted with places where settlers happened to settle. Some became major urban centers, but most remained just dots on the map, despite elaborate local plans and efforts to make them metropolitan centers. Those that developed into major centers did so because their economic potential induced thousands of people and institutions to decide to work, live, and produce there. The best assumption is that economic factors affect location decisions to about the same extent that they affect other types of decisions, such as pricing by firms and demand for goods and services by consumers. Employers who locate in wrong places find that they cannot compete for employees or customers. Workers who make poor locational choices find that their living standards suffer.