



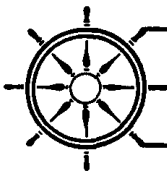
LAND ECONOMICS

Folke Dovring

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FOLKE DOVRING

UNIVERSITY OF ILLINOIS - URBANA



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PREFACE

This volume is intended as an intermediate college textbook --that is, for advanced undergraduates and first-year graduate students. It reflects many years of teaching Land Economics in the Department of Agricultural Economics at the University of Illinois. Early on in my career, I developed a syllabus, more like a mini-textbook, which I handed out to my own classes and used in combination with blackboard and handout illustrations. This book is the result of developing and expanding that short text. Among other things, a good deal of subject matter has been added in order to make the book useful to instructors whose approach to Land Economics is somewhat different from my own. In addition, many up-to-date tables and illustrations have been included where appropriate.

Folke Døvring



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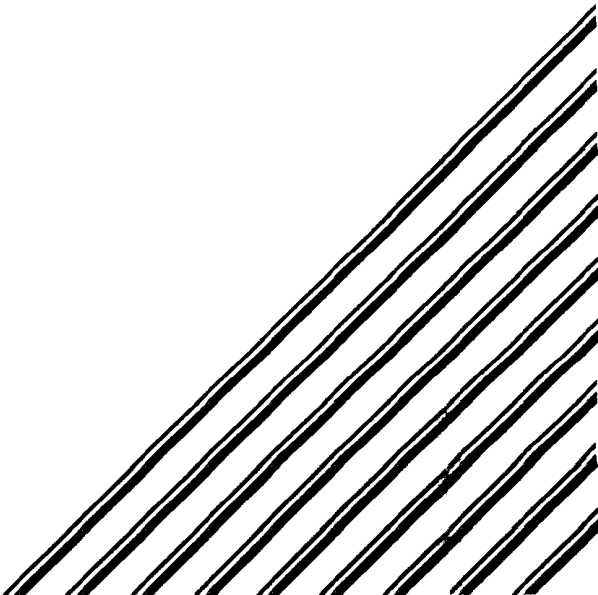
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Part 1

OVERVIEW





CHAPTER 1

Introduction to Land Economics

Land has many characteristics that make it different from other basic factors in economy and society. The highly composite nature of most land includes a whole bundle of things, among them space and raw materials, fund resources and flow resources, energy sources, supply limitations (because the earth is finite and not man-made), and the often unclear borders between natural and man-made components of real estate. All of these peculiar characteristics call for special insights and analytical tools if we are to understand the economics of land use.

Land economics is a convenient short term for the economics of natural resource use. Land is the origin or the carrier of nearly all natural resources on earth, including access to air and water. But the term includes more than resources. Not all land is a resource. Some of it is worthless or even an impediment with negative value (see Chapter 9). Even so, it is often economically relevant.

Economic principles and theories are as applicable to land as to other components of the economic system. As in all major lines of analysis, they require specialized information to become practically valid. Land is "different" to such an extent that without specialized study it will be even less understood than labor, marketing, money and finance, or consumption economics.

The specifics of land problems are known to many different kinds of scientists, among them the experts in geology and soil science, agronomy, agricultural economics, mining, and city planning. Land problems are familiar also to people in several practical professions such as farmers, foresters, land developers, real estate brokers, architects, construction engineers, and so on. The task of those who pursue land economics as a field of study within the social sciences is to pull together these several strands of specialized knowledge and show how they fit within the wider fabric of the economy at both the macro and micro levels. In doing so, land economists also need to draw on contributions from other social sciences such as geography, law, political science, and sociology.

The purpose of studying land economics is both to enlighten us in general and to help prepare those who will choose any of the many careers where knowledge of the economics of land will be part of their life and the tools of their work. Land economics has applications to production both on farms and in forests and in many other branches of the economy such as urban development, real estate transactions, and land tenure decisions. It also applies to resource policy at several levels, including energy policy, water use policy, pollution control, and other measures to protect the environment.

The tools of land economics are found on several levels. We need conceptualization (to know what we are talking about), macro and micro economic theory and constructs, and institutional theory. We also need considerable amounts of information about practical circumstances and quantitative proportions. Some knowledge about the history of economic ideas will also be useful. The land characteristics mentioned above also necessitate special emphasis on long-term processes, macro relations, and institutions. We must also pay attention to interdependencies (multiple lock-in systems), which are especially important in location patterns. In this book we will above all focus on the functions of land in society.

1.1 SOME BASIC CONCEPTS

1.1.1 A Bundle of Things

Land is no simple matter. A piece of it may be defined by boundary markers, coordinates, or any other kind of

physical description. But within such boundaries are many things, and not all of them are likely to be economically relevant at the same time. These things can be classified by size and shape of space and by a set of raw materials present. The latter may include many different kinds of fund resources or flow resources (see Section 1.1.3), or both, sometimes in complicated interaction. There may also be energy components or alternatives among them. There can be many combinations of rocks and soils, climatic quality, and of economic ambient both on the site and surrounding it. Both substance attributes and space attributes may be in part natural and in part man-made.

Value of a piece of land can not be derived from considering the bundle of things as a whole. Only those parts that can serve the purposes of an eventual buyer are relevant to one's estimate of value. Those bidding against someone for the same property may have different things on their minds. Primary uses of land can combine with complementary and supplementary uses in a wide variety of possible combinations. These include, for instance, farmland also in recreational use, such as for hunting and outings, water reservoirs used also for fish production and water sports, and so on. More important than multiple uses is the case where one use excludes other uses, either temporarily or forever.

1.1.2 Space and Raw Material

Land can be wanted for two main kinds of purpose: as space to exist in or to conduct activities in, and as a source of raw material from which to make things. These two functions are clearly separated in several nonagricultural pursuits such as housing and mining. In agriculture and forestry, the two functions are intermingled, and the distinction is not clear at first glance.

As a first approach, we can say that land has spatial attributes in size, shape, and location, and substance attributes in soil quality, mineral content, topography, and climate. This distinction holds also with regard to land as nature or as recreation area, for which it also requires both spatial and substance attributes to suit the purpose.

Land as space is, of course, an indispensable requisite for existence. The reason why many of us seldom think of this is that some amount of space is constantly held at our disposal, both by public agencies such as those who administer streets, roads, parks, and public buildings, and by private entrepreneurs who provide for housing developments, shopping centers, and so on.

In contemporary America, most people tend to take space for granted. This is because of the country's past history of plentiful land supply. There have on the whole been few class distinctions or restrictions on land access. In some other countries, one may encounter private streets, or severe housing shortages. Such things help us imagine what the consequences might be if some powerful individual or organization had a land monopoly.

Land as raw material is a more complicated concept. Some materials are simply extracted from the rocks or the soil, such as fossil fuels, metal ores, and rock, gravel, sand, clay, and lime needed as building materials. Extractive uses are typically exhaustive: Once a mine or an oil well is mined out, there is no longer a source. Biological production is different: There too, we may to some extent mine the soil for mineral plant foods. But we can replace or recycle these, and a large part of the biomass is obtained from carbon in the atmosphere, water in the soil, and incident sunshine. All of these are flow resources--they will, within limits, recur again and again. But the size and location of a piece of land limits the amounts of these flow resources that it can help us capture.

1.1.3

Fund Resources and Flow Resources

Natural resources can be classified as being either a fund that is used up by being used, or a flow that is continuously renewed with the passage of time. Fund resources are typified by mines and oil wells: flow resources by the water in a river that is renewed annually from recurrent rainfall. Ultimately, of course, the entire earth is a fund of finite size, but most of its elements can be made into a flow by recycling. Only fossil and nuclear fuels are destroyed by use. Metals and other chemicals may be retrieved by some recycling technique, if sometimes only at prohibitive cost, one that always includes some cost in energy. Most fund resources are also a natural flow, but one that is replenished too slowly for us to await the buildup of concentrated deposits from the scattered fund of the earth.

Land as space is a fund resource rendering flow services. Space as such can not be destroyed. Even a hole in the ground, such as an empty mine, takes up as much space as before it was dug and can be used as a building site either above the ground or below it. Development from one spatial

use to another puts an end to the use of one flow and opens up the use of another one.

Flow resources have no limit over time, but in the present they are of course limited. Air and sunshine are without cost and come to us in a supply so large that we can regard them as limitless. There are limits when someone builds a tall building in front of our house, or plants trees that shade our solar collectors, or makes the air unfit to breathe because of pollution.

Between the extreme examples of pure fund and flow resources, land used for biological production has both fund and flow elements in it. The soils are a fund that has been built up over periods of time generally too long for us to contemplate in economic reasoning. They also contain a flow of nutrients and other biologically relevant elements that can be husbanded for better or worse. These land and water areas are also space on which we can capture flow elements of atmosphere and sunshine.

1.1.4 Land and Energy

Before the 1970s, energy was generally overlooked as a limiting factor in economic production. It always had a price, but it was assumed that energy could always be produced at some equilibrium price. Recent attention to energy problems has brought into focus the fact that most of our current energy supplies come from fund resources such as oil and gas wells, coal mines, and uranium mines. Thus they are not only land products but also irreplaceable. The total supply of these resources is well defined physically but not economically because the use of them is often subject to marginal conditions.

Eventually there will have to be a transition to using more and more flow resources for energy. Most of these flow resources will come from sunshine transformed in various ways. Because such a transition will require huge amounts of investments as well as large land areas, it can not be accomplished very rapidly. In the meantime, fund resources for energy may have to be priced according to their medium-term opportunity cost rather than to their current cost of extracting and processing. The alternative would be to limit the use of energy by administrative controls. All of this gives to land economics a new facet and greatly enhanced interest, for no economic production can take place entirely without energy

inputs. This is true of directly land-based production no less than of other economic activity.

1.1.5 Specific Supply Limitations

The supply of land is limited by several obvious things that are not always noted: The physical supply is rigidly limited; each piece of land has a fixed location; land is basically made by nature, not by people; and land is permanent. Yet, all of these characteristics are true only in a rigid, formal sense. Functionally, they are all subject to some modification. The ways in which such modifications are possible are areas of applied theory in land economics.

Thus the rigidly limited physical supply of land is relevant only in the physical sense. It does not always constrain economic use where variations in the intensity of use can substitute for scarcity of acreage. Fixed location is always a function of other locations and can be modified as other locations are established or altered. The nature-made portion of land is not always as large as we think. In many ways, land "in the raw" has been modified by human use. This includes the manipulation of plant and animal genetics and the spread of cultivated species around the globe. Finally, the permanence of land is true only in the purely physical sense of so much space. What space is filled with can be changed within wide limits.

1.1.6 Real Estate

The bundle of things in a piece of land usually includes some man-made features, which in many cases we are not able to separate clearly from the nature-given properties of the land. Whenever man-made features are such that they can not be readily separated from the land, they become part of the land for economic analysis. Land and fixtures are treated as a single object, real estate. The difference between land and real estate is not always analytically important, but for clarity of reasoning we should remain aware of this difference.

In conventional economic analysis, the factors of production are listed as "land, labor, and capital." To this specification we now often add management and technology, sometimes also energy, as separately recognizable factors of production. In such a listing, land should really only mean