the reasons the commodity is picked as money is its ready divisibility into relatively small homogeneous units. The first unit of money will be allocated to its most important and valued use to an individual; the second unit will be allocated to its second most valued use, etc. Any unit of money that must be given up will be surrendered at the sacrifice of the least highly valued use previously being served or which would have been served. Therefore, it is true of money, as of any other commodity, that *as its stock increases, its marginal utility declines; and that as its stock declines, its marginal utility to the person increases.*[17] Its marginal utility of addition is equal to the rank of the most highly valued end the monetary unit can attain; and its marginal utility is equal in value to the most highly valued end *that would have to be sacrificed* if the unit were surrendered.

What are the various ends that money can serve? They are: (*a*) the nonmonetary uses of the money commodity (such as the use of gold for ornament); (*b*) expenditure on the many different kinds of consumers' goods; (*c*) investment in various alternative combinations of factors of production; and (*d*) additions to the cash balance. Each of these broad categories of uses encompasses a large number of types and quantities of goods, and each particular alternative is ranked on the individual's value scale. It is clear what the uses of consumption goods are: they provide immediate satisfaction for the individual's desires and are thus immediately ranked on his value scale. It is also clear that when money is used for nonmonetary purposes, it becomes a direct consumers' good itself instead of a medium of exchange. Investment, which will be further discussed below, aims at a greater level of future consumption through investing in capital goods at present.

What is the usefulness of keeping or adding to a cash balance? This question will be explored in later chapters, but here we may state that the desire to keep a cash balance stems from

[17]For a further discussion of this point, see Appendix A below, on "The Diminishing Marginal Utility of Money."

fundamental *uncertainty* as to the right time for making purchases, whether of capital or of consumers' goods. Also important are a basic *uncertainty* about the individual's own future value scale and the desire to keep cash on hand to satisfy any changes that might occur. Uncertainty, indeed, is a fundamental feature of all human action, and uncertainty about changing prices and changing value scales are aspects of this basic uncertainty. If an individual, for example, anticipates a rise in the purchasing power of the monetary unit in the near future, he will tend to postpone his purchases toward that day and add now to his cash balance. On the other hand, if he anticipates a fall in purchasing power, he will tend to buy more at present and draw down his cash balance. An example of general uncertainty is an individual's typical desire to keep a certain amount of cash on hand "in case of a rainy day" or an emergency that will require an unanticipated expenditure of funds in some direction. His "feeling safer" in such a case demonstrates that money's only value is not simply when it makes exchanges; because of its very marketability, its mere *possession* in the hands of an individual performs a service for that person.

That money in one's cash balance is performing a service demonstrates the fallacy in the distinction that some writers make between "circulating" money and money in "idle hoards." In the first place, all money is *always* in someone's cash balance. It is never "moving" in some mysterious "circulation." It is in A's cash balance, and then when A buys eggs from B, it is shifted to B's cash balance. Secondly, regardless of the length of time any given unit of money is in one person's cash balance, it is performing a service to him, and is therefore never in an "idle hoard."

What is the marginal utility and the cost involved in any act of consumption exchange? When a consumer spends five grains of gold on a dozen eggs, this means that he anticipates that the most valuable use for the five grains of gold is to acquire the dozen eggs. This is his marginal utility of addition of the five

grains. This utility is his anticipated psychic revenue from the exchange. What, then, is the "opportunity cost" or, simply, the "cost," of the exchange, i.e., the next best alternative forgone? This is the most valuable use that he could have made with the five grains of gold. This could be any one of the following alternatives, whichever is the highest on his value scale: (*a*) expenditure on some other consumers' good; (*b*) use of the money commodity for purposes of direct consumption; (*c*) expenditure on some line of investment in factors of production to increase future monetary income and consumption; (*d*) addition to his cash balance. It should be noted that since this cost refers to a decision on a marginal unit, of whatever size, this is also the "marginal cost" of the decision. This cost is subjective and is ranked on the individual's value scale.

The nature of the cost, or utility forgone, of a decision to spend money on a particular consumers' good, is clear in the case where the cost is the value that could have been derived from another act of consumption. When the cost is forgone investment, then what is forgone is expected future increases in consumption, expressed in terms of the individual's rate of time preference, which will be further explored below. At any rate, when an individual buys a particular good, such as eggs, the more he continues to buy, the lower will be the marginal utility of addition that each successive unit has for him. This, of course, is in accordance with the law of marginal utility. On the other hand, the more money he spends on eggs, the greater will be the marginal utility forgone in whatever is the next best good—e.g., butter. Thus, the more he spends on eggs, the less will be his marginal utility derived from eggs, and the greater will be his marginal cost of buying eggs, i.e., the value that he must forgo. Eventually, the latter becomes greater than the former. When this happens and the marginal cost of purchasing eggs becomes greater than the marginal utility of addition of the commodity, he switches his purchases to butter, and the same process continues. With any stock of money, a man's consumption expenditures come first, and expenditures on each

good follow the same law. In some cases, the marginal cost of consumption on a consumers' good becomes investment in some line, and the man may invest some money in factors of production. This investment continues until the marginal cost of such investment, in terms of forgone consumption or cash balance, is greater than the present value of the expected return. Sometimes, the most highly valued use is an addition to one's cash balance, and this continues until the marginal utility derived from this use is less than the marginal cost in some other line. In this way, a man's monetary stock is allocated among all the most highly valued uses.

And in this way, individual demand schedules are constructed for every consumers' good, and market-demand schedules are determined as the summation of the individual demand schedules on the market. Given the stocks of all the consumers' goods (this *given* will be analyzed in succeeding chapters), their market prices are thereby determined.

It might be thought, and many writers have assumed, that money has here performed the function of measuring and rendering comparable the utilities of the different individuals. It has, however, done nothing of the sort. The marginal utility of money differs from person to person, just as does the marginal utility of any other good. The fact that an ounce of money can buy various goods on the market and that such opportunities may be open to all does not give us any information about the ways in which various people will rank these different combinations of goods. *There is no measuring or comparability in the field of values or ranks.* Money permits only *prices* to be comparable, by establishing money prices for every good.

It might seem that the process of ranking and comparing on value scales by each individual has established and determined the prices of consumers' goods without any need for further analysis. The problem, however, is not nearly so simple. Neglect or evasion of the difficulties involved has plagued economics for many years. Under a system of barter, there would

be no analytic difficulty. All the possible consumers' goods would be ranked and compared by each individual, the demand schedules of each in terms of the other would be established, etc. Relative utilities would establish individual demand schedules, and these would be summed up to yield market-demand schedules. But, in the monetary economy, a grave analytic difficulty arises.

To determine the price of a good, we analyze the market-demand schedule for the good; this in turn depends on the individual demand schedules; these in their turn are determined by the individuals' value rankings of units of the good and units of money as given by the various alternative uses of money; *yet the latter alternatives depend in turn on given prices of the other goods*. A hypothetical demand for eggs must assume as given some money price for butter, clothes, etc. *But how, then, can value scales and utilities be used to explain the formation of money prices, when these value scales and utilities themselves depend upon the existence of money prices?*

B. The Money Regression

It is obvious that this vitally important problem of *circularity* (*X* depends on *Y*, while *Y* depends on *X*) exists not only in regard to decisions by consumers but also in regard to any exchange decision in the money economy. Thus, let us consider the *seller* of the stock of a consumers' good. At a given offered money price, he must decide whether to sell the units of his stock or whether to hold on to them. His eagerness to sell in exchange for acquiring money is due to the use that the money would have for him. The money would be employed in its most important uses for him, and this will determine his evaluation of the money—or its marginal utility of addition. But the *marginal utility of addition of money to the seller of the stock* is based *on its already being money* and its ready command of other goods that the seller will buy—consumers' goods and factors of production alike. The seller's marginal utility therefore also depends on the

previous existence of money prices for the various goods in the economy.

Similarly, for the laborer, landowner, investor, or owner of a capital good: in selling his services or goods, money has a marginal utility of addition, which is a necessary prior condition to his decision to sell the goods and therefore a determinant in his supply curve of the good for money. And yet this marginal utility always depends on there being a previous array of money prices in existence. The seller of any good or service for money, therefore, ranks the marginal utility of the money that he will obtain against the marginal utility of holding on to the good or service. Whoever spends money to buy any good or service ranks the marginal utility which keeping the money has for him against the marginal utility of acquiring the good. These value scales of the various buyers and sellers determine the individual supply-demand schedules and hence all money prices; yet, in order to rank money and goods on his value scale, money must *already* have a marginal utility for each person, and this marginal utility *must* be based on the fact of pre-existing money prices of the various goods.[18]

The solution of this crucial problem of circularity has been provided by Professor Ludwig von Mises, in his notable theory of the money regression.[19] The theory of money regression may

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[18]It is true that

> he who considers acquiring or giving away money is, of course, first of all interested in its future purchasing power and the future structure of prices. But he cannot form a judgment about the future purchasing power of money otherwise than by looking at its configuration in the immediate past. (Mises, *Human Action*, p. 407)

[19]*See* Mises, *Theory of Money and Credit*, pp. 97–123, and *Human Action*, pp. 405–08. *Also see* Schumpeter, *History of Economic Analysis*, p. 1090. This problem obstructed the development of economic science until Mises provided the solution. Failure to solve it led many economists to despair of ever constructing a satisfactory economic analysis of money

be explained by examining the period of time that is being considered in each part of our analysis. Let us define a "day" as the period of time just sufficient to determine the market prices of every good in the society. On day *X*, then, the money price of each good is determined by the interactions of the supply and demand schedules of money and the good by the buyers and sellers on that day. Each buyer and seller ranks money and the given good in accordance with the relative marginal utility of the two to him. Therefore, a money price at the *end* of day *X* is determined by the marginal utilities of money and the good as they existed at the *beginning* of day *X*. But the marginal utility of money is based, as we have seen above, on a *previously* existing array of money prices. Money is demanded and considered useful because of its *already existing* money prices. Therefore, the price of a good on day *X* is determined by the marginal utility of the good on day *X* and the marginal utility of money on day *X*, which last in turn depends on the prices of goods on day $X - 1$.

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prices. They were led to abandon fundamental analysis of money prices and to separate completely the prices of goods from their money components. In this fallacious course, they assumed that individual prices are determined wholly as in barter, without money components, while the supply of and the demand for money determined an imaginary figment called the "general price level." Economists began to specialize separately in the "theory of price," which completely abstracted from money in its real functions, and a "theory of money," which abstracted from individual prices and dealt solely with a mythical "price level." The former were solely preoccupied with a particular price and its determinants; the latter solely with the "economy as a whole" without relation to the individual components—called "microeconomics" and "macroeconomics" respectively. Actually, such fallacious premises led inevitably to erroneous conclusions. It is certainly legitimate and necessary for economics, in working out an analysis of reality, to isolate different segments for concentration as the analysis proceeds; but it is not legitimate to falsify reality in this separation, so that the final analysis does not present a correct picture of the individual parts and their interrelations.

The economic analysis of money prices is therefore *not* circular. If prices today depend on the marginal utility of money today, the latter is dependent on money prices *yesterday*. Thus, in every money price in any day, there is contained a *time component*, so that this price is partially determined by the money prices of yesterday. This does *not* mean specifically that the price of eggs today is partially determined by the price of eggs yesterday, the price of butter today by that of yesterday, etc. On the contrary, the time component essential to each specific price today is the *general array* of yesterday's money prices for all goods, and, of course, the subsequent evaluation of the monetary unit by the individuals in the society. If we consider the *general array* of today's prices, however, an essential time component in their determination is the general array of yesterday's prices.

This time component is purely on the money side of the determining factors. *In a society of barter, there is no time component* in the prices of any given day. When horses are being exchanged against fish, the individuals in the market decide on the relative marginal utilities solely on the basis of the direct uses of the commodities. These direct uses are immediate and do not require any previously existing prices on the market. Therefore, the marginal utilities of direct goods, such as horses and fish, have no previous time components. And, therefore, there is no problem of circularity in a system of barter. In such a society, if all previous markets and knowledge of previous prices were somehow wiped out, there would, of course, be an initial period of confusion while each individual consulted his value scales and tried to estimate those of others, but there would be no great difficulty in speedily re-establishing the exchange markets. The case is different in a monetary economy. Since the marginal utility of the money commodity depends on previously existing money prices, a wiping out of existing markets and knowledge of money prices would render impossible the direct re-establishment of a money economy. The economy would be wrecked and thrown back into a highly primitive state of barter, after which a

money economy could only slowly be re-established as it had been before.

Now the question may be raised: Granted that there is no circularity in the determination of money prices, does not the fact that the causes partially *regress* backward in time simply push the unexplained components back further without end? If today's prices are partly determined by yesterday's prices, and yesterday's by those of the day before yesterday, etc., is not the regression simply pushed back infinitely, and part of the determination of prices thus left unexplained?

The answer is that the regression is not infinite, and the clue to its stopping point is the distinction just made between conditions in a money economy and conditions in a state of barter. We remember that the utility of money consists of *two* major elements: the utility of the money as a medium of exchange, and the utility of the money commodity in its direct, commodity use (such as the use of gold for ornaments). In the modern economy, after the money commodity has fully developed as a medium of exchange, its use as a medium tends greatly to overshadow its direct use in consumption. The demand for gold as money far exceeds its demand as jewelry. However, the latter use and demand continue to exist and to exert some influence on the total demand for the money commodity.

In any day in the money economy, the marginal utility of gold and therefore the demand for it enter into the determination of every money price. The marginal utility of gold and the demand for it today depend on the array of money prices existing yesterday, which in turn depended on the marginal utility of gold and the demand for it yesterday, etc. Now, as we regress backwards in time, we must eventually arrive at the original point when people first began to use gold as a medium of exchange. Let us consider the *first* day on which people passed from the system of pure barter and began to use gold as a medium of exchange. On that day, the money price, or rather, the gold price, of every other good depended partially on the

marginal utility of gold. This marginal utility had a *time component*, namely, the previous array of gold prices, which had been determined in barter. In other words, when gold first began to be used as a medium of exchange, its marginal utility for use in that capacity depended on the existing previous array of gold prices established through *barter*. But if we regress one day further *to the last day of barter*, the gold prices of various goods on that day, like all other prices, had *no* time components. They were determined, as were all other barter prices, solely by the marginal utility of gold and of the other goods on that day, and the marginal utility of gold, since it was used *only* for direct consumption, had *no* temporal component.

The determination of money prices (gold prices) is therefore completely explained, with no circularity and no infinite regression. The demand for gold enters into every gold price, and today's demand for gold, in so far as it is for use as a *medium of exchange*, has a time component, being based on yesterday's array of gold prices. This time component regresses until the last day of barter, the day before gold began to be used as a medium of exchange. On that day, gold had no utility in that use; the demand for gold was solely for direct use, and consequently, the determination of the gold prices, for that day and for all previous days, had no temporal component whatever.[20,21]

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[20]As we regress in time and approach the original days of barter, the exchange use in the demand for gold becomes relatively weaker as compared to the direct use of gold, until finally, on the last day of barter, it dies out altogether, the time component dying out with it.

[21]It should be noted that the crucial stopping point of the regression is *not* the cessation of the use of gold as "money," but the cessation of its use as a *medium of exchange*. It is clear that the concept of a "general" medium of exchange (money) is not important here. As long as gold is used as a medium of exchange, gold prices will continue to have temporal components. It is true, of course, that for a commodity used as a *limited* medium of exchange only a limited array of prices has to be taken into account in considering its utility.

The causal-temporal pattern of the regression may be portrayed as in the diagram in Figure 38. Consecutive days are numbered 1, 2, 3, etc., and, for each period, arrows depict the underlying causal factors determining the gold prices of goods on the market. For each period of time, the gold prices of goods are fundamentally determined by the relative marginal utilities of gold and other goods on individual value scales, and the marginal utilities of gold are based on the gold prices during the preceding period. This temporal component, depicted by an arrow, continues backward until the period of barter, when gold is used only for direct consumption or production purposes and not as a medium of exchange. At that point there is no temporal dependence on preceding gold prices, and the temporal arrow disappears. In this diagram, a system of barter prevails on days 1, 2, and 3, and gold is used as a medium of exchange on day 4 and thereafter.

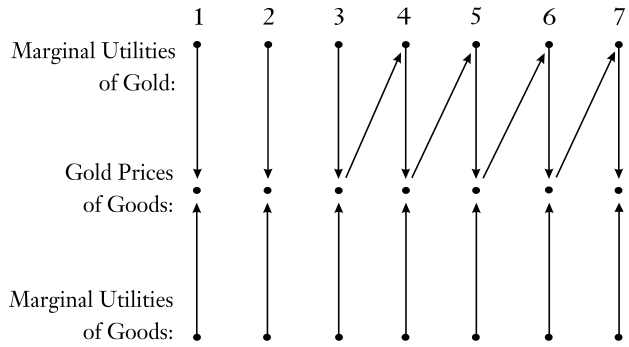

FIGURE 38. CAUSAL-TEMPORAL PATTERN OF THE MONEY REGRESSION

One of the important achievements of the regression theory is its establishment of the fact that money *must* arise in the manner described in chapter 3, i.e., it must develop out of a commodity already in demand for direct use, the commodity then being used as a more and more general medium of exchange.

Demand for a good as a medium of exchange *must* be predicated on a previously existing array of prices in terms of other goods. A medium of exchange can therefore *originate only* according to our previous description and the foregoing diagram; it can arise only out of a commodity previously *used directly in a barter situation*, and therefore having had an array of prices in terms of other goods. *Money must develop out of a commodity with a previously existing purchasing power, such as gold and silver had.* It cannot be created out of thin air by any sudden "social compact" or edict of government.

On the other hand, it does *not* follow from this analysis that if an extant money were to lose its direct uses, it could no longer be used as money. Thus, if gold, after being established as money, were suddenly to lose its value in ornaments or industrial uses, it would not necessarily lose its character as a money. Once a medium of exchange has been established as a money, money prices continue to be set. If on day X gold loses its direct uses, there will still be previously existing money prices that had been established on day $X - 1$, and these prices form the basis for the marginal utility of gold on day X. Similarly, the money prices thereby determined on day X form the basis for the marginal utility of money on day $X + 1$. From X on, gold could be demanded for its exchange value alone, and not at all for its direct use. Therefore, while it is absolutely necessary that a money *originate* as a commodity with direct uses, it is not absolutely necessary that the direct uses continue after the money has been established.

The money prices of consumers' goods have now been completely explained in terms of individual value scales, and these value scales have been explained up to the point of the content of the subjective use-valuations of each good. Economics is not concerned with the specific content of these ends, but with the explanation of various phenomena of action based on *any* given ends, and therefore its task in this sphere is fully accomplished

by tracing these phenomena back to subjective valuations of useful goods.[22]

C. Utility and Costs

We may sum up the utility and cost considerations in decisions of buyers and sellers of consumers' goods—or, rather, of potential buyers and sellers (cf. chapter 2, pp. 190f.)—as follows:

Seller:

Revenue: Marginal Utility of Addition of the Units of Money = value rank in most valuable prospective use

Cost:

Either
- (1) Marginal Utility of Good in direct use —highest-ranked use that would have to be sacrificed
- *OR*
- (2) Marginal Utility of holding for anticipated future sale at higher price—whichever is the higher on his value scale

In cases where neither cost item is present, the sale is costless.

Buyer:

Revenue: Marginal Utility of Addition of the Units of the Good = highest-ranked direct use of units

Cost: Marginal Utility of Units of Money—value rank in highest-ranked use that will have to be sacrificed in making the exchange

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[22]Professor Patinkin criticizes Mises for allegedly basing the regression theorem on the view that the marginal utility of money refers to the marginal utility of the goods for which money is exchanged rather than the marginal utility of holding money, and charges Mises with inconsistently holding the latter view in part of his *Theory of Money and Credit*. In fact, Mises' concept of the marginal utility of money *does* refer to the utility of *holding* money, and Mises' point about the regression theorem is a different one, namely, that the marginal utility-to-hold is in

The aim of the actor is always to achieve a psychic profit from an action by having his marginal revenue exceed his marginal cost. Only after the decision has been made, the action taken, and the consequences assessed, can the actor know if his decision was correct, i.e., if his psychic revenue really did exceed his cost. It is possible that his cost may prove to have been greater than his revenue and that therefore he lost on the exchange.

It is convenient to distinguish the two vantage points by which an actor judges his action as *ex ante* and *ex post. Ex ante* is his position when he must decide on a course of action; it is the relevant and dominant consideration for human action. It is the actor considering his alternative courses and the consequences of each. *Ex post* is his recorded observation of the results of his past action. It is the judging of his past actions and their results. *Ex ante*, then, he will always take the most advantageous course of action, and will always have a psychic profit, with revenue exceeding cost. *Ex post*, he may have profited or lost from a course of action. Revenue may or may not have exceeded cost, depending on how good an entrepreneur he has been in making his original action. It is clear that his *ex post* judgments are mainly useful to him in the weighing of his *ex ante* considerations for future action.

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itself based on the prior fact that money can exchange for goods, i.e., on the prior money prices of goods. Hence, it becomes necessary to break out of this circularity—by means of the regression theorem. In short, the prices of goods have to exist *in order* to have a marginal utility of money to hold.

In his own theory, Patinkin very feebly tries to justify circularity, by saying that in analyzing the market (market "experiment") he begins with utility, and in analyzing utility he begins with prices (individual "experiment"), but the fact remains that he is caught inextricably in a circular trap, which a methodology of cause-and-effect (in contrast to a mathematical type of mutual determination) would quickly reveal. Don Patinkin, *Money, Interest, and Prices* (Evanston, Ill.: Row, Peterson & Co., 1956), pp. 71–72, 414.

Suppose that an ultimate consumer buys a product and then finds he was mistaken in this purchase and the good has little or no value to him. Thus, a man might buy a cake and find that he does not like it at all. *Ex ante* the (expected) utility of the cake was greater than the marginal utility of the money forgone in purchasing it; *ex post* he finds that he was in error and that if he had it to do over again, he would not have bought the cake. The purchase was the consumer's responsibility, and he must bear the loss as well as the gain from his voluntary transaction. Of course, no one can relive the past, but he can use this knowledge, for example, to avoid purchasing such a cake again. It should be obvious that the cake, once purchased, may have little or no value even though the man originally paid several grains of gold for it. The *cost* of the cake was the forgone marginal utility of the three grains of gold paid for it. But this cost incurred *in the past* cannot confer any value on the cake *now*. This would seem obvious, and yet economics has always suffered from neglect of this truth, particularly during the nineteenth century, in the form of various "cost" theories of value. These cost theories asserted that the value of goods is conferred by the costs or sacrifices incurred in their acquisition in the past. On the contrary, it is clear that value can be conferred on a good only by individuals' desires to use it directly in the *present* or in the present expectation of selling to such individuals in the *future*.[23]

We may modify the buyer summary above by considering the case in which the buyer is not an ultimate consumer, but rather a speculative buyer anticipating a future price rise. In that

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[23]As Wicksteed states: "Efforts are regulated by anticipated values, but values are not controlled by antecedent efforts," and

> The value of what you have got is not affected by the value of what you have relinquished or forgone in order to get it. But the measure of the advantages you are willing to forgo in order to get a thing is determined by the value that you expect it to have when you have got it. (Wicksteed, *Common Sense of Political Economy*, I, 93 and 89)

case, a higher revenue for him will be the marginal utility of holding for anticipated future sale at a higher price, which he considers net of the cost of storage.

D. Planning and the Range of Choice

It should be evident that the establishment of money tremendously broadens the range of choice open to everybody. The range of alternative uses that can be satisfied by units of money is far wider than the number of uses to which individual goods can be put. Horses or houses can be allocated to several uses, raw materials to many areas of production, but money can be allocated in expenditure on *every* single type of exchangeable good in the society, whether a tangible commodity or an intangible service, a consumers' or a capital or a natural good, or claims to these goods. Money serves greatly to expand the range of choice; and it itself becomes a key *means* to be allocated to the most highly valued of alternative ends.[24]

It might be worthwhile to consider at this point what each person does in action. He is always engaged in allocating means to the most highly valued of his alternative ends, as ranked on his value scale. His actions in general, and his actions *in exchange* in particular, are always the result of certain expectations on his part, expectations of the most satisfactory course that he could follow. He always follows the route that he *expects* will yield him the most highly ranked available end at a certain future time (which might in some cases be so near as to be almost immediate) and therefore a psychic profit from the action. If he proves to have acted erroneously, so that another course of action would have yielded him a greater psychic revenue, then he has incurred a loss. *Ex ante* he appraises his situation, present and prospective future, chooses among his valuations, tries to achieve the highest ones according to his "know-how," and

[24]We shall see below, in chapter 11, that money is unique in not conferring any general benefit through an increase in the supply once money has been established on the market.

then chooses courses of action on the basis of these *plans*. Plans are his decisions concerning future action, based on his ranking of ends and on his assumed knowledge of how to attain the ends. Every individual, therefore, is constantly engaged in *planning*. This planning may range from an impressive investment in a new steel plant to a small boy's decision to spend two cents on candy, but it is planning nevertheless.[25] It is erroneous, therefore, to assert that a free market society is "unplanned"; on the contrary, each individual plans for himself.

But does not "chaos" result from the fact that individual plans do not seem to be co-ordinated? On the contrary, the exchange system, in the first place, co-ordinates individual plans by benefiting *both* parties to every exchange. In the second place, the bulk of the present volume is devoted to an explanation and analysis of the principles and order that determine the various exchange phenomena in a monetary economy: prices, output, expenditures, etc. Far from being chaotic, the structure of the monetary economy presents an intricate, systematic picture and is deducible from the basic existence of human action and indirect exchange.[26]

6. Interrelations Among the Prices of Consumers' Goods

Thus, at any given point in time, the consumer is confronted with the previously existing money prices of the various consumers' goods on the market. On the basis of his utility scale, he

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[25]"Planning" does not necessarily mean that the man has pondered long and hard over a decision and subsequent action. He might have made his decision almost instantaneously. Yet this is still planned action. Since all action is purposive rather than reflexive, there must always, before an action, have been a decision to act as well as valuations. Therefore, there is always planning.

[26]Economics "must at any rate include and imply a study of the way in which members of . . . society will spontaneously administer their own resources and the relations into which they will spontaneously enter with each other." Wicksteed, *Common Sense of Political Economy*, I, 15–16.

determines his rankings of various units of the several goods and of money, and these rankings determine how much money he will spend on each of the various goods. Specifically, *he will spend money on each particular good until the marginal utility of adding a unit of the good ceases to be greater than the marginal utility that its money price on the market has for him.* This is the law of consumer action in a market economy. As he spends money on a good, the marginal utility of the new units declines, while the marginal utility of the money forgone rises, until he ceases spending on that good. In those cases where the marginal utility of even one unit of a good is lower than the marginal utility of its money price, the individual will not buy any of that good.

In this way are determined the individual demand schedules for each good and, consequently, the aggregate market-demand schedules for all buyers. The position of the market-demand schedule determines what the market price will be in the immediate future. Thus, if we consider action as divided into periods consisting of "days," then the individual buyers set their rankings and demand schedules on the basis of the prices existing at the end of day 1, and these demand schedules determine what the prices will be by the end of day 2.

The reader is now referred back to the discussion in chapter 2 above, sections 9 and 10. The analysis, there applied to barter conditions, applies to money prices as well. At the end of each day, the demand schedules (or rather, the total demand schedules) and the stock in existence on that day set the market equilibrium price for that day. In the money economy, these factors determine the money prices of the various goods during that day. The analysis of changes in the prices of a good, set forth in chapter 2, is directly applicable here. In the money economy, the most important markets are naturally continuous, as goods continue to be produced in each day. Changes in supply and demand schedules or changes in total demand schedules and quantity of stock have exactly the same directional effect as in barter. An increase in the market's total demand schedule over the previous day tends to increase the money price for the day;

an increase in stock available tends to lower the price, etc. As in barter, the stock of each good, at the end of each day, has been transferred into the hands of the most eager possessors.

Up to this point we have concentrated on the determination of the money price of each consumers' good, without devoting much attention to the relations among these prices. The interrelationships should be clear, however. The available goods are ranked, along with the possibility of holding the money commodity in one's cash balance, on each individual's value scale. Then, in accordance with the rankings and the law of utility, the individual allocates his units of money to the most highly valued uses: the various consumers' goods, investment in various factors, and addition to his cash balance. Let us here set aside the question of the distribution chosen between consumption and investment, and the question of addition to the cash balance, until later chapters, and consider the interrelations among the prices of consumers' goods alone.

The law of the interrelation of consumers' goods is: *The more substitutes there are available for any given good, the more elastic will tend to be the demand schedules (individual and market) for that good.* By the definition of "good," two goods cannot be "perfect substitutes" for each other, since if consumers regarded two goods as completely identical, they would, by definition, be one good. *All* consumers' goods are, on the other hand, *partial* substitutes for one another. When a man ranks in his value scale the myriad of goods available and balances the diminishing utilities of each, he is treating them all as partial substitutes for one another. A change in ranking for one good by necessity changes the rankings of all the other goods, since all the rankings are ordinal and relative. A higher price for one good (owing, say, to a decrease in stock produced) will tend to shift the demand of consumers from that to other consumers' goods, and therefore their demand schedules will tend to increase. Conversely, an increased supply and a consequent lowering of price for a good will tend to shift consumer demand from other goods to this

one and lower the demand schedules for the other goods (for some, of course, more than for others).

It is a mistake to suppose that only technologically similar goods are substitutes for one another. The more money consumers spend on pork, the less they have to spend on beef, or the more money they spend on travel, the less they have to spend on TV sets. Suppose that a reduction in its supply raises the price of pork on the market; it is clear that the quantity demanded, and the price, of beef will be affected by this change. *If the demand schedule for pork is more than unitarily elastic in this range*, then the higher price will cause less money to be spent on pork, and more money will tend to be shifted to such a substitute as beef. The demand schedules for beef will increase, and the price of beef will tend to rise. On the other hand, if the demand schedule for pork is *inelastic*, more consumers' money will be spent on pork, and the result will be a fall in the demand schedule for beef and consequently in its price. Such interrelations of substitute goods, however, hold true in some degree for all goods, since all goods are substitutes for one another; for every good is engaged in competing for the consumers' stock of money. Of course, some goods are "closer" substitutes than others, and the interrelations among them will be stronger than among the others. The closeness of the substitution depends, however, on the particular circumstances of the consumer and his preferences rather than on technological similarity.

Thus, consumers' goods, in so far as they are substitutes for one another, are related as follows: When the stock of *A* rises and the price of *A* therefore *falls*, (1) *if* the demand schedule for *A* is elastic, there will be a tendency for a decline in the demand schedules for *B*, *C*, *D*, etc., and consequent declines in their prices; (2) if the demand schedule for *A* is inelastic, there will be a rise in the demand schedules for *B*, *C*, *D*, etc., and a consequent *rise* in their prices; (3) if the demand schedule has exactly neutral (or unitary) elasticity, so that there is no change in the amount of money expended on *A*, there will be no effect on the demands for and the prices of the other goods.

As the money economy develops and civilization flowers, there is a great expansion in the types of goods available and therefore in the number of goods that can be substituted for one another. Consequently, there is a tendency for the demands for the various consumers' goods to become more elastic, although they will continue to vary from highly elastic to highly inelastic. In so far as the multiplication of substitutes tends to render demand curves for individual goods elastic, the first type of interaction will tend to predominate. Furthermore, when *new* types of goods are established on the market, these will clearly draw monetary demand away from other, substitute products, and hence bring about the first type of reaction.

The substitutive interrelations of consumers' goods were cogently set forth in this passage by Philip Wicksteed:

> It is sufficiently obvious that when a woman goes into the market uncertain whether she will or will not buy new potatoes, or chickens, the price at which she finds that she can get them may determine her either way. . . . For the price is the first and most obvious indication of the nature of the alternatives that she is foregoing, if she makes a contemplated purchase. But it is almost equally obvious that not only the price of these particular things, but the price of a number of other things also will affect the problem. If good, sound, old potatoes are to be had at a low price, the marketer will be less likely to pay a high price for new ones, because there is a good alternative to be had on good terms. . . . If the housewife is thinking of doing honour to a small party of neighbours by providing a couple of chickens for their entertainment at supper, it is possible that she could treat them with adequate respect, though not with distinction, by substituting a few pounds of cod. And in that case not only the price of chickens but the price of cod will tend to affect her choice. . . .
>
> But on what does the significance . . . [of the price difference between chicken and cod] depend? Probably upon the price of things that have no obvious

> connection with either chicken or cod. A father and mother may have ambitions with respect to the education or accomplishments of their children, and may be willing considerably to curtail their expenditure on other things in order to gratify them. Such parents may be willing to incur . . . entertaining their guests less sumptuously than custom demands, and at the same time getting French or violin lessons for their children. In such cases the question whether to buy new or old potatoes, or whether to entertain friends with chicken or cod, or neither, may be affected by the terms on which French or music lessons of a satisfactory quality can be secured.[27]

While all consumers' goods compete with one another for consumer purchases, some goods are also *complementary* to one another. These are goods whose uses are closely linked together by consumers, so that movements in demand for them are likely to be closely tied together. An example of complementary consumers' goods is *golf clubs* and *golf balls*, two goods the demands for which tend to rise and fall together. In this case, for example, an increase in the supply of golf balls will tend to cause a *fall* in their prices, which will tend to raise the demand schedule for golf *clubs* as well as to increase the quantity of golf balls demanded. This will tend to *increase* the price of golf clubs. In so far, then, as two goods are *complementary* to each other, when the stock of *A* rises, and the price of *A* therefore *falls*, the demand schedule for *B* increases and its price will tend to *rise*. Since a fall in the price of a good will always increase the quantity of the good demanded (by the law of demand), this will always stimulate the demand schedule for a complementary good and thus tend to raise its price.[28] For this effect the elasticity of demand for the original good has no relevance.

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[27]Wicksteed, *Common Sense of Political Economy*, I, 21–22.

[28]The exception is those cases in which the demand curve for the good is directly vertical, and there will then be no effect on the complementary good.

Summing up these interrelations among consumers' goods:

SUBSTITUTABLE GOODS:

If stock of *A* rises, and price of *A falls*, and *Demand Curve* for *A* is:

Inelastic: Demand for, Price of, *B*, *C*, *D*, . . . *rise*
Elastic: Demand for, Price of, *B*, *C*, *D*, . . . *fall*
Neutral: No effect on *B*, *C*, *D*, . . .

COMPLEMENTARY GOODS:

If stock of *A* rises, price of *A falls*, and: Demand for, and Price of, *B*, *C*, *D*, . . . *rise*.
(Unless Demand Curve for *A* is vertical, then there is no effect.)

All goods are substitutable for one another, while fewer are complementary. When they are also complementary, then the complementary effect will be mixed with the substitutive effect, and the nature of each particular case will determine which effect will be the stronger.

This discussion of the interrelation of consumers' goods has treated the effect only of changes from the *stock*, or supply, side. The effects are different when the change occurs in *the demand schedule* instead of in the quantity of stock. Suppose that the market-demand schedule for good *A increases*—shifts to the right. This means that, for every hypothetical price, the quantity of *A* bought, and therefore the amount of money spent on *A*, *increases*. But, given the supply (stock) of money in the society, this means that there will be decreases in the demand schedules for one or more other goods.[29] More money spent on good *A*, given the stock of money, signifies that less money is spent on goods *B*, *C*, *D* . . . The demand curves for the latter goods "shift to the left," and the prices of these goods *fall*. Therefore,

[29]We omit at this point analysis of the case in which the increase in demand results from decreases of cash balance and/or decreases in investment.

the effect of the substitutability of all goods for one another is that an increased demand for *A*, resulting in a *rise* in the price of *A*, will lead to decreased demand schedules and *falling* prices for goods *B*, *C*, *D* . . . We can see this relation more fully when we realize that the demand schedules are determined by individual value scales and that a rise in the marginal utility of a unit of *A* necessarily means a relative fall in the utility of the other consumers' goods.

In so far as two goods are complementary, another effect tends to occur. If there is an increase in the demand schedule for golf clubs, it is likely to be accompanied by an increase in the demand schedule for golf balls, since both are determined by increased relative desires to play golf. When changes come from the demand side, the prices of complementary goods tend to rise and fall together. In this case, we should not say that the rise in demand for *A led* to a rise in demand for its complement *B*, since both increases were due to an increased demand for the consumption "package" in which the two goods are intimately related.

We may now sum up both sets of interrelations of consumers' goods, for changes in stock and in demand (suppliers' reservation demand can be omitted here, since this speculative element tends toward correct estimates of the basic determinant, consumer demand).

Table 10 indicates the reactions of other goods, *B*, *C*, *D*, to changes in the determinants for good *A*, in so far as these goods are substitutable for it or complementary to it. A + sign signifies that the prices of the other goods react in the *same* direction as the price of good *A*; a – sign signifies that the prices of the other goods react in the *opposite* direction.

In some cases, an *old* stock of a good may be evaluated differently from the *new* and therefore may become a separate good. Thus, while well-stored old nails might be considered the same good as newly produced nails, an old Ford will not be considered the same as a new one. There will, however, definitely be a close relation between the two goods. If the supply schedule for the

TABLE 10

CHANGE IN PRICES OF *B*, *C*, *D*, . . .		
If *A* and the Good are:	If Change in Stock of *A*	If Change in Demand for *A*
Substitutable for each other	+ if Demand for *A* is *elastic* – if Demand for *A* is *inelastic* None or 0 if Demand for *A* is *unitary*	–
Complementary to each other	–	+

new Fords decreases and the price rises, consumers will tend to shift to the purchase of old Fords, tending to raise the price of the latter. Thus, old and new commodities, technologically similar, tend to be very close substitutes for each other, and their demands and prices tend to be closely related.

Much has been written in the economic literature of consumption theory on the "assumption" that each consumers' good is desired quite independently of other goods. Actually, as we have seen, the desires for various goods are of necessity interdependent, since all are ranged on the consumers' value scales. Utilities of each of the goods are relative to one another. These ranked values for goods and money permit the formation of individual, and then aggregate, demand schedules in money for each particular good.

7. *The Prices of Durable Goods and Their Services*

Why does a man purchase a consumers' good? As we saw back in chapter 1, a consumers' good is desired and sought

because the actor believes that it will serve to satisfy his urgently valued desires, that it will enable him to attain his valued ends. In other words, the good is valuable because of the expected *services* that it will provide. Tangible commodities, then, such as food, clothing, houses, etc., and intangible personal services, such as medical attention and concert performances, are similar in the life of the consumer. Both are evaluated by the consumer in terms of their services in providing him with satisfactions.

Every type of consumers' good will yield a certain amount of *services per unit of time*. These may be called *unit services*. When they are exchangeable, these services may be sold individually. On the other hand, when a good is a physical commodity and is durable, it may be sold to the consumer in one piece, thereby embodying an expected future accrual of many unit services. What are the interrelations among the markets for, and prices of, the unit services and the durable good as a whole?

Other things being equal, it is obvious that a *more* durable good is more valuable than a *less* durable good, since it embodies more future unit services. Thus, suppose that there are two television sets, each identical in service to the viewer, but that *A* has an expected life of five years, and *B* of 10. Though the service is identical, *B* has twice as many services as *A* to offer the consumer. On the market, then, the price of *B* will tend to be twice the price of *A*.[30]

For nondurable goods, the problem of the separate sale of the service of the good and of the good itself does not arise. Since they embody services over a relatively short span of time, they are almost always sold as a whole. Butter, eggs, Wheaties, etc., are sold as a whole, embodying all their services. Few would think of "renting" eggs. Personal services, on the other

[30]Strictly, this is not correct, and the important qualification will be added below. Since, as a result of time preference, present services are worth more than the same ones in the future, and those in the near future more than those in the far future, the price of *B* will be *less* than twice the price of *A*.

hand, are never sold as a whole, since, on the free market, slave contracts are not enforceable. Thus, no one can purchase a doctor or a lawyer or a pianist for life, to perform services at will with no further payment. Personal services, then, are always sold in their individual units.

The problem whether services should be sold separately or with the good as a whole arises in the case of durable commodities, such as houses, pianos, tuxedos, television sets, etc. We have seen that goods are sold, not as a total class, e.g., "bread" or "eggs," but in separate homogeneous units of their supply, such as "loaves of bread," or "dozens of eggs." In the present discussion, a good can be sold either as a complete physical unit—a house, a television set, etc.—or in service units over a period of time. This sale of service units of a durable good is called *renting* or *renting out* or *hiring out* the good. The price of the service unit is called the *rent*.

Since the good itself is only a bundle of expected service units, it is proper to base our analysis on the *service unit*. It is clear that the demand for, and the price of, a service unit of a consumers' good will be determined on exactly the same principles as those set forth in the preceding analysis of this chapter.

A durable consumers' good embodies service units as they will accrue over a period of time. Thus, suppose that a house is expected to have a life of 20 years. Assume that a year's rental of the house has a market price, as determined by the market supply and demand schedules, of 10 ounces of gold. Now, what will be the market price of the house itself should it be sold? Since the annual rental price is 10 ounces (and if this rental is expected to continue), the buyer of the house will obtain what amounts to 20 x 10, or 200 ounces, of prospective rental income. The price of the house as a whole will tend inexorably to equal the present value of the 200 ounces. Let us assume for convenience at this point that there is no phenomenon of time preference and that the present value of 200 ounces is therefore equal to 200 ounces. In that case, the price of the house as a whole will tend to equal 200 ounces.

Suppose that the market price of the house as a whole is 180 ounces. In that case, there will be a rush to buy the house, since there is an expected monetary profit to be gained by purchasing for 180 ounces and then renting out for a total income of 200 ounces. This action is similar to speculative purchasers' buying a good and expecting to resell at a higher price. On the other hand, there will be a great reluctance by the present owners of such houses (or of *the* house, if there is no other house adjudged by the market as the same good), to sell at that price, since it is far more profitable to rent it out than to sell it. Thus, under these conditions, there will be a considerable excess of demand over supply of this type of house for sale, at a price of 180 ounces. The upbidding of the excess demand tends to raise the price toward 200. On the other hand, suppose that the market price is above 200. In that case, there will be a paucity of demand to purchase, since it would be cheaper to pay rental for it instead of paying the sum to purchase it. On the contrary, possessors will be eager to sell the house rather than rent it out, since the price for sale is better. The excess supply over demand at a price over 200 will drive the price down to the equilibrium point.

Thus, while every type of market price is determined as in the foregoing sections of this chapter, the market also determines price *relations*. We see that there is a definite relationship between the price of the unit services of a durable consumers' good and the price of the good as a whole. If that relationship is disturbed or does not apply at any particular time, the actions of individuals on the market will tend to establish it, because prospects of monetary gain arise until it is established, and action to obtain such gain inevitably tends to eliminate the opportunity. This is a case of "arbitrage" in the same sense as the establishment of *one price* for a good on the market. If two prices for one good exist, people will tend to rush to purchase in the cheaper market and sell more of the good in the more expensive market, until the play of supply and demand on each market establishes an "equilibrium" price and eliminates the

arbitrage opportunity. In the case of the durable good and its services, there is an *equilibrium-price relation*, which the market tends to establish. *The market price of the good as a whole is equal to the present value of the sum of its expected (future) rental incomes or rental prices.*

The expected future rental incomes are, of course, not necessarily a simple extrapolation of present rental prices. Indeed, since prices are always changing, it will almost always be the case that rental prices will change in the future. When a person buys a durable good, he is buying its services for a length of time extending into the future; hence, he is more concerned with *future* than with *present* rates; he merely takes the latter as a possible guide to the future.[31] Now, suppose that the individuals on the market generally estimate that rents for this house over the next decade or so will be much lower than at present. The price of the house then will not be 20 x 10 ounces, but some correspondingly smaller amount.

At this point, we shall define the "price of the good as whole" as its *capital value* on the market, even though there is risk of confusion with the concept of "capital good." The *capital value* of any good (be it consumers' or capital good or nature-given factor) is the money price which, as a durable good, it presently sells for on the market. The concept applies to durable goods, embodying future services.[32] The capital value of a consumers' good will tend to equal the present value of the sum of expected unit rentals.

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[31]It needs to be kept in mind that, strictly, there is no such thing as a "present" price established by the market. When a man considers the price of a good, he is considering that price agreed upon in the last recorded transaction in the market. The "present" price is always, in reality the historically recorded price of the most immediate past (say, a half-hour ago). What always interests the actor is what various prices will be at various times in the future.

[32]On the different uses of the term "value," see Appendix B, "On Value," below.

The capital value at any time is based on expectations of future rental prices. What happens when these expectations are erroneous? Suppose, for example, that the market expects the rental prices of this house to increase in the next few years and therefore sets the capital value higher than 200 ounces. Suppose, further, that the rental prices actually decline instead. This means that the original capital value on the market had overestimated the rental income from the house. Those who had sold the house at, say, 250, have gained, while those who bought the house in order to rent it out have lost on the transaction. Thus, those who have forecast better than their fellows gain, while the poorer forecasters lose, as a result of their speculative transactions.

It is obvious that such monetary profits come *not* simply from correct forecasting, *but from forecasting more correctly than other individuals*. If all the individuals had forecast correctly, then the original capital value would have been below 200, say, 150, to account for the eventually lower rental prices. In that case no such monetary profit would have appeared.[33] It should be clear that the gains or losses are the consequences of the freely undertaken action of the gainers and losers themselves. The man who has bought a good to rent out at what proves to be an excessive capital value has only himself to blame for being overly-optimistic about the monetary return on his investment. The man who sells at a capital value higher than the eventual rental income is rewarded for his sagacity through decisions voluntarily taken by all parties. And since successful forecasters are, in effect, rewarded, and poor ones penalized, and in proportion to good and poor judgment respectively, the market tends to establish and maintain as high a quality of forecasting as is humanly possible to achieve.

The equilibrium relation between the capital value on the market and the sum of *expected* future rents is a day-to-day

[33]The concept of monetary profit and loss and their relation to capitalization will be explored below.

equilibrium that tends always to be set by the market. It is similar to the day-to-day *market equilibrium* price for a good set by supply and demand. On the other hand, the equilibrium relation between present capital value and *actual* future rents is only a long-range tendency fostered by the market's encouragement of successful forecasters. This relation is a *final* equilibrium, similar to the *final equilibrium* prices that set the goal toward which the day-to-day prices tend.

Study of capital value and rental prices requires additional supply-demand analysis. The determination of the unit rental price presents no problem. Price determination of the capital value, however, needs to be modified to account for this dependence on, and relationship to, the rental price. The *demand* for the durable good will now be, not only for direct use, but *also*, on the part of others, *demand for investment in future renting out*. If a man feels that the market price of the capital value of a good is lower than the income he can obtain from future rentals, he will purchase the good and enter the renting-out market as a supplier. Similarly, the *reserved demand* for the good as a whole will be not only for direct use or for speculative price increases, but *also* for future renting out of the good. If the possessor of a durable good believes that the selling price (capital value) is lower than what he can get in rents, he will reserve the supply and rent out the good. The capital value of the good will be such as to clear the total stock, and the total of all these demands for the good will be in equilibrium. The reserved demand of the buyers will, as before, be due to their reserved demand for money, while the sellers of both the good as a whole and of its unit services will be demanding money in exchange.

In other words, for any consumers' good, the possessors have the choice of either consuming it directly or selling it for money. In the case of durable consumers' goods, the possessors can do any one of the following with the good: use it directly, sell it whole, or *hire it out*—selling its unit services over a period of time. We have already seen that if using it

directly is highest on his value scale, then the man uses the good and reserves his stock from the market. If selling it whole is highest on his value scale, he enters the "capital" market for the good as a supplier. If renting it out is highest on his value scale, then he enters the "renting" market for the good as a supplier. Which of these latter alternatives will be higher on his value scale depends on his estimate of which course will yield him the higher money income. The shape of the supply curves in both the capital and rental markets will be either rightward- and upward-sloping or vertical, since the greater the expected income, the less will be the amount reserved for direct use. It is clear that the supply schedules on the two markets are interconnected. They will tend to come into equilibrium when the equilibrium-price relation is established between them.

Similarly, the nonpossessors of a good at any given time will choose between (*a*) not buying it and reserving their money, (*b*) buying it outright, and (*c*) renting it. They will choose the course highest on their value scales, which depends partially on their demand for money and on their estimate of which type of purchase will be cheaper. If they decide to buy, they will buy on what they estimate is the cheaper market; then they can either use the good directly or resell it on the more expensive market. Thus, if the capital value of the house is 200 and a buyer estimates that total rental prices will be 220, he buys outright at 200, after which he may either use it directly or enter the rental market as a supplier in order to earn the expected 220 ounces. The latter choice again depends on his value scale. This is another example of the arbitrage action already explained, and the effect is to link the demand curves for the two types of markets for durable goods.

Here it must be pointed out that in some cases the renting contract itself takes on the characteristics of a capital contract and the estimating of future return. Such is the case of a *long-term* renting contract. Suppose that A is planning to rent a house to B for 30 years, at a set annual price. Then, instead of continual

changes in the rental price, the latter is *fixed* by the original contract. Here again, the demand and supply schedules are set according to the various individual estimates of the changing course of other varying rents for the same type of good. Thus, if there are two identical houses, and it is expected that the sum of the varying rents on house *A* for the next 30 years will be 300 ounces, then the long-term renting price for house *B* will tend to be set at 10 ounces per year. Here again, there is a similar connection between markets. *The price of presently established long-term rents will tend to be equal to the present value of the sum of the expected fluctuating rents for identical goods*. If the general expectation is that the sum of rents will be 360 ounces, then there will be a heavy demand for long-term rent purchases at 300 ounces and a diminished supply for rent at that price, until the long-term rental price is driven to 12 ounces per year, when the sum will be the same. And here again, the ever-present uncertainty of the future causes the more able forecasters to gain and the less able ones to lose.[34]

In actuality, time preference exists, and the present value of the future rentals is always less by a certain discount than the sum of these rentals. If this were not so, the capital value of very durable goods, goods which wear out only imperceptibly, would be almost infinite. An estate expected to last and be in demand for hundreds of years would have an almost infinitely high selling price. The reason this does not happen is that *time preference* discounts future goods in accordance with the length of time being considered. How the rate of time preference is arrived at will be treated in later chapters. However, the following is an illustration of the effect of time preference on the capital-value of a good. Assume a durable good, expected to last for 10 years, with an expected rental value of 10 ounces each year. If the rate of time preference is 10 percent per annum, then the future rents and their *present* value are as follows:

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[34]Cf. Fetter, *Economic Principles*, pp. 158–60.

Years:	1	2	3	4	5	6	7	8	9	10
Expected Rents:	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Present Value: (assuming first year payment at one year from present date)	9.0	8.1	7.3	6.7	6.0	5.4	4.9	4.4	4.0	3.6

Sum of these present values = 59.4 ounces = Capital value, as compared to a sum of 100 ounces of future rent.

As the date of time recedes into the future, the compounded discount becomes greater, finally reducing the present value to a negligible amount.

It is important to recognize that the time-preference factor does *not*, as does relatively correct forecasting of an uncertain situation, confer monetary profits or losses. If the time-preference rate is 10 percent, purchasing the aforementioned good for 59.4 ounces, holding it, and renting it out for 10 years to acquire 100 ounces does *not* constitute a monetary profit. Present money was at this premium over future money, and what this man earned was simply the amount of future income that the market had evaluated as equal to 59.4 ounces of present money.

In general, we may sum up the action of entrepreneurs in the field of durable consumers' goods by saying that they will tend to *invest* in the outright purchase of (already existing) durable consumers' goods when they believe that the present capital value of the good on the market is less than the sum of future rentals (discounted by time preference) that they will receive. They will sell such goods outright when they believe that the present capital value is higher than the discounted sum of future rentals. Better forecasters will earn profits, and poorer ones will suffer losses. In so far as the forecasting is correct, these "arbitrage" opportunities will tend to disappear.

Although we have analyzed the arbitrage profits and losses of entrepreneurship in the case of selling outright as against

renting, we have yet to unravel fully the laws that govern entrepreneurial incomes—the incomes that the producers strive to obtain in the process of production. This problem will be analyzed in later chapters.[35]

8. Welfare Comparisons and the Ultimate Satisfactions of the Consumer

In our preoccupation with analysis of the action of man in the monetary economy, it must not be thought that the general truths presented in chapter 1 remain no longer valid. On the contrary, in chapter 1 they were applied to isolated Crusoe-type situations because we logically begin with such situations in order to be able to analyze the more complex interrelations of the monetary economy. However, the truths formulated in the first chapter are applicable still, not only through logical inferences applied to the monetary nexus, but also directly to all situations in the monetary economy in which money is not involved.

There is another sense in which the analysis of the first chapter is directly applicable in a money economy. We may be primarily concerned in the analysis of exchange with the consumer's allocation of money to the most highly valued of its uses—based on the individual's value scales. We must not forget, however, the *ultimate* goal of the consumer's expenditures of money. This goal is the actual use of the purchased goods in attaining his most highly valued ends. Thus, for the purposes of analysis of the *market*, once Jones has purchased three pounds of butter, we have lost interest in the butter (assuming there is no chance of Jones' re-entering the market to sell the butter). We call the retail sale of the butter the sale of the *consumers*'

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[35]For a discussion of the value of durable goods, see the brilliant treatment in Böhm-Bawerk, *Positive Theory of Capital*, pp. 339–57; Fetter, *Economic Principles*, pp. 111–21; and Wicksteed, *Common Sense of Political Economy*, I, 101–11.

good, since this is its *last sale for money* along the path of the butter's production. Now the good is in the hands of the ultimate consumer. The consumer has weighed the purchase on his value scale and has decided upon it.

Strictly, we must never lose sight of the fact that this purchase by the consumer is *not* the last stopping point of the butter, when we consider human action in its entirety. The butter must be carried to the man's home. Then, Jones allocates the units of butter to their most highly valued uses: buttered toast, butter in a cake, butter on a bun, etc. To use the butter in a cake or sandwich, for example, Mrs. Jones bakes the cake and prepares the sandwich and then brings it to the table where Jones eats it. We can see that the analysis of chapter 1 holds true, in that useful goods—horses, butter, or anything else—in the hands of the consumer are allocated, in accordance with their utility, to the most highly valued uses. Also, we can see that actually the *butter when last sold for money* was not a consumers' good, but a *capital good*—albeit one of lower order than at any other previous stage of its production. Capital goods are produced goods that must be combined still further with other factors in order to provide the consumers' good—the good that finally yields the ultimate satisfaction to the consumer. From the full praxeological point of view, the butter becomes a consumers' good only when it is actually being eaten or otherwise "consumed" by the ultimate consumer.

From the standpoint of praxeology proper—the complete formal analysis of human action in all its aspects—it is inadmissible to call the good at its last retail sale to the consumer a "consumers' good." From the point of view of that subdivision of praxeology that covers traditional economics—that of *catallactics*, the science of monetary exchanges—however, it becomes convenient to call the good at the last retail stage a "consumers' good." This is the last stage of the good in the monetary nexus—the last point, in most cases, at which it is open to producers to invest money in factors. To call the good at this final monetary stage a "consumers' good" is permissible, provided

we are always aware of the foregoing qualifications. We must always remember that without the final stages and the final allocation by consumers, there would be no *raison d'être* for the whole monetary exchange process. Economics cannot afford to dismiss the ultimate consumption stage simply because it has passed beyond the monetary nexus; it is the final goal and end of the monetary transactions by individuals in society.

Attention to this point will clear up many confusions. Thus, there is the question of consumers' income. In chapter 3, we analyzed consumers' money income and the universal goal of maximizing psychic income, and we indicated to some extent the relation between the two. Everyone attempts to maximize the latter, which includes on its value scale a vast range of all consumers' goods, both exchangeable and nonexchangeable. Exchangeable goods are generally in the monetary nexus, and therefore can be purchased for money, whereas nonexchangeable goods are not. We have indicated some of the consequences of the fact that it is *psychic* and not *monetary* income that is being maximized, and how this introduces qualifications into the expenditure of effort or labor and in the investment in producers' goods. It is also true that psychic income, being purely subjective, cannot be measured. Further, from the standpoint of praxeology, we cannot even ordinally compare the psychic income or utility of one person with that of another. We cannot say that A's income or "utility" is greater than B's.

We can—at least, theoretically—measure monetary incomes by adding the amount of money income each person obtains, but this is by no means a measure of psychic income. Furthermore, it does not, as we perhaps might think, give any exact indication of the amount of services that each individual obtains purely from *exchangeable* consumers' goods. An income of 50 ounces of gold in one year may not, and most likely will not, mean the same to him in terms of services from exchangeable goods as an income of 50 ounces in some other year. The purchasing power of money in terms of all other commodities is continually changing, and there is no way to measure such changes.

Of course, as historians rather than economists, we can make imprecise judgments comparing the "real" income rather than the monetary income between periods. Thus, if Jones received 1,000 ounces of income in one year and 1,200 in the next, and prices generally rose during the year, Jones' "real income" in terms of goods purchasable by the money has risen considerably less than the nominal monetary increase or perhaps fallen. However, as we shall see further below, there is no precise method of measuring or even identifying the purchasing power of money and its changes.

Even if we confine ourselves to the same period, monetary incomes are not an infallible guide. There are, for example, many consumers' goods that are obtainable *both* through monetary exchange and outside the money nexus. Thus, Jones may be spending 18 ounces a month on food, rent, and household maintenance, while Smith spends only nine ounces a month. This does not necessarily mean that Jones obtains twice as much of these services as Smith. Jones may live in a hotel, which provides him with these services in exchange for money. Smith, on the other hand, may be married and may obtain household and cooking services outside the monetary nexus. Smith's psychic income from these services may be equal to, or greater than, Jones', despite the lower monetary expenditures.

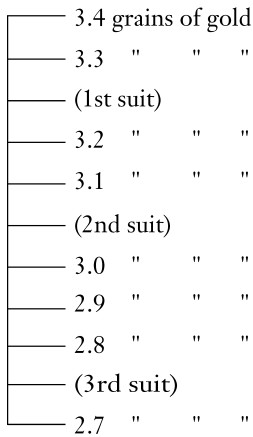
Neither can we measure psychic incomes if we confine ourselves to goods in the monetary nexus. A and B might live in the same sort of house, but how can the economist-observer deduce from this that the two are deriving the same amount of enjoyment from the house? Obviously, the degree of enjoyment will most likely differ, but the mere fact of the income or property will provide no clue to the direction or extent of the difference.

It follows that the law of the diminishing marginal utility of money applies only to the valuations of *each individual* person. There can be no comparison of such utility between persons. Thus, we cannot, as some writers have done, assert that an extra

dollar is enjoyed less by a Rockefeller than by a poor man. If Rockefeller were suddenly to become poor, each dollar would be worth more to him than it is now; similarly, if the poor man were to become rich, his value scales remaining the same, each dollar would be worth less than it is now. But this is a far cry from attempting to compare different individuals' enjoyments or subjective valuations. It is certainly possible that a Rockefeller enjoys the services of each dollar more than a poor, but highly ascetic, individual does.

9. Some Fallacies Relating to Utility

A doctrine commonly held by writers on utility is that the consumer acts so as to bring the marginal utility that any good has for him into *equality* with the price of that good. To understand this thesis, let us examine the preference scale of Mr. Jones in contemplating the purchase of one or more suits (and we shall assume that each suit is of the same quality—the same "good"). Suppose his value scale is as follows:



And suppose also that the market price is 2.9 grains per suit. Jones will buy not one or three, but two, suits. *He will buy up to the last unit at which the diminishing marginal utility that the suit*

has for him exceeds the increasing marginal utility of money.[36] This is obvious. Now, if a writer couches the exposition in terms of highly divisible goods, such as butter, and in terms of small units of money, such as pennies, it is easy to leap unthinkingly to the conclusion that the consumer for each good will act in such a way as to equalize, at the market price, the marginal utility of the sum of money and the marginal utility of the good. It should be clear, however, that there is never any such "equalization." In the case of the suit, the rank of the second suit is still considerably above the rank of the 2.9 grains. So there is no equalization. Even in the case of the most divisible of goods, there will still be a *difference in rank*, not an equalization, between the two utilities. A man may buy 11 ounces of butter at 10 cents an ounce, until there is nothing ranking between the 11th ounce and the 10cents on his utility scale; yet there is still no *equality*, but a difference in rank, with the last ounce bought ranking higher than the last sum of money spent. Of course, the consumer tries to spend his money so as to bring the two as close as possible, but they can never be equal.

Furthermore, the marginal utility of each particular good, after the purchases are made, differs in rank from that of every other. Thus, let us take one grain of gold as the monetary unit under consideration. Let us say that the given market-prices of various goods are as follows:

eggs — 1 dozen per grain;
butter — 1 pound per grain;
bread — 1 loaf per grain;
candy — 1 bar per grain.

Now each individual will purchase each commodity until the last point at which the marginal utility of the unit exceeds the marginal utility of a grain of gold. For one man, this might mean the purchase of five pounds of butter, three loaves of

[36]We are omitting possible shifts in rank resulting from the increasing utility of money, which would only complicate matters unduly.

bread, two bars of candy, etc. This would mean that either a sixth pound of butter or a fourth loaf of bread would have a lower marginal utility than a grain of gold forgone. However, the marginal utility of each good will still differ in rank from that of every other and will not be equal to that of any other.

Another, even more curious doctrine holds that in equilibrium the ratio of the marginal utilities of the various goods equals the ratio of their prices. Without entering in detail into the manner by which these writers arrive at this conclusion, we can see its absurdity clearly, since utilities are not quantities and therefore cannot be divided.

These fallacies stem from a related one: the idea that an individual will act so as to *equalize* the marginal utility that any good will have in each of its uses. Applied to money, this would imply that the marginal utility of a unit of money is equal for each field of expenditure for each person. This is incorrect, as we have just seen that the marginal utilities of the various goods are not equalized. Successive units of a good are allocated to the most desired end, then to the next most desired satisfaction, etc. If there are several uses for the good, each one involving many possible units, the marginal utility of a unit in each use continues to decline as the supply increases. As goods are purchased, the marginal utility of each good purchased diminishes, and a man may allocate his money first to one use, then to another, and then to the first use again. However, in no case is there any equalization of marginal utilities.

The dogma of the equalization of marginal utilities may best be illustrated in the following passage from perhaps the originator of this line of argument:

> Let s be the whole stock of some commodity, and let it be capable of two distinct uses. Then we may represent the two quantities appropriated to these uses by x_1 and y_1, it being a condition that x_1 plus y_1 equal s. The person may be conceived as successively expending small quantities of the commodity; now it

> is the inevitable tendency of human nature to choose that course which appears to offer the greatest advantage at the moment. Hence, when the person remains satisfied with the distribution he has made, it follows that no alteration would yield him more pleasure; which amounts to saying that an increment of commodity would yield exactly as much utility in one use as in another. Let Δu_1, Δu_2, be the increments of utility, which might arise respectively from consuming an increment of commodity in the two different ways. When the distribution is completed, we ought to have $\Delta u_1 = \Delta u_2$ . . . The same reasoning . . . will evidently apply to any two uses, and hence to all uses simultaneously, so that we obtain a series of equations less numerous by a unit than the number of ways of using the commodity. The general result is that the commodity, if consumed by a perfectly wise being, must be consumed with a maximum production of utility.[37]

The chief errors here consist in conceiving utility as a certain quantity, a definite function of an increment in the commodity, and in treating the problem in terms of infinitely small steps. Both procedures are fallacious. Utilities are not quantities, but ranks, and the successive amounts of a commodity that are used are always discrete units, not infinitely small ones. If the units are discrete, then the rank of each unit differs from that of every other, and there can be no equalization.

Many errors in discussions of utility stem from an assumption that it is some sort of quantity, measurable at least in principle. When we refer to a consumer's "maximization" of utility, for example, we are *not* referring to a definite stock or quantity of something to be maximized. We refer to the *highest-ranking position* on the individual's value scale. Similarly, it is the

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[37]W. Stanley Jevons, *The Theory of Political Economy* (3rd ed.; London: Macmillan & Co., 1888), pp. 59–60.

assumption of the infinitely small, added to the belief in utility as a quantity, that leads to the error of treating marginal utility as the mathematical derivative of the integral "total utility" of several units of a good. Actually, there is no such relation, and there is no such thing as "total utility," only the marginal utility of a *larger-sized* unit. The size of the unit depends on its relevance to the particular action.[38]

This illustrates one of the grave dangers of the mathematical method in economics, since this method carries with it the bias of the assumption of continuity, or the infinitely small step. Most writers on economics consider this assumption a harmless, but potentially very useful, fiction, and point to its great success in the field of physics. They overlook the enormous differences between the world of physics and the world of human action. The problem is not simply one of acquiring the microscopic measuring tools that physics has developed. The crucial difference is that physics deals with inanimate objects that *move* but do not *act*. The movements of these objects can be investigated as being governed by precise, quantitatively determinate laws, well expressed in terms of mathematical functions. Since these laws precisely describe definite paths of movement, there is no harm at all in introducing simplified assumptions of continuity and infinitely small steps.

Human beings, however, do not move in such fashion, but act purposefully, applying means to the attainment of ends. Investigating causes of human action, then, is radically different from investigating the laws of motion of physical objects. In particular, human beings act on the basis of things that are *relevant* to their action. The human being cannot see the infinitely small step; it therefore has no meaning to him and no relevance to his action. Thus, if one ounce of a good is the smallest unit that human beings will bother distinguishing, then the ounce is

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[38]See Appendix A below, "The Diminishing Marginal Utility of Money," and Rothbard, "Toward a Reconstruction of Utility and Welfare Economics."

the basic unit, and we cannot simply assume infinite continuity in terms of small fractions of an ounce.

The key problem in utility theory, neglected by the mathematical writers, has been *the size of the unit*. Under the assumption of mathematical continuity, this is not a problem at all; it could hardly be when the mathematically conceived unit is infinitely small and therefore literally *sizeless*. In a praxeological analysis of human action, however, this becomes a basic question. The relevant size of the unit varies according to the particular situation, and in each of these situations this relevant unit becomes the *marginal* unit. There is none but a simple ordinal relation among the utilities of the variously sized units.

The tendency to treat problems of human action in terms of equality of utility and of infinitely small steps is also apparent in recent writings on "indifference maps." Almost the entire edifice of contemporary mathematical economics in consumption theory has been built on the "indifference" assumption. Its basis is the treatment of large-sized classes of combinations of two goods, between which the individual is indifferent in his valuations. Furthermore, the differences between them are infinitely small, so that smooth lines and tangents can be drawn. The crucial fallacy is *that "indifference" cannot be a basis for action.* If a man were really indifferent between two alternatives, he could not make any choice between them, and therefore the choice could not be revealed in action. We are interested in analyzing human action. Any action demonstrates choice based on preference: preference for one alternative over others. There is therefore no role for the concept of indifference in economics or in any other praxeological science. If it is a matter of indifference for a man whether he uses 5.1 or 5.2 ounces of butter for example, because the unit is too small for him to take into consideration, then there will be no occasion for him to act on this alternative. He will use butter in ounce units, instead of tenths of an ounce. For the same reason, there are no infinitely small steps in human action. Steps are only

those that are significant to human beings; hence, they will always be finite and discrete.

The error in reasoning on the basis of "indifference" is the failure to appreciate the fact that a problem important in the field of *psychology* may have no significance in the realm of praxeology, to which economics belongs. Psychology deals with the problem of *how* or why the individual forms value scales, and for this question it is relevant to consider whether the individual is decisive or inclined to be "indifferent" between various alternatives. Praxeology, however, is a logical science based on the existence of action *per se*; it is interested in explaining and interpreting real action in its universal sense rather than in its concrete content. Its discussion of value scales is therefore a deduction from the nature of human action and not a speculative essay on the internal workings of the mind. It is consequently irrelevant for praxeology whether a man, in having to decide between alternatives *A* and *B*, makes a choice firmly and decisively, or whether he decides by tossing a coin. This is a problem for psychology; praxeology is concerned only with the fact that he chooses, for example, *A* rather than *B*, and that therefore *A* ranked higher in his preference scale than *B*. Utility theory is not concerned with psychology or the internal operations of the mind, but is part of a separate science based on the logical consequences of the simple existence of action.

Neither is praxeology based on behaviorist psychology. In fact, in so far as praxeology touches on psychology, its principles are the reverse of those of behaviorism. As we have seen, far from simply observing action in the same way as we observe and record the movements of stones, praxeology is based on a fundamental distinction between human action and the motion of inorganic matter, namely, that human action is *motivated* toward the achievement of certain ends. Means and resources are used for the achievement of these ends. Far from leaving mind out of the picture, praxeology rests fundamentally on the basic axiom of action, action caused and put into effect by human minds. However, praxeology is not concerned with the content of these

ends, the manner of arriving at them, or their order; it is concerned with analysis of the logical implications of the existence of these ends.

Some writers, in their artificial separation of value scales from real action, have actually gone to the length of attempting to discover people's indifference maps by means of questionnaires. These attempts, besides being open to the stricture that indifference is not praxeologically valid, fail to realize that value scales can and do change continually and that therefore such questionnaires have no relevance to the business of economics. Economics is interested not in value scales professed in response to questionnaires, but in the values implied by real action. As Ludwig von Mises states, with regard to all attempts to separate value scales from action:

> . . . the scale of value is nothing but a constructed tool of thought. The scale of value manifests itself only in real acting; it can be discerned only from the observation of real acting. It is therefore impermissible to contrast it with real acting and to use it as a yardstick for the appraisal of real actions.[39]

Since indifference is not relevant to human action, it follows that two alternatives for choice cannot be ranked equally on an individual's value scale. If they are really ranked equally, then

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[39]Mises, *Human Action*, p. 102. Dr. Bernardelli justly says:

> If someone asks me *in abstracto* whether my love for my country is greater than my desire for freedom, I am somewhat at a loss how to answer, but actually having to make a choice between a trip in my country and the danger of losing my freedom, the order of intensities of my desire becomes only too determinate. (Harro F. Bernardelli, "What has Philosophy to Contribute to the Social Sciences, and to Economics in Particular?" *Economica*, November, 1936, p. 451)

Also see our discussion of "consumer surplus" in section 4 above.

they cannot be alternatives for choice, and are therefore not relevant to action. Hence, not only are alternatives ranked ordinally on every man's value scale, but they are ranked *without ties*; i.e., every alternative has a different rank.

The famous illustration used by the indifference theorists to demonstrate the relevance of indifference to human action is the case of Buridan's ass. This is the fable of the ass who stands, hungry, equidistant from two equally attractive bales of hay, or, thirsty, equidistant from two water holes. Since the two bales or water holes are equally attractive in every way, the ass can choose neither one and must therefore starve. This example is supposed to prove the great relevance of indifference to action and to be an indication of the way that indifference is *revealed* in action. Compounding confusion, Schumpeter refers to this ass as "perfectly rational."[40]

In the first place, it is of course difficult to conceive of an ass or a person that could be *less* rational. He is confronted not with *two* choices, but with *three*, the third being to starve where he is. Even on the indifferentists' own grounds, this third choice will be ranked lower than the other two on the actor's value scale. He will *not* choose starvation.

If both the left and right water holes are equally attractive, and he can find no reason for preferring one or the other, the ass or the man will allow pure chance, such as a flip of a coin, to decide on either one. But on one he must and will decide. Again, we are interested in preference *as revealed through choice* and not in the *psychology* of preferences. If the flipped coin indicated the left water hole, then the left water hole was finally placed higher on the actor's value scale, as was revealed when he went toward it. Far from being a proof of the importance of indifference, the case of Buridan's ass is an excellent demonstration of the fact that indifference can play no part whatever in an analysis of human action.

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[40]Schumpeter, *History of Economic Analysis*, pp. 94 n. and 1064.

Another way of attempting a justification of the indifference analysis is to suppose that a man, Jones, chooses each of two alternatives *A* and *B* about 50 percent of the time, upon repeated opportunities. This shifting is alleged to be a demonstration that Jones is really indifferent as between the two alternatives. Yet what is the reasonable inference? Clearly, that in some cases, *A* was *preferred* to *B* on Jones' value scale, and that in the others, the positions were shifted so that *B* was *preferred* to *A*. *In no case* was there indifference between the two alternatives. The shift of choice indicates a shift in the preference scale, and not indifference on a constant value scale. Of course, if we were dealing with psychology, we could enter into a discussion of intensities of preferences and opine that the man, with respect to his underlying personality, was relatively indifferent rather than intensely biased, as between the two alternatives. But in praxeology we are not interested in the concrete content of his value scales nor in his underlying personality. We are interested in value scales as revealed through choice.

Appendix A
The Diminishing Marginal Utility of Money

Some writers, while admitting the validity of the law of diminishing marginal utility for all other goods, deny its application to money. Thus, for example, a man may allocate each ounce of money to his most preferred uses. However, suppose that it takes 60 ounces of gold to buy an automobile. Then the acquisition of the 60th ounce, which will enable him to buy an automobile, will have considerably more value than the acquisition of the 58th or of the 59th ounce, which will not enable him to do so.

This argument involves a misconception identical with that of the argument about the "increasing marginal utility of eggs" discussed in chapter 1, above.[41] There we saw that it is

[41]See chapter 1, pp. 73–74.

erroneous to argue that because a fourth egg might enable a man to bake a cake, which he could not do with the first three, the marginal utility of the eggs has increased. We saw that a "good" and, consequently, the "unit" of a good are defined in terms of whatever quantity of which the units give an *equally serviceable supply*. This last phrase is the key concept. The fourth egg was not equally serviceable as, and therefore not interchangeable with, the first egg, and therefore a *single egg* could not be taken as the *unit*. The units of a good must be homogeneous in their serviceability, and it is only to such units that the law of utility applies.

The situation is similar in the case of money. The serviceability of the money commodity lies in its use in exchange rather than in its direct use. Here, therefore, a "unit" of money, in its relevance to individual value scales, must be such as to be homogeneous with every other unit in exchange-value. If another ounce permits a purchase of an automobile, and the issue is relevant to the case in question, then the "unit" of the money commodity must be taken not as one ounce, but as 60 ounces.

All that needs to be done, then, to account for and explain "discontinuities" because of possible large purchases is to *vary the size of the monetary unit* to which the law of utility and the preferences and choices apply.[42] This is what each man actually does in practice. Thus, suppose that a man is considering what to do with 60 ounces of gold. Let us assume, for the sake of simplicity, that he has a choice of parceling out the 60 ounces into five-ounce units. This, we will say, is alternative *A*. In that case, he decides that he will parcel out each five ounces in accordance with the highest rankings on his utility scale. The first five ounces will be allocated to, or spent on, the most highly valued use *that can be served by five ounces*; the next five ounces to the next most highly valued use, and so on. Finally, his 12th five

[42]Cf. the excellent discussion of the sizes of units in Wicksteed, *Common Sense of Political Economy*, I, 96–101 and 84.

ounces he will allocate to his 12th most highly valued use. Now, however, he is also confronted with alternative *B*. This alternative is to spend the entire 60 ounces on whatever single use will be most valuable on his value scale. This will be the single highest-ranked use for a *unit* of 60 ounces of money. Now, to decide which alternative course he will take, the man compares the utility of the highest-ranked single use of a lump sum of 60 ounces (say, the purchase of a car) with the utility of the "package"—the expenditure of five ounces on *a*, five ounces on *b*, etc. Since the man knows his own preference scale—otherwise he could never choose any action—it is no more difficult to assume that he can rank the utility of the whole package with the utility of purchasing a car than to assume that he can rank the uses of each five ounces. In other words, he posits a unit of 60 ounces and determines which alternative ranks higher on his value scale: purchase of the car or a certain package distribution by five-ounce (or other-sized) units. At any rate, the 60 ounces are distributed to what each man believes will be its highest-ranking use, and the same can be said for each of his monetary exchange decisions.

Here we must stress the fact that there is no numerical relation—aside from pure ordinal rank—between the marginal utilities of the various five-ounce units and the utilities of the 60-ounce units, and this is true even of the package combination of distribution that we have considered. All that we can say is that the utility of 60 ounces will clearly be higher than any *one* of the utilities of five ounces. But there is no way of determining the numerical difference. Whether or not the rank of the utility of this *package* is higher or lower than the utility of the car purchase, moreover, can be determined only by the individual himself.

We have reiterated several times that utility is only ranked, and never measurable. There is no numerical relationship whatever between the utility of large-sized and smaller-sized units of a good. Also, there is no numerical relationship between the utilities of one unit and several units of the same

size. Therefore, there is no possible way of adding or combining marginal utilities to form some sort of "total utility"; the latter can only be a *marginal* utility of a large-sized unit, and there is no numerical relationship between that and the utilities of small units.

As Ludwig von Mises states:

> Value can rightly be spoken of only with regard to specific acts of appraisal. . . . Total value can be spoken of only with reference to a particular instance of an individual . . . having to choose between the total available quantities of certain economic goods. Like every other act of valuation, this is complete in itself. . . . When a stock is valued as a whole, its marginal utility, that is to say, the utility of the last available unit of it, coincides with its total utility, since the total supply is one indivisible quantity.[43]

There are, then, two laws of utility, both following from the apodictic conditions of human action: first, that *given the size of a unit of a good, the (marginal) utility of each unit decreases as the supply of units increases; second, that the (marginal) utility of a larger-sized unit is greater than the (marginal) utility of a smaller-sized unit*. The first is the law of diminishing marginal utility. The second has been called the law of increasing total utility. The relationship between the two laws and between the items considered in both is purely one of rank, i.e., ordinal. Thus, four eggs (or pounds of butter, or ounces of gold) are worth more on a value scale than three eggs, which in turn are worth more than two eggs, two eggs more than one egg, etc. This illustrates the second law. One egg will be worth more than a second egg, which will be worth more than a third egg, etc. This illustrates

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[43]Mises, *Theory of Money and Credit*, pp. 46–47. *Also see* Harro F. Bernardelli, "The End of the Marginal Utility Theory," *Economica*, May, 1938, pp. 205–07; and Bernardelli, "A Reply to Mr. Samuelson's Note," *Economica*, February, 1939, pp. 88–89.

the first law. But there is no arithmetical relationship between the items apart from these rankings.[44]

The fact that the units of a good must be homogeneous in serviceability means, in the case of money, that the given array of money prices remains constant. The serviceability of a unit of money consists in its direct use-value and especially in its exchange-value, which rests on its power to purchase a myriad of different goods. We have seen in our study of the money regression and the marginal utility of money that the evaluation and the marginal utility of the money commodity rests on an already given structure of money prices for the various goods. It is clear that, in any given application of the foregoing law, the money prices cannot change in the meantime. If they do, and for example, the fifth unit of money is valued more highly than the fourth unit because of an intervening change in money prices, then the "units" are no longer equally serviceable and therefore cannot be considered as homogeneous.

As we have seen above, this power of the monetary unit to purchase quantities of various goods is called the *purchasing power of the monetary unit.* This purchasing power of money consists of the *array* of all the given money prices on the market at any particular time, considered in terms of the prices of goods per unit of money. As we saw in the regression theorem above, today's purchasing power of the monetary unit is determined by today's marginal utilities of money and of goods, expressed in demand schedules, while today's marginal utility of money is directly dependent on yesterday's purchasing power of money.[45]

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[44]It must always be kept in mind that "total" and "marginal" do not have the same meaning, or mutual relation, as they do in the calculus. "Total" is here another form of "marginal." Failure to realize this has plagued economics since the days of Jevons and Walras.

[45]For further analysis of the determination of the purchasing power of money and of the demand for and the supply of money, see chapter 11 below on "Money and Its Purchasing Power."

Appendix B
On Value

Economics has made such extensive use of the term "value" that it would be inexpedient to abandon it now. However, there is undoubtedly confusion because the term is used in a variety of different ways. It is more important to keep distinct the subjective use of the term in the sense of *valuation* and preference, as against the "objective" use in the sense of *purchasing power* or price on the market. Up to this chapter, "value" in this book has meant the subjective individual "valuing" process of ranking goods on individual "value scales."

In this chapter, the term "value of capital" signifies the purchasing power of a durable good in terms of money on the market. If a house can be sold on the market for 250 ounces of gold, then its "capital value" is 250 ounces. The difference between this and the subjective type of value is apparent. When a good is being subjectively valued, it is ranked by someone in relation to other goods on his value scale. When a good is being "evaluated" in the sense of finding out its capital value, the evaluator *estimates* how much the good could be sold for in terms of money. This sort of activity is known as *appraisement* and is to be distinguished from subjective evaluation. If Jones says: "I shall be able to sell this house next week for 250 ounces," he is "appraising" its purchasing power, or "objective exchange-value," at 250 ounces of gold. He is not thereby ranking the house and gold on his own value scale, but is estimating the money price of the house at some point in the future. We shall see below that appraisement is fundamental to the entire economic system in an economy of indirect exchange. Not only do the renting and selling of consumers' goods rest on appraisement and on hope of monetary profits, but so does the activity of all the investing producers, the keystone of the entire productive system. We shall see that the term "capital value" applies, not only to durable consumers' goods, but to all nonhuman factors of production as well—i.e., land and capital goods, singly and in various aggregates. The use and purchase

of these factors rest on appraisement by entrepreneurs of their eventual yield in terms of monetary income on the market, and it will be seen that their capital value on the market will also tend to be equal to the discounted sum of their future yields of money income.[46]

[46]On appraisement and valuation, cf. Mises, *Human Action*, pp. 328–30.

5

PRODUCTION: THE STRUCTURE

1. Some Fundamental Principles of Action

THE ANALYSIS OF PRODUCTION ACTIVITIES—the actions that eventually result in the attainment of consumers' goods—is a highly intricate one for a complex, monetary market economy. It is best, therefore, to summarize now some of the most applicable of the fundamental principles formulated in chapter 1. In that chapter we applied those principles to a Crusoe economy only. Actually, however, they are applicable to any type of economy and are the indispensable keys to the analysis of the complex modern economy. Some of these fundamental principles are:

(1) Each individual acts so that the expected psychic revenue, or achievement of utility, from his action will exceed its psychic cost. The latter is the forgone utility of the next best alternative that he could adopt with the available means. Both the psychic revenue and the psychic cost are purely subjective to the individual. Since all action deals with units of supply of a good, we may refer to these subjective estimates as marginal utility and marginal cost, the *marginal* signifying action in steps.

(2) Each person acts in the *present* instant, on the basis of present value scales, to obtain *anticipated* end results *in the future*. Each person acts, therefore, to arrive at a certain satisfactory state in the future. Each has a temporal horizon of

future dates toward which his actions are directed. He uses present given *means*, according to his technological ideas, to attain his ends in the future.

(3) Every person prefers and will attempt to achieve the satisfaction of a given end in the present to the satisfaction of that end in the future. This is the law of time preference.

(4) All goods are distributed by each individual in accordance with their utility to him. A stock of the units of a good is allocated first to its most highly valued uses, then to its next most highly valued use, etc. The definition of a *good* is that it consists of an interchangeable supply of one or more units. Therefore, every unit will always be valued equally with every other. If a unit of a stock is given up or disposed of, the *least highly valued use* for one unit will be the one given up. Therefore, the value of each unit of the supply of a good is equal to the utility of the least highly valued of its present uses. This marginal utility diminishes as the stock of each good increases. The marginal utility of *addition* of a unit to the stock equals the utility of a unit in its next most highly valued use, i.e., *the most highly valued of the not yet satisfied ends*. This provides us with the law of marginal utility and the law of allocation of goods.

(5) In the technical combination of factors of production to yield a product, as one factor varies and the others remain constant, there is an optimum point—a point of maximum average product produced by the factor. This is the law of returns. It is based on the very fact of the existence of human action.

(6) And we know from chapter 2 that the price of any good on the market will tend to be *uniform* throughout the market. The price is determined by supply and demand schedules, which are themselves determined by the value scales of the individuals in the market.

2. The Evenly Rotating Economy

Analysis of the activities of production in a monetary market economy is a highly complex matter. An explanation of these

activities, in particular the determination of prices and therefore the return to factors, the allocation of factors, and the formation of capital, can be developed only if we use the mental construction of the *evenly rotating economy*.

This construction is developed as follows: We realize that the real world of action is one of continual change. Individual value scales, technological ideas, and the quantities of means available are always changing. These changes continually impel the economy in various directions. Value scales change, and consumer demand shifts from one good to another. Technological ideas change, and factors are used in different ways. Both types of change have differing effects on prices. Time preferences change, with certain effects on interest and capital formation. The crucial point is this: before the effects of any one change are completely worked out, other changes intervene. What we must consider, however, by the use of reasoning, is what would happen if no changes intervened. In other words, what would occur if value scales, technological ideas, and the given resources remained constant? What would then happen to prices and production and their relations? Given values, technology, and resources, whatever their concrete form, remain constant. In that case, the economy tends toward a state of affairs in which it is *evenly rotating*, i.e., in which the same activities tend to be repeated in the same pattern over and over again. Rates of production of each good remain constant, all prices remain constant, total population remains constant, etc. Thus, if values, technology, and resources remain constant, we have two successive states of affairs: (*a*) the period of transition to an unchanging, evenly rotating economy, and (*b*) the unchanging round of the evenly rotating economy itself. This latter stage is the state of *final equilibrium*. It is to be distinguished from the market equilibrium prices that are set each day by the interaction of supply and demand. *The final equilibrium state is one which the economy is always tending to approach.* If our *data*—values, technology, and resources—remained constant, the economy would move toward the final equilibrium

position and remain there. In actual life, however, the data are always changing, and therefore, before arriving at a final equilibrium point, the economy must shift direction, towards some other final equilibrium position.

Hence, the final equilibrium position is always changing, and consequently no one such position is ever reached in practice. But even though it is never reached in practice, it has a very real importance. In the first place, it is like the mechanical rabbit being chased by the dog. It is never reached in practice and it is always changing, but it explains the direction in which the dog is moving. Secondly, the complexity of the market system is such that we cannot analyze factor prices and incomes in a world of continual change unless we first analyze their determination in an evenly rotating world where there is no change and where given conditions are allowed to work themselves out to the full.

Certainly at this stage of inquiry we are not interested in ethical evaluations of our knowledge. We are attaching no ethical merit to the equilibrium position. It is a concept for scientific explanation of human activity.

The reader might ask why such an "unrealistic" concept as final equilibrium is permissible, when we have already presented and will present grave strictures against the use of various unrealistic and antirealistic premises in economics. For example, as we shall see, the theory of "pure competition," so prevalent among writers today, is based on impossible premises. The theory is then worked out along these lines and not only applied uncritically to the real world, but actually used as an ethical base from which to criticize the real "deviations" from this theory. The concepts of "indifference classes" and of infinitely small steps are other examples of false premises that are used as the basis of highly elaborate theoretical structures. The concept of the evenly rotating economy, however, when used with care, is not open to these criticisms. For this is an ever-present force, since it is the goal toward which the actual system is always moving, the *final position of rest*, at which, on the basis

of the given, actually existing value scales, all individuals would have attained the highest positions on their value scales, given the technology and resources. This concept, then, is of legitimate and realistic importance.

We must always remember, however, that while a final equilibrium is the goal toward which the economy is moving at any particular time, changes in the data alter this position and therefore shift the direction of movement. Therefore, *there is nothing in a dynamic world that is ethically better about a final equilibrium position*. As a matter of fact, since wants are unsatisfied (otherwise there would be no action), such a position of no change would be most unfortunate, since it would imply that no further want-satisfaction would be possible. Furthermore, we must remember that a final equilibrium situation tends to be, though it can never actually be, the *result* of market activity, and not the *condition* of such activity. Far too many writers, for example, discerning that in the evenly rotating economy entrepreneurial profits and losses would all be zero, have somehow concluded that this must be the *condition* for any legitimate activity on the market. There could hardly be a greater misconception of the market or a greater abuse of the equilibrium concept.

Another danger in the use of this concept is that its purely static, essentially timeless, conditions are all too well suited for the use of mathematics. Mathematics rests on *equations*, which portray mutual relationships between two or more "functions." Of themselves, of course, such mathematical procedures are unimportant, since they do not establish causal relationships. They are of the greatest importance in physics, for example, because that science deals with certain observed regularities of motion by particles of matter that we must regard as unmotivated. These particles move according to certain precisely observable, exact, quantitative laws. Mathematics is indispensable in formulating the laws among these variables and in formulating theoretical explanations for the observed phenomena. In human action, the situation is entirely different, if not diametrically opposite. Whereas in physics, causal relations can only be

assumed hypothetically and later approximately verified by referring to precise observable regularities, in praxeology we *know* the causal force at work. This causal force is human action, *motivated*, purposeful behavior, directed at certain ends. The universal aspects of this behavior can be logically analyzed. We are not dealing with "functional," quantitative relations among variables, but with human reason and will causing certain action, which is not "determinable" or reducible to outside forces. Furthermore, since the data of human action are always changing, there are no precise, quantitative relationships in human history. In physics, the quantitative relationships, or laws, are constant; they are considered to be valid for any point in human history, past, present, or future. In the field of human action, there are no such quantitative constants. There are no constant relationships valid for different periods in human history. The only "natural laws" (if we may use such an old-fashioned but perfectly legitimate label for such constant regularities) in human action are *qualitative* rather than *quantitative*. They are, for example, precisely the laws educed in praxeology and economics—the fact of action, the use of means to achieve ends, time preference, diminishing marginal utility, etc.[1]

Mathematical equations, then, are appropriate and useful where there are constant quantitative relations among unmotivated variables. They are singularly inappropriate in praxeology and economics. In the latter fields, verbal, logical analysis of

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[1]Another difference is one we have already discussed: that mathematics, particularly the calculus, rests in large part on assumptions of infinitely small steps. Such assumptions may be perfectly legitimate in a field where behavior of unmotivated matter is under study. But *human action* disregards infinitely small steps precisely because they *are* infinitely small and therefore have no relevance to human beings. Hence, the action under study in economics must always occur in finite, discrete steps. It is therefore incorrect to say that such an assumption may just as well be made in the study of human action as in the study of physical particles. In human action, we may describe such assumptions as being not simply unrealistic, but *antirealistic*.

action and its processes through time is the appropriate method. It is not surprising that the main efforts of the "mathematical economists" have been directed toward describing the final equilibrium state by means of equations. For in this state, since activities merely repeat themselves, there seems to be more scope for describing conditions by means of functional equations. These equations, at best, however, can do no more than describe this equilibrium state.

Aside from doing no more than verbal logic can do, and therefore violating the scientific principle of *Occam's razor*—that science should be as simple and clear as possible—such a use of mathematics contains grave errors and defects within itself. In the first place, it cannot describe the *path* by which the economy approaches the final equilibrium position. This task can be performed only by verbal, logical analysis of the causal action of human beings. It is evident that this task is the important one, since it is this analysis that is significant for human action. Action moves along a path and is not describable in an unchanging, evenly rotating world. The world is an uncertain one, and we shall see shortly that we cannot even pursue to its logical conclusion the analysis of a static, evenly rotating economy. The assumption of an evenly rotating economy is only an auxiliary tool in aiding us in the analysis of real action. Since mathematics is least badly accommodated to a static state, mathematical writers have tended to be preoccupied with this state, thus providing a particularly misleading picture of the world of action. Finally, the mathematical equations of the evenly rotating economy describe only a static situation, outside of time.[2] They differ drastically from the mathematical equations of

[2]The mathematical economists, or "econometricians," have been trying without success for years to analyze the path of equilibrium as well as the equilibrium conditions themselves. The econometrician F. Zeuthen recently admitted that such attempts cannot succeed. All that mathematics can describe is the final equilibrium point. See the remarks of F. Zeuthen at the 16th European meeting of the Econometric Society, in *Econometrica*, April, 1955, pp. 199–200.

physics, which describe a *process through time*; it is precisely through this description of constant, quantitative relations in the *motion* of elements that mathematics renders its great service in natural science. How different is economics, where mathematics, at best, can only inadequately describe a timeless end result![3]

The use of the mathematical concept of "function" is particularly inappropriate in a science of human action. On the

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[3]For a brilliant critique of the use of mathematics in economics, *see* Mises, *Human Action*, pp. 251, 347–54, 697–99, 706–11. *Also see* Mises, "Comments about the Mathematical Treatment of Economic Problems," *Studium Generale* VI, 2 (1953), (Springer Verlag: unpublished translation by Helena Ratzka); Niksa, "Role of Quantitative Thinking in Modern Economic Theory"; Ischboldin, "Critique of Econometrics"; Paul Painlevé, "The Place of Mathematical Reasoning in Economics" in Louise Sommer, ed., *Essays in European Economic Thought* (Princeton, N.J.: D. Van Nostrand, 1960), pp. 120–32; and Wieser, *Social Economics*, pp. 51 ff. For a discussion of the logical method of economics, see Mises, *Human Action* and the neglected work, J.E. Cairnes, *The Character and Logical Method of Political Economy* (2nd ed.; London: Macmillan & Co., 1888). *Also see* Marian Bowley, *Nassau Senior and Classical Economics* (New York: Augustus M. Kelley, 1949), pp. 55–65. If any mathematics has been used in this treatise, it has been only along the lines charted by Cairnes:

> I have no desire to deny that it may be possible to employ geometrical diagrams or mathematical formulae for the purpose of exhibiting economic doctrines *reached by other paths*. . . . What I venture to deny is the doctrine which Professor Jevons and others have advanced—that economic knowledge can be extended by such means; that Mathematics can be applied to the development of economic truth, as it has been applied to the development of mechanical and physical truth and unless it can be shown either that mental feelings admit of being expressed in precise quantitative forms, or, on the other hand, that economic phenomena do not depend on mental feelings, I am unable to see how this conclusion can be avoided. (Cairnes, *Character and Logical Method of Political Economy*, pp. iv–v)

one hand, action itself is *not* a function of anything, since "function" implies definite, unique, mechanical regularity and determination. On the other hand, the mathematics of simultaneous equations, dealing in physics with unmotivated motion, stresses mutual determination. In human action, however, the known causal force of action unilinearly determines the results. This gross misconception by mathematically inclined writers on the study of human action was exemplified during a running attack on Eugen Böhm-Bawerk, one of the greatest of all economists, by Professor George Stigler:

> . . . yet the postulate of continuity of utility and demand functions (which is unrealistic only to a minor degree, and essential to analytic treatment) is never granted. A more important weakness is Böhm-Bawerk's failure to understand some of the most essential elements of modern economic theory, the concepts of mutual determination and equilibrium (developed by the use of the theory of simultaneous equations). Mutual determination is spurned for the older concept of cause and effect.[4]

The "weakness" displayed here is not that of Böhm-Bawerk, but of those, like Professor Stigler, who attempt vainly and fallaciously to construct economics on the model of mathematical physics, specifically, of classical mechanics.[5]

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[4]George J. Stigler, *Production and Distribution Theories* (New York: Macmillan & Co., 1946), p. 181. For Carl Menger's attack on the concept of mutual determination and his critique of mathematical economics in general, *see* T.W. Hutchison, *A Review of Economic Doctrines, 1870–1929* (Oxford: The Clarendon Press, 1953), pp. 147–48, and the interesting article by Emil Kauder, "Intellectual and Political Roots of the Older Austrian School," *Zeitschrift für Nationalökonomie* XVII, 4 (1958), 412 ff.

[5]Stigler appends a footnote to the above paragraph which is meant as the *coup de grace* to Böhm-Bawerk: "Böhm-Bawerk was not trained in mathematics." Stigler, *Production and Distribution Theories*. Mathematics, it must be realized, is only the servant of logic and reason, and not their master. "Training" in mathematics is no more necessary to the realization of

To return to the concept of the evenly rotating economy, the error of the mathematical economists is to treat it as a real and even ideal state of affairs, whereas it is simply a mental concept enabling us to analyze the market and human activities on the market. It is indispensable because it is the goal, though ever-shifting, of action and exchange; on the other hand, the data can never remain unchanged long enough for it to be brought into being. We cannot conceive in all consistency of a state of affairs without change or uncertainty, and therefore without action. The evenly rotating state, for example, would be incompatible with the existence of money, the very medium at the center of the entire exchange structure. For the money commodity is demanded and held only because it is more marketable than other commodities, i.e., because the holder is more sure of being able to exchange it. In a world where prices and demands remain perpetually the same, such demand for money would be unnecessary. Money is demanded and held only because it gives greater assurance of finding a market and because of the uncertainties of the person's demands in the near future. If everyone, for example, knew his spending precisely over his entire future—and this would be known under the evenly rotating system—there would be no point in his keeping a cash balance of money. It would be invested so that money would be returned

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its uselessness for and inapplicability to the sciences of human action than, for example, "training" in agricultural techniques is essential to knowing that they are not applicable on board an ocean liner. Indeed, training in mathematics, without adequate attention to the epistemology of the sciences of human action, is likely to yield unfortunate results when applied to the latter, as this example demonstrates. Böhm-Bawerk's greatness as an economist needs no defense at this date. For a sensitive tribute to Böhm-Bawerk, *see* Joseph A. Schumpeter, "Eugen von Böhm-Bawerk, 1851–1914" in *Ten Great Economists* (New York: Oxford University Press, 1951), pp. 143–90. For a purely assertive and unsupported depreciation of Böhm-Bawerk's stature as an economist, *see* Howard S. Ellis' review of Schumpeter's book in the *Journal of Political Economy*, October, 1952, p. 434.

in precisely the needed amounts on the day of expenditure. But if no one wishes to hold money, there will be no money and no system of money prices. The entire monetary market would break down. Thus, the evenly rotating economy is unrealistic, for it cannot actually be established and we cannot even conceive consistently of its establishment. But the idea of the evenly rotating economy is indispensable in analyzing the real economy; through hypothesizing a world where all change has worked itself out, we can analyze the directions of actual change.

3. The Structure of Production: A World of Specific Factors

Crucial to understanding the process of production is the question of the *specificity* of factors, a problem we touched on in chapter 1. A *specific* factor is one suitable to the production of only one product. A *purely nonspecific* factor would be one equally suited to the production of all possible products. It is clear that not all factors could be purely nonspecific, for in that case all factors would be purely interchangeable, i.e., there would be need for only one factor. But we have seen that human action implies more than one existing factor. Even the existence of *one* purely nonspecific factor is inconceivable if we properly consider "suitability in production" in *value* terms rather than in *technological* terms.[6] In fact, if we analyze the concept, we find that there is no sense in saying that a factor is "equally suitable" in purely technological terms, since there is no way of comparing the physical quantities of one product with those of another. If X can help to produce three units of A or two units of B, there is no way by which we can compare these units. Only the *valuation* of consumers establishes a hierarchy of valued goods, their interaction

[6]The literature in economics has been immeasurably confused by writers on production theory who deal with problems in terms of technology rather than valuation. For an excellent article on this problem, cf. Lionel Robbins, "Remarks upon Certain Aspects of the Theory of Costs," *Economic Journal*, March, 1934, pp. 1–18.

setting the prices of the consumers' goods. (Relatively) nonspecific factors, then, are allocated to those products that the consumers have valued most highly. It is difficult to conceive of any good that would be purely nonspecific and equally valuable in all processes of production. Our major distinction, then, is between the *specific* factor, which can be used in only one line of production, and the *nonspecific* factor (of varying degrees of convertibility), which can be used in more than one production process.

Now let us for a time consider a world where every good is produced *only* by several *specific* factors. In this world, a world that is conceivable, though highly unlikely, every person, every piece of land, every capital good, would necessarily be irrevocably committed to the production of one particular product. There would be no alternative uses of any good from one line of production to another. In the entire world of production, then, there would be little or no "economic problem," i.e., no problem of allocating scarce means to alternative ends. Certainly, the *consumers* would still have to allocate their scarce monetary resources to be most preferred consumers' goods. In the nonmarket sphere, everyone—again as a consumer—would have to allocate his time and energies to the enjoyment of various consumers' goods. There would still, in the sphere of production of exchangeable goods, be *one* allocation that every man would make: how much time to devote to labor and how much to leisure. But there would be no problem of *which* field to labor in, no problem of what to do with any piece of land, no problem of how to allocate capital goods. The employment of the factors would all depend on the consumers' demand for the final product.

The structure of production in such a world of purely specific factors would be somewhat as in Figure 39. In this diagram, we see two typical consumers' goods, *A* and *B*. Each, depicted as a solid rectangle at the bottom of the diagram, is produced by co-operating factors of the next higher rank, designated *P*1, or the first order of producers' goods. The *capital goods* of the first rank are, in turn, produced with the help of co-operating factors,

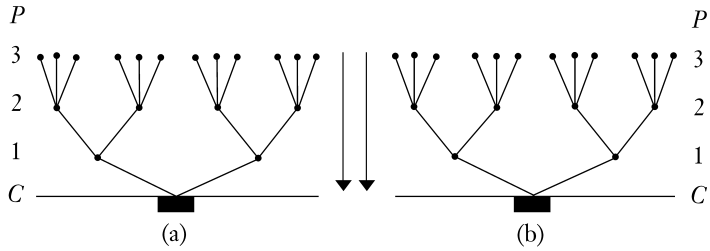

FIGURE 39. STRUCTURE OF PRODUCTION IN A WORLD OF PURELY SPECIFIC FACTORS

these being of the second-rank, and so on upward. The process logically continues upward until capital goods are produced completely by land and labor factors, although this stage is not depicted on the diagram. Lines connect the dots to designate the causal pattern of the factors. In the diagram, all factors are purely *specific*, since no good is used at different stages of the process or for different goods. The center arrows indicate the causal direction of *effort* downward, from the highest ranked producers' goods through the intermediate ranks, finally concluding in consumers' goods. At each stage, labor uses nature-given factors to produce capital goods, and the capital goods are again combined with labor and nature-given factors, transformed into lower and lower orders of capital goods, until consumers' goods are reached.

Now that we have traced the direction of productive effort, we must trace the direction of monetary income. This is a reverse one, from the consumers back to the producers. The consumers purchase the stock of a consumers' good at a price determined on the market, yielding the producers a certain income. Two of the crucial problems of production theory are the method by which the monetary income is allocated and the corollary problem of the pricing of the factors of production. First, let us consider only the "lowest" stage of production, the stage that brings about the *final* product. In that stage, numerous factors, all now assumed to be specific, co-operate in producing the consumers' good. There are three types of such

factors: labor, original nature, and produced capital goods.[7] Let us assume that on a certain day, consumers purchase a certain quantity of a good *X* for, say, 100 ounces of gold. Given the quantity of the good sold, the *price* of the total quantity is equal to the (gross) income obtained from the sale of the good. How will these 100 ounces be allocated to the producing factors?

In the first place, we must make an assumption about the *ownership* of the consumers' good just before it is sold. It is obvious that this owner or these owners will be the *immediate* recipients of the 100 ounces of gold income. Let us say that, in the final stage, there have been seven factors participating in the production: two types of labor, two types of land, and three types of capital goods. There are two alternatives in regard to the final ownership of the product (*before* it is sold to the consumer): (*a*) all the owners of these factors *jointly* own the final product; or (*b*) the owner of each of the factors sells the services of his factor to someone else, and the latter (who may himself contribute a factor) sells the good at a later date to the consumer. Although the latter is the nearly universal condition, it will be convenient to begin by analyzing the first alternative.

Those who own the final product, whatever the alternative adopted, are "capitalists," since they are the owners of capital goods. It is better, however, to confine the term "capitalists" to those who have saved money capital with which to buy factors. This, by definition, does not occur under the first alternative, where owners of factors are joint owners of the products. The

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[7]We must hasten to add that this does *not* signify adoption of the old classical fallacy that treated each of these groups of factors as homogeneous. Clearly, they are heterogeneous and for pricing purposes and in human action are treated as such. Only the same good, homogeneous for human valuation, is treated as a common "factor," and all factors are treated alike—for their contribution to revenue—by producers. The categories "land, labor, and capital goods" are essential, however, for a deeper analysis of production problems, in particular the analysis of various income returns and of the relation of time to production.

term "product-owner" suffices for designating the owner of the capital assets, whatever the alternative adopted. Product-owners are also "entrepreneurs," since they assume the major entrepreneurial burden of adjusting to uncertain future conditions. To call them "entrepreneurs" alone, however, is to run the danger of forgetting that they are also capitalists or product-owners and that they would continue to perform that function in an evenly rotating economy.

4. Joint Ownership of the Product by the Owners of the Factors

Let us first consider the case of joint ownership by the owners of all the final co-operating factors.[8] It is clear that the 100 ounces of gold accrue to the owners jointly. Let us now be purely arbitrary and state that a total of 80 ounces accrues to the owners of capital goods and a total of 20 ounces to the owners of labor and nature-given factors. It is obvious that, whatever the allocation, it will be, on the unhampered market, in accordance with the voluntary contractual agreement of each and every factor-owner concerned. Now it is clear that there is an important difference between what happens to the monetary income of the *laborer* and the *landowner*, on the one hand, and of the owner of *capital goods*, on the other. For the capital goods must in turn be produced by labor, nature, and other capital goods. Therefore, while the contributor of personal "labor" energy (and this, of course, includes the energy of direction as well as what are called "laborers" in popular parlance) has earned a pure return, the owner of capital goods has previously spent some money for the production or the purchase of *his* owned factors.

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[8]It must be understood that "factors of production" include *every* service that advances the product toward the stage of consumption. Thus, such services as "marketing costs," advertising, etc., are just as legitimately productive services as any other factors. The fallacy in the spurious distinction between "production costs" and "selling costs" has been definitely demonstrated by Mises, *Human Action*, p. 319.

Now it is clear that, since only factors of production may obtain income from the consumer, *the price of the consumers' good—i.e., the income from the consumers' good, equals the sum of the prices accruing to the producing factors, i.e., the income accruing to the factors*. In the case of joint ownership, this is a truism, since *only a factor* can receive income from the sale of a good. It is the same as saying that 100 ounces equals 100 ounces.

But what of the 80 ounces that we have arbitrarily allocated to the owners of capital goods? To whom do they finally accrue? Since we are assuming in this example of joint ownership that all products are owned by their factor-owners, it also follows that capital goods, which are *also* products, are *themselves* jointly owned by the factors on the second rank of production. Let us say that each of the three first-order capital goods was produced by five co-operating factors: two types of labor, one type of land, two types of capital goods. All these factor-owners jointly own the 80 ounces. Let us say that each of the first-order capital goods had obtained the following:

Capital good *A*: 30 ounces
Capital good *B*: 30 ounces
Capital good *C*: 20 ounces

The income to each capital good will then be owned by five factor-owners on the second rank of production.

It is clear that, conceptually, *no one, in the last analysis, receives a return as the owner of a capital good*. Since every capital good analytically resolves itself into original nature-given and labor factors, it is evident that no money could accrue to the owner of a capital good. All 100 ounces must eventually be allocated to labor and owners of nature-given factors exclusively. Thus, the 30 ounces accruing to the owners of capital good *A* will be allocated to the five factor-owners, while the, say, four ounces accruing to one of the capital goods of third rank helping to produce good *A* will, in turn, be allocated to land, labor, and capital-goods factors of the fourth rank, etc. Eventually, all the

money is allocated to labor and nature-given factors only. The diagram in Figure 40 illustrates this process.

At the bottom of the diagram, we see that 100 ounces of gold are transferred from the consumers to the producers. Some of this money goes to owners of capital goods, some to landowners, some to owners of labor. (The proportion going to one group and the other is arbitrarily assumed in the example and is of no importance for this analysis.) The amount accruing to the capital-goods owners is included in the *shaded* portion of the diagram and the amount accruing *both* to labor and nature-owners is included in the clear portion of the diagram. In the lowest, the first block, the 20 ounces received by owners of land and of labor factors is marked with an upward arrow, followed by a similar upward arrow at the top of the diagram, the top line designating the money ultimately received by the owners of the various factors. The width of the top line (100 ounces) must be equal to the width of the bottom line (100 ounces),

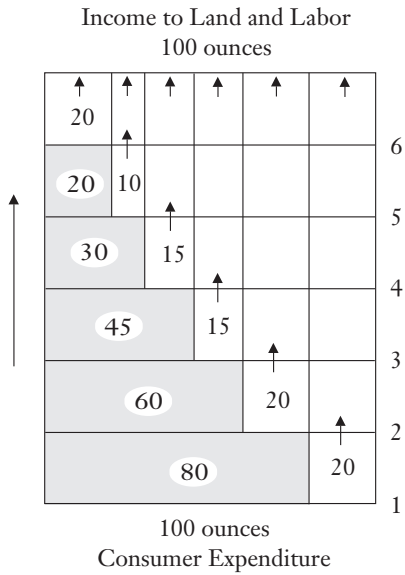

FIGURE 40. INCOME ACCRUING TO THE FACTORS OF PRODUCTION

since the money ultimately received by the owners of the factors must equal the money spent by the consumers.

Moving up to line 2, we follow the fortunes of the 80 ounces which had accrued to the owners of capital goods of the first order. We assume that 60 ounces accrue to the owners of second-order capital goods and 20 ounces to second-order labor and nature-given factors. Once again, the 20 ounces' clear area is marked with an upward arrow designating the ultimate receipt of money by the owners of the factors and is equally marked off on the top line of the diagram. The same process is repeated as we go further and further upward in the order of capital goods. At each point, of course, the amount obtained by owners of capital goods becomes smaller, because more and more has accrued to labor and nature owners. Finally, at the highest conceivable stage, all the remaining 20 ounces earned by the owners of capital goods accrue to land and labor factors only, since eventually we must come to the stage where no capital good has yet been produced and only labor and nature remain. The result is that the 100 ounces are all eventually allocated to the clear spaces, to the land and labor factors. The large upward arrow on the left signifies the general upward course of the monetary income.

To the truism that the income from sale of the consumers' good equals the consumers' expenditure on the good, we may add a corresponding truism for each stage of production, namely, that *the income from sale of a capital good equals the income accruing to the factors of its production.*

In the world that we have been examining, where all products, at whatever stage, are owned jointly by the owners of their factors, it is clear that *first* work is done on the highest stage. Owners of land and of labor *invest* their land and labor to produce the highest-order (in this case the fifth) capital good; then these owners turn the good over to the owners of labor and land at the next lower stage; these produce the fourth-order capital good, which in turn co-operates with labor and land factors on

that stage to produce the lower-order good, etc. Finally, the lowest stage is reached, and the final factors co-operate to produce the consumers' good. The consumers' good is then sold to consumers.[9]

In the case of joint ownership, then, there does not arise any separate class of owners of capital goods. All the capital goods produced are jointly owned by the owners of the producing land and labor factors; the capital goods of the next lower order are owned by the owners of the land and labor factors at the next lower stage along with the previously co-operating owners, etc. In sum, the entire capital-goods structure engaged in any line of production is jointly owned by the owners of land and labor. And the income gained from the final sale of the product to the consumers accrues only to the owners of land and labor; there is no separate group of owners of capital goods to whom income accrues.[10]

It is obvious that the production process takes *time*, and the more complex the production process the more time must be taken. During this time, all the factors have had to work without earning any remuneration; they have had to work only in *expectation of future* income. Their income is received only at a much later date.

The income that would be earned by the factors, in a world of purely specific factors, depends entirely on consumer demand for the particular final product. If consumers spend 100 ounces on the good, then the factors will jointly earn 100 ounces. If they spend 500 ounces, the factors will earn that amount. If they spend nothing on the product, and the producers have made the

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[9]On the structure of production, *see* Wieser, *Social Economics*, pp. 47 ff.

[10]In practice, one or more persons can be the owners of any of the factors. Thus, the original factors might also be jointly owned by several persons. This would not affect our analysis. The only change would be that the joint owners of a factor would have to allocate the factor's income according to voluntary contract. But the type of allocation would remain the same.

enormous entrepreneurial error of working on a product that the consumers do not buy, the factors earn precisely zero. The joint monetary income earned by the owners of the factors fluctuates *pari passu* with consumer demand for the product.

At this point, a question naturally arises: What happens to owners of factors who earn a zero return? Must they "starve"? Fundamentally, we cannot answer this question for concrete individual persons, since economics demonstrates truths about "functional" earnings in production, and not about the entire earnings of a given person. A particular person, in other words, may experience a zero return on this good, while at the same time earning a substantial return on ownership of another piece of land. In cases where there is no such ownership in another area, the individual may pursue isolated production that does not yield a monetary return, or, if he has an accumulated monetary cash balance, he may purchase goods by reducing the balance. Furthermore, if he has such a balance, he may invest in land or capital goods or in a production organization owning them, in some other line of production. His labor, on our assumptions, may be a specific factor, but his *money* is usable in every line of production.

Suppose we assume the worst possible case—a man with no cash balance, with no assets of capital, and whose labor is a *specific* factor the product of which has little or no consumer demand.[11] Is he not truly an example of an individual led astray by the existence of the market and the specialization prevalent on it? By subjecting himself to the consumer has he not placed his happiness and existence in jeopardy? Even granting that people chose a market, could not the choice turn out to be tragic for many people?

The answer is that there is no basis whatever for such strictures on the market process. For even in this impossible case,

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[11]Actually, this case cannot occur, since labor, as we shall see below, is always a nonspecific factor.

the individual is no worse off than he would have been in isolation or barter. He can always revert to isolation if he finds he cannot attain his ends via the market process. The very fact that we consider such a possibility ludicrous is evidence of the enormous advantages that the market confers upon everyone. Indeed, empirically, we can certainly state that, without the modern, developed market, and thrown back into isolation, the overwhelming majority of individuals could not obtain enough exchangeable goods to exist at all. Yet this choice always remains open to anyone who, for any reason, voluntarily prefers isolation to the vast benefits obtainable from the market system. Certainly, therefore, complaints against the market system by disgruntled persons are misplaced and erroneous. Any person or group, on the unhampered market, is free to abandon the social market at any time and to withdraw into any other desired form of co-operative arrangement. People may withdraw into individual isolation or establish some sort of group isolation or start from the beginning to re-create their own market. In any case, on the free market, their choice is entirely their own, and they decide according to their preferences unhampered by the use or threat of violence.[12]

Our example of the "worst possible case" enables us to analyze one of the most popular objections to the free society: that "it leaves people free to starve." First, from the fact that this objection is so widespread, we can easily conclude that there will be enough charitable people in the society to present these unfortunates with gifts. There is, however, a more fundamental refutation. It is that the "freedom-to-starve" argument rests on a basic confusion of "freedom" with "abundance of exchangeable goods." The two must be kept conceptually distinct. Freedom is meaningfully definable only as absence of interpersonal

[12]It is therefore our contention that the term "consumers' sovereignty" is highly inapt and that "individual sovereignty" would be a more appropriate term for describing the free market system. For an analysis of the concept of "consumers' sovereignty," see chapter 10 below.

restrictions. Robinson Crusoe on the desert island is absolutely free, since there is no other person to hinder him. But he is not necessarily living an abundant life; indeed, he is likely to be constantly on the verge of starvation. Whether or not man lives at the level of poverty or abundance depends upon the success that he and his ancestors have had in grappling with nature and in transforming naturally given resources into capital goods and consumers' goods. The two problems, therefore, are logically separate. Crusoe is absolutely free, yet starving, while it is certainly possible, though not likely, for a given person at a given instant to be a slave while being kept in riches by his master. Yet there is an important connection between the two, for we have seen that a free market tends to lead to abundance for all of its participants, and we shall see below that violent intervention in the market and a hegemonic society tend to lead to general poverty. That a person is "free to starve" is therefore *not* a condemnation of the free market, but a simple fact of nature: every child comes into the world without capital or resources of his own. On the contrary, as we shall see further below, it is the free market in a free society that furnishes the only instrument to reduce or eliminate poverty and provide abundance.

5. Cost

At this point, let us reintroduce the concept of "cost" into the analysis. We have seen above that the cost, or "marginal" cost, of any decision is the next highest utility that must be forgone because of the decision. When a means M must be distributed among ends E_1, E_2, and E_3, with E_1 ranked highest on the individual's value scale, the individual attempts to allocate the means so as to attain his most highly valued ends and to forgo those ranked lower, although he will attain as many of his ends as he can with the means available. If he allocates his means to E_1 and E_2, and must forgo E_3, E_3 is the marginal cost of his decision. If he errs in his decision, and arrives at E_3

instead of E_2, then *ex post*—in retrospect—he is seen to have suffered a loss compared to the course he could have taken.

What are the costs involved in the decisions made by the owners of the factors? In the first place, it must be stressed that these costs are subjective and cannot be precisely determined by outside observers or be gauged *ex post* by observing accountants.[13] Secondly, it is clear that, *since* such factors as land and the produced capital goods have only one use, namely, the production of this product (by virtue of being purely specific), they involve *no cost* to their owner in being used in production. By the very terms of our problem, the only alternative for their owner would be to let the land lie unused, earning no return. The use of labor, however, does have a cost, in accordance with the value of the leisure forgone by the laborers. This value is, of course, unmeasurable in money terms, and necessarily differs for each individual, since there can be no comparison between the value scales of two or more persons.

Once the final product has been produced, the analysis of the previous chapter follows, and it becomes clear that, in most cases, the sale of the good at the market price, whatever the price may be, is *costless*, except for rare cases of direct consumption by the producer or in cases of anticipation of a price increase in the near future. This sale is *costless* from the proper point of view—the point of view of acting man at the relevant instant of action. The fact that he would not have engaged in the labor at all if he had known in advance of the present price might indicate a deplorable instance of poor judgment, but it does not affect the present situation. At present, with all the labor already exerted and the product finished, the original—subjective—cost has already been incurred and vanished with the original making of

[13]Cf. the excellent discussion of cost by G.F. Thirlby, "The Subjective Theory of Value and Accounting 'Cost,' " *Economica*, February, 1946, pp. 33 f.; and especially Thirlby, "Economists' Cost Rules and Equilibrium Theory," *Economica*, May, 1960, pp. 148–53.

the decision. At present, there is no alternative to the sale of the good at the market price, and therefore the sale is costless.[14]

It is evident, therefore, that once the product has been made, "cost" has *no influence* on the price of the product. Past costs, being ephemeral, are irrelevant to present determination of prices. The agitation that often takes place over sales "below cost" is now placed in its proper perspective. It is obvious that, in the relevant sense of "cost," no such sales can take place. The sale of an already produced good is likely to be costless, and if it is not, and price is below its costs, then the seller will hold on to the good rather than make the sale.

That costs do have an influence in production is not denied by anyone. However, the influence is not directly on the price, but on the amount that will be produced or, more specifically, on the degree to which factors will be used. We have seen in our example that land and capital goods will be used to the fullest extent practicable, since there is no return or benefit in allowing them to remain idle.[15] But man laboring bears the cost of leisure forgone. What he expects will be the monetary return from his labor is the deciding factor in his decision concerning how much

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[14]As Thirlby says, "Cost is ephemeral. The cost involved in a particular decision loses its significance with the making of a decision because the decision displaces the alternative course of action." Thirlby, "Subjective Theory of Value," p. 34. And Jevons:

> *Labor once spent has no influence on the future value of any article*: it is gone and lost forever. In commerce bygones are forever bygones and we are always starting clear at each moment, judging the values of things with a view to future utility. Industry is essentially prospective, not retrospective. (Jevons, *Theory of Political Economy*, p. 164)

[15]There will undoubtedly be exceptions, such as cases where the owner obtains enjoyment from the land or capital good from its lying idle—such as the esthetic enjoyment of using it as an uncultivated forest. These alternatives are then also costs, when a decision is made on the use of the land.

or whether or not to employ his labor on the product. The monetary return is ranked on his subjective value scale along with the costs of forgoing leisure, and his decision is made on the quantity of labor he will put forth in production. The height of costs on individual value scales, then, is *one* of the determinants of the quantity, the *stock*, that will be produced. This stock, of course, *later* plays a role in the determination of market price, since stock is evaluated by consumers according to the law of diminishing marginal utility. This, however, is a far cry from stating that cost either determines, or is co-ordinate with utility in determining, price. We may briefly summarize the law of price (which can be stated at this point only in regard to specific factors and joint ownership, but which will be later seen as true for any arrangement of production): Individuals, on their value scales, evaluate a given stock of goods according to their utilities, setting the prices of consumers' goods; the stock is produced according to previous decisions by producers, who had weighed on their value scales the expected monetary revenue from consumers against the subjective costs (themselves simply *utilities forgone*) of engaging in the production. In the former case, the utility valuations are generally (though by no means always) the ones made by *consumers*; in the latter case, they are made by *producers*. But it is clear that the determinants of price are *only the subjective utilities of individuals* in valuing given conditions and alternatives. There are no "objective" or "real" costs that determine, or are co-ordinate in determining, price.[16]

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[16]It is unfortunate that these truths, substantially set forth by the "Austrian School of economics" (which included some Englishmen and Americans) close to three-quarters of a century ago, should have been almost entirely obscured by the fashionable eclectic doctrine that "real costs" and utility are somehow co-ordinate in price determination, with "cost" being "really" more important "in the long run." How often has Alfred Marshall's homely analogy of utility and cost being "two blades of a scissors" been invoked as a substitute for analysis! Emil Kauder has supplied an interesting interpretation of the reason for the failure of British thought to adopt the nascent subjective value approach in previous centuries. He

If we investigate the costs of laborers in production more closely, we see that what is involved is not simply a question of leisure forgone. There is another, though in this case intertwined, element: *present goods* are being forgone in exchange for an expectation of return *in the future*. Thus, added to the leisure-labor element, the workers, in this case, must wait for some time before earning the return, while they must give up their leisure in the present or in various periods earlier than the return is obtained. Time, therefore, is a critical element in production, and its analysis must pervade any theory of production.

When the owners of the factors embark on a process of production the yield of which will be necessarily realized in the future, they are giving up leisure and other consumers' goods that they either could have enjoyed without working or could have earned earlier from shorter processes of production. In order to *invest* their labor and land in a process of production, then, they must restrict their *present* consumption to less than its possible maximum. This involves forgoing either immediate consumption or the consumption made possible from shorter processes of production. *Present* consumption is given up in anticipation of *future* consumption. Since we have seen that the universal law of time preference holds that any given satisfaction will be preferred earlier than later, an equivalent satisfaction will be preferred as early as possible. Present consumption of a good will be given up only in anticipation of a *greater future*

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attributes the emphasis on labor and real cost, as contrasted to subjective utility and happiness, to the Calvinist background of the British classicists, typified by Smith and Locke. Of particular interest here is his citation of the strongly Evangelical background of Marshall. Implicit in his treatment is the view that the second major reason for the classicists' failure to follow subjectivist leads was their search for an invariable measurement of value. This search embodied the "scientistic" desire to imitate the methods of the natural sciences. Emil Kauder, "The Retarded Acceptance of the Marginal Utility Theory," *Quarterly Journal of Economics*, November, 1953, pp. 564–75.

consumption, the degree of the premium being dependent on time preferences. This restriction of present consumption is *saving*. (See the discussion in chapter 1.)

In a world where products are all jointly owned by owners of factors, the original owners of land and labor must do their own saving; there is no monetary expression to represent total saving, even in a monetary economy. The owners of land and labor forgo a certain amount of present or earlier consumption and save in various amounts in order to invest their time and labor to produce the final product. Their income is finally earned, say after one year, when the good is sold to the consumers and the 100 ounces is received by the joint owners. It is impossible, however, for us to say what this saving or investment was in monetary terms.

6. Ownership of the Product by Capitalists: Amalgamated Stages

Up to this point we have discussed the case in which the owners of land and labor, i.e., of the original factors, restrict their possible consumption and invest their factors in a production process, which, after a certain time, produces a consumers' good to be sold to consumers for money. Now let us consider a situation in which the owners of the factors do *not* own the final product. How could this come about? Let us first forget about the various stages of the production process and assume for the moment that all the stages can be lumped together as one. An individual or a group of individuals acting jointly can then, *at present*, offer to pay money to the owners of land and labor, thus buying the services of their factors. The factors then work and produce the product, which, under the terms of their agreement, belongs to the new class of product-owners. These product-owners have purchased the services of the land and labor factors as the latter have been contributing to production; they then sell the final product to the consumers.

What has been the contribution of these product-owners, or "capitalists," to the production process? It is this: the saving and

restriction of consumption, instead of being done by the owners of land and labor, has been done by the *capitalists*. The capitalists originally saved, say, 95 ounces of gold which they could have then spent on consumers' goods. They refrained from doing so, however, and, instead, *advanced* the money to the original owners of the factors. They *paid* the latter for their services while they were working, thus advancing them money before the product was actually produced and sold to the consumers. The capitalists, therefore, made an essential contribution to production. They relieved the owners of the original factors from the necessity of sacrificing present goods and waiting for future goods. *Instead*, the capitalists have supplied present goods *from their own savings* (i.e., money with which to buy present goods) to the owners of the original factors. In return for this supply of present goods, the latter contribute their productive services to the capitalists, who become the owners of the product. More precisely, the capitalists become the owners of the capital structure, of the whole structure of capital goods as they are produced. Keeping to our assumption that one capitalist or group of capitalists owns all the stages of any good's production, the capitalists continue to advance present goods to owners of factors as the "year" goes on. As the period of time continues, highest-order capital goods are first produced, are then transformed into lower-order capital goods, etc., and ultimately into the final product. At any given time, this whole structure is owned by the capitalists. When one capitalist owns the whole structure, these capital goods, it must be stressed, *do him no good whatever*. Thus, suppose that a capitalist has already advanced 80 ounces over a period of many months to owners of labor and land in a line of production. He has in his ownership, as a result, a mass of fifth-, fourth-, and third-order capital goods. None of these capital goods is of any use to him, however, until the goods can be further worked on and the final product obtained and sold to the consumer.

Popular literature attributes enormous "power" to the capitalist and considers his owning a mass of capital goods as of

enormous significance, giving him a great advantage over other people in the economy. We see, however, that this is far from the case; indeed, the opposite may well be true. For the capitalist has already saved from possible consumption and hired the services of factors to produce his capital goods. The owners of these factors have the money already for which they otherwise would have had to save and wait (and bear uncertainty), while the capitalist has only a mass of capital goods, a mass that will prove worthless to him unless it can be further worked on and the product sold to the consumers.

When the capitalist purchases factor services, what is the precise exchange that takes place? The capitalist gives money (a present good) in exchange for receiving factor services (labor and land), which work to supply him with capital goods. They supply him, in other words, with *future goods*. The capital goods for which he pays are way stations on the route to the final product—the consumers' good. At the time when land and labor are hired to produce capital goods, therefore, these capital goods, and therefore the services of the land and labor, are *future* goods; they represent the embodiment of the expected yield of a good in the future—a good that can then be consumed. The capitalist who buys the services of land and labor in year one to work on a product that will eventually become a consumers' good ready for sale in year two is advancing money (a present good) in exchange for a future good—for the present anticipation of a yield of money in the future from the sale of the final product. A present good is being exchanged for an expected future good.

Under the conditions of our example, we are assuming that the capitalists own *no* original factors, in contrast to the first case, in which the products were jointly owned by the owners of these factors. In our case, the capitalists originally owned money, with which they purchased the services of land and labor in order to produce capital goods, which are finally transformed by land and labor into consumers' goods. In this example we

have assumed that the capitalists do not at any time own any of the co-operating labor or land factors. In actual life, of course, there may be and are capitalists who both work in some managerial capacity in the production process and also own the land on which they operate. Analytically, however, it is necessary to isolate these various functions. We may call those capitalists who own only the capital goods and the final product before sale "pure capitalists."

Let us now add another temporary restriction to our analysis—namely, that all producers' goods and services are only *hired*, never bought outright. This is a convenient assumption that will be maintained long after the assumption of specific factors is dropped. We here assume that the pure capitalists never purchase as a whole a factor that in itself could yield several units of service. They can only *hire* the services of factors per unit of time. This situation is directly analogous to the conditions described in chapter 4, section 7 above, in which consumers bought or "rented" the unit services of goods rather than the goods as a whole. In a free economy, of course, this hiring or renting must always occur in the case of labor services. The laborer, being a free man, *cannot be bought*; i.e., he cannot be paid a cash value for his total future anticipated services, after which he is at the permanent command of his buyer. This would be a condition of slavery, and even "voluntary slavery," as we have seen, cannot be enforced on the free market because of the inalienability of personal will. A laborer cannot be bought, then, but his *services* can be bought over a period of time; i.e., he can be rented or hired.

7. *Present and Future Goods: The Pure Rate of Interest*

We are deferring until later the major part of the analysis of the pricing of productive services and factors. At this point we can see, however, that the purchasing of labor and land services are directly analogous. The classical discussion of productive income treats labor as earning wages whereas land earns rents,

and the two are supposed to be subject to completely different laws. Actually, however, the earnings of labor and land services are analogous. Both are original and productive factors; and in the case in which land is hired rather than bought, both are rented per unit of time rather than sold outright. Generally, writers on economics have termed those capitalists "entrepreneurs" who buy labor and land factors in expectation of a future monetary return from the final product. They are entrepreneurs, however, only in the actual economy of uncertainty. *In an evenly rotating economy*, where all the market actions are repeated in an endless round and there is therefore no uncertainty, *entrepreneurship* disappears. There is no uncertain future to be anticipated and about which forecasts are made. To call these capitalists simply entrepreneurs, then, is tacitly to imply that in the evenly rotating economy there will be no capitalists, i.e., no group that saves money and hires the services of factors, thereby acquiring capital and consumers' goods to be sold to the consumers. Actually, however, there is no reason why pure capitalists should not continue in the ERE (the evenly rotating economy). Even if final returns and consumer demand are certain, *the capitalists are still providing present goods to the owners of labor and land* and thus relieving them of the burden of waiting until the future goods are produced and finally transformed into consumers' goods. Their function, therefore, remains in the ERE to provide present goods and to assume the burden of waiting for future returns over the period of the production process. Let us assume simply that the sum the capitalists paid out was 95 ounces and that the final sale was for 100 ounces. The five ounces accruing to the capitalists is payment for their function of supplying present goods and waiting for a future return. In short, the capitalists, in year one, bought future goods for 95 ounces and then sold the transformed product in year two for 100 ounces when it had become a *present* good. In other words, in year one the market price of an anticipated (certain) income of 100 ounces was only 95 ounces. It is clear that this arises out of the universal fact of time preference and of the

resulting premium of a given good at present over the present *prospect* of its *future* acquisition.

In the monetary economy, since money enters into all transactions, the discount of a future good against a present good can, in all cases, be expressed in terms of one good: money. This is so because the money commodity is a present good and because claims to future goods are almost always expressed in terms of future money income.

The factors of production in our discussion have all been assumed to be purely *specific* to a particular line of production. When the capitalists have saved money ("money capital"), however, they are at liberty to purchase factor services in any line of production. *Money, the general medium of exchange, is precisely nonspecific*. If, for example, the saver sees that he can invest 95 ounces in the aforementioned production process and earn 100 ounces in a year, whereas he can invest 95 ounces in some other process and earn 110 ounces in a year, he will invest his money in the process earning the greater return. Clearly, the line in which he will feel impelled to invest will be the line that earns him the greatest *rate* of return on his investment.

The concept of *rate* of return is necessary in order for him to compare different potential investments for different periods of time and involving different sums of money. For any amount of money that he saves, he would like to earn the greatest amount of net return, i.e., the greatest rate of net return. The absolute amount of return has to be reduced to units of time, and this is done by determining the rate per unit of time. Thus, a return of 20 ounces on an investment of 500 ounces after two years is 2 percent per annum, while a return of 15 ounces on the same investment after one year is a return of 3 percent per annum.

After data work themselves out and continue without change, the rate of net return on the investment of money capital will, in the ERE, be the *same* in every line of production. If capitalists can earn 3 percent per annum in one production process and 5 percent per annum in another, they will cease

investing in the former and invest more in the latter until the rates of return are uniform. In the ERE, there is no entrepreneurial uncertainty, and the rate of net return is the pure exchange ratio between present and future goods. This rate of return is *the rate of interest*. This *pure rate of interest* will be uniform for all periods of time and for all lines of production and will remain constant in the ERE.[17]

Suppose that at some time the rates of interest earned are not uniform as between several lines of production. If capitalists are generally earning 5 percent interest, and a capitalist is obtaining 7 percent in a particular line, other capitalists will enter this line and bid away the factors of production from him by raising factor prices. Thus, if a capitalist is paying factors 93 ounces out of 100 income, a competing capitalist can offer 95 ounces and outbid the first for the use of the factors. The first, then, forced to meet the competition of other capitalists, will have to raise his bid eventually to 95 (disregarding for simplicity the variation in percentages based on the investment figure rather than on 100). The same equalization process will occur, of course, between capitalists and firms within the same line of production—the same "industry." There is always competitive pressure, then, driving toward a uniform rate of interest in the economy. This competition, it must be pointed out, does not take place simply between firms in the same industry or producing "similar" products. Since money is the general medium of exchange and can be invested in all products, this close competition extends throughout the length and breadth of the production structure.

A fuller discussion of the determination of the rate of interest will take place in chapter 6 below. But one thing should here be evident. The classical writers erred grievously in their discussion of the income-earning process in production. They believed that wages were the "reward" of labor, rents the "reward"

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[17]The term "pure rate of interest" corresponds to Mises' term "originary rate of interest." *See* Mises, *Human Action*, *passim*.

of land, and interest the "reward" of capital goods, the three supposedly co-ordinate and independent factors of production. But such a discussion of interest was completely fallacious. As we have seen and shall see further below, capital goods are *not* independently productive. They are the imputable creatures of land and labor (and time). Therefore, capital goods generate no interest income. We have seen above, in keeping with this analysis, that *no* income accrues to the owners of capital goods *as such*.[18]

If the owners of land and labor factors receive all the income (e.g., 100 ounces) when they own the product jointly, why do their owners consent to sell their services for a total of five ounces less than their "full worth"? Is this not some form of "exploitation" by the capitalists? The answer again is that the capitalists *do not* earn income from their possession of capital goods or because capital goods generate any sort of monetary income. The capitalists earn income in their capacity *as purchasers of future goods in exchange for supplying present goods to owners of factors*. It is this *time element*, the result of the various individuals' time preferences, and *not* the alleged independent productivity of capital goods, from which the interest rate and interest income arise.

The capitalists earn their interest income, therefore, by supplying the services of present goods to owners of factors in advance of the fruits of their production, acquiring their products by this purchase, and selling the products *at the later date when they become present goods*. Thus, capitalists supply present goods in exchange for future goods (the capital goods), hold the future goods, and have work done on them until they become present

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[18]Here the reader is referred to one of the great works in the history of economic thought, Eugen von Böhm-Bawerk's *Capital and Interest* (New York: Brentano's, 1922), where the correct theory of interest is outlined; in particular, the various false theories of interest are brilliantly dissected. This is not to say that the present author endorses all of Böhm-Bawerk's theory of interest as presented in his *Positive Theory of Capital*.