

**URBAN
LAND
ECONOMICS**

**MICHAEL GOLDBERG
PETER CHINLOY**

URBAN LAND ECONOMICS

MICHAEL GOLDBERG
Faculty of Commerce
University of British Columbia

PETER CHINLOY
Department of Economics
University of British Columbia

JOHN WILEY & SONS

New York

Chichester

Brisbane

Toronto

Singapore

*This book is dedicated to
Richard U. Ratcliff*

Copyright © 1984, by John Wiley & Sons, Inc

All rights reserved. Published simultaneously in Canada.

Reproduction or translation of any part of
this work beyond that permitted by Sections
107 and 108 of the 1976 United States Copyright
Act without the permission of the copyright
owner is unlawful. Requests for permission
or further information should be addressed to
the Permissions Department, John Wiley & Sons.

Library of Congress Cataloging in Publication Data:

Goldberg, Michael A. (Michael Arthur), 1941--
Urban land economics.

Includes index.

I. Land use, Urban--United States. I. Clinlov, Peter,
1950-- II. Title.
HD205.G64 1984 333.77'0973 83-23486
ISBN 0-471-09286-X

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

PREFACE

The present text originates from our need in the faculty of Commerce and Business Administration at the University of British Columbia to provide materials for students in our courses in urban land economics. Since Canadian urban institutions are considerably different from those in the United States, American classroom materials are inappropriate. The educational level of existing books was also a problem. The course for which this text has been designed is an introductory course in the subject, but students who take the course typically have two years of economics behind them, up through the intermediate micro and macro level. Accordingly, we could assume literacy in economics, though not in urban land economics.

Existing books came from two different sources, undergraduate urban economics courses and undergraduate courses in real estate. The former tended to focus on economic analysis to the exclusion of urban institutions; the latter tended to be too descriptive and institutional. In short, we were seeking a synthetic creature that employed economic concepts and economic analysis but which also set these analyses in the context of the appropriate institutions, be they national, regional, or local.

The resulting effort is best viewed as an applied institutional urban economics text. It draws on economic concepts and applies them within an institutional framework. The conceptual and institutional ideas that are developed here are thought to be sufficiently general and applicable that they can be utilized in a Canadian or American setting. Thus, the book is also comparative in nature, demonstrating the generality and utility of the approach in various national and regional and urban contexts.

Given the genesis of the present volume in our need to provide appropriate material for our course, with its real-world application, we see it as being of potential use in analogous courses in which applied urban economic thinking is being introduced for the first time. Urban economics courses in schools or departments of city and regional planning would be other obvious places where the present book might be of use. Courses in real estate and urban economics of an applied nature would also be potential users. Finally, courses in urban economic geography also might fruitfully employ the book. In each case, the

book is intended to develop concepts of urban economics, of urban land markets, and of the institutional environment within which these markets must function.

To achieve these objectives, the book is organized into three parts. Part 1 introduces the reader to urbanization processes, cities, and the broadly based discipline of urban land economics. Part 2 develops the necessary economic and institutional constructs to equip the reader to analyze contemporary urban issues. In Part 3 a range of such issues is addressed, including housing and land, changing urban economic patterns, and issues related to urban public finance and government organization.

Isaac Newton noted that each generation's scholars can see so much farther than their predecessors because the more recent scholars stand on the shoulders of the intellectual giants of previous eras. We agree heartily, and if our students can improve their vision and understanding and decision making relating to urban land markets it is because we have been able to stand on the shoulders of earlier giants. The most important of these leaders from earlier generations is Richard U. Ratcliff. His pioneering work, *Urban Land Economics* (McGraw-Hill Book Company, 1949), is still the best in the field despite being well into its fourth decade. The insights provided by Dick Ratcliff in that book, complemented by insights from his more recent writings, are as fresh and stimulating today as they were nearly two score years ago. Dick was directly responsible for the scale and quality of the present Urban Land Economics Program at the University of British Columbia. The present volume is traceable to numerous conversations and endless enjoyable luncheons with Dick. His intellectual imprint is apparent in the Urban Land Economics Program today and pervades this book as well.

Just months before he died, he typed the foreword that opens this book. His prefatory chapter is a model of clarity and thoughtfulness and sets out in extraordinarily economical fashion the crux of urban land economics. Our debts to Richard U. Ratcliff, for his participation in the present project and for allowing us to stand on his shoulders, are truly without limit. It is to his achievements and memory that we have dedicated our effort here.

Other acknowledgments are deserved and due. To our students over the past two years, our thanks and gratitude for their forbearance. Their patience and critical comments, while of little assistance to themselves, have helped us in revising and shaping the book so that future generations might have an easier time grappling with the material.

Similarly, our colleagues, particularly Jonathan Mark, who used the draft version of this text several times, have provided both critical comments and support. George Gau, Stan Hamilton, and Dennis Capozza

have provided valuable assistance at various stages in the writing and revision of the manuscript.

Financial support has been provided by the Real Estate Council of British Columbia, which, through its ongoing funding of our research activities in urban land economics, enabled us to develop much of the comparative statistics that fill the volume. Support has also been provided by the Social Sciences and Humanities Research Council of Canada, both in research funding and leave fellowship, during which part of the book was written. The Faculty of Commerce and Business Administration also provided secretarial and clerical support that made the task feasible. Specifically, the entire staff of the Faculty's Word Processing Centre performed the herculean task of typing, retyping, and revising. They tolerated unreadable handwritten revisions and laborious and seemingly endless tables ("Goldberg's awful tables," as they came to be known). Merrill De Vuyst and Joan Ewer helped get initial drafts typed and onto the word processing system. Mabel Yee had the most difficult task of last-minute revisions, and endured tedious hours of glaring into and glowering at the CRT display, as well as having to ride herd on the various bits and pieces of manuscript, tables, and figures that are all embodied in a writing project of this scale. To all of our helpers in the Faculty, our heartfelt thanks.

The traditional disclaimer that must accompany acknowledgments needs to be made by us as well. Despite the best efforts of all involved, and despite the consultation and guidance given by friends, errors remain. We apologize in advance to our readers for these errors and for the confusion that might result from such mistakes. We accept our responsibility for these errors and hope that we may have the opportunity in the future to rectify them.

Michael Goldberg
Peter Chinly

FOREWORD

The aim of this book is to bring the reader to a comprehension of the economics of urban land and to an understanding of the economically rooted problems of cities, and to the development of remedies. But its first obligation is to lay down a basic structure as a frame of reference for the diverse material to come, a framework that will provide the perspective required for a balanced and realistic consideration of the broad content of this field of study.

The basic frame of reference to be presented in this introduction will be constructed of three types of material: (1) the essential characteristics of land as a natural resource and as a universal economic good; (2) the evolutionary and functional nature of human settlement as a prime land use from which is derived special qualities of productivity; and (3) certain unique features of urban land economics as an organized discipline. As an essay on the general nature of urban land, this introduction will anticipate many of the subject areas to be developed fully in the main body of this volume. (Because of its separate authorship, the introduction will possibly deviate occasionally from later generalizations, but such departures are useful in illustrating the relative immaturity of urban land economics and in challenging the new generation of scholars to search for definitive answers.)

LAND AND NATURE

"Under all, the land," proclaims the motto of a prominent real estate trade association. The implications of this statement are vast and profound. Land provides space and support for all living entities, and the fruits of the soil are the basis of the sustenance of all forms of life. Inextricably associated with the land surface and equally essential to life are the atmosphere and the beneficent rays of the sun. In addition, the supersurface of land is the meeting place of meteorological and astronomical forces and factors that create the various climates at each location on the earth's surface.

Land as two-dimensional space is the entire surface of the earth, but two-dimensional space is a physical, geometric concept of no economic

significance. As a productive resource or economic good, land is three-dimensional, elemental space that may be wet or dry, ocean, lake, river, or solid ground. To accommodate plants and animal life including humans, their activities and artifacts, three-dimensional space is essential. The concept of a vertical dimension for land embodies a recognition that associated with the horizontal space of a parcel of land is subsurface space that encloses the subsoil responsible for fertility and gives room for plant roots, minerals, and energy sources. The supersurface is the realm of the atmosphere and the climate, and provides space for building bulk, for multifarious biological and botanical activities, and airspace for everything that flies, from gnats to 747s.

Land has been characterized traditionally as "the gift of nature"; it is the natural attributes of land that impart productivity and utility. The differentiation among various parcels of land is the result of different combinations of natural components inseparably associated. Indeed, land is truly the product of nature, a composite of natural attributes through nature giving of itself. Because land is the essential site of all natural processes, it is difficult to distinguish and identify for land as separate from nature. In the large, land is nature and nature is land.

It may be observed that the essentiality of land and its fruits for our survival may well explain the persistence down through history of the primacy of land as our most valued possession. There is an intriguing hypothesis that humans, along with many other living creatures, respond to a basic and innate instinct to possess and protect territory essential to their welfare. Indeed, some modern aspects of our behavior toward land could be interpreted as a residual instinctive compulsion to hold land, the heritage of a primitive necessity.

Land as a Joint Product

We have defined land as a composite of natural attributes, but land by any definition does not become a productive economic good without some human input. Even the consumption of natural products such as wild berries requires effort in harvesting. Modern farming involves large capital investments in draining and fencing, in machinery and buildings as well as substantial labor in planting, cultivating, and harvesting. Land in urban areas, except for some recreational uses, requires human input and improvements such as clearing and grading, supplying potable water and waste-disposal facilities, and building access roads. To shelter urban activities and provide living quarters, various structures must be erected. Thus, land as the space attribute of nature has no economic value without human capital and labor applied to the space and its natural components. In this sense, land with productive potential is a joint product of nature and humankind. Thus, the traditional conception of land as a gift of nature overlooks the fact that land is nonproductive without essential human contribution.

Fixity in Space

It is well-recognized that land as space is fixed at a specific latitude and longitude. But the other physical components of land—the natural materials and the more or less permanently attached man-made improvements—are not all immobile or immutable. Topsoil can blow away, rivers can dry up, houses can be moved, and over time drain tile may deteriorate, smog can pollute the atmosphere, and forests can burn or be lumbered off. These changes and many others can drastically modify land's productivity and its economic value.

From the fact that space is fixed it follows that any given unit of space must be used or exploited where it is found: It cannot be moved into a more favorable market. Furthermore, it follows that each parcel of land is vulnerable to conditions within its special environment, be they favorable or adverse, static or in flux. It is this quality of land which gives rise to the concept of location, an aspect of land about which much will be said in this volume. At this point, we will only introduce the subject with a brief definition and some of the more important implications.

Site location is the complex of special space relationships with other points on the landscape that are linked with a site in some meaningful way. This concept is merely the popular and common-sense notion of location. For example, the locational qualities of a home include exposure to a set of natural features such as a fine view or a strong prevailing wind, and a combination of spatial relationships and travel convenience to various human activities and diverse facilities such as the homes of friends and relatives, schools, churches, shopping centers, and places of work. The special set of significant exposures and conveniences which affect site productivity will vary with each type of land use and with each site devoted to a given type of use.

The locational qualities of a site fixed in space are rarely stable, for there is constant change in the features of the landscape with which it is linked. Each change is likely to affect the productivity of the site in some degree. For example, a home becomes less desirable if the lovely sea view from the living room is contaminated by the appearance of off-shore oil drilling rigs. A potential supermarket site rises in value as the surrounding area develops with subdivisions and new homes.

Environmental change may be sufficiently drastic to bring about a change in the nature of the utilization of the site. For example, farm land on the periphery of a growing city will be subdivided into home sites when population pressures make it more valuable for subdividing than for farming. Thus, land is said to possess economic mobility and, with many exceptions, tends to move into its most productive use as determined by its environment.

One of the more interesting derivatives of this discussion is the observation that locational factors, external to the site, can generate

change in productivity and use while the land remains physically unaltered.

Fixity in Supply

It is not debatable that the total area of land on the surface of the earth is fixed and nonexpansible, provided, of course, that we define land broadly as the entire surface of the earth, wet or dry. The statement would be untrue under the popular definition of land as solid ground, as demonstrated by the dramatic achievement of the Dutch in expanding their country by converting the sea into productive land area. But there is a widespread and carelessly accepted assumption that there is an absolute limit to the land area available to us. This generalization is translated by the naive and by the real estate salesman into an assurance that land will always increase in value as growing demand presses against the fixed supply. But, in matter of fact, land is not a homogeneous element traded in a common market; it is highly differentiated in physical and locational characteristics.

Parcels of land may shift from one use to another because of economic forces or political controls. We have earlier alluded to the conversion of farm land to urban uses under economic pressures; modifications of public controls such as zoning can substantially increase or decrease the land area available for commercial or industrial purposes; a new bridge may open up heretofore inaccessible land for development and effectively increase the supply in the market; and so we must conclude that the physical truth that the surface area of the earth is fixed in extent has no practical economic significance, and the naive conclusion that land always rises in value must be labeled as a misleading and dangerous guide in land investment.

Uniqueness

As no two persons are exactly alike, so no two parcels of land are identical. Each parcel has an orientation different from any other parcel, and may have physical differences in subsoil conditions, drainage, and other features. Our concern here is with the economic significance of this quality of uniqueness. Land law recognizes this characteristic of land, and in certain situations specific performance of a contract relating to land is required because of the impossibility of discovering an identical parcel that might be substituted and the injustice of a money award in lieu of a unique land site. In the marketplace, the uniqueness of land parcels requires that each parcel be judged individually. Differences find expression in the variety of bids and offers. Although exact substitutability cannot obtain, economic equivalence is effected through trade-offs of qualities and in the pricing of the product. For example, in a subdivision of nearly identical lots located in a cold climate, buyers may be willing to pay the same price for a lot facing south but with no view and a lot facing north but with a protected view

of the distant mountains; or a lot with a few trees may command a premium over an identical and contiguous parcel with no ground cover. It may be said that the land market operates in a manner quite like any other market that deals in nonstandardized goods. Uniqueness of land sites, then, is an accepted fact but not a characteristic that distorts economic behavior in a pattern which is singular to the land market.

Exploitation by Humans

Since the beginning of time, the creatures of the earth, for self-serving purposes, have exploited, within their powers to do so, such natural resources as were accessible and appropriate to their needs. Each species, regardless of the burden on the rest of nature, has conducted this exploitation in a continuing and single-minded quest for survival, for benign conditions of life, and for the assured perpetuation of its kind. Within recorded history, among the denizens of our planet, *Homo sapiens* have made by far the most dramatic progress in improving living conditions. Our resourcefulness and industry have raised the quality of our life from bare existence to a highly sophisticated level. But this advance has been achieved at the expense of nature.

Early humans were sustained by natural foods procured by hunting and by harvesting wild fruits and vegetables. Later, having depleted the supply of wild foods, they learned by necessity to cultivate the land and domesticate wild animals. The raw materials out of which they fashioned increasingly complex artifacts were drawn from natural sources, some of which proved to be exhaustible. But neither the domestication of the food supply nor the development of synthetic materials has emancipated humans from dependence on nature as the ultimate source of food and energy.

Over the centuries, our increasing control over those aspects of nature that could be exploited for our benefit and our ingenuity in evolving a productive technology have nourished a progressively increasing growth in the human population. The needs and demands of this expanding population have pressed on the supply of natural resources to the point of threatening the exhaustion of some critical elements; it has led to a decimation of many wild species and has disturbed the ecological balance in parts of the world; and it has contaminated nature in many places and reduced both material productivity and aesthetic benefits.

There are those who are disturbed by alarmist predictions of an exhaustion of the world's resources and a contamination of the environment so extensive that it leads to the disappearance of humanoids from the face of the earth. But these timid souls can find encouragement in the great versatility of land in productive uses, its economic mobility, and in the demonstrated ingenuity of our species in devising offsets, social and technical, to potentially destructive developments. It may be observed in passing that testimony to the near-identity of land

and nature lies in the fact that most of the social devices aimed at limiting the destructive exploitation of nature take the form of public controls over the use of land.

THE URBAN ENVIRONMENT

The anthropology of cities reveals that human settlements developed as an integral aspect of technological, social, and economic evolution. Early humans discovered that cooperative group action was more productive for the individual than was independent effort in such essential activities as, for example, hunting large animals. At that time, considerations of defense enforced other practical considerations favoring a close-knit congregation of dwelling places. Settlements grew up in proximity to natural resources such as a water hole or where raw materials could be most easily extracted. In later times, with the development of production processes involving specialization and the division of labor, the most efficient arrangement required that the living and working places of the producers be geographically concentrated. The expansion of trade and exchange encouraged the appearance of trading communities that were points of assembly for goods, the loci of trading activities, and the homes of the traders. The need for cross-country transport of raw materials and finished products spawned towns and cities at the junctions of trade routes, where goods were loaded or shifted from one mode of transport to another, such as from canoe to pack animal, or from ship to rail.

This brief and partial account of the functional origins of human settlement serves to suggest certain generalities about cities. First, broadly speaking, most settlements are bifunctional, the locus of both human production and consumption. They are centers of consumption in which people live, use and consume the products of nature's bounty and human effort, and enjoy various services and the benefits and satisfactions of social contacts. In the same urban place, involving the same people for the most part, there are productive economic activities of various kinds by which most of the residents earn their living. The proliferating functions of an advancing society have created an ever-increasing complexity of interaction and interdependence within urban areas. This pattern of interrelationships is organic in the sense that modifications in any one of the components of the system will effect some responsive modifications in one or more of the other components or related processes. For example, the recent demographic shift in Santa Cruz, California, to a greater number and higher proportion of young adults will result in a change in local consumption patterns which, in turn, will affect retailers and places of entertainment. There will be changes in the composition of the labor force which may benefit some lines of business and damage others and which will modify the attractiveness of the area for new industries. This example illustrates

the point that the analysis of any one urban component abstracted from the rest of the community may result in a distorted conclusion that ignores significant side effects.

The anthropology of urbanism offers a valuable guide to the analyst and the decisionmaker dealing with urban phenomena. The history of human settlements demonstrates the functional character of cities and establishes their evolutionary adaptation to the changing needs and preferences of society, changes which follow advances in technology or modifications in such factors as social values and political organization.

Now, it is fundamental that the decisionmaker deal with future probabilities. His or her decision, be it in connection with a specific transaction or the adoption of a policy, depends on his prediction of the probable outcome of the decision. Even the analyst examining the past is in search of generalizations that may be useful in forecasting the future. It is clear that analysis for decision making regarding urban land requires forecasting changes in factors affecting future productivity, land values and land use, and evaluating the composite effect of these factor changes. In effect, the analyst seeks to describe and measure the coming phase of the city's continuing mutation in patterns of land values and land utilization. It is of note that the factors of greatest weight are exogenous to the site or area under analysis. Locational factors are probably the most significant in urban areas. A second category of productivity factors is composed of the ever-changing social, economic, political, and technological environment that affects all manner of economic activities. A third class of factors involves physical changes in the land itself from the operation of natural forces or through man-made modifications and improvements. Incidentally, the question of whether there is a difference in urban and agricultural land economics is answered by the fact that all of the productivity factors in the three categories just summarized are active agents in determining the productivity of both classes of land.

THE NATURE OF LAND ECONOMICS

It may be presumed that the readers of this volume are familiar with the field of economics and, in general, with the subject areas it encompasses. They should understand the nature of at least the more familiar economic institutions and processes, and should have been exposed to the various economic theories, laws, and principles which the casual scholar is inclined to accept without serious question. Economics is generally classified as a social science. Without questioning the accuracy of this term, we do perceive a danger in the encouragement of the misconception that the "science" of economics is a systematic and orderly body of internally consistent information and principles that is as immutable as are the laws of nature.

Our view of economics, including land economics, emphasizes its be-

havioristic aspect. Economics is the study of human behavior in situations where economic considerations prevail. Economic laws or principles are nothing more than generalizations, based on past economic behavior, that permit predictions of probable future behavior within useful limits of reliability. But human behavior is not constant. This fact is observable and widely accepted as a general truth; but there is somewhat less agreement that changing social behavior is explained in part by the fact that, contrary to the tenets of classical economic theory, human nature is not innate and unchanging. The famous psychologist Thorndike has said: "Much, perhaps nine-tenths of what commonly passes as distinctly human nature is . . . not in man originally but is put there by institutions, or grows there by the interaction of the world of natural forces and the capacity to learn." Institutional economics, which is our brand of land economics, accepts this explanation of changing social behavior and discards as unrealistic the classical assumption of hedonism as the universal and unchanging motivating force.

Institutional economics not only views social change which modifies economic behavior as, in part, the result of change in human nature, but also recognizes that changes in individual attitudes are usually associated with corresponding changes in group patterns of thinking and action. Consistent with this view is the application of the Darwinian concept of evolution in the physical world to evolution in the social world, defined here as a continuous adaptation to constantly shifting social patterns and evolving technology.

Central to institutional economics is the recognition that social, political, and economic institutions are powerful determinants of economic behavior. These institutions appear, change, and sometimes disappear in a social form of Darwinian evolution. Thorstein Veblen, an early prophet of institutionalism, summarized the tenets of this school of economics somewhat as follows: Human activity is to be viewed as an evolutionary process; institutions are decisive factors in shaping human behavior; social science must deal with real human beings, not rationalized human nature—with facts, not a normalized picture of them.

Institutional economics does not purport to replace or discredit orthodox neoclassical economics as an analytical device. However, it does offer a different approach and emphasis, one that is particularly well adapted to the problems of land. The following summary of the salient features of institutional economics is adapted from the writings of Professor Edwin Witte, a well-known institutionalist and labor economist:

1. It is not a complete, self-contained, and connected body of thought, but a method approaching particular economics problems.

2. It is problem-oriented economics.
3. Its concerns are more than solely economic motives and thus include whatever leads humankind to act in economic matters.
4. It is interdisciplinary in recognition of the broad range of interacting social and technical factors that affect economic affairs.
5. It recognizes that institutions that are active or that are restraints in our economy are man-made and changeable. In problem solving, it is the present form of the institution and its evolutionary origins which are the materials of analysis.
6. The method is heavily inductive, based on a direct observation of all the facts.
7. It comprehends the associational propensities of our society that lead to group patterns of thinking and action.

Whether or not the authors of this volume will be comfortable with the institutional label, the treatment of urban land economics in this volume conforms to my perception of institutional economics; and, by intent or not, it is the economics of Darwinian change. As genuine, problem-oriented institutionalism, the book is launched with a preview of urban problems. The reader will find that most of these problems are land-related, and as he proceeds through the text, he will discover that all of the criteria of the institutionalist approach are fully met.

But in what sense is this the economics of Darwinian change? Certainly, classical economics does not ignore change, but there are differences in the concept of change and the view of what changes. Basically, the classicist views change as discontinuous, the product of disturbing elements outside the system and calling for adjustment to reestablish equilibrium or a state of quiescence. But to the institutionalist, change is an ineluctable part of the economic process. Technology is in constant flux, institutions are forever changing, and humans continue to strive to adapt to the unending mutations in their physical and social environment. This view of change is useful to the analyst who searches for generalizations out of past economic behavior in order to interpret change or to discover remedies to problems which arise through change. Future change becomes more predictable, the by-products of change are more foreseeable, and the outcomes of remedial steps are more reliably forecast.

We earlier suggested that the *raison d'être* of economic analysis is to solve problems and make decisions and that the constructive economist is necessarily a forecaster. He must predict the probabilities of various possible future outcomes under alternative solutions and courses of action. Thus, economic analysis must start with a study of the prospective physical and institutional changes that may affect his predictions. The

institutionalist is not one to seek solutions or sound decisions under the classical assumption that economic behavior is constrained by a fixed body of timeless and "place-less" principles; the economics of the institutionalist is human behavior in an environment of ceaseless and pervasive change. There is no present; there is only the past and the future.

Richard U. Ratcliff

CONTENTS

PART 1

Introduction and Setting 1

Urban Problems. An Introduction 1
Urban Achievements 3
Urban Land Economics: Its Potential Role 3

1 Urbanization, Urban Areas, and Urban Land Markets 7

Urbanization: The Process 7
Urbanized Area: The Product 20
Urban Problems: The Inevitable Side Effect 26

PART 2

The Tools of Urban Land Economics 32

Some Problems in Need of Analysis and Treatment 33
An Introduction and Overview of the Tools 33
The Approach 35

2 Introductory Overview to Urban Land Economics 36

What Is Urban Land Economics? 36
The Purpose of the Book 39

3 Urban Macroeconomics 42

Introduction: Accounting for Urban Economic Activity 42
Models or Concepts of Urban Economies 50
Forecasting Urban Economies 83
Summary 95
Appendix: The Input-Output Model in Mathematical Summary 97