

CHAPTER II

Ultimate Determinants of Value

§ 1

Supply of One Good Means Demand for Other Goods

If our explanation of the determination of value is to approximate completeness, we must not stop with an analysis of the nature of demand and supply, but must bring into view the forces which lie back of each. We shall begin with demand. It was said in the last chapter that desire is not demand. Nevertheless, desire is related to demand as (part) cause to effect. Demand depends upon desire for goods coupled with ability to pay for them. Other things equal, the greater the desire for any goods, the greater the demand for them. The desire of an isolated man for goods of any kind, expresses itself in his efforts to produce these goods. But where, as in a modern community, there is division of labor, each member of the community specializing in some one line, demand for any good on the part of producers of other things, expresses itself in their production of these other things for a market, in order that they may have the means to purchase what they desire. In effect, though the use of money intervenes, they buy the goods they desire with the goods they produce. If the farmer desires a piano, an automobile, good furniture and various other things, he works longer hours or more intensively and produces more wheat, cotton, corn or beef.

Thus the goods of one kind, which he *supplies*, express and give effect to his *demand* for other goods.

It is this fact which lay back of the contention of the classical economists, that there could be no such thing as a *general* oversupply, i. e. the supply of a larger amount of all kinds of goods than could be sold. There might be, through miscalculation of producers, or other cause, an oversupply of one or a few kinds of goods compared to other goods. But this simply meant that the producers of the goods supplied in excess, say cotton, had plenty of those goods with which to purchase other goods. They had produced what, they believed, would be satisfactory means of payment for the goods desired. That is, they had intended to produce marketable goods. They had mistakenly produced too much of one thing (or a few things). But to assume that nothing they could have produced would have been acceptable to those with whom they traded, would be to assume that the latter had no wants remaining unsatisfied, for the satisfaction of which they were willing to pay. But if, in our system of division of labor, these latter, the purchasers of cotton, have produced any goods, it must be because they desire and, therefore, have a demand for, other goods, such as cotton. Though they do not desire (and, except at low prices, will not take) all of the cotton which has been too freely produced, they do desire other goods and have produced the wherewithal to pay for them. In other words, people produce goods in modern society chiefly as a means of getting other goods. Production of

goods by a person who intends to sell them establishes a strong presumption that he wants something else, that his wants are not satisfied. What he wants to buy may be factories, railroad shares, office buildings and tenements, but it is pretty certain that he wants to buy something. If he puts his money into a savings bank, the situation remains the same, for he merely makes the bank his agent. The bank invests, i. e. *buys*, for account of its depositors. *General* overproduction would mean, then, a more or less universal production of goods for sale, by persons who did *not* want other goods in exchange for the goods sold. It would mean a desire to sell goods but no corresponding desire to buy goods. Since, in general, men sell only that they may buy, such a situation as a general phenomenon is almost unthinkable. It may seem to exist temporarily, and for special reasons, during a panic and business disorganization, but it is very far from being a normal condition of economic life; nor can general oversupply, though seeming to exist during such a business breakdown because merchants and manufacturers are afraid to buy the usual amounts of goods, raw material and machinery, be put forth as a cause of the breakdown. In fact, the refusal of dealers and manufacturers to buy does cause it to appear that there is a surplus of goods, discourages manufacturers of those goods, throws men out of work, deprives these men of the means of purchasing, and so accentuates the appearance of superfluity. But the condition is one of industrial breakdown rather than of too efficient industrial

functioning.¹ Provided our economic machinery

¹ Professor Davenport says (*Economics of Enterprise*, New York—Macmillan—, 1913, p. 362) that in a time of depression "goods are offering against present money, while money is offering only against promises to pay in later goods or in later money with which presumably to command later goods. . . . The offers of present goods are not for present goods, and the offers of present money are not offers for present goods." In other words, everybody seems anxious to sell for money and relatively few seem anxious to spend money.

To this one might reply that, although it seems to picture fairly well the situation during depression, yet the difficulty is that sellers of goods, despite apparent eagerness to sell, are nevertheless asking prices higher in money than buyers are willing to give, and that a revaluation of their goods by sellers, on a lower basis, would enable them to be sold. Professor Davenport contends, to be sure (*ibid.*, p. 303), that falling prices may not terminate the glut, since if the purchasing power of money over present goods is thus rising, "so also is rising its putative future purchasing power." But this can hardly be true without limit. At some degree of lowness of prices, purchasers of goods must realize that a better time to buy can hardly be expected to arrive. There must be a scale of prices at which, could it be generally accepted, goods would exchange freely, not reluctantly, for other goods through the medium of money. Indeed, Professor Davenport goes on to mention such considerations by way of accounting for the eventual revival from depression.

But be this as it may, assuming, for example, that all persons who have money are unwilling to spend it at any set of prices of goods, while all holders of goods are anxious to dispose of them for money on any terms, does it not still follow that all who have or produce goods for sale are demanders of other goods? In the assumed case, they are demanders of money; and this means, in effect, in a gold standard country, that they are demanders of gold. Temporarily, at least, the value of gold—or other primary-money commodity—is raised. Could such a condition continue, it would stimulate the production of gold and lead to the employment of more men to find and to work gold deposits. So far from there being an all-round oversupply of goods, we could say with truth that

works smoothly, we need not fear a superfluity of goods, and when we appear to have such superfluity, the real difficulty is to be sought elsewhere.

§ 2

Influences Back of Demand

Intensity of demand for goods shows itself, as has been above stated, in intensity of effort devoted to producing other goods with which to buy them. But intensity of demand for any one kind (or a few kinds) of goods, may show itself also in a smaller consumption of other kinds, and in using most of one's available purchasing power to buy the goods most wanted. In other words, our estimates of relative utility inevitably involve not one but two comparisons or sets of comparisons. We must compare the utility of goods desired with the cost of the goods in terms of what we produce to pay for them and, therefore, in terms of the disutility (of effort and other sacrifice) involved in producing the latter goods. We must also compare the utility of any special goods desired, with the

there was a relative undersupply of gold. Perhaps it is better, in view of the above complex of considerations, not to assert absolutely that all-round overproduction is impossible. During depression there is a condition which often seems like all-round oversupply, or practically that. And it is of too temporary a nature, perhaps, to warrant a shift of surplus labor to gold production even if that were in less degree than is the case on aleatory industry. Of course, also, where the currency is of the fiat order a temporary apparent relative undersupply of it, of the kind here in question, could not give opportunity for much employment of idle labor in producing it. But that the difficulty, in its origin, is always one of maladjustment rather than of too much production everywhere, should be clear.

utility of other goods which might be purchased instead but which, because our earning power is not unlimited, may have to be sacrificed if the special goods most wanted are bought.

To illustrate, a farmer's desire for a piano may cause him to work longer hours and cultivate his farm more intensively, in order to produce the extra amount of wheat necessary for purchasing the piano without greatly sacrificing his other needs. His sacrifice takes then the form of the extra effort required to earn the requisite money. On the other hand, his desire for the piano may, conceivably, cause him to work no harder but may induce him to give up owning an automobile. In that case, his sacrifice takes a different form, but may be regarded as none the less a sacrifice. The same principle applies to anything which one may purchase,—coal, shoes, sugar, etc.

We have already seen² that as a person has more and more units of any article, the utility or desirability of additional units declines. A pound of sugar, to a man who could never have but a single pound, would be highly prized. A second pound would be somewhat less desired but would yet have high utility. But to a man who regularly consumes 75 pounds of sugar a year, one pound more or less is of relative unimportance. In the case of some goods, utility would diminish rapidly as the amount owned increased. In the case of other goods, utility would diminish slowly. In any case, a person desiring the goods would purchase them up to the point where the last unit secured

² Chapter I, §1.

was just equal, in his mind, to the price paid. The purchaser of sugar would buy each year or each month such an amount that the last pound purchased would just about seem worth while getting at the price. The purchaser of coal would buy, each winter, such a number of tons that the last ton would just about seem worth the price paid. If the price were lower he might luxuriate in more heat. If it were much higher, he might endeavor to get along with one less heated room. The last ton purchased would just about seem to be the equivalent, in utility, of the money spent for it or (since money has utility only for what it can buy) of the other goods which could have been secured with the price of that ton but which are sacrificed in order to get the coal. This last ton, being just equal in utility to the money necessary for its purchase, would just compensate for the disutility (labor or other sacrifice) involved in earning that last addition to the year's income. This statement remains true in principle even when the assumed purchaser of goods finds labor a constant delight. For such labor still involves a sacrifice of sleep, or leisure or reflection, which may be no less or even more delightful to him. As to the person who gets all or nearly all his income from property, it can hardly be said that the last hour's work has any disutility at all. But, even so, goods may still be valued in terms of other goods foregone.³ The last ton of coal purchased is called the marginal purchase, its utility, marginal utility, the effort or other sacri-

³ See Davenport, *Economics of Enterprise*, p. 93.

rice necessary to earn that much more (e. g. the last and, therefore, hardest or most disagreeable hour's work, if work must be undergone) is the marginal effort or sacrifice, and its disutility is the marginal disutility. At the point where the coal purchasing stops, the marginal utility of coal is just equal to the marginal utility of money or of the goods other than coal for which the money might be spent and, if the money had to be earned, is just about equal⁴ to the marginal disutility of earning that money.

We may now restate the relation of demand to price, pointing out that demand rises as price falls and that this is true partly because a fall of price induces some to be purchasers who would not buy at a high price, and partly because those who would buy at a high price will buy more if price be lower.

A further statement may be made, which has to do with both demand and supply. A great rise in the price of (say) wheat, would tend to decrease the demand for wheat by persons producing other goods to get it, partly because it would induce some to give up producing the means of purchasing wheat and to produce, instead, the wheat itself. On the other hand, a great decrease in the price of wheat (resulting, perhaps, from the invention of better harvesting machinery and from improved methods of soil enrichment⁵), would tend to in-

⁴ Not necessarily exactly equal since the money may be earned at one time and spent at a later time, and since, therefore, its utility may be different from its estimated utility.

⁵ These improvements, other things equal, mean that fewer are required to produce wheat, and, therefore, unless some change

crease the demand for it by causing some who had been producers of wheat, to produce other things and therewith buy wheat. Otherwise putting the matter, we may say that the amount which would be paid for wheat in terms of other goods, is roughly limited (if we have long periods and possible change of occupation, in view) to the amount of other goods which could be produced with the same (marginal) sacrifice as the wheat. A price of wheat so high that it is much more difficult to get the wheat desired, by producing other goods with which to buy it, than to produce the wheat itself, would mean a smaller demand for wheat,⁶ and demand and supply would only be equalized, in the long run, by a shifting of a part of the community's producing power into

their occupation, prices will fall so far as to make wheat production relatively unprofitable. That is, prices will fall more than the improvement in methods can permanently justify.

⁶ Unless we think of wheat producers as being demanders of wheat, directly or indirectly, from themselves. Considered as a group, however, the producers of wheat and wheat products are suppliers of wheat to the rest of the community. The part of the product that they themselves consume, they cannot be said (as a group) to demand, in the sense of buying it with other goods. Hence, if other producers are pushed or drawn into wheat production, because of high wheat prices, the demand for wheat may be said to be smaller. In a more detailed, and, therefore, perhaps, less philosophical sense, producers of wheat may be said to demand wheat, indirectly, if they sell their wheat and buy wheat flour. Their demand for the flour from the millers is, indirectly, a demand for wheat since it occasions demand for wheat by the millers. In this sense, the wheat producers may, often, literally buy back their own wheat. It is possible, in short, to conceive of the wheat consumed by the wheat producers themselves as entering into neither demand nor supply, or to conceive of it as entering into both.

wheat production. There is a very real sense, then, in which the demand for an article, and the amount which consumers will pay for it, depends upon its cost of production. They will not, in the long run, pay more for it than the amount of other goods which the same sacrifice will produce. Normal or long run demand may therefore be said to depend on the (marginal) utility of the goods demanded, on the (marginal) utility of the other goods which will have to be sacrificed if these are enjoyed, on the (marginal) disutility or sacrifice of producing the goods necessary to pay for the desired goods, and, by way of comparison,⁷ on the disutility or sacrifice necessary to produce, instead of buying, the goods desired.

Cost of production has often been spoken of as if it influenced only supply of goods and not demand. But this, if the position here taken can be justified, is not consistent with a broad philosophical view of the phenomena in question. Conditions of cost influence demand no less than supply,⁸ even though their influence on demand is not obvious without a philosophical analysis of economic relations.

This point has importance in the distinction between goods which have and goods which have not any cost of production, i. e. between goods which are reproducible and goods which are almost or absolutely fixed in quantity. Ordinary commodi-

⁷ A similar comparison, amounting to the same thing, would be one of the utility of the desired goods compared with the utility of other goods producible at the same sacrifice.

⁸ If economists dislike this contention, they must, it would seem, abandon the traditional definitions of demand and supply.

ties are in the first class. Land space is in the second class. The demand for ordinary commodities depends not only upon their utility, but in part, as we have seen, upon their cost of production, for the majority of people will not long pay for any good more than this cost, i. e. more than the amount of other goods which the same effort, etc., would produce.⁹ But the demand for land space depends (assuming any given prices) solely on its utility, for it has no cost of production.¹⁰ At any set of prices for the different pieces of land in a community, the demand would be almost totally unaffected by any possibility of producing the desired land instead of buying it, for, on the whole, and with a few exceptions of *made* land, there is no such possibility.¹¹ Buyers of land would purchase it up to the point where its utility, for their purposes, equalled its price. At a low set of prices, more land would be bought than at higher

⁹ The above statement is made in general terms and must be taken by the critical reader with the qualifications already made in this and the previous chapter as to difference of cost to different producers, marginal cost, and dependence of this cost on amount produced. But the statement as here made is sufficiently accurate for the purpose in hand.

¹⁰ Though improvements on it, of course, do have. But such improvements are to be sharply separated in thought from the land itself.

¹¹ It is not the intention to suggest that the buyer or renter of land space has no alternative. He may use a smaller piece of land more intensively instead of a larger piece less intensively. Thus, he may put a twenty-story building on a small area instead of putting a ten-story building on a larger area. He may choose a poorer site instead of a better one. But the buyer or renter of capital has alternatives of these kinds and has *in addition* the alternative of becoming himself a producer of the sort of capital wanted.

prices. But if the land were sufficiently desired by purchasers, to make the prices high, their demand would not be likely to be limited by any alternative of shifting their industry and becoming producers of land. To an extent, land fertility can be produced by human effort but, practically speaking, land space cannot be.

§ 3

Influences Back of Supply

Let us now analyze the supply side of the market in the same way. The supply of any good, e. g. cotton, depends, first, on the price that can be realized for it, per pound, i. e. ultimately on the amount of other desired goods obtainable in exchange for the cotton. A higher price would encourage larger production. Second, the supply of cotton depends upon the intensity of desire for these other goods securable in exchange by the producers of cotton. Supposing the intensity of desire for these goods on the part of cotton producers to be very great, they would produce large amounts of cotton with which to buy these other goods. Assuming their desire for other goods to be weak and easily satisfied, they would care less to produce large amounts of cotton with which to buy these other goods. If the producers of cotton and of the other goods for which it is given are alike members of a single homogeneous population, able to change easily in large groups, from one occupation to another, the intense or weak demand of cotton producers for other goods will indicate an intense or weak demand in the whole community for goods in general,

probably including cotton, and may not imply any special effect on the value of cotton in relation to other goods. But if, as is the case, cotton is only producible in certain climates, and if those who live and work in those climates are persons whose wants are slight and easily satisfied, the effect on the supply of cotton may be important. In trade between highly civilized countries on the one hand and primitive peoples on the other, the lack of desire upon the part of the latter for anything beyond a few simple necessities of life, tends (assuming their labor to be wholly voluntary) to restrict the supply of the goods they produce and so to raise the prices of such goods. This result will not follow, of course, if the goods in question can be cheaply produced in the civilized country.

Third, the supply of cotton may depend upon the disutility of producing it, i. e. the unpleasantness or difficulty of or disinclination to do the work or make the accumulations of capital used in producing the cotton. Thus, if exhaustion of the soil should increase the labor per pound of producing cotton, this would discourage its production and, if only the same price as before could be secured, less and perhaps much less cotton would be produced than before. On the other hand, should improvements in machinery and in methods of soil culture make the labor cost per pound of cotton less than before, the production of cotton would be encouraged and, at the same price, a larger amount of cotton than before would be produced and sold.

Summarizing our conclusions thus far and restating them, we may say that producers of cotton

will supply it up to the point where the (marginal) disutility to them of producing it is just balanced by the (marginal) utility to them of the goods which they get in exchange.

But in presenting the above considerations, we have failed to emphasize an influence to which the greatest importance should be attributed. This is the influence exerted by comparison, in the minds of producers, of the various ways of getting what they want as consumers. Thus, the producers of cotton are producing it, in large part, as the most effective way, for them, of securing wheat, bacon, sugar, etc. Should the price of cotton greatly fall or of these other things greatly rise, so that the produce of a year's labor in cotton raising would purchase much less than before of these other things, some of the cotton producers (or persons who would have become such), might instead turn their efforts to other lines, to producing goods other than cotton, which they could more profitably exchange for the various goods they desired, or to producing, themselves, some of these desired goods instead of buying them with cotton. We may, indeed, regard the cost of production of cotton as being the amount of other goods, of one and another sort, which the same effort and self denial would produce and the production of which the cotton raisers forego when they raise cotton. Assuming the possibility of an easy shifting of occupations, they will not care to produce cotton if they have to dispose of it for much less than that amount of other goods which the same effort and sacrifice would produce. To say that they must take less than this, is to say that some other

line (or lines) of production is (or are) more profitable than cotton raising, and such a condition would tend to *decrease the supply* of cotton.¹²

On the supply side then, as on the demand side of the market, in the case of any goods, the cost of production is an important consideration, cost of production being understood to mean the amount of *other* goods which the same effort and sacrifice would produce. Purchasers do not wish to pay more than this cost of production and will, in large part, change their occupations and cease to appear on the demand side of the market, if they do have to pay more. Sellers do not wish to take less than this cost of production and will, in large part, change their occupations, and cease to appear on the supply side of the market if they do have to take less. It need not surprise us that demand and supply are thus both so closely related to cost in the sense of the word here used. Let us remember that those who demand one kind or several kinds of goods, supply other goods, and that those who supply one kind of goods demand other kinds. The demander is a supplier and vice versa. Every person is at the same time a buyer of some things and a seller of other things. And every person, in a modern society based on industrial freedom, has the alternative of becoming a buyer of what he now sells and a seller of what

¹² Another way to put the same thought is to say that the supply of cotton would decrease if the producers of it have to expend more effort and sacrifice in producing cotton as a means of paying for other desired goods, than would be required to produce these goods direct or to produce something other than cotton with which to buy them.

he now buys. In fact, every industrial unit has many alternatives and all of them are determining conditions of his action as an economic unit in industrial society.¹³ When buyers, taking them as a whole, refuse, in the long run, to pay for a good *more* than its cost of production, and when sellers, taking them as a whole, refuse, in the long run, to accept less, both groups are influenced, not only by their available alternatives of varying their consumption in amount or in proportions and of varying the intensity or degree of their productive efforts and other sacrifices, but also, and, for many economic problems, most importantly, by their alternative of shifting their fields of industrial activity.¹⁴

On the supply side, as on the demand side, it is worth while emphasizing the distinction between goods producible in indefinite amounts, in relation

¹³ Cf. Professor H. J. Davenport's discussion in his *Economics of Enterprise*, Chapter VI.

¹⁴ There is here no intention to deny, of course, that an individual concern can afford to charge a lower price if it can fully utilize its plant than if it is unable to secure business enough to utilize its plant to anything like full capacity. Such a concern might, therefore, be willing to sell a larger amount of goods for as low a price as that for which it would sell a smaller amount. Where the size of plant of maximum efficiency is large enough to supply the entire market for any article or service (e. g. electric light in a city), monopoly production is likely to be the cheapest. (For a fuller discussion of the conditions fixing the rates charged by a company whose facilities are not completely utilized, see the author's *Principles of Commerce*, New York—Macmillan —, 1916, Part III, Chapter I, §6 of Chapter II, and § 1 of Chapter III.) But it should be clear enough that where an increase of output is dependent upon the construction and maintenance of several plants, a higher price is more likely to increase supply than a lower price.

to the world's need of them, such as wheat, corn, cotton, iron ore; and goods more or less fixed in quantity, such as original Greek statuary, the paintings of Michael Angelo, and, chief in importance, land. It is true that producers of wheat, corn and cotton will not engage in the production of these crops at a price below cost (in the sense and on the hypotheses herein set forth). But the sellers of land space do not have cost of production to consider, because land space practically speaking (though there is *some* "made land") can not be produced. The owners of land space therefore, in selling it, consider only the utility to them of what they can get for it compared to the utility to them of the land. The producer of cotton, also, *after he has produced it*, considers only the utility of what he can get for it compared to the utility to him of the cotton—if he has any way of using it all. But cotton is constantly being used up and requiring to be resupplied and *before producing it*, the cotton farmer most certainly *will* consider its cost of production, nor will he go on, year after year, raising cotton for less than this.

§ 4

Labor Costs in Production

Having made the foregoing general analysis of cost of production and its influence on demand and supply, we have now to enter into some of the more detailed aspects of cost. A larger supply of any good (assuming no improvements in methods of production) involves

either more labor by those already engaged in producing it or a larger number of such producers. Neither can ordinarily be had without higher price as an inducement. Let us first consider the possibilities as regards getting more goods of a given sort by engaging more persons for their production. In much of our previous discussion, we have seemed to assume that the tendency, so far as change of employment is easy, is for returns to workers to be about the same in one line of activity as in another, in proportion to effort and other sacrifices. But we have not emphasized the fact that a given line of activity may seem much harder, much more distasteful, to some men than to other men. This fact may sometimes have an important influence on price. By way of illustration, let us suppose a change in occupations abroad of such a sort that far more American wheat was wanted than before, and this not temporarily owing to war conditions but more or less constantly. For a while this want might be very inadequately satisfied, but should the demand and the resultant high price continue, larger acreage in the United States would be sown to wheat, and a larger proportion of the American population would devote themselves to wheat production. Of those who changed from other lines into agriculture, some would be persons with no training for the work and others persons with comparatively little taste for it. To make the large production continuous, the price of wheat must remain high enough to keep these persons in

the work. After a period of a generation or two, new tastes and habits would have time to form, and a larger number of men than before might be willing to engage permanently in agriculture without much extra inducement. But during a short period, though a period of some years, a considerable inducement to wheat production, in the form of high prices, might be necessary.

There is, however, in addition, the possibility of securing more goods of a given sort, e. g. wheat, by getting those already engaged in its production, to work more intensively or to work longer hours. But additional hours of labor become progressively more and more a burden and there is a progressive disinclination to perform such labor. At first thought we might suppose that a higher rate of pay per hour would encourage working longer hours, that a higher price of wheat, for instance, would cause persons already engaged in wheat production to work longer hours and thus produce more wheat. But it is perhaps equally likely that the larger returns per hour, resulting in greater prosperity, would make the longer hours of labor seem less necessary as a means of getting a living¹⁵ and would encourage the taking of more leisure. So there is no certainty that a higher price would in that way add to the supply even temporarily. So far as agriculturists could change from other lines to

¹⁵ Cf. Jevons, *The Theory of Political Economy*, fourth edition, London (Macmillan), 1911, pp. 179-183.

the production of wheat, a rise in wheat prices might induce them to do so, and eventually it would bring more men into agriculture; but it very likely would not increase the intensity or the hours of labor and it might, conceivably, even decrease them. It does not follow that a lower price would cause more wheat to be produced than a higher. For though smaller returns from wheat and other farm products might necessitate somewhat more work to make a living, if agriculturists *had no alternative*, yet, as things are, lower returns than in other lines would divert many into these other lines and so almost of necessity decrease the supply of agricultural produce,¹⁶ just as higher returns would draw more men

¹⁶ Even if a lower price, e. g. for wheat, would actually bring a larger supply than a higher price—as it might if wheat producers were unable to change their occupation and simply had to work harder for a living—price would still be determined at the point where demand and supply were equal and, probably, there would be only one such point. Any other price would mean a position of unstable equilibrium and could not continue. The high price, though it might, on the present hypothesis, limit supply, would be likely to limit demand still more. The low price, though it might increase the supply, would presumably still more increase the demand. Competition would therefore operate to fix price at the point of equality. We are not here dealing with a supply which, at any price, is a certain amount or indefinitely more (see Fisher, *Elementary Principles of Economics*, New York—Macmillan—, 1912, pp. 317, 324) but with a supply which, though it increases as price falls, increases, for each lower price, only up to a certain limit. Some point of equilibrium there must be, unless we suppose supply to increase as price falls, and to decrease as price rises, more rapidly than demand; and that, therefore, demand exceeds supply at the higher prices, and falls short of it at the lower.

into wheat raising and increase the number of bushels produced.

§ 5

Land and Capital Costs in Production

We have seen that to get a larger supply of any good may be expected, ordinarily, to require a larger amount of *labor*. Attention should now be called to the fact that it requires the use of more *land* or a more intensive application of labor and capital to land already used for the line of production in question, or both. Suppose, as before, that there is desired the production of wheat. Assuming other things to be equal, more wheat can not be produced unless the land already devoted to wheat production is cultivated more intensively, unless additional land not previously cultivated is brought under cultivation, or unless land previously used for other purposes is diverted to the production of wheat. To get larger wheat production in any of these ways, requires a higher price. Assume that the price has been \$1 a bushel. At that price the average producer will cultivate his land with whatever degree of intensiveness yields the greatest gain. He will increase the amount of labor devoted to cultivating his wheat land, as long as the wheat yielded pays the wages of this labor and a satisfactory return on the necessary capital. But the point is soon reached beyond which additional labor can not, without spreading over more land, produce wheat enough to cover

the requisite wages. For it is impossible, on a given piece of land, indefinitely to increase the amount of labor and get a proportionately increased product. This fact is, of course, generally known to farmers, and, in its applications to urban land, is known to merchants and manufacturers also. But if wheat sells for \$1.20 a bushel, and money wages remain the same, or even advance somewhat,¹⁷ it may be profitable to cultivate a given piece of land more intensively than otherwise would pay. An additional man may be hired and, though the amount of wheat produced probably will not increase in anything like the same per cent as the labor, the increase, *at the new and higher price*, will be more likely to cover the additional wages paid and to yield some profit, than it would at the lower price. But the point to be emphasized is that, other things equal, it will not pay thus to cultivate the land more intensively *unless* the price to be received *is* higher. The higher price is a necessary means of bringing out the larger supply.

The same principle applies to urban land. To increase the amount of manufacturing or of retail trading on a given area, necessitates more crowded quarters or else higher buildings, and the higher buildings are made the more solid must be their foundations. In other words, a point is eventually

¹⁷ To the objection that we have assumed wages virtually to fall since we assume wheat prices to rise in a greater degree than wages, the answer may be made that, if the prices of other goods do not rise at all, wages need not rise as far as does wheat in order that wage earners should be able to enjoy a *larger* amount of goods-in-general than before.

reached where additional stories, and, therefore, additional production on the same land space, yields a less reward than would smaller production, proportionate to the labor (including the labor of building) expended.

If all land had exactly the same capacities and advantages, an additional demand for wheat would not for any great length of time cause wheat land to be cultivated any more intensively than before, as compared with land used for other purposes. It would always be more profitable, if a larger amount of wheat were wanted, to divert land from the production of other goods into the production of wheat. But in fact, land has not all the same capacities. Hence there would be some loss in turning into wheat production land previously used to produce (say) corn. The corn land is farther south, on an average; and rather than get all the extra wheat desired, by diverting former corn land into wheat production, it may be desirable to get part of it by cultivating more intensively the land already devoted to wheat raising. But it is also true that an additional demand for wheat (or other goods) is likely to be partly satisfied by diverting into such production land which was previously otherwise used. This, of course, necessitates a higher price for the wheat. Let us suppose that tastes or customs have changed so that wheat is even more used as food than now and corn less so. Since some of the land used to produce corn can also be used to produce wheat, the probability is that part of the additional wheat wanted will be so secured. But it will not be so secured except at a higher

relative price for wheat. Presumably the lands used for producing corn are devoted to that purpose because, at existing values, it pays best so to devote them.¹⁸ But with wheat higher in price, and corn, perhaps, lower, it may be worth while to divert some land from the one use to the other. The use which was before *less* profitable, now becomes *more* profitable in relation to other uses. The two kinds of goods are competitive and that one which can pay more for the use of the land, gets it.¹⁹ A change in relative values may give to a wheat crop, land which would otherwise have been devoted to corn; or may, in a city, give to a shirt factory, land which would otherwise be used for a shoe factory or for a wholesale grocery.

Following our previously adopted sense of "cost of production," we may say that the cost of production of wheat (at the margin of wheat production, viz, on the land which it is just worth while to devote to that purpose instead of to some other—or no other—purpose, and with the labor which is just induced to follow wheat production) is measured by the value of the other goods, e. g.

¹⁸ Though it will also pay, in many cases, to alternate or rotate crops, for the sake of retaining fertility, nevertheless, a higher price of wheat would introduce it into rotations from which, at a lower price, it would be omitted.

¹⁹ This idea, suggested by Mill in a reference to what he regards as an exceptional case (*Principles of Political Economy*, Book III, Chapter IV, §6), appears to be clearly understood by Jevons who discusses it at length in the preface to the second edition of his *Theory of Political Economy*, (See pp. xlvii-li of the fourth edition.)

corn, which the same labor and land might have produced instead.

Since, besides land and labor, machinery and other kinds of "capital" are used in production, and since such "capital" can only be accumulated by saving, we may regard saving (or "waiting") as one of the three primary factors of production, the other two being labor and land. And we may widen our concept of cost of production so as to include consideration of saving. We shall then say that the cost of production of wheat, for example, is the amount of corn or other goods which the same labor, land *and saving* could produce if devoted to such other line and which must therefore be sacrificed if the wheat is produced instead.

§ 6

The Value of Land

The value of land—and of some other goods not now reproducible, such as original Greek statuary—has little or no relation to cost of production. Land has no cost of production (though there is, of course, a very little "made land") in the sense in which we have used this expression. The amount which purchasers will pay for land is not, practically, limited by any alternative they may have of producing some of it themselves, nor is the amount that sellers will take at all determined by any corresponding consideration of other rewards which the labor of its production might have brought them, since there is, for land as such, no such labor of production. Land has a

value based on its earning power,²⁰ but this value is neither directly nor ultimately fixed by any cost of production.

§ 7

Joint Demand and Joint Supply

Two cases of value, sometimes called special cases though really, perhaps, more usual than the more simple case, remain to be cleared up. One is the case of joint demand; the other is the case of joint supply.

Demand for the services of railroads may be mentioned as a case of joint demand. Demand for rail transportation involves, indirectly, demand for rails, ties, ballast, engines, cars, services of engineers, etc. All of these together are necessary for transportation. Demand and supply (or, in some degree, government regulation) fix a set of rates (prices) for transportation and these rates go out indirectly as payments for the various services by which the service of transportation is made possible. If any one thing needful for transportation is scarce, e. g. ties, the price of that thing may go very high indeed without raising the price of transportation (dependent on so many prices) in anything like the same degree, and therefore without greatly diminishing the demand for transportation. The different articles and services included in joint demand may change greatly in price relatively to each other, according to their relative costs of production, without chang-

²⁰ Cf. Chapter VI, §2.

ing the price of or the demand for the desired combined service.²¹

Joint supply is the familiar case of by-products. Two or more things are in part produced by the same process. Thus, coke and coal gas are both produced by the process of abstracting gas from coal. The expense of mining the coal and the expense of abstracting the gas are then joint expenses. These expenses would have to be met either to get the coal gas or to secure the coke. Another example, commonly given, is that of wool and mutton. These are joint products of the sheep raising industry. The expense of sheep raising is a joint expense, an expense which must be met to secure *either* the wool or the mutton, but which, if it is met, makes it possible without great additional cost, to get *both* wool and mutton. In this case, as in most cases of joint supply or joint cost, not all of the cost is joint. The cost of shearing is not joint but is necessary only to get the wool. The cost of slaughtering is necessary to get the mutton. The expenses of marketing are also, for the most part, special. But a considerable part of the total expense is joint.

In the case of joint supply, a part of the expense of production, i. e. the part which is joint, will be covered in varying proportions in the price of the several goods so produced, according to the

²¹ Cf. Marshall, *Principles of Economics*, sixth edition, London (Macmillan), 1910, pp. 381-383, and Taussig, *Principles of Economics*, second edition, New York (Macmillan), 1915, Vol. I, pp. 221-224.

relative demand for such goods.²² The producers must, in the long run, receive, from all the goods jointly produced, the average return on the labor and capital applied to production of such goods. But any one of the by-products may, if demand for it is small, sell for little more than enough to cover the special expense of producing and marketing it. Thus, in the case of wool and mutton, the prices received for both must cover the cost of marketing, slaughtering and shearing, as well as the cost of maintaining the flocks; but the price received for the wool alone, in case the demand for wool is relatively small—or for the mutton alone, if the demand for it is small—need cover little more than the special cost of producing and marketing the one product, leaving the purchasers of the other to pay the part of the cost which is joint. In consequence of this fact, an increased demand for mutton would tend to lower the price of wool. For it would encourage sheep raising and would thus increase the amount of wool. But the larger amount of wool could not be sold (for we are not assuming a greater demand for it) except at a lower price. Hence, the price would fall, and, since the process of producing the mutton involves, also, the preliminary step of producing the wool, it would be worth while to sell the wool for the cost of shearing and marketing, rather than not sell it at all.²³

²² See J. S. Mill, *Principles of Political Economy*, Book III, Chapter XVI, §1.

²³ For a discussion of whether railroad rates are an example of joint cost, see the author's *Principles of Commerce*, New York (Macmillan), 1916, Part III, p. 9, footnote.

§ 8

Summary

In this chapter we have endeavored to trace the influences bearing upon value and price back to their more remote origins. Since supply of one good means demand for others, it appeared that there could not be a general oversupply of all goods but that an oversupply of some means merely a relative undersupply of others. Demand for any good involves a willingness to sacrifice something in order to get it. The sacrifice may take the form of extra effort or of giving up some alternative good. At any price the demand of each purchaser is for so much of the good that another unit of it would be worth no more than the price paid in money, and, therefore, in labor or in other goods. A high price of any article would tend to reduce demand for it not only by discouraging its consumption but also by causing many who would else be purchasers of it to become instead producers of it. In this sense, demand for any good depends upon its cost of production. Purchasers will not, in the long run, pay more for a good than the amount of other goods which the same productive effort and other sacrifice will produce. The prices at which there may be demand for a non-reproducible good, are not thus limited.

The supply of any good depends upon the price offered, and upon the intensity of demand of the producers of it for the other goods they indirectly get through its sale. A higher price will not of necessity always cause producers to work longer or

harder at their task. It may encourage them to reduce their hours of work since it may enable them to earn more than before in fewer hours than before. But a higher price will usually increase the amount of any good produced since it will usually increase the number of persons producing that good by diverting some from other lines. Supply, therefore, depends upon cost of production except, of course, in the case of non-reproducible goods, of which, with some qualification, land space is an example. To get more of anything produced may require a higher price because persons relatively ill adapted to its production or to whom the work is comparatively distasteful must be drawn in, because poorer land must be used, because land already so used must be used more intensively, and because land relatively better fitted (at the old relation of prices) for other production must be drawn in.

The cost of production of any good comes finally to be expressible as the amount of some other good or goods which the same labor, land and saving could produce. The cases of joint demand and joint supply were found to involve some intricacies but no new fundamental principle.