

CHAPTER ONE

Capital Theory and Classical Value Theory

I suggested in the introduction that capital theory is of considerable theoretical significance. In this chapter and the next I shall describe the domain of capital theory, the principal problems capital theory is supposed to solve, and the relations between capital theory and the theory of equilibrium prices. In showing how the phenomena of capital and interest complicate the tasks of other economic theories, I shall explain why capital theory is important.

1. What Is Economics About?

To place capital theory within economics, something must be said concerning what economics is. Economists and philosophers of economics have offered many different definitions. Most of these have been variations on two basic ones. Lionel Robbins defines economics as "the science which studies human behavior as a relationship between ends and scarce means which have alternative uses" (1932:15). According to this definition, economics is concerned with one aspect of much of human behavior. Robbins' definition has been called a "formal" definition of economics. The other basic definition, which is implicit in Plato's *Republic* and which was generally accepted until the twentieth century, takes economics to be the science of the production, exchange, distribution, and consumption of those goods and services that contribute to our material well-being. This second definition has been called "substantive."

The formal definition of economics has been criticized as both too narrow and too broad. It seems to exclude much of Keynes's work. It seems to include Abraham's decision to sacrifice Isaac. The substantive definition of economics has also been criticized as both too

broad and too narrow. Purely technological questions concern our material well-being but are not a part of economics. The behavior of a concert pianist has an economic aspect, even though it does not perhaps, contribute to our material well-being. Although I shall not deal with detailed efforts that have been made to deal with the im- plausible implications of either definition, I shall in chapter 10 give reasons to prefer a substantive definition of economics.

It is senseless to enter into this dispute about how to define economics now. First, we should examine the phenomena economists study and the sort of things they say about those phenomena. One might begin by accepting tentatively one of these definitions, subject to later review and assessment. I prefer, however, to approach the subject in a more neutral way.

Related to the controversies concerning the definition of economics have been disagreements about whether economics can or should provide general laws. As thus stated, the issue is far from clear. What is a "general law"? I am not sure that any good answer can be given in the abstract. Even if one were available, I do not think it would be helpful in considering whether economics can or should provide general laws. Marx and Veblen have substantive objections to economists' claims to have discovered such general laws. Marx alleges that purported general laws in economics are either trivial or illegitimate generalizations of regularities which are peculiar to capitalism. (1973:86-88). Veblen criticizes the presuppositions of the "laws" espoused by the orthodox economists of his day (Lerner 1948:244f). The question "should or can economics provide general laws?" is distinct from the problem of defining economics, although related to it. Later I shall consider carefully the scope and status of the "laws" concerning capital and interest and employ my conclusions in arguing for a definition of economics. Once again, I would prefer to begin without either entering or prejudging the controversy.

But something must be said concerning what economics is. I think it is best to begin by considering what the subject matter or domain of economics has been. Economists, of course, do not always agree about whether a given phenomenon is an economic phenomenon or whether a given analysis is an economic analysis. Yet the overlap is large. Almost all economists agree that the subject matter of economics includes the principal features of production, exchange, and distribution that have been studied by well-known economists of the past two centuries. Let us focus on this portion of the domain of economics.

I thus think it is useful and fair as a first approximation to regard economic theories as accounts of how capitalist economies function.

Although economists do study other sorts of economies as well as institutions which are usually not regarded as part of any economy, I shall nevertheless assume that in examining theories of production, exchange, distribution, and consumption in modern competitive economies, one is studying the core of economic theory. To understand what economics is, let us thus consider the dominant object in the domain of economics, the capitalist economy.

2. What Is a Capitalist Economy?

If we are to consider economic theories as accounts of the functioning of a capitalist economy, we must first determine what a capitalist economy is. Capitalist economies come in many varieties, and they differ considerably in economically relevant respects. Adam Smith's society was not even industrial, while today we find huge firms dominating economies. Can any single kind of economy have such vastly different instances? Furthermore, even if there is a sense in which England had a capitalist economy in both 1776 and 1976, not every feature of England's economy in either year, or in any year in between, was capitalist. There are no instances of a purely capitalist economy. Actual economies are always mixed and messy. It is impossible to discover what a capitalist economy is merely by describing exhaustively any existing economy.

To talk of "a capitalist economy" is, therefore, to employ a theoretical term. Economists have developed *models* whose assumptions define this term. For now we can think of such models as a description of a kind of theoretical system. Different schools of economists employ different models of capitalism. Sometimes these differences are large. Orthodox neoclassical economists and Marxian economists, for example scarcely seem to be talking about the same economic system. Theorists in the mainstream of economics, both classical and neoclassical, are in closer agreement. Their models overlap sufficiently for us to take the shared assumptions as roughly specifying what the principal object of economic theory, the capitalist economy, is. Proceeding within the confines of these basic assumptions, we shall be able to see why capital theory is of great importance to the foundations of mainstream economic theory and why certain methodological positions are especially attractive to mainstream theorists.

What follows is in effect the mainstream definition of the capitalist economic system. The notion of *system* here is important. Perhaps the central insight that distinguishes mainstream economic theorizing of

the past two centuries from earlier comments on economics is to conceive of production, distribution, and exchange as interconnected in a self-regulating system. Within a certain legal, moral, and political environment, the economy as a whole is supposed to function without regulation. The following definition or sketch is not implicit in *all* economic work of the past two centuries. Marx accepts a different sketch (see chapter 9). Keynes's work is also largely independent. Empirical work that involves few theoretical presuppositions is also possible. This section provides an account of the foundations of mainstream classical and neoclassical theory, not a survey of approaches to economic theory.

Since the following sketch is fleshed out in many different ways and not explicitly stated, there can be no canonical formulation. Yet there is a recognizable core to the many economic models developed by classical and neoclassical economists. The following three claims characterize the object of mainstream economic theory:

- (1) Individuals are well-informed, rational, and self-interested (mutually disinterested).
- (2) In the production of goods, and especially in the distribution of goods and services, individuals only interact through voluntary exchange.
- (3) The result of voluntary exchanges among rational and self-interested individuals is an efficient and mutually beneficial systematic organization of production and distribution.

Corollary: The distribution of income and other advantages is determined principally by the assets with which individuals begin and the amount of effort they exert.

The above sketch of a capitalist economy may be interpreted in several ways. At first glance it seems a rough description of capitalist economies that economic theorists endeavor to refine. More cautiously, (1) and (2) might be regarded merely as presuppositions of laws and auxiliary assumptions economic theorists employ. They are basic components of standard models. One can leave open the question of whether theorists believe these presuppositions to be true, yet still recognize that (1) and (2) provide the core of refined theoretical models of capitalism. (3) raises a crucial theoretical problem. One may also regard the above sketch either as a methodological directive concerning how to develop economic theory or simply as a set of claims about capitalist economies. I formulated (1)–(3) as assertions, but I might just as well have stated them as rules for theorizing.

One might plausibly think of the statements above as characterizing market societies in general and add a proviso like "For the economy to be capitalist, . . . money profit must be the sole objective of the units engaged in production" (Lange 1945–46:27). I think most mainstream economists would have regarded Lange's proviso as an implication of (1)–(3). The characterization provided by (1)–(3) only attempts to capture what has generally been taken to be the principal object of economic theory. (See for example Friedman 1962:13).

Obviously almost everybody knows that people are not invariably well-informed, rational or self-interested. (1) merely tells the economist that the deviations are not relevant to understanding basic economic phenomena and can be omitted from the most fundamental theories. In explaining specific happenings, economists may investigate particular limitations on rationality, information, or self-interest.

(2) is concerned with institutions. It is a strongly (methodological) individualist thesis. It tells the economist what are the atoms out of which the economic system is constructed and what are the principles of construction. Notice that competition may be (and usually has been) considered to involve no actual interactions between people except voluntary exchanges. Competition is reflected in the properties of those exchanges. After a poor harvest, grain sellers will find their stocks declining and will try to raise the price of grain. They will succeed because individual buyers who are short of grain will offer more and more until they withdraw from the market or find a willing seller. Actual struggle between people, with its concomitant dissimulation, victories, and defeats, has no role in traditional treatments of competition.

(2) is a strong claim. It excludes, for example, the internal structure of a firm from the subject matter of economics—which, in fact, until recently was the case. Other social practices and interactions—family size and structure, moral precepts, political demands, etc.—will, of course, influence the operation of any economy. (2) tells economists to abstract from these in developing their most general theoretical account. In less general work, economists can investigate the influence on voluntary exchanges of background constraints like taxes or tariffs and of aberrations like monopolies.

Given (1) and (2), an economist can take it for granted that the basic elements of economic life are voluntary exchanges between informed rational and mutually disinterested individuals. (1) and (2) are presupposed by mainstream classical and neoclassical theory. To show that (3) then follows from (1) and (2) is perhaps the central problem. The corollary is mentioned because of its normative significance and because of its importance to the specific controversies I discuss below.

modities in exchange for meat will be able to acquire it. Meat sellers will receive more commodities (or their money equivalent) for the meat they have on hand. Those individuals who have a choice between selling corn or using it to fatten cattle and hogs will discover that it is to their advantage to produce more meat. A shortage will give rise to an increase in price which will motivate people to increase the supplies. Fluctuations in prices serve as signals that direct individuals toward activities that provide for unsatisfied needs.

Much more than a theory of price fluctuations is needed. I have explained roughly how price changes enable competitive economies to respond to changes in demand, but nothing I have so far said demonstrates that, at the more or less stable prices around which fluctuations occur, the proper amount of resources is devoted to producing meat. Indeed, I have not yet discussed criteria for what that proper amount is. All I have argued is that, with an increase in demand for meat, the price system will lead to an increase in supply. How does one know that meat production is not already inefficiently large? Knowing the dynamic forces that enable the system to respond to change does not tell one how the system functions after such response is complete. The above account of price fluctuations shows how prices signal needs (and changes in supply conditions), but not how individual actions in response to these signals lead to a systematic organization of the economy. Do these fluctuations tend toward some sort of order? Economists need a theory of *long-run equilibrium prices* or of *exchange values* in order to understand how capitalist economies can operate systematically (and efficiently) without centralized control. The exchange value of a commodity or service is its equilibrium price, the price around which market price fluctuates and toward which market price tends. In distinguishing market price and exchange value (or long-run equilibrium price), mainstream economists are, as it were, identifying the two separate components which together determine actual (market) prices—short-run supply and demand relations and factors influencing “long-run” equilibrium.

4. Do Exchange Values Reflect Physical Costs?

The most primitive theory of exchange value might be called a “physical cost” theory. Provided that one does not have any accidental disproportions between supply and demand which lead market price to differ from exchange value, exchange ratios reflect the physical costs or sacrifices involved in supplying the respective commodities

3. The Theory of Exchange Value

A fundamental problem for mainstream economics has thus been to explain how exchanges between individuals systematically organize production and distribution. The sketch above tells theorists that, given certain background constraints, the significant features of a pure capitalist economy result from the exchanges between individuals.

How do these voluntary exchanges, in the environment provided by law and custom (which is usually taken for granted), lead to order in production and distribution? To answer, one needs to discover and analyze basic regularities in capitalist economies. In exchanging commodities or performing services in exchange for commodities, people unintentionally establish orderly exchange ratios between commodities or between services and commodities. Money can be used as a generalized means of exchange and as a store of wealth because of this order. Individuals generally know the prevailing prices, and they make their decisions on the basis of this knowledge. Although individuals may by bargaining affect the ratio in some particular exchange, the range for bargaining is limited. People must generally take exchange ratios or prices as given.

Economists take a further step. Assume that the data upon which economic agents act, except for relatively fixed information concerning technological possibilities and their own wants, consist only of prices of available commodities. Economic theorists should thus look to prices to discover how the actions of self-interested agents on the market are coordinated. One then shows that individual actions are efficiently coordinated by showing the prices are so determined that they make advantageous to rational self-interested individuals those activities which efficiently satisfy the needs of people. If theorists can demonstrate this, they have explained how the exchanges of rational and self-interested individuals lead (given background institutional arrangements) to economic order. The theory of prices is thus central to mainstream explanations of the functioning of capitalist economic systems.

Yet exchange ratios or prices are not absolutely stable. Fluctuations are frequent, and sometimes large. Relatively permanent changes also occur. Consider these fluctuations first. Observation and reflection show that price fluctuations often direct self-interested individuals to act in a way which leads to economic order. If incomes rise and people seek to consume more meat, the price of meat will rise. The price increase will ration the given meat supplies, so that those individuals who are willing and able to sacrifice a considerable quantity of com-

of an investment, "profits." For my purposes there is no reason to distinguish profits and interest or to distinguish between the rate of profit and the rate of interest. In the models I shall be discussing there is no excess or "pure" profits and thus no important difference between what Marx and the classical political economists called "the rate of profits" and what neoclassical economists since the 1870s have more often called "the rate of interest." Physical cost theories of exchange value do not appear to allow for profits or interest. They thus seem doomed right from the start.

Furthermore, one might object that a physical cost theory of exchange value requires impossible comparisons between commodities. How is an individual to compare the physical cost of his or her beef with that of a neighbor's broom? Each requires for its production many inputs, and each of these inputs in turn requires many inputs. It seems that we need to know all of the physical costs before we can discover any. If physical costs are not easily discoverable, it is hard to see how they can determine exchange values. Physical cost theories of exchange value thus seem unpromising.

5. The Labor Theory of Value

The labor theory of exchange value or equilibrium price provides a way around the above two objections to simple physical cost theories of value. The price of commodities is more than the sum of the costs of the physical inputs because some of the exertions of the laborer are unpaid. There is a surplus out of which profits may be apportioned. The value of a commodity is equal to the amount of labor needed to produce it, plus the labor needed to produce all of the inputs. As in the deer and beaver example, labor is measured in terms of time, and we assume that the different kinds of labor can be reduced to multiples of a single kind. Labor must be efficiently applied. The existence of profit does not undermine the labor theory of value, because the value of the labor power (the wage), which is equal to the labor needed to produce and reproduce the worker's ability to work, is less than the labor which must be exerted by the worker in making commodities.

The labor theory of value remains a physical cost theory of value, where labor time is used as the unit to measure physical cost. In building an automobile, one uses up some fraction of a large stamping machine and thereby incurs a physical cost. The idea of the labor theory of value is that this physical cost can be represented as a fraction of the amount of labor time needed to build the stamping machine (and

(Eatwell 1975c). Thus Adam Smith writes, "The real price of everything, what everything really costs to the man who wants to acquire it, is the toil and trouble of acquiring it. . . . What is bought with money or with goods is purchased by labor as much as what we acquire by the toil of our own body" (1776:26). If prices reflect physical costs, the economy will be organized efficiently. For each commodity, individuals will have to pay exactly what it costs in resources and exertion. Just that amount of labor and resources will be directed into each activity as is required by the demand. Not all needs or wants, of course, are reflected in market demand. Some people have little or nothing to offer in exchange for what they need or want. Such ineffective needs or wants are largely ignored in traditional discussions of the efficiency of forms of economic organization.

How can exchange ratios equal physical cost ratios? In Adam Smith's deer and beaver fable (1776:41f), one beaver will exchange for two deer if it requires twice the effort to trap a beaver as it does to kill a deer. Physical cost here is quantity of unassisted labor. If hunting and trapping require the same effort per unit time, the quantity of labor can be measured by labor time. With sufficient simplifying assumptions, Smith has a precise and unambiguous measure of physical cost.

In any real economy, one has no simple way of measuring physical cost. Yet one might nevertheless argue that exchange value *must* equal physical cost. If two commodities did not exchange in proportion to their physical costs, some exchanges must be involuntary or some exchangers must be irrational or misinformed. How else in equilibrium could unequal physical costs exchange for one another? Obviously people make many mistakes, but economists may reasonably inquire about how the economy would operate in the absence of irrationality, compulsion, altruism, or misinformation.

Simple physical cost theories of exchange value run into several problems. If one adds up the money cost of the physical inputs needed to produce anything, the total is less than the price of the commodity produced. Otherwise there could be no profit or interest. Depending on the precise interpretation of physical inputs, there might be some difficulties about rent, too. I shall not discuss the complications that rent and various grades of skilled labor introduce. Profits and interest are not the same thing, neither in ordinary language nor in the technical language of economists. Economists usually distinguish interest (which is equal to the return on a secure loan) from profit (the return from an investment which is over and above the return on a secure loan). Most contemporary economists regard interest as a cost, while profits may be a surplus. Classical economists usually called the whole of the return

all its inputs). The labor theory of value enables us to reduce a vector (a heterogeneous list) of physical costs to a scalar (a single magnitude).

The labor theory of value thus makes plausible the thesis that exchange values are proportional to physical costs. Labor times can be estimated, particularly in primitive economies. No one will ordinarily exchange a given quantity of labor for a lesser. The labor theory of value faces, however, serious difficulties which demonstrate that physical cost theories of exchange value are impossible.¹ The most crucial difficulty leads us directly to the problems with capital and interest. In order to present this refutation of the labor theory of exchange value or of any other physical cost theory of exchange value, we must note one further critical feature of a capitalist economy. Individuals may exchange either money or commodities for the services of laborers. If these laborers are supplied with machinery and raw materials, they produce new commodities. The sum of the exchange values of the raw materials, machinery, and wage is less than the exchange value of the commodities produced. The difference is the interest or profit that a capitalist earns. Capitalists will invest so as to make the largest profit they can. If we assume that capitalists are rational and well-informed, there will be a tendency for the rate of profit to become equal on all employments of capital. Apart from a risk premium, the rate of profit should equal the rate of interest if capitalists can freely shift from making loans to making investments.

Actually, as Ricardo points out, the rate of profit should not be precisely equal in all employments. "He [a capitalist] may therefore be willing to forgo a part of his money profit, in consideration of the security, cleanliness, ease, or any other real or fancied advantage which

¹ Paul Samuelson (1959, 21f) argues that the phenomenon of rent itself refutes the labor theory of value. In Ricardo's view (which has been very generally accepted), when the size of the labor force increases and demand for grain increases, farmers begin to cultivate inferior land or to cultivate the same land more intensively. Unless there is technological progress, they get a smaller return for their efforts. The value of the grain must increase or else the profits on such marginal agricultural ventures would be lower than average and capitalists would refuse to grow the extra grain. The extra profits on more fertile lands and on less intensive cultivation are absorbed as rent. Demand thus influences exchange value. If the labor theory of value denies this, it must be wrong. But the labor theory of value only asserts that the exchange value of a commodity is proportional to the amount of labor socially necessary to produce the commodity. It can concede that the amount of labor socially necessary to produce a commodity depends on demand. From the perspective of neoclassical theory, this last construal of the labor theory of value seems trivial and empty. Yet I am not convinced that the dependence of exchange values on demand shows that the labor theory of value is false or trivial. It may be sensible to deal with economic phenomena in a piecemeal fashion. Samuelson's argument raises basic questions (see ch. 9).

one employment may possess over another" (1817:90; see also Smith 1776:99).

The equalizing of the rate of profit conflicts with any physical cost theory of exchange value. Consider two commodities x and y which require the same inputs and the same amount of direct labor. Suppose x takes two years to make while y takes one year; x and y are different kinds of chairs; they take the same amount of labor time to make, but the glue in x takes a year to dry while y is made with screws. The exchange values of x and y cannot be equal, because interest must be paid twice on the investment in making x , but only once on the investment in making y . If x and y were to exchange one for one on the market, no capitalist would invest in making x , because the profit or interest per year would be smaller (Ricardo 1817:30–38).

Another way of putting essentially the same difficulty is as follows. Suppose that q and r , say chairs and tables, are both produced by labor and the same wood-working machine, M . If the production of one chair or one table requires the same total money investment, their equilibrium prices on the market must be equal. Suppose, however, that out of the total investment in producing chairs very little is spent on wages and a great deal on M , while the bulk of the investment in producing tables is devoted to wages. The labor value and physical cost of tables must be larger than that of chairs, because the exertions, the actual laboring, of workers are a cost (a quantity of labor time) larger than that needed to purchase their wages, while the physical costs or labor values of inputs contribute no more than their own cost to the value of the output (Marx 1967, 3, ch. 9). A simple arithmetical example may help here. Suppose that $p_M = \$10$ and the labor socially necessary to make M is 5 hours. Suppose that wages are \$1 per hour and that nine machines and 10 hours of labor are used to produce a chair, while one machine and 90 hours of labor are used to produce a table. Let the rate of profit be 100%. The price of a table is the same as that of a chair (\$200). The labor needed to produce chairs, however, is only 55 hours, while that needed to produce tables is 95 hours. As the rate of profit tends toward zero, prices tend toward labor values.

Consider more carefully what happens with a change in distribution of income between wages and profits. In the first example, if the rate of interest or profit is very high, the value of x will be far higher than the value of y . As the rate of interest declines toward zero, the value of x declines toward the value of y . In the second example, the equilibrium price of tables relative to that of chairs increases as profits decrease and wages increase. Since the physical inputs are by hypothesis in both cases absolutely unchanged, exchange values cannot

possibly be measures of physical cost alone. Ricardo sought an "invariable standard of value" as a way out of this difficulty (1823:361-412; 1817:43-47). But there is no way out. Exchange values are not determined by physical costs alone.

6. Capital, Distribution, and Exchange Values

Since a physical cost theory of exchange values *cannot* be correct, the fundamental problem of mainstream economic theory, the explanation of the systematic functioning of a capitalist economy, remains unsolved. Most economists believe that the physical cost theory of exchange value the classical political economists pursued is a dead end. The divergence of exchange values and physical costs shows that costs are not exclusively physical costs. Since it is interest, in particular, which makes exchange values and physical costs (as socially necessary labor time) differ, they argue that we must regard interest as a cost. But what is interest the cost of? "Capital" is the apparent answer. Neoclassical economists have attempted to make sense of this answer. In doing so and in attempting to explain how capitalism functions, they have offered a new theory of value.

One might, however, draw a different conclusion from the failure of physical cost theories of value. Perhaps exchange values are not proportional to costs. Those economists who have sought to revive classical political economy recognize that exchange values are sensitive to the distribution of income. Yet they deny that interest is another kind of cost and that the classical conception of costs was a mistake. Instead, following Sraffa (1960) they explain exchange values in terms of both physical costs and the distribution of income.

To suggest that values are determined by costs *and* distribution is to conceive of capitalist economies in quite a different way than have mainstream classical and neoclassical theorists. It is to abandon the strategy of relying on the theory of exchange value to explain all fundamental economic phenomena. Since in Sraffa's work exchange values depend on the distribution of income (which is not itself a "cost"), Sraffa cannot employ the theory of exchange value to explain the distribution of income. Moreover, denying that exchange values are proportional to costs leads one to question the theoretical sketch of a capitalist economy presupposed by both classical and neoclassical economists. Once one denies that distribution of income can be explained by the theory of exchange values, can one continue to regard economic agents as interacting only through voluntary exchange? Once

one regards interest as requiring that exchange values differ from physical costs, can one continue to regard capitalist economic organization as efficient and mutually beneficial? Can one continue to regard the distribution of income as determined by individual assets and efforts? Theories of the relations between capital, interest, and prices are thus fundamental to how one conceives of capitalist economies.

Mainstream economists have worked with models of capitalist economies in which the individual agents were rational and self-interested, their interactions were voluntary exchanges and the results of their interactions were efficient and mutually beneficial. In working with such models, the theory of prices or exchange ratios has been fundamental. Price fluctuations are relatively easy to understand but relatively superficial. Theories of equilibrium prices or of exchange values are much more important and much more difficult to provide. Classical physical cost theories of exchange values are irremedial failures. They give no account of the relations between interest and exchange values. They thus fail to articulate the basic sketch of a capitalist economy as a vast system of efficient voluntary cooperation through exchange. Let us turn now to another way to develop that sketch and to the subtle and elaborate attempts of mainstream neoclassical theorists to understand the relations between capital, interest, and exchange values.