

The Nature and Role of Economic Theory

What Is Economics?

TO DEFINE precisely the general area of investigation known as economics poses something of a problem, as the ramifications of economics are many and the limits often obscure. Indeed, economics has been defined somewhat facetiously as “what economists do.” One of the most illustrious economists of recent times defined economics in one breath as “a study of mankind in the ordinary business of life” (a definition most would regard as too broad), and in the next as the study of “action which is most closely connected with the attainment and with the use of the material requisites of well-being” (which could be considered too narrow on the one hand as excluding nonmaterial elements, and as too broad on the other as tending to include mere technology) [2.71, p. 1]. In fact it may be almost impossible to comprehend in a brief definition all that goes on under the name of economics.

If we confine our attention to that branch of economics known as economic theory or economic analysis, we may perhaps be more successful. For this purpose economics can be defined as the study of the processes by which scarce resources are or might be allocated toward the achievement of diverse competing objectives. In addition, it is appropriate to specify that for the process to be of interest to economic analysis, it is usually necessary that it involve at some point resources that are transferable and measurable.

The consideration of diverse objectives is needed to set off economics from engineering, for example. If we are given a certain supply of wood, steel, and cement and asked to build a bridge meeting certain requirements, the problem is one of engineering, not of economics. On the other hand, if there were unlimited quantities of wood, steel, and lumber available, there would be no need to economize in their use, and again no economic problem, even though there might be many uses to which they could be put. Or if we have multiple ends but the resources cannot be transferred from one objective to another, as, for example, if we have materials for a bridge and the makings of a stew; then unless the one can in some way be converted into the other there is still no economic problem but merely a number of separate technological problems.

It is only when the wood, steel, and concrete might be diverted to other uses if not used for the bridge that the necessity arises for the kind of choice we term economic, typically expressed through the influence that the prices at which the materials are valued have on how much of each material is to be used in the structure.

While in a sense any problem containing the elements of limited resources and competing ends can be called economic, or perhaps better may be said to have economic aspects, economics is chiefly interested only in those cases involving at least the possibility of a transfer of resources between individuals or groups, as in exchange. Thus the study of the actions of a Robinson Crusoe, while it may serve to illustrate principles, is in itself more of an exercise in hypothetical psychology than one in economics. And while it is not absolutely necessary that the resources involved be measurable, ordinarily it is difficult or impossible to bring the apparatus of economics effectively to bear on a problem unless these resources are at least indirectly measurable. Indeed, for purposes of analysis it very greatly facilitates matters to assume not only that resources are measurable, but that they are "fungible"; i.e., that an aggregate amount of a given resource can be subdivided without changing its essential qualities, in somewhat the same degree that a gallon of gasoline may be divided into quarts and pints without losing its properties.

Indeed, this fungibility, or divisibility, is often so important that in cases where it does not exist of itself it is often introduced by an artificial device in order to render the problem under discussion more amenable to the manipulations of the economist. Thus a house, from the point of view of the occupant, is certainly not a fungible resource (though to a contractor or real estate operator dealing in large numbers of houses, "housing" might approach a certain degree of fungibility); the economist, however, instead of talking separately about housing units of different kinds, may attempt to substitute for them all a common fungible denominator in the shape of the number of dollars spent for rent or the "dollars' worth of housing." Some of the pitfalls necessarily involved in such convenient devices will be examined later.

Of course, fungibility is in a sense only a matter of perspective. If one begins to deal in gasoline by the molecule, fungibility vanishes. Nails by the pound are reasonably fungible, if of small size; for large spikes and bolts it may be another matter. As one approaches the scale for which the fungibility begins to be imperfect, special care must be taken to consider the effects of these "indivisibilities." Man himself is the greatest source of indivisibilities, and yet the economist often persists in treating labor as a perfectly divisible resource. Paradoxically, though, the identity of the firm or the consumer is intimately tied up with this matter of indivisibility, so that in a sense the economist who persists in treating resources as though they were perfectly fungible is indulging in a basic inconsistency. Complete consistency, unfortunately, is often only available at the cost of considerable added complexity,

or even of complete frustration, and to be completely consistent in this matter, as in many others, would make economic analysis an almost hopelessly complicated subject. But if we are to be inconsistent, it is better to be consciously so.

The Role of Economic Theory

ECONOMIC theory bears somewhat the same relation to other branches of economics, such as economic history or the study of economic institutions, as geometry¹ does to surveying: it provides a logical framework or skeleton in relation to which the necessarily inexact and incomplete observations of the real world can be apprehended with greater insight.

Economic theory proper, indeed, is nothing more than a system of logical relations between certain sets of assumptions and the conclusions derived from them. The propositions of economic theory are derived by logical reasoning from these basic assumptions in exactly the same way as the theorems of geometry are derived from the axioms upon which the system is built. The difference between economic theory and geometry is that while in geometry the axioms are intended to have some approximate relation to the real space of ordinary experience, in economics the axioms are intended to have some approximate relation to the properties of the real economic world. In addition, there is a marked difference in the care and rigor with which economists have typically stated their assumptions and deduced their conclusions, and the great complexity of the real economic world has called forth a relatively large number of different theoretical systems in an attempt to aid in the understanding of various aspects of reality. But this is essentially a matter of degree rather than of kind.

The validity of a theory proper does not depend on the correspondence or lack of it between the assumptions of the theory or its conclusions and observations in the real world. A theory as an internally consistent system is valid if the conclusions follow logically from the premises, and the fact that neither the premises nor the conclusions correspond to reality may show that the theory is not very useful, but does not invalidate it. In any pure theory, all propositions are essentially tautological, in the sense that the results are implicit in the assumptions made. The proposition that under perfect competition minimum average cost, marginal cost, and price are all equal is implicit in the definitions given to these various terms, in the same sense that the proposition $12 \times 12 \times 12 = 1,728$ is implicit in the definition of the decimal notation and the operation of multiplication, or that the proposition that the angles of a triangle add up to 180° is implicit in the parallel postulate.

The fact that the propositions of economic theory are tautologies does not mean, however, that they are not useful. Of course, if man were a perfect,

1. Etymologically, indeed, geo-metry is "earth measurement."

logical thinking machine so that immediately upon defining the terms and assumptions all the logical implications of those assumptions would be apparent, there would be no need to study economic theory, just as there would be no need to study arithmetic if it were intuitively obvious as soon as one defined the decimal notation that $12 \times 12 \times 12 = 1,728$, or that a 12-inch cube contains 1,728 cubic inches. It would then be quite obvious what theoretical assumptions correspond to reality, and there would be no need to go through the tedious process of elaborating the structure implied in a set of assumptions.

Indeed, a fairly sharp distinction can be drawn between the "tautological" nature of the propositions of economic theory and the inductive propositions derived from observation on the basis of whether the proposition is conceivably falsifiable by any possible hypothetical observation. In the case of theoretical propositions, if an observation does not conform to the prediction given by the model, one will merely deduce that the assumptions upon which the proposition is based are not met in fact. An observation that price is different from marginal cost does not disprove the proposition that perfect competition would achieve this result, but rather indicates that in this particular case the conditions of perfect competition are not fulfilled. Indeed, no set of observations would persuade us to discard this proposition: in any instance, some means would be found for declaring that the conditions do not correspond with those postulated by the theory (assuming, of course, that there is no logical flaw in the process by which the result was deduced from the assumptions). Similarly, if one were to fill a one-foot cube with water by means of a dipper containing one cubic inch, and found that it would take more or less than 1,728 dippers to fill the cube, one would not discard the multiplication table (though one might go over and check the arithmetic), but would conclude that the measurements were a little off, or the method of constructing the cube was incorrect, or that the dipping process was inaccurate, or perhaps that space was warped, rather than Euclidean. On the other hand, Gresham's law, to the effect that bad currency drives out good, is a generalization from observation that would have to be abandoned or modified if an instance were adduced in which bad money failed to drive out good, just as the proposition that "Steel rusts when exposed to the elements" would have to be modified upon the exhibit of stainless steel to read: "Ordinary steels rust when exposed to the elements."

Nevertheless, the putting together of a logical economic theory is more than a mere intellectual exercise, although sometimes some of the more abstruse and hypothetical constructions seem to yield their chief utility in terms of the artistic appreciation of the adept. For example, some aspects of the theory of games seem for the moment to be at this stage. (Mathematics is not without cases of this sort. One famous mathematician, upon completing the proof of a theorem in the theory of numbers, is said to have remarked: "And

the peculiar beauty of this theorem, which will particularly endear it to the hearts of all true mathematicians, is that under no conceivable circumstances can it be of any possible practical value!"). One approach to the application of economic theory is to use it as a first approximation, or skeleton, to which modifications may be added which will, it is hoped, permit successively closer approximations to reality. This has been termed, not without a touch of irony, the "optimistic approach." It is indeed a method with which the physical sciences have had eminent success. Kinematics starts with concepts such as the perfectly rigid body, the weight concentrated at a point, frictionless motion, and the like, though in fact all bodies are more or less flexible, weight is distributed, and friction is inescapable. Thermodynamics makes use of the "perfect gas," and hydrodynamics has its "perfect fluid." By setting up systems on the basis of these abstract and impossible assumptions, models are built up which not only give insight into the operation of the real world but are capable of modification so as to permit prediction of real phenomena with reasonable accuracy, whereas to have attempted to build up a science by taking into account all of the factors from the beginning would have been an impossible intellectual achievement, both for the original investigator and for the student.

It is moreover necessary at times to set up a simplified abstract model in order to understand fully the operation of the factors that produce a departure from the model. The operation of friction can be understood, for example, only when one considers what would happen in the absence of friction. Similarly, only by considering a system in which there is perfect competition can the nature of monopoly and the various types of imperfect competition be fully understood.

Abstract models are also useful in deducing boundaries or limits that cannot be surpassed by the real world. For example, in thermodynamics, from the empirically validated premises of the conservation of energy and the tendency of heat to flow only from hotter to cooler media (the second law of thermodynamics), and consideration of a hypothetically perfect Carnot cycle engine, perfectly insulated and operating infinitely slowly, one can deduce a maximum limit on the proportion of the heat of combustion of a fuel that can be turned into mechanical energy when operating between given extremes of temperature. Practical engines differ greatly from the Carnot engine, and the theoretical limit cannot be reached or even in many cases very closely approximated in practice, but the theoretical relation between the temperature extremes and the efficiency is useful as a guide in the design of power plants. Similarly, a hypothetical state of perfect competition in economics can be shown (and will be, in Chapter 5) to produce results that are in a certain sense an optimum. Perfect competition does not exist, and indeed cannot be approached at all closely in many areas, but from this theoretical result we can derive some ideas as to how to proceed in improving the

operation of the actual economic system. Again, with some care, perfect competition and complete monopoly can be set up as extremes, within which the real world may be expected to lie, although here one must be somewhat careful as it may be difficult to show conclusively that assumptions which lie between two extremes will produce results that in some relevant sense lie between the results of the extreme assumptions.

The Selection of Assumptions

IN CONSTRUCTING an economic theory, the logical sequence starts with the selection of a set of assumptions. In practice, of course, the basic assumptions or postulates are often added to or modified as indicated by the way the logical superstructure develops. But the initial foundation will strongly influence the way the superstructure develops, and it is indeed in the selection of these initial assumptions that much of the art of economic theory lies, as contrasted with the more determinate and mechanical procedure of erecting the logical consequences. For in the selection of initial assumptions one is faced with a dilemma. On the other hand, one can attempt to make quite realistic assumptions, only to find that no interesting corollaries can be deduced from them. One could, for example, postulate that business executives determine their actions by a compromise between the ethics or mores of their class, their past habits, and their own self-interest. But without more details being supplied, this is too vague to enable us to predict with any accuracy the behavior of such persons. And if one goes on to specify in detail the ethics, the past habits, and the nature of the entrepreneur's own interest, as well as the mechanism of compromise, the result is immediately too complicated to be manageable.

On the other hand, one can make assumptions that are extremely simple and tractable, and from which a long chain of interesting corollaries may be drawn. But often these assumptions differ so significantly from reality that the corollaries likewise fail to give much insight into the real world. For example, the classical quantity theory of money was based tacitly on the assumption that individuals would spend or invest their income as fast as they conveniently could, so that the velocity of circulation of money was virtually a constant. A system of theory based on such an assumption proved incapable of developing an adequate theoretical counterpart to the business cycles and depressions actually observed, and thus while the superstructure built on this assumption was logically sound, it failed to provide helpful insights into some of the important problems of the real world. A slightly more elaborate assumption, that cash holdings and the velocity of circulation would vary with the rates of interest obtainable, proved capable of supporting a more realistic superstructure, and after some difficulty found an important place in some of the variants of the Keynesian system.

The problem then is to select basic assumptions that will be at once tractable, in the sense of being easy to handle and capable of producing a substantial superstructure of logically deduced propositions, and sufficiently realistic so that the superstructure thus built up will have an illuminating resemblance to reality. The value of an economic theory will depend very heavily on the selection of assumptions that prove successful in approaching reality without too great a sacrifice of tractability.

The feat is the more difficult in that the "realism" of the assumptions is often not apparent in the assumptions themselves, but only becomes apparent after the superstructure has been built and compared with reality. Kelvin's concept of matter as built up of vortex rings in the ether proved fruitless as a means of approaching the real world; on the other hand, although the basic elements of Maxwell's electromagnetic interaction theory appeared to be merely mathematical abstractions that seemed at first even less "realistic," nevertheless out of them came Hertzian waves and radio. Similarly, in monetary theory, one might be hard put to determine, on the basis of immediate observation, whether a fixed velocity of circulation or a liquidity-preference theory would be more "realistic," in the relevant sense, but as the one did not, and the other did, provide a satisfactory model for depressions, one is inclined to return and ascribe some of the evident realism of the superstructure to a corresponding underlying realism in the foundation.

This imputation of realism to the underlying assumptions cannot, however, be taken too literally. One might argue, for example, that although the assumption that firms act to maximize profits by equating marginal cost and marginal revenue yields a reasonably good picture of over-all business behavior, this need not necessarily indicate that businessmen consciously consider either marginal cost or marginal revenue in making decisions. The "Darwinian" economist may argue that various business policies have survival value in proportion to the closeness of the behavior they produce to that predicted by the classical theory, so that in competition only those firms survive whose policies in fact produce a close approach to the theoretical behavior. We could thus observe results that agree very well with those predicted by the classical assumptions without these assumptions being themselves any very close reflection of the actual decision process, just as evolutionary developments may appear to have teleological origins, and may even be described, for the sake of brevity, in teleological language, even by those who reject completely any teleological concept of the evolutionary process itself.

On the other side of the problem, it is often difficult to foresee just how far one can go in making assumptions realistic without destroying their tractability. For this reason it is often convenient to start with more drastically unrealistic assumptions than is absolutely necessary, in order to be sure of having a satisfactory degree of tractability, without which one is blocked

from the start. Then after the superstructure has been built, one can often go back and see to what extent the foundation can be modified in the direction of greater realism or greater generality without undercutting the superstructure. For example, one may start with a notion of competition that requires an infinitely large number of buyers and sellers in each market, but having built a theory on this foundation, it may be possible to go back and find that the theory will still hold if one assumes merely that buyers and sellers are numerous enough so that the influence of each upon the price is actually negligible. Or one may go further and stipulate merely that each buyer or seller thinks that his individual influence on the price is too small to be given any weight in determining his action; or even to specify merely that each acts as though his action would not influence the price, even though he may actually believe that it does. The analysis in this last case would then become applicable to a system of socialist managers instructed to follow a "rule" designed to simulate perfect competition.

Or again, in the analysis of monopoly, it is often convenient, for the sake of simplicity in the original investigation or exposition, to assume that the marginal cost of production is zero. Application of the results to cases where the marginal cost is not zero can then often be made merely by a shift of the axes so that the former origin of the diagram now falls at a point on the scale equal to the marginal cost. Thus one should not become impatient with a theoretical structure merely because the assumptions are unrealistic: if only the assumptions are sufficiently tractable to produce an interesting superstructure, ways may often be found to modify the assumptions so as to bring the results into a more illuminating relation to reality. It is indeed often necessary to start with oversimplified cases just to acquire the necessary skill in handling the type of problem being attacked.

Prescriptive Uses of Theory

ECONOMIC theory can also be useful in showing in what direction changes would be beneficial, even where it is not very successful in making predictions about the precise absolute outcome. In particular, the analysis of perfect competition may be used as a point of departure for devising a host of measures which might make the real world approach more closely this ideal. Unfortunately, this branch of theory has often been seriously misused as an apologia for the status quo, or for the promotion of a policy of *laissez faire*, in that the beneficial aspects of the perfect competition model were ascribed to the real world of *laissez faire* without adequate attention to the very substantial differences that in fact separate a *laissez faire* system from the perfect competition of the economist. Far from being an apologia for the status quo, this part of economic theory can be made the basis for prescribing very definite and substantial interference with the free play of anarchic economic

forces. Indeed, as a prescriptive theory, classical economics may be said to be the economics of socialism, in that it has a great deal to say, rightly or wrongly, about how a socialist regime ought to be run—even more, perhaps, than about how a capitalist regime actually operates; Marxist economics, on the other hand, can be said to be the economics of capitalism rather than socialism: it has a great deal to say, rightly or wrongly, about the workings and especially the development of capitalist regimes, but is of little or no help and may actually be misleading in the running of a socialist economy.

Finally, it may be noted that without the aid of some sort of economic theory to fall back on, even a community of complete altruists would probably fail to come to the most satisfactory arrangements. The complexities of the modern industrial community are such that no individual can trace the specific consequences of the various alternative courses of action open to him through all their repercussions. Nor would it be sufficient for each individual to attempt to act in the common interest subject to those economic institutions which happen to exist at the time. Rather it is necessary to find that set of economic institutions within which individuals can achieve the best results. Even if through some mass religious conversion or through the reforming influence of a utopian socialism the problem of incentives were swept away, it would still be necessary to provide some method by which individuals could determine what action would be in the general interest of the community, even though it might no longer be necessary to provide a specific incentive for them to act in the way indicated.

More realistically, while it may be possible to postulate some gradual improvement in the degree to which individuals can be persuaded to act in the common interest instead of or as well as in their own individual interests, and even to hope for an eventual far-reaching change in this direction, it appears likely that for the foreseeable future altruism will continue to be a scarce resource to be relied on as far as possible only where economic incentives alone cannot do the job. For the very large area where economic incentives can be made to work effectively, economic theory will still be important. Indeed, an appreciation of some of the simpler propositions of economic theory may well be essential if the individual is to determine the boundary line between the areas where he may pursue his own economic self-interest without detriment to the common welfare and those areas where he may be expected to draw upon his resources of altruism. As Sir Dennis Robertson puts it, it is the business of the economist to economize the "greatest thing in the world, love" [1.5].