



# INTERMEDIATE ECONOMIC ANALYSIS

CARTER & SNAVELY

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W. Harrison Carter

PROFESSOR OF ECONOMICS

DEAN OF THE COLLEGE OF LIBERAL ARTS AND SCIENCES  
THE UNIVERSITY OF CONNECTICUT

William P. Snavelly

PROFESSOR OF ECONOMICS

THE UNIVERSITY OF CONNECTICUT

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## Preface

This book is designed to present a clear and concise statement of the essentials of economic theory at an intermediate level. It is intended for courses in economic analysis or economic theory, and it is directed to students who have already completed a course in "principles." Although we have assumed that the students have been exposed to many of the basic concepts in the introductory course, experience has taught us that the intermediate course in theory must review these concepts before pushing on into new territory.

Experience has also taught us another fact. Although we find theoretical analysis both useful and exciting, many students do not always share these feelings. It is not sufficient merely to present the theoretical analysis. It is also essential to relate the analysis to actual problems, in order to make the analysis more real without diluting the theory. For this reason, a certain amount of descriptive and empirical data have been included, as well as references to relevant policy decisions. It is hoped that this will make the analysis more meaningful.

The book is also designed to provide the teacher with a considerable degree of flexibility in developing his own course. An attempt has been made to keep the book within a reasonable length for a one-semester course. There is considerable variation in approach and emphasis among courses in theory. All cover essentially the same topics, and the chapter arrangement of this book follows the orthodox pattern. Some teachers may want to give major emphasis to the purely theoretical analysis, whereas others may wish to include consideration of some of the empirical data or discuss the application of the theoretical analysis to case problems. The intention of the authors has been to give a clear explanation of the basic elements of economic theory so that the teacher can build on them in his lectures and discussions. The references have been selected with this in mind also. They cover different approaches to the

topics, and the annotations indicate the nature of the material covered whenever this is not evident from the title.

Our indebtedness to others is extensive. Since this is intended as a presentation of current economic theoretical analysis, it draws heavily on the contributions of other economists. The material has been used in our classes in syllabus form over a period of years, and we owe much to the comments of our students. The manuscript has been read in its entirety by Professor Richard S. Howey of the University of Kansas. We wish to express our appreciation for his helpful comments and suggestions. Portions of the manuscript have been read by Professors James McGill Buchanan, James R. Schlesinger, and Tipton R. Snavelly of the University of Virginia; and by our colleagues, Professors Philip E. Taylor, Joel B. Dirlam, Irving F. Fellows, Paul N. Taylor, H. John Thorkelson, Melvin Lurie, Morris Singer, Rudolf R. Rhomberg, and Dorothy Goodwin of the University of Connecticut. We have benefited much from their advice and criticism. Needless to say, the authors bear full responsibility for any remaining errors and omissions. We also wish to acknowledge the valuable assistance of Mrs. Zinaida Daricek and Miss Sandra Howard in the typing of the manuscript.

*W. Harrison Carter*  
*William P. Snavelly*

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TO OUR PARENTS

*W. H. C. and O. E. C.*      *T. R. S. and N. A. S.*

AND OUR WIVES

*J. L. C.*      *A. P. S.*

## PART I. INTRODUCTION





# 1

## The Anatomy of Economics

Economics, as one of the social sciences, deals with one portion of human behavior and one group of social institutions. It is concerned with the institutions and human activities that are involved in the production, distribution, and consumption of goods and services in the process of satisfying human wants. These activities are not sharply demarcated from other types of human behavior, but they do represent a sufficiently homogeneous group of activities to justify studying them separately. In the study of any specific problem, such as the economic development of underdeveloped areas, we must consider not only the economic aspects but also the political, the sociological, and the psychological aspects. The economist must always remember that he is a social scientist. He is concerned, however, with certain definite aspects of the problem, and he brings to this study powerful tools of analysis.

There is an extensive literature on the nature and scope of economics. Though some have questioned the fruitfulness of this type of inquiry, there are certain basic factors that determine with reasonable clarity which aspects of a problem are economic in nature. It will be helpful to give at least brief consideration to the essential characteristics of economic problems and to the methods of analysis used by the economist before considering specific types of economic analysis.

### NATURE AND SCOPE

#### *Scarce Resources*

It is a commonplace observation that goods and services available to satisfy human wants, and the resources to produce these goods and services, are limited relative to the human wants themselves. There are two crucial variables in this statement—the amount of available resources and the extent of human wants. The scarcity of resources, and hence of

goods and services, is relative. Actually this relative scarcity of goods and services could be reduced either by increasing the production of goods and services or by reducing human wants. There have been, and are today, certain social groups for whom self-denial and abstinence play an important role. It is safe to say, however, that in most contemporary societies the mere suggestion that human wants might be reduced flies in the face of accepted mores. In fact, constantly expanding wants are a major characteristic of modern society. Although to some extent biologically determined, human wants are primarily socially determined.

Since the scarcity of available resources puts a ceiling on the production of goods and services, these resources must be used as efficiently as possible so that the output of desired goods and services may be as large as possible. This is economizing. Society has evolved a network of institutions for economizing. The nature of these institutions, and of the decision-making processes, is largely determined by our political and social philosophies. In a relatively free-enterprise economy, the decisions are primarily made by individuals—by individual consumers and individual business units. The corporation, the banking system, the marketing and pricing structures are illustrations of institutions designed to contribute to the effective utilization of resources. The accumulation of capital and technological developments are major factors in expanding the production of goods and services. An important portion of economics consists of the description and the analysis of the functioning of these institutions and of the factors determining the aggregate national output.

Scarcity gives rise to another set of problems. The aggregate national product must be allocated among the various groups. Each of the factors of production receives a share. This apportionment may be approached in terms of the portion of the total allocated to labor as a group and to the owners of land and of capital. It may also be approached in terms of the pricing of the individual factors of production—the determination of wages, interest, rent, and profits. This is accomplished primarily through the price system, although governmental policies also play an important role.

### *Alternative Uses*

Resources are not only limited, but they are also capable of alternative uses. Any given agent of production may be used for the production of different goods and services or may not be used at all. Some land may be used to produce either wheat or corn, other land to produce either corn or cotton. Labor may be shifted from the production of one commodity to the production of some other good or to the creation of services. Loanable funds likewise may be directed into any of a wide range

of types of production and consumption. Decisions with respect to the allocation of these resources must be made in every type of society, although there are wide differences in the processes by which these decisions are made. Though the government plays an increasingly important role through its tax structure and its expenditure pattern in modern free-enterprise systems, the major role is played by the individual consumer and business firm. The consumer allocates his income among the various types of expenditures, thus affecting the allocation of the agents of production among competing uses. Consumer choices, translated through the price system, are thus part of the planning mechanism whereby decisions are made as to what goods and services are to be produced and how much of each.

Another type of decision-making arises from the fact that within limits the agents of production are substitutes for each other. The proportionality in which the agents of production are combined in the production of a given commodity can be varied. The same product is frequently produced with very dissimilar combinations of the factors in different regions. Rice is grown in the United States with the use of large amounts of capital, whereas large amounts of labor are used in China. The introduction of laborsaving devices in industry involves the substitution of capital equipment for a certain amount of labor. Different types of production do have certain technical requirements, but there is a wide range over which the proportionality of the factors can be varied. This involves a decision as to how the goods will be produced. The decision-making unit in this case is primarily the individual firm, although here again the government plays an important role through various types of regulations.

There are, therefore, three basic problems in connection with the utilization of scarce resources and their allocation among alternative uses. These are—What will be produced and how much of each? How will it be produced? For whom will it be produced? These basic questions form the subject matter of economics. In a free-enterprise system, or in a mixed economy, the price system provides the means for making many of these decisions.

### *Economic Goals*

A problem remains, however, with respect to the basis on which these decisions are made. How do we measure effectiveness, and on what basis is the allocation determined? Effectiveness is a relative concept and must be measured in terms of accomplishing certain goals. Resources must be allocated in a manner that will maximize desired ends. In some societies these ends have been concerned primarily with the strength of the state, whereas in other societies they have been concerned with the welfare of the individual. Every society must have a

philosophy of economic activity. Unless objectives are clearly defined, it is impossible to make intelligent choices. The determination of the goals themselves, however, lies outside of economics. Economics is impartial as between ends. A distinction has been drawn at times between positive, or pure economics, and normative, or welfare economics. The former is concerned with an explanation of how the economic system works and why it operates the way it does and with predictions of what will happen under given conditions. Its objective is the formulation of economic principles. The latter is concerned with the evaluation of the functioning of the economic system and with the formulation of policies designed to achieve certain objectives. The selection of norms or goals, however, lies in the area of social philosophy and not economics. In actual practice, most economists have been concerned with both the positive and the welfare aspects of economics.

### DECISION-MAKING UNITS

The discussion of the nature of economics has indicated that there are certain basic problems that confront every society. These problems concern the effective utilization of scarce resources and their allocation among alternative uses in order to maximize desired goals. Decisions must be made with respect to what items will be produced, how each will be produced, and who will receive them. It is essential that every society have some process by which these decisions are made and some system of economic controls if these decisions are to achieve the goals desired. The economic system consists of a network of economic institutions concerned among other things with the management of these resources and their allocation among the competing uses for them. These institutions have developed within certain political and social frameworks and philosophies, they have changed over time, and they differ among economic systems at any given time. The basic economic problems are common to all societies, but these societies differ with respect to the machinery whereby the economic as well as other decisions are made.

Two of the major ways in which societies differ are in the relative importance of the various decision-making units and the structure of these units. These decision-making units are the household, the firm, and the government. Although the household is thought of primarily in its consumption aspects, it is also income-producing. There is an inward flow of income which is obtained by selling services in the form of labor and by providing loanable funds and property. There is also an outward flow of expenditures. It exchanges the funds obtained as income for a variety of goods, services, and nonliquid assets. The expenditure decisions of the household have an important bearing on what goods and services are

produced. In making its decisions the household is motivated primarily by a desire to maximize satisfactions.

The firm is engaged in combining the various agents of production in order to produce the goods and services sought by the household units and other consuming groups. The payments made for the agents of production represent costs to the firm but are income to the units which receive them. The goods and services they produce and sell represent income to the firm but involve expenditures by the households and other economic units. The firm, in making its decisions, is motivated primarily by the desire to maximize profits, although other factors may also play a part and various restrictions may be placed on the firm.

The government plays an increasingly important role. Its activities fall into three major groups—production, regulation, and fiscal policy. An illustration of governmental production is found in hydroelectric power generation. Governmental regulatory activities cover a wide range. In the United States they include such things as antitrust legislation, pure food and drug acts, public utility rate regulation, and agricultural price-support programs. Finally, governmental fiscal policy is a very important factor in the functioning of the economy. There has been a large increase, both absolute and relative, in the amount of public spending during the past forty years. Approximately 20 per cent of total spending in the United States today is public spending, as opposed to private spending. This means that the government is making a significant portion of the decisions that determine the types of goods and services produced.

It is possible to set up an economic system in which all of the basic economic decisions are made by a centralized planning group. It is also possible to visualize an economic system in which all of the decisions are made by individual households and individual firms. Actually, most economic systems can be described as mixed economies.

Economic analysis is applicable to all types of economic systems. In our discussion, however, we will be concerned primarily with an economic system in which there is a wide area of individual choice.

## ECONOMIC ANALYSIS

There are a number of alternative approaches to the discussion of economic problems, each of which has an important contribution to make to our understanding of the nature and functioning of the economic system. These can be classified broadly as the descriptive-historical approach, the analytical-theoretical approach, and the policy-welfare approach. Some economists have placed primary emphasis on one of these but in the discussion of most economic problems we find all three included.

The first approach is concerned with the description of the structure and functioning of economic institutions. This includes a consideration of the historical evolution of the institutions, as well as the current structure. An essential part of the discussion of banking problems is a description of the banking structure. If we are studying central banks, as one part of the banking system, we must concern ourselves with their organization, operations, relation to other parts of the banking system, and historical development. In the discussion of any economic problem, it is necessary to understand the institutional framework, and this is provided by the various descriptive and historical studies.

Description by itself is not sufficient, however. It is necessary also to establish functional relationships and general principles. It is important to be able to describe the various types of trade restrictions, but we must consider the effect of the tariff on prices and production. We must study the relationship between price and the quantity purchased or between income and the amount purchased. The development of tools of analysis and general principles that may be applied in the interpretation of economic data and for the solution of economic problems is the objective of economic analysis. Economic analysis is not a set of doctrines but a method of thought. It does not provide ready-made answers to problems, but it does provide tools of analysis that enable us to tackle new problems and to reason logically to a solution. The questions asked are "how," "why," and "what" questions—How does the price system operate to allocate resources? What determines the level of national income and its distribution among the groups in the nation? What determines the prices of individual commodities and the price level in general? If we are successful in developing tools of analysis which assist us in arriving at meaningful answers to questions of this type, we shall then be in a position to gain a better understanding of the functioning of the economy, to predict what will happen under given conditions, to develop instruments of control, and to evaluate the efficiency of the economy in terms of the desired ends. This is well worth the effort.

The policy and welfare aspects of economics are concerned with the formulation of policies to accomplish certain goals and with the evaluation of the functioning of the economic system in terms of these goals. We have already pointed out that the selection of goals lies outside of economics. It involves subjective judgments and is in the area of ethics and social philosophy. Once these goals have been defined, however, the economist is in a position to assist in the formulation of policies designed to achieve them. In actual practice, economists have been very much concerned with matters of economic policy.

The broad objective of this book is to develop tools of analysis and general principles—economic analysis. Although this is the primary pur-

pose, we will have occasion at times to refer to descriptive material as well as welfare aspects.

### *Two Major Types of Problems*

Economic problems and analyses can be classified under the broad headings of microeconomics and macroeconomics. In microeconomics, we are concerned with the small (relatively speaking) and the individual. This includes the study of the individual firm, the individual consuming unit, and the individual commodity. Illustrations of specific problems include the analysis of the factors determining the price of wheat or automobiles, the equilibrium output of the firm or individual industry, and the wage rate paid a given type of labor. These are the types of problems considered in Parts II and III, where analyses of the determination of the prices of commodities and the prices of the factors of production are developed.

Macroeconomics is concerned with the study of large units, that is, with economic aggregates. This involves the analysis of the general price level rather than the prices of individual commodities; the national output and national income rather than the output of the individual firm or industry; total employment rather than the employment in individual firms. The analysis of the determinants of the level of national income in Part IV falls in this category.

At first glance there would not appear to be any significant difference between these two types of problems. The aggregate output of the nation is the summation of the outputs of all the individual producing units in the nation. The general price level is an average of all the prices of individual commodities and services. There are, however, several reasons why these two types of problems call for separate analyses. In the first place, any attempt to arrive at an aggregative analysis through an analysis of the individual parts would be extremely cumbersome. Consider the problem of attempting to determine the factors affecting the general price level from an analysis of the prices of all the individual items. We can obtain a much clearer understanding by using the equation of exchange or the national income analysis, both aggregative approaches.

In the second place, there is frequently a fallacy in reasoning from the individual to the general. Conclusions that are valid for an individual part may not be valid for the whole. Savings for the individual consumer may be highly desirable, but an excessive increase in savings by society as a whole may initiate a depression. The individual bank may adjust its cash position by selling marketable securities, but if the entire banking system attempted to sell securities all at the same time there would be a disastrous break in the prices of these securities. A tariff on one com-



modity may benefit the domestic industry affected, but it does not follow that a tariff on all commodities would benefit the nation.

In order to be able to deal with the various types of economic problems which are of significance, it is necessary to be familiar both with individual (microeconomic) and with aggregative (macroeconomic) analyses.

### *Methods of Economic Analysis*

The analysis of economic problems presents several difficulties. The method of scientific experimentation, which is so valuable in the natural sciences, has very limited application in the social sciences. This is due to the large number of variables and the inability to control them. The physicist or chemist can set up an experiment in which he attempts to keep constant all variables except one, and he then studies the effects of changes in that one variable. The economist cannot set up this type of experiment, but he has developed several types of analysis by means of which he attempts to approximate these ideal laboratory conditions.

One of the most valuable tools of analysis is that of deduction, or theoretical reasoning. It is the method of model building. We start from a given set of assumptions and then reason logically from these assumptions to arrive at generalizations that follow from the assumptions set up. In doing this, we create a controlled situation, thus paralleling the method of scientific experimentation. In the analysis of price, we will set up a number of different models of market situations. One of these will be pure competition, in which there are a large number of buyers and sellers and a homogeneous product. It will also be assumed that the consumer strives to maximize his satisfactions and that the businessman strives to maximize his profits. Having thus set up our "model" by clearly defining our assumptions, we shall then be able by reasoning logically to deduce generalizations concerning the nature and functioning of the model. In setting up the model we are abstracting from reality, but we are enabled to analyze the specific type of situation defined in the assumptions.

Another technique used in theoretical reasoning is that of studying the relation between two variables, holding all others constant. This is the *ceteris paribus* assumption. In the analysis of demand, for instance, we shall study the relationship between the price of a commodity and the quantity purchased, holding everything else constant. There are other factors affecting the amount purchased, each of which must be studied, but by holding these other factors constant we can more readily study the functional relationship between the price of a commodity and the quantity purchased.

Deductive reasoning, therefore, provides us with hypotheses or gen-



eralizations. These must then be tested. This is usually done by means of empirical studies. Deductive analysis indicates that the quantity of a commodity purchased varies inversely with the price of that commodity, other things being constant. Empirical data may confirm the hypothesis established deductively. If the empirical studies do not confirm the hypothesis, it is necessary to check to determine why. It is possible that there were errors of logic in the deductive analysis. It is possible that the hypothesis was tested in a situation inconsistent with the original assumptions. In the illustration above, income might have changed at the same time as the price change, and thus other factors were not constant. If the generalization derived deductively successfully meets all empirical tests, we have a valid economic law that can be used in further analysis. In using it, however, care must be taken to apply it only in situations consistent with the original assumptions on which it is based.

The other major technique of analysis is that of induction, or empirical study. Such studies start with the "facts" and attempt to arrive at empirical generalizations or patterns of uniformity by a systematic analysis of those facts. Examples of empirical analyses are statistical studies of the relation between price and quantity purchased, between volume of output and cost, and between income and quantity purchased. Studies of this type provide us with valuable generalizations. In this respect, induction is similar to deduction, both resulting in the establishment of hypotheses or generalizations. They are similar, also, in that the hypotheses must be tested by data other than that from which they were derived. However, generalizations arrived at inductively do not demonstrate causal relation. There might be a high degree of correlation between the sunspot cycle and the business cycle, but this does not demonstrate any causal relation between these two variables. Once a hypothesis has been suggested by inductive analysis, it is then necessary to try to determine by deductive reasoning whether there is any causal relation and the nature of this relation.

It is obvious, therefore, that inductive and deductive methods of analysis supplement each other. Each provides us with generalizations or principles, but the generalizations arrived at by one type of analysis must be checked by the other method to determine their validity. These two methods supplement each other in other ways also. For instance, deductive analysis assists in selecting the relevant facts to be studied in inductive analyses, and inductive studies enable us to check on the reality of the assumptions made in deductive analysis.

The use of deductive and inductive analyses has resulted in generalizations which provide us with a better understanding of the functioning of the economic system and enable us to predict the outcome of certain types of situations. They provide the means whereby we can analyze new