

## CHAPTER I

### THE DETERMINATION OF VALUE

#### § 1

#### *Value, or the Analogue of Value, to the Isolated Man*

By value, in the sense of value in exchange, we ordinarily mean the number of units of some other good or goods, taken as a standard or measure of value<sup>1</sup>, that any given article or immaterial benefit will bring in trade. Thus, the value of a man's horse may be 150 bushels of wheat or 30 tons of coal or 75 days of common labor or two dozen operatic performances. The thought is that the horse would sell for—would bring in exchange—such an amount of other goods. Since money is the medium by which exchanges are commonly effected and, therefore, a generally recognized measure of value, we ordinarily express exchange relations in terms of money. We would be much more likely to state the value of the horse as \$160 than to state it as (for example) 30 tons of coal. Everyone sells goods for money or buys goods with money or both. Everyone is tolerably familiar with the value of the money unit in terms of various other goods. Everyone knows, that is, about how much of various other goods a dollar will buy. Consequently the statement that a horse is worth \$160 includes the other statements and can be readily translated into them. Valuation of

<sup>1</sup> Jevons, *The Theory of Political Economy*, fourth edition, London (Macmillan), 1911, pp. 78-83.

goods in terms of money is really valuation of them in terms of goods-in-general.

Exchange value is a social phenomenon. It involves the exchanging of one kind of goods for another kind (or kinds) of goods and a comparison of the utility or desirability of the one kind with that of the other. Such a comparison will presumably be made, in fact, by both parties to an exchange. But though exchange value is thus a phenomenon involving human relations as well as involving goods and so is a social phenomenon, nevertheless nearly all of the factors that enter into its determination exist in a state of isolation such as that of a Robinson Crusoe. And so we may, perhaps, with advantage, begin our study of value by a consideration of the comparisons that might enter the mind of a Crusoe who, alone on his island, is engaged in eking out a precarious living. To Crusoe, as to a man in the most advanced modern community, must be presented frequently the necessity of making a choice among different commodities, all of which together he can not secure in anything like the number or quantity desired, and all of which, possibly, he cannot use, since some may be substitutes for others. He must, therefore, compare the utility of one kind of goods with the utility of something else. It may be that he has occasion to decide whether a month's labor which he can spare from other purposes shall be used to build an additional room to his hut or dugout, or whether it shall be used to make him a canoe; whether today's efforts shall be devoted to killing and dressing a goat or whether the day shall be spent in catching fish. There is,

of course, for Crusoe, no value in the sense of power in exchange, since there is no one with whom exchanges can be made. But there is value, if we may use the term in an analogous case, in the sense of comparison of one thing with some other thing or things, i. e. there is comparative utility. If Crusoe would rather spend a month's labor which he has available, in building an additional room than in constructing a canoe, it is probably because the utility of the room is greater to him than the utility of the canoe, or, at any rate, that he believes it to be greater. If he could make the canoe in two weeks and a new goat-skin suit in another two weeks but would rather devote all four weeks to building the additional room, then the room has greater utility to him than the canoe and suit together; or, if the canoe and suit are reckoned equal, the room has more than twice the utility of either. Were Crusoe in a small community with several other inhabitants, he would perhaps be willing to make two canoes for two of his fellow islanders, in return for their building the additional room for him. Then we could say that the value of the room was two canoes or that a canoe was worth the half completed room. Crusoe, alone on his island, can make no trade; but he can appraise the room in terms of canoes and clothes to the extent of deciding whether he will produce the one or the other two. Similar comparisons would be made in the case of goods satisfying somewhat the same need. For a quart of berries, Crusoe might be willing to work two hours and for a boiled lobster two hours. Then the lobster would

be worth, to Crusoe, two quarts of berries. Each article can be compared with each other, directly or through the common means of purchasing them all from nature, viz. labor.<sup>2</sup>

We have now to take into consideration another fact, so far not mentioned. This is that successive units of any article or service have a progressively lower degree of utility. Crusoe's one suit of goat skin, if he can afford no more, will have great utility to him, will be, in fact, indispensable. A second suit will be, perhaps, important but not as much so. A third will be comparatively unimportant. Similarly, a one-room shelter will be indispensable; a second room may be almost indispensable; a third will be a great convenience, a fourth somewhat convenient, and so on. It is certain that Crusoe will get himself enough food to support life, if he possibly can. It is pretty certain that he will build and keep in some repair one room. It is pretty certain that he will keep himself supplied with one suit of clothes. How much beyond these essentials he will go will depend upon his intensity of desire for comforts and luxuries and also upon his strength, energy and willingness to work.

Having seen that the utility of any good diminishes for Crusoe according as he has a large amount of that good, let us reexamine our conclusion regarding the utility to him of a room as compared with that of a canoe. The comparative utilities of these two items of wealth will depend on how much room Crusoe already has as well as upon his

<sup>2</sup> Or labor and waiting. See Chapters III and IV.

need for room in general or for a canoe. If he has no room at all, a one-room hut will probably seem much more important to him than a canoe, and, rather than go without it, he might be willing to do much more work than he would do for a small boat. But the utility of a second room would be less and that of a third still less. Suppose Crusoe would as soon have a canoe as to have the third room. Then he would be willing to devote as much labor to getting the one as to securing the other. If the time necessary to build an additional room is four weeks and that necessary to make a canoe is two weeks, he would choose the canoe after he had a sufficient number of rooms so that an additional room would have less than twice the (marginal) utility of a canoe. If, that is, the labor of building a room remains always twice that of making a canoe, regardless of the number of rooms added, then this labor cost determines the number of rooms which Crusoe will build in preference to a canoe and, therefore, the marginal utility of a room (the utility of the last, final or marginal room). The value of a room in terms of canoes will depend upon the utility of an additional room, but this utility will depend upon the number of rooms Crusoe already has and this, again, will depend upon the labor required to build a room.

But suppose that the nearby available material for house building is scarce, that additional rooms necessitate longer trips for materials, and, perhaps, greater search to find materials that are satisfactory,—in other words, that the labor of constructing additional rooms becomes progressively

greater as more rooms are built. Then the labor of construction no more determines the utility and value of a room than its utility and value determine the amount of labor which Crusoe will undergo to build it. For if the utility of additional rooms to Crusoe is little, he will construct but one or two rooms and the labor of construction will be slight; whereas, if the utility of additional rooms is great, he will build them, in preference to a canoe, until the labor of construction (per added room) is considerable. Nevertheless it will still be true that when the utility of an additional room becomes less in relation to the labor of construction than is the utility of a canoe in relation to the labor of its construction, Crusoe will cease adding rooms and will turn to the building of a canoe. And the value of a room will still be measured by its utility *in relation* to the utility of a canoe, or by the labor of its construction in relation to the labor of constructing a canoe. Either method of measurement is correct since either is equivalent<sup>3</sup> to the other.

## § 2

### *Conditions Determining The Extent of An Isolated Man's Production*

Having considered the principles determining the relative amounts of different goods that an isolated man will produce, and the values or the comparative utilities of these goods,<sup>4</sup> we may now profitably give brief attention to the considera-

<sup>3</sup> At the margin.

<sup>4</sup> See, however, the further considerations in Chapter IV, § 1.

tions determining the total amount of such a man's production. Of course Crusoe will produce necessary food. It is scarcely less certain that he will make himself some clothing and get at least a crude kind of shelter. His different wants will receive satisfaction in the order of and to the extent commensurate with their importance and the ease with which they can be satisfied. The wants remaining unsatisfied will be of progressively less importance in relation to the effort or other sacrifice necessary to satisfy them. On the other hand, additional hours of labor per day soon come to involve discomfort and sacrifice to an increasing degree. If Crusoe works thirteen hours, he will almost certainly find the thirteenth hour of labor harder than the tenth, eleventh or twelfth. He will choose to work eight, ten, twelve or thirteen hours as the case may be, according to the relation between the utility to him of the goods which the last hour's work produces and the disutility (discomfort or labor sacrifice) of the last hour's work. If the importance to him of the goods which his tenth hour produces is more than enough to compensate him for the work done, then he will work ten hours. Or, perhaps, at nine hours and three-quarters the last minute's work just balances in sacrifice the gains to be secured. Then it will be a matter of indifference to him whether he works nine hours and forty-four minutes or nine hours and forty-five minutes, but he will not work nine hours and forty-six minutes.<sup>5</sup>

<sup>5</sup> See Jevons, *The Theory of Political Economy*, fourth edition, p. 173.

## § 3

*Utility, Relative Production of Different Goods,  
and Value, in a Modern Community*

We have seen how an isolated man compares the utility of different objects and what considerations determine the amounts of them that he will produce. Let us now consider how values are determined in a *community* of persons, where there is division of labor and where, therefore, exchange of goods is a characteristic feature of economic life. In general, and with a qualification which will be made shortly,<sup>6</sup> an isolated group of producers, or an entire community isolated from other communities, or society as a whole, produces to a larger degree those things of which its members desire large amounts, provided the sacrifice or cost of production is no greater, and produces to a less extent goods not so much desired. Suppose, for instance, that we are considering a community whose members desire large amounts of bread and, therefore, wheat, but only a small quantity of apples. Then large amounts of wheat will be produced and not many apples. But since the producers of wheat and of apples do not consume most of their own production, their relative tastes and preferences as between these two kinds of goods can not, to any large extent, act upon them directly. It is the tastes and preferences of buyers which affect price by influencing demand. Thus the large general demand for wheat means that there are many persons willing to pay a good

<sup>6</sup> See second and third paragraphs after this.



price for it rather than not to have it or rather than to have less of it, that the amounts these persons are willing to purchase can only be produced by the labor of many wheat raisers, and that the prices which the consuming purchasers are willing to pay are such as will make many persons willing to engage in (and devote their land to) wheat production. On the other hand, to say that apples are not greatly desired is to say that, unless the price is very low, there are few persons who want any or that those who want them want but small amounts, or both. It follows that large amounts can not be sold at a remunerative price and that the price consumers will pay is only high enough to keep a comparatively few producers (and few acres) in apple production, and is not high enough to tempt larger numbers into it. Of course if the apple growers do not receive almost as much for their work as the wheat raisers they may not consent, even in small numbers, to continue their occupation very long. But it is entirely possible that there will be a few who will like the work well enough to remain in it even if their return is very slightly less than it might be in the other line of production. There will be some, also, who, while earning, perhaps, less than most wheat raisers, remain apple growers because they are not well adapted for wheat raising and would make even smaller returns in it. Similarly some land will be devoted to apple growing, even with a low price of apples and with consequent small returns to the owner of the land so used, because the land will produce even smaller returns if used for the production of

wheat. Furthermore, if there has been produced in the community in question a certain more or less necessary quantity of wheat, additional amounts of wheat will have so little utility that apples or other goods will be preferred. The conditions of demand and value will, therefore, encourage a larger production of wheat than of apples but not a production entirely devoted to wheat.

Thus, in a considerable community, demand and the conditions of production determine the relative amounts of different goods which are produced. Variety of consumption results both from the fact that increasing amounts of any good reduce its marginal utility so that additional amounts are less desired than other things, and also from the fact that additional amounts of any kind of goods may cost more by requiring producers and land which, except for the offering of a high price, would be devoted to another line of production.<sup>7</sup> And as with an isolated individual, a community labors, through the activities of its members, to produce goods up to the point where the sacrifice of production is just balanced by the satisfaction or utility or the anticipated satisfaction of consumption.

But in an organized community of the modern industrial type, carrying on economic activities with a considerable degree of specialization or

<sup>7</sup>The United States government has recognized this principle, during the present war, by guaranteeing to farmers a minimum price of wheat. An alternative might be government direction of occupations and investment by way of compulsion. A man might be compelled to work in some line of activity for a less return than he could get if allowed to work in some other line.

division of labor, the utility of any goods consumed, *to the consumer*, is not necessarily or even probably just equal to the disutility of producing them, *to the producer*. For in such a community each person engaged in productive activity produces goods or services which others enjoy.<sup>8</sup> The labor sacrifice of the producers of hats may or may not—probably will not—be the exact equivalent of the enjoyment or anticipated enjoyment of the wearers of the hats. Thus, the hats in question may be of the variety affected by the well-to-do for formal evening wear, and may be, therefore, far removed from the list of necessities. The utility of or the satisfaction yielded by these hats may be comparatively slight, but they are purchased because, to their purchasers, the utility of money is also comparatively slight. Yet the disutility of the last hour's work in making them, to the producers of the hats, may be considerable, far more than would be compensated by the enjoyment of such a luxury. These producers may be, for the most part, comparatively poor, so that the payment for the last hour of their labor represents necessities rather than luxuries. The necessities so purchased by them, although worth no more in the market than the hats which they have produced, have to these hat makers a utility corresponding to the labor sacrifice which they have to undergo in earning the necessities. Their necessities have, that is, a utility to them equal to the disutility of producing the hats. But the hats have not, to them, any such utility.

<sup>8</sup> Cf. J. B. Clark, *Distribution of Wealth*, New York (Macmillan), 1899, p. 390.

On the other hand, the wearers of the hats may be engaged in producing (or capital which their earlier efforts and saving have enabled them to accumulate may be instrumental in producing) the very articles of necessity which the hat producers consume. The utility of these articles, or services, to those who consume them may therefore be much greater than the disutility (of labor or waiting<sup>9</sup> or both) required for their production by the classes engaged in producing them.<sup>10</sup> In modern industrial society, then, there is a rough correspondence between the utility of the goods which a man buys with the proceeds of his last hour of work, and the disutility of the work. But we cannot, in such a society with its division of labor, its strata of wealthy and poorer classes, and its differences of individual energy and taste, assert any very marked correspondence between the utility of goods to a consumer and the disutility of labor or labor and waiting undergone by a producer.

#### § 4

##### *Demand and Supply in Relation to Price*

The division of labor characteristic of modern society means that different persons produce different things for a market, that we specialize in

<sup>9</sup> See Chapter III, §5, for a brief discussion of whether waiting involves a disutility in the sense of pain-cost.

<sup>10</sup> We are here assuming that all the classes under discussion and enjoying incomes, contribute something to production. Nevertheless, there are classes, as we shall later see, which reap where they have not sown.

production and then trade to get what as individuals or family groups we want. The problem of value in such a society is the problem of explaining what factors determine the ratios of exchange between different kinds of goods. The explanation of the problem begins with a study of demand and supply. The price of any article is determined, by the competitive forces of business, at that point which equalizes demand and supply. As has been frequently pointed out, demand must be distinguished from mere desire and supply must be distinguished from stock. There may be many persons who desire automobiles, but whose desires are of no significance economically because not backed by any financial ability to purchase. Demand implies ability to buy as well as desire to buy. Furthermore, since the amount which would be purchased by buyers depends partly on price, demand should be stated in relation to some price. We should therefore say, in defining demand: the demand for any kind of goods, e. g. cotton cloth, at any given price (per yard) is the amount (number of yards) of those goods which purchasers would take at that price.

It is a generally recognized fact that demand is greater, other things equal, when price is lower, and that demand is less when price is higher.<sup>11</sup> Assuming other things equal, we can suppose a complete schedule of demands, corresponding to all possible prices. All but one of these demands are

<sup>11</sup> The case of goods purchased for display is probably not an exception since, first, a reduction of price simply means that the same display requires a larger purchase and, second, a reduction of price may make possible some display by a lower economic group.

hypothetical, since they correspond to prices that do not exist. They are, in each case, what the demand *would* be *if* the price of the goods were thus and so. The demand corresponding to the actual price, represents an actual demand. But the other demands, especially those corresponding to prices near the actual price, are important, because they stand for forces of competition which help to determine actual price. *If* the price *should* go lower, demand would increase and might exceed supply, thus bringing price back again to the point of equilibrium. We must, therefore, recognize a series of potential demands corresponding to a series of hypothetical prices; yet we must, also, recognize that the actual demand for any article is the one which goes with the actual price or prices of that article during the period in question.

Supply, also, needs to be carefully defined. The total stock, say of cotton, in existence at any time, is not the supply in the sense here used. Supply, like demand, should be spoken of in connection with price. The supply of any kind of goods, at any given price, is the amount which sellers would dispose of at that price. At a higher price, more persons would be encouraged to produce the goods for sale, and those already producing them would be inclined to produce more. At a lower price there would be less encouragement to the production of the goods. Even if we are dealing only with temporary or short-run supply, e. g. the supply of corn in April, so that a rise of prices could not for several months increase the amount *produced*, it might still be true that a higher price would

tend towards a greater supply and vice versa. For at a price much below normal, many who otherwise might sell their corn, would be inclined to hold it in the hope of a higher future price. As in the case of demand, we may have a supply schedule with a supply corresponding to each assumed price; and each such supply is hypothetical except the supply which corresponds to the actual price. But the hypothetical supplies are not to be ignored since consideration of them enables us better to understand the nature of the competitive conditions by which price is fixed.

Both demand and supply operate only during a period of time. This period of time may be longer or shorter according as the problem which interests us is long-run or short-run price. If we are considering the determination of so-called market price, our concern is with demand and supply during a brief period, e. g. a week, a day, or an hour. If we are considering the determination of seasonal price, say of corn or cotton, our concern is with demand and supply between one harvest and the next. If we are considering, for a certain manufactured good, the determination of the price corresponding in some degree to the seasonal price of an agricultural product, our concern is with demand and supply of this good during a period so short that additional plants for the manufacture of the good could not be constructed and so short that existing factories and machinery would not wear out.<sup>12</sup> During such a

<sup>12</sup> Cf. Taussig, *Principles of Economics*, second edition, New York (Macmillan), 1915, Vol. I, pp. 149, 150.

period the good in question might be continuously produced, but the amount produced could not much exceed, though it might fall short of, the normal capacity of the plants. Finally, if we are considering long-run or normal price, our concern is with demand and supply over a longer period involving a number of seasons or, in the case of a manufactured good produced with large plant, involving a sufficient number of years so that the cost of construction of plants becomes an important influence on the supply of the articles produced by such plants.

It has been said above that the higher the price of a good, the larger (other things equal) will be the amount supplied, and the less will be the amount demanded. A high price, therefore, seems to be associated with a large supply and a low price with a large demand. This may appear to be contrary to the commonly accepted notion that high price means shortage of supply, or unusually large demand, or both. Yet in truth there is no inconsistency in the statement of these apparently opposite relationships. The phenomena in question involve an interaction of cause and effect. The prospect of being able to receive a high price for goods certainly stimulates the production of those goods. Yet a large production tends to force down the price. So, also, in the case of demand, it is certainly true that low prices of goods encourage purchases, and it is likewise true that large purchases tend to make prices high.

Our present task is to examine the exact way in which the forces on the demand and on the supply side of the market operate to determine price. The



price of any kind of goods tends always to be fixed at that point where demand and supply are equal. To demonstrate this tendency, let us assume prices at which demand and supply are not equal and show that such prices involve unstable equilibrium and hence can not continue. We may suppose that, in a given market, a price of 8 cents a pound for cotton would equalize demand and supply and that, at such a price, both the demand and the supply would be 10,000,000 pounds. At 7 cents, the demand would be greater, say for 11,000,000 pounds, while the supply would be less, perhaps 9,000,000 pounds. Why, nevertheless, might not 7 cents be the resulting price? The answer is to be found, not in a mere statement that demand then would exceed supply, but in an analysis of the conditions and forces of the market, for which the terms demand and supply are merely our mode of expression. Since, at a price of 7 cents, there are prospective buyers whose total purchases would aggregate 11,000,000 pounds, while, at that price, only 9,000,000 pounds would be forthcoming, not all of the prospective buyers willing to purchase at 7 cents, could get the desired amounts of cotton. Many of them would bid more than 7 cents rather than not get the cotton wanted and this bidding would force the price up. Any price lower than 8 cents would leave a preponderance of force on the demand side of the market, and would involve a further competitive bidding up of price. But we could not expect to have a bidding up of the price beyond 8 cents. For at 8 cents the supply is equal to the demand. In other words, all those who are willing to pay 8 cents a

pound can get all the cotton which, at that price, they are willing to buy. No one of them has occasion to offer a higher price to insure his getting the desired amount of cotton. If any one of them, for any reason, chooses to offer and pay a higher price, other purchasers need not do so. For, by hypothesis, the supply at 8 cents a pound is enough to satisfy the demand. Hence, even after the purchases of any who for any reason pay more are completed, there will still be enough purchasable at 8 cents to satisfy the remainder of the demand. We see, then, that the conditions and forces of a market will not permit the continuance of a price below that which equalizes demand and supply, but that there is no reason why intending purchasers should pay more than this equalizing price.

Let us now suppose a price above that which equalizes demand and supply, in order to see clearly that such a price, also, could not continue. At a price of (say) 9 cents a pound, the demand for cotton might aggregate not over 8,000,000 pounds; while the supply would be more than at a price of 8 cents and might aggregate 11,000,000 pounds. Obviously, the 11,000,000 pounds which sellers might be willing to supply at a price of 9 cents a pound, could not be entirely disposed of at a price of 9 cents. Unless the price falls, some who are willing to sell for less than 9 cents rather than not sell, will be left with cotton on their hands. These will bid against each other in order to dispose of their cotton, and this bidding will lower the price to 8 cents. But it will not lower the price more than that, for all those who are

willing to sell at 8 cents a pound can find purchasers. Should any sellers choose, for some unaccountable reason, to dispose of their cotton at a lower price, nevertheless others would not have to do likewise; for the cotton supplied by these others at 8 cents a pound would be necessary to satisfy the demand and would, therefore, at this price, be purchased. We conclude that price is fixed, by market conditions, at a point such as to equalize demand and supply, since for price to be fixed at any other point involves a condition of unstable equilibrium.

## § 5

*Explanations and Qualifications*

It is frequently stated that, assuming perfect competition, there can be but one price for a given kind of goods, in any market and at any one time. Thus, some men would not be selling cotton in a market at 7 cents a pound at the same time that others were selling for 8 cents. For, if the dealers asking 7 cents could completely satisfy the demand, those asking 8 cents would make no sales; while if those selling at 7 cents could *not* completely satisfy the demand, they would soon realize that a higher price could be asked. By a similar line of reasoning we may conclude that, if some purchasers were paying 8 cents and others only 7 cents, those having cotton to sell would sell it by preference to the former. If the purchasers at 8 cents could take the entire supply, those willing to pay but 7 cents would get no cotton, while, if the purchasers at 8 cents could *not*

take the entire supply, they would soon realize that they could get what cotton they wanted without offering so high a price.

When it is said, then, that perfect competition makes impossible more than one price for any kind of goods in a given market at any given time, perfect competition must be understood to mean complete knowledge on the part of all the buyers and sellers, of conditions throughout the market, a readiness on the part of each buyer to buy where he can buy most cheaply, and a corresponding endeavor on the part of each seller to sell to whoever will pay the most. So far as knowledge is incomplete, or so far as buyers and sellers are actuated by motives not purely economic (e. g. by the motive of friendship), there is the possibility of two or more prices existing side by side in the same market. On the exchanges, where goods are bought and sold in such large quantities as to make the effort for complete information clearly worth while, there is seldom any great difference in price among different transactions in any one kind of goods, taking place at the same time. In retail trade, where the purchases of any individual from day to day are so small that it sometimes seems scarcely worth the trouble to investigate slight differences in price or to go much farther than the nearest store, differences in price are more likely to arise or to persist.

Besides the possibility—and, in some cases, probability—of differences in the price of a kind of goods at any given time, there is also to be considered the likelihood—almost the certainty—that price will fluctuate from month to month, from

week to week, from day to day, even from moment to moment. But some length of time is required for the carrying out of any transactions whatever. Demand and supply, therefore, almost necessarily have reference to a period of time rather than to an instant.<sup>18</sup> It follows that, except as we imagine a period of time infinitesimally brief, we cannot say with complete accuracy that demand and supply are equalized by any one price. Demand for and supply of wheat, during a year, are equalized by a series of changing prices from day to day during the year, or by an average price. Either the *seasonal* price, or the long run or *normal* price is, then, an average of prices, an average of a series of prices differing somewhat from each other. Even the *market* price has reference rather to a very short period than to a point of time.

It is often said, in explanation of a rise in the price of some commodity, that the demand for it has increased or that the supply has decreased; and in explanation of a fall in price it is commonly stated that the demand has decreased or the supply increased. Obviously, an increased demand, say for cotton, which raises its price, is different from an increased demand which merely results from a fall of price. When we say that an increase of demand has raised the price of cotton, we mean that the potential demand at each possible price is

<sup>18</sup> Though we might define them as the amounts which, *at any given instant*, persons *stand ready* to buy and sell *during* some *period*. This would not help us any and would, indeed, be subject to the objection that what buyers and sellers, at any given moment, think they will do if prices remain unchanged, may not be at all what, even if prices so remained, they actually would do.

greater than previously at the same price. In other words, the whole demand schedule has shifted.<sup>14</sup> Population may have increased or new uses may have been discovered for cotton or tastes and styles may have changed, so that cotton goods are more desired than formerly. Unless, therefore, price is higher, demand will exceed supply, buyers will bid against each other, and price will have to rise.

Likewise, if it is said that the price of cotton rises because of a decreased supply, this must be held to mean, not that there is a decreased supply consequent on a lower price, but that there is, at each assumed price, a less potential supply than formerly would have been forthcoming at that price. This fact might be the result of soil exhaustion or of a possibility of using land more profitably for some other crop or (as for a single season) of destruction of part of the crop by the boll weevil. In any of these cases demand, at the former price, would exceed supply, and, therefore, a higher price must result.

Consider now the conditions which make for a fall in price. The increase of supply which may cause such a fall is not the increase which results from a larger demand and a higher price, but is an increase of supply due to other conditions than a rise of price. It may be due to improved methods of cultivation or (as for a single season) to exceptionally favorable weather conditions. Unless the price falls, there will then be an excess of

<sup>14</sup> See Fisher, *Elementary Principles of Economics*, New York (Macmillan), 1912, pp. 268-273.

supply over demand. Sellers of the cotton therefore bid against each other in price reduction, causing the price to be fixed at a point such that the demand will be equal to the now larger supply.

But price may be lowered, also, through a decreased demand. This decreased demand must be supposed to be a demand smaller at each price and not a smaller demand consequent merely on a higher price. It may result from change of taste or style or from inability of part of the buyers, owing to changed conditions diminishing their prosperity, to make their desires effective in demand. In any such case only a lower price can equalize demand and supply.

The case of monopoly price is not altogether exceptional. Monopoly price, also, is fixed where demand and supply are equal. But the monopolist controls the supply of his product and can therefore ordinarily fix his price so as to secure a larger net profit than would be possible if competition had to be met. But if, in any industry, monopoly seems inevitable or socially preferable, government may regulate the price or prices in question. Such regulation, if effective, will remove the motive to limitation of supply. The regulated monopoly will rather prefer to extend its business, as the only way of making a considerable profit. To regulate any price to a lower point than gives a normal *competitive* return to the factors engaged in the production of the good will cause these factors to be shifted, in part, to other lines of production.<sup>15</sup>

<sup>15</sup> Of course this does not mean that when the government, under its war power, limits a grocer's charge for sugar, the grocer will change his business. Even if the limitation were known to be for

If such a law is not evaded, it can only be because its penalties or other causes bring about an appreciable curtailment of demand for the good the price of which is regulated. But to regulate monopoly price down to a level of competitive profits, will tend rather to increase supply than to decrease it.

§ 6

*Speculation in Relation to Price*

It has been above pointed out<sup>16</sup> that the price of any kind of goods may fluctuate from week to week or from month to month. This fluctuation is, however, limited in extent by the activities of speculators, at least when speculation is intelligently carried on. We might be inclined to expect that the price of (say) wheat would be very low immediately after harvest, because of the large quantity suddenly thrown on the market, that this lowness of price would discourage its production, and that its scarcity, realized particularly when

a long period, he might yet remain in the business because expecting a substantial profit from his sales of other groceries. Nor is there any intention to deny that, by means of regulation, priorities, appeals and otherwise, government may decrease the consumption of and the demand for many goods by civilians in war time, thus in effect compelling them to lend it their funds for its purposes, for lack of the customary alternative. But if government expends these funds there is not likely to be a reduction in average prices. (See §7 of this Chapter). Permanently to regulate everyone's consumption of goods of every kind (assuming such regulation to be possible) would amount to doing away with the competitive money system, for few would bother to acquire funds which they might not expend.

<sup>16</sup> In the immediately preceding section (§5) of this Chapter.



each season's stock was nearly gone, would cause its price then to be very high. But speculators see chances to make profit from such differences of price. They, therefore, buy up the wheat in the fall, when its price is low, and hold it for sale at a time when a greater relative need makes its price higher. The large purchases in the fall tend to keep the price of wheat from going as low as it otherwise might, and the holding of a considerable stock into the spring for sale then, tends to prevent so great a rise as might otherwise occur. Speculative holding, in other words, increases the demand when price is low and increases the supply when price is high. The difference between the low and high prices will therefore, perhaps, on the average, about pay for the skill, trouble and capital furnished by the speculator. It is doubtless true that, in the absence of a speculating class, many farmers would themselves be inclined to hold their wheat till the season of highest price, but many others find this inconvenient and risky. The existence of a class of speculative buyers enables the farmers to sell at once for somewhere near the later and (on the average) higher price, and to avoid risk of loss. It is likely, therefore, to encourage wheat production and thus to tend towards a reasonably low average price to the public. Purchase in the fall and holding by millers might, of course, serve in considerable degree the same purpose. But this would compel millers to be speculators and to invest large capital in the storage of wheat, and it is not certain that they would perform these services as cheaply as specialists.

Consider now another type of speculation. The speculator who "sells short" really promises to sell at a fixed future date and at an agreed price, goods which he does not possess at the time of making the promise. The buyer, of course, undertakes, on his part, to purchase the goods in question on the agreed date and at the agreed price. He is said to buy a "future." The buyer may be a manufacturer or a dealer to whom it is important that he shall know in advance just what certain supplies will cost when he is ready for them. He wishes to avoid any risk of fluctuation in the prices of these supplies. The speculator assumes this risk for him. Thus, a speculator may agree, in April, to sell wheat in June at \$1.90 a bushel. The speculator should be an expert in predicting, so that to him the risk from possible fluctuations is less than it would be to others.<sup>17</sup> But even to the specialist there is some element of risk. The market price when June arrives may be \$1.95. In that case the speculator is obliged to buy for \$1.95 a bushel the wheat which he has agreed to sell for \$1.90,<sup>18</sup> and loses \$0.05 on each bushel. If the price turns out to be \$1.87, however, he gains \$0.03 on each bushel delivered. The fact that there are experts

<sup>17</sup> As Fisher has well pointed out, risk is fundamentally a matter of ignorance. Events occur only when their causes occur; and if we could know all the relations of cause and effect even in their most intricate ramifications and make ourselves familiar with existing conditions, we could predict all events with certainty. Our uncertainty is due to no inconsistency of Nature but to an ignorance of Nature that makes consistency sometimes appear to us like inconsistency. See Fisher, *The Nature of Capital and Income*, New York (Macmillan), 1906, pp. 265-269.

<sup>18</sup> Or pay 5c a bushel to the man with whom he made the contract.

who will promise, in advance, to sell at an agreed price, probably has some tendency to equalize prices. For if scarcity is feared, each intending purchaser (e.g. miller) would be likely to buy in advance and hold for his own future use a stock much larger than would satisfy his immediate needs. Such panic buying might make supply seem relatively short (say of wheat in the spring) and cause prices to rise unduly. But instead of thus purchasing in advance a large stock of the goods they desire, prospective users can arrange with speculators to be supplied with the desired goods as these goods are needed.

It is, of course, the intelligent speculation of experts which thus tends over a period of considerable length to equalize prices. So far as the untrained public are lured into speculative use of funds by the prospect of large chance gains, the effect of their speculation is quite as likely to be greater price fluctuations as less. For the untrained public are not unlikely to buy when prices are high, and to sell in a panic when prices are low thus causing them to go still lower. In short selling, also, they are as likely as not to make corresponding errors of judgment.

#### § 7

##### *The Determination of the General Level of Prices*

Let us now apply the principles of demand and supply to the general level of prices. We shall see that much the same kinds of competitive forces which fix any one price (as above explained) in relation to other prices, fix the general level of

prices of goods in terms of money. We shall consider the supply of goods, including the services of labor and of "waiting" (i. e. investing, or putting capital into use, the service for which interest is paid) offered for money, and the demand for goods by those having money to spend.

Where there is only fiat (inconvertible paper) money, the supply of goods in general, offered for money, at any level of average prices of those goods, would be just the same as at any other level of prices. This is very nearly true no matter what the money system.<sup>19</sup> If wheat prices are higher than corn prices, or *vice versa*, productive effort may be diverted from one line into another. But we are now not discussing changes in individual or relative prices. We are discussing only changes in the general level of prices, the average of prices. If the general level of prices should double, there is no reason to believe that the amount of goods produced for sale would on that account greatly increase. Supposing a community to be in reasonable prosperity and business activity at the lower prices, an increase of these prices would not make possible a very greatly increased production. It would not enable men to work longer hours nor would it make machinery more efficient. Neither would it stimulate the sales of goods by making such sales more profitable, since a general rise of prices simply means that money has a less value. If everything should sell for twice as much money as before, the sellers would gain nothing, for the

<sup>19</sup> See remainder of this section for explanation of why it is not always entirely true.

things they desire to buy would also cost twice as much. Looking at the matter from any reasonable point of view, it must be admitted that the supply of goods in general, at a higher level of prices, would be no greater (or but slightly greater)<sup>20</sup> than at a lower level. Likewise, at a lower level of prices, the supply of goods would be no less than at a higher one. A lower level of prices would not mean less activity or a smaller sale of goods. It would pay as well to sell goods at a low level of prices as at a high level, since at the lower level the money received would have correspondingly greater purchasing power.

The lower level of prices would only decrease the supply of other goods and the higher level increase it, in one contingency, and then only to a very limited degree. When the currency system is based on a precious metal, e. g. gold, a lower level of prices means a higher value of gold as money. It might therefore divert some labor from the production of other goods to the production of gold for coinage. A higher level of prices might tend, in the same degree, to divert labor from gold production towards the production of other goods. To this extent only, a higher level of prices would tend to increase the supply of goods in general other than money, and a lower level of prices to decrease it.

On the other hand, a higher level of prices of goods would tend to decrease the demand for goods by persons having money to spend. For with higher prices, and no greater amount of money to

<sup>20</sup> See next paragraph.

spend, buyers of goods would be unable to purchase as much as at lower prices. Lower prices of goods would mean that the money of purchasers would go farther.

Let us now suppose a doubling of the amount of money. Prices would tend to increase in nearly the same proportion. Suppose prices did not rise. Then purchasers of goods would buy all they were in the habit of buying and still have as much money left to spend as they formerly spent all together. This they would endeavor to spend at once. For in modern countries money is not hoarded away, but only enough is kept on hand for emergency requirements, and the rest is spent. Those who save are spending just as effectually as any others. The difference is in what they buy. Those who save buy factories, warehouses, railroads, farms, etc. Even though their savings are put into a savings bank, they are none the less spent for investment goods. It follows that a sudden doubling of the amount of money, if prices did not increase, would mean a demand for goods far exceeding the supply. The amount of land is practically constant. Doubling the amount of money would not enable people to work longer hours and so increase the products of labor. In a busy community the supply of goods to be sold simply *could not* be doubled except with an increase of population or invention. The increased money would therefore mean that at the old prices the demand for goods in general would exceed the supply. Purchasers would bid against each other. Prices would rise. Equilibrium would only be reached, supply and demand be

equal, at a general level of prices nearly (or, if fiat money, quite) twice that which had preceded.<sup>21</sup>

<sup>21</sup>The quantity theory of money has recently been attacked by Professor B. M. Anderson, Jr., in his book on *The Value of Money* (New York—Macmillan—,1917. We may profitably digress, perhaps, long enough to consider the bearing of three of his hypothetical illustrative cases. In the first (pp. 150, 151), Professor Anderson supposes a paper money convertible not in gold but in varying quantities of silver such that the amount of silver receivable for a unit of the paper is always the equivalent of a definite weight in gold. Under these circumstances, he asserts: "The causation as between quantity of money and value of money would be exactly the reverse of that asserted by the quantity theory. A high value of money would mean lower prices. With lower prices, less money would be needed to carry on the business of the country. Paper would then be super-abundant. But in that case, paper would rapidly be sent in for redemption and the quantity of money would be reduced." But is it not true that the paper money will not be presented for redemption? On the contrary, the conditions assumed by Professor Anderson are precisely those which would prevent the sending in of the paper money for redemption. If prices are indeed lower, those who possess this money have a more urgent motive than before to expend it while it will buy much, rather than to have it redeemed. The paper money will not be presented for redemption so long as it is worth more in goods than is the silver in which it is redeemable. And if and when it is presented for redemption, this will be *the result of a diminished purchasing power consequent on its redundancy*. In other words, we find here an influence of the quantity of money on the prices of goods.

In the second hypothetical case which we shall examine (pp. 296-299), Professor Anderson supposes an island the people of which are chiefly engaged in producing a single crop and to which comes by wire the news of a partial failure of the same crop in another part of the world. The island crop, Professor Anderson says, will rise in price and so will other goods in the island, which the prospectively prosperous planters now begin to buy. All this may be true but it furnishes no convincing refutation of the quantity theory of money, a theory which definitely asserts that both the quantity of money *and* the price level in a limited territory are largely determined by prices outside of that territory. If, on the island, prices

In a country which has a gold standard monetary system prices are largely dependent upon the amount of gold mined and hence upon the number and richness of gold mines.

If prices rose equally, this would mean a doubling in the money wages of labor for the same results produced and, similarly, a doubling in the

*rise before money flows in*, this can be true only to the extent that the now potentially more valuable crop is held for higher prices and hence trade is decreased, or by virtue of increased rapidity of money circulation or, most importantly perhaps, by the ability of the banks, in anticipation of crop sales at a higher price, to expand circulating credit (*if reserves will permit*) somewhat farther than usual. The quantity theory of money, properly interpreted, does not assume money to act on prices in any other way than *through the market and through human motives and calculations*.

In the third case (pp. 309, 310), Professor Anderson argues that reduction of some prices, if quantity of money and volume of trade remain the same, may not raise other prices but may leave a lower average of prices than before. He supposes that maid-servants who were receiving \$20 a month have their wages lowered to \$10 by a combination of employers and, having no better alternatives, continue to act as servants. He then proceeds to contend that although the employers have \$10 more each to spend per month, the servants have each \$10 less, that these changes just offset each other and that, therefore, prices will not change except for the fall of wages, the net effect being an average reduction. The \$10, according to Professor Anderson, is simply "short-circuited." The fallacy lies in the assumption that this \$10 is expended only once, e. g. by employer to retail shoe dealer, *in the same period of time* during which it would formerly have been expended twice, e. g. by employer to servant and by servant to shoe dealer. Why not assume that, if the servant fails to connect with the \$10, it goes from the employer to the retail shoe dealer and from the shoe dealer to the clothier? On the latter assumption, the fall of servants' wages, with volume of money and credit and volume of trade unchanged, certainly *would* mean a rise in some other price or prices. Professor Anderson has arbitrarily interpolated a decreased velocity of circulation of money.



money interest received for "waiting." Aside from disturbing effects during the period of transition, the *rate* of interest would be the same with the high prices as with the low. The money value of the sum waited for would be doubled and the money value of the interest would be doubled. The ratio between them would be the same as before. In other words, since prices have doubled, borrowers, for example, would require twice as many dollars as before and would also, of course, pay twice as many dollars in interest.

In the light of the principles above set forth, regarding supply and demand, we can explain why the excessive amounts of inconvertible paper money sometimes issued by governments, issued particularly in time of war, have resulted in very exceptional rises in the price level. This increased amount of money means, at any level of prices, a greater demand for goods. Therefore, that the demand for goods may not exceed the supply, the level of prices must rise. There is another factor of importance at such times, viz., public confidence in the money issued. If there is a general belief that the money will become absolutely valueless or greatly decrease in value, then many who have goods to sell will refuse to sell them for this money, but will demand gold or silver or other goods in exchange. This decrease in the supply of goods, offered for money, will mean that only a higher level of prices than otherwise would result can equalize supply and demand. Thus is to be explained the high prices (and, reciprocally, the great depreciation of money) in such periods as the American Revolution, the Civil War, etc.

## § 8

*The Relation of Commercial Banking to the  
General Level of Prices*

Credit instruments, or credit rights—for the paper is in each case but evidence of the underlying obligation—act as substitutes for money primarily through the intermediation of commercial banking,<sup>22</sup> and foreign exchange banking. Commercial banks constitute an important part of the mechanism of trade. Their work facilitates internal trade and, in connection with the work of foreign exchange banks and brokers, facilitates external trade as well. It is estimated that nine-tenths of the total business in the United States is carried on through the use of bank credit.<sup>23</sup>

Bank deposits (rights to draw from a bank or banks), which circulate by means of checks, may come into being in any one of several ways. One may become a depositor by directly depositing money (or the right to draw money, received by check from some one else, but this merely registers a transfer of a deposit and does not create one). One may become a depositor by borrowing from the bank in which the deposit is to be. If A goes to his bank and leaves there \$50,000 cash, he thereupon is said to have deposited such an amount in the bank and can draw on this sum at will by

<sup>22</sup> Savings banks and investment banks perform, of course, important functions, but do not have a part in providing a substitute for money.

<sup>23</sup> See Fisher, *The Purchasing Power of Money*, New York (Macmillan), 1911, pp. 317, 318.

issuing checks against it in favor of any persons to whom he wishes to make payments. But A may also go to the same bank, give his endorsed note or other satisfactory security, and borrow \$50,000. This money he leaves on deposit. The bank is then said to lend its credit. What A has borrowed is not money but the right to draw money by check, at will. The bank is under as much obligation to redeem his checks on demand as if he had directly put money into the bank. On the other hand, A is under obligation to pay the bank, when his note matures, the amount borrowed plus interest. Finally, one may also become a depositor by endorsing to his bank a note or draft payable by a third party who then is the real borrower.

It should be readily apparent that a bank can, in ordinary times, redeem all checks presented for redemption, without keeping for that purpose a cash reserve which at all nearly equals its liabilities. The total value of deposits which a bank is under obligation to pay out on demand, may be \$500,000. Yet it is certain that all the depositors will not call for their money at the same time. Instead of drawing it out, most of them send checks back and forth to and from others who do likewise. A cash reserve of \$100,000 may be ample. Putting the matter in the opposite way, we may assert that if there is \$100,000 in cash in such a bank, the bank can lend its credit, i. e. more deposits or rights to draw, to the extent of (say) \$400,000.

We have said that different depositors in a bank liquidate their obligations to each other by giving checks. There is, then, simply a change on the bank's books. Any amount of obligations can be

thus balanced. Different persons are made successively creditors of the bank for larger or smaller sums. The situation is complicated, but the principle is not changed, when depositors of different banks have business dealings with each other. In this case, which is a decidedly usual one, the banks become successively each other's debtors and creditors and have to settle through a clearing house. Bank A may have accepted and paid cash for, or credited to depositors, many checks on Bank B. Bank B therefore owes Bank A. Similarly, Bank C may owe Bank B, etc. All of these complicated obligations are balanced by a clearing house, so that each bank pays what it owes net or receives what is owed to it net, and a great deal of flow of money is avoided. In other words, the principle of cancellation is applied whenever possible between banks, just as it is in any one bank to the depositors in it.

The general level of prices is somewhat higher and the value of money is somewhat lower, because of the additional use of credit. The conditions of supply and demand require a somewhat higher level of prices, just as we have seen that they do when there is more money. Gold is cheaper. The demand for it is less. It does not need to be produced, and cannot profitably be produced, at such a low margin, i. e. from such unfavorable sources of supply, as would otherwise be worth while. But this bank credit is not altogether an *addition* to currency; it decreases the amount of gold money, and so is largely a *substitution* of a cheaper for a dearer currency.

But if bank credit can thus take the place of money, is there any limit to such substitution? Why might not credit expand and prices rise, or money be pushed out, indefinitely? The answer is that the amount of bank credit is pretty definitely related to the amount of money. In the first place, a certain amount of cash is needed in the banks, to maintain confidence. The amount so needed bears a relation to the amount of bank credit, and must be some reasonable per cent of such credit. Otherwise, the public is likely to become frightened and demand cash, and this cash cannot be paid. A margin against such contingencies is always essential and, for national banks of the United States and Federal reserve banks, as well as frequently for State banks, is required by law. So the total bank credit is related to the total bank reserves or cash in the banks.<sup>24</sup> Banks maintain the proper relation between deposits and reserves, by adjusting their rates of interest (or discount) charged to borrowers. If the deposits are in danger of becoming too great, relative to the reserves, a higher charge to borrowers will discourage borrowing, and so will limit the increase of those deposits which originate in the borrowing of deposit rights (or in the discounting of notes and acceptances).

The total bank credit is related, also, to the total cash in circulation.<sup>25</sup> Bank deposits passed by means of checks are absolutely unavailable for

<sup>24</sup> White, *Money and Banking*, third edition, Boston (Ginn), 1908, p. 197. The reserves required of national banks now have to be kept as deposits in the Federal reserve banks.

<sup>25</sup> Fisher, *The Purchasing Power of Money*, p. 50.

very many transactions. They are unavailable when the maker of a check is unknown, and they are unavailable, practically, for small payments, such as street car fares. Even bank notes cannot fill up the entire circulation when, as is usually the case, the government allows them to be issued only in relatively large denominations. The smaller denominations are needed and government money is used. Business convenience, then, also compels a relationship between the quantity of bank credit and the quantity of government money.

Since the quantity of bank credit is related in these two ways to the quantity of government coined and government issued money, changes in the latter tend to bring proportionate changes in the former. It is still true that prices depend upon the quantity of money, though the dependence is in part indirect. The demand for goods comes from those who have bank credit to offer as well as from those who have only money.

## § 9

*Summary*

We began our study of value by assuming the simplest possible situation in which the principal value-determining forces might work, viz. a place inhabited by a single isolated man. Though in such a situation no exchanges are possible and, therefore, no value, in the sense of power in exchange, is possible, there may nevertheless be comparisons of utility. Such an isolated man may choose to produce one thing instead of another because its utility is greater to him than the

utility of the other, in relation to the time and intensity of labor necessary to produce it. It is likewise true for a person so situated, as for a person in a modern community, that a given unit of any good has less utility according as he possesses many units. If one kind of good has, because he possesses little of it, greater utility to him than another, and is yet no harder to produce, he will devote his attention to producing it instead of the other until the relative utilities are as the relative sacrifices or costs of its production. But this adjustment may be reached either because the utility of the desired good becomes less as more of it is possessed, or because the labor of producing it becomes greater in proportion when more is wanted, or for both reasons. Some wants will eventually remain unsatisfied because they are not important enough to warrant the sacrifices of production, sacrifices which are likely to grow greater in proportion to the results obtained, as more hours per day are devoted to labor.

In a modern community, the relatively large production of the most desired goods is brought about through the influence of desire upon demand and of demand upon the profitableness of supplying these goods. The principle of diminishing utility still applies and each purchaser buys goods desired by him only up to the point where the last unit purchased has a utility equal to the utility of the money which must be paid for it, which will be equal to the utility of the most desired alternative purchase that might have been made with the money. The goods which are generally so desired in quantity that the average purchaser buys much

before their utility becomes as low as the price, are goods which, therefore, it pays to produce in large amounts. Many persons and much land and capital are devoted to producing these goods. In a general way, we can state that producers carry on productive effort up to the point where its discomfort, weariness or disutility balances the satisfaction or utility which is the reward of that effort. But we cannot say that the disutility of productive effort, to the producer, equals the utility of the goods produced, to the consumer.

A modern community is made up of specializing units; specialization requires exchange; and exchange involves a rate or rates of exchange. In other words, exchange involves demand and supply. It is the forces of the market which fix the price of any good at the point where demand and supply are equal. At a lower price, demand would exceed supply and buyers would bid against each other, so raising the price. At a higher price, supply would exceed demand and sellers would bid against each other in order to dispose of the goods. Demand, supply and price have reference to a period of time which may be shorter or longer according as we are concerned with market, seasonal or normal price.

Speculative buying and holding for a rise tends to keep up the prices of agricultural products when they first come upon the market and to prevent scarcity and high prices later. The selling of "futures" also tends towards equalization of prices. But speculation by persons inexpert in it may tend to increase price fluctuations instead of to diminish them.



The general average of prices or price level is also determined by demand and supply and largely resolves itself into a relation between the volume of purchasing power in the form of money and bank deposit (checking) accounts on the one hand and the volume of trade on the other hand.