The Positive Theory of Capital

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CEE

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Book IV, Chapter IV

Two-Sided Competition

IV.IV.1

The case of two-sided competition is the most common in economic life, as it is the most important in the development of the Law of Price. It demands, therefore, our most careful attention.

IV.IV.2

The typical situation which the present case assumes may be represented by the following scheme. It shows us ten buyers and eight sellers, each of them wishing to buy or sell a horse, and it tells us at the same time the degree of the subjective valuation put upon the horse by each of the exchangers. It will be seen that the figures which represent these valuations are very different, and this exactly corresponds with facts. Indeed, the individual relations of want and provision for want, which regulate subjective value, are so very various that it would be difficult to find two persons who had an entirely similar opinion about the value of any one thing.

BUYERS.			SELLERS.		
A_1 values a horse at		£30	B_1 values a horse at		£10
(and will buy at any price under)			(and will sell at any price over)		
A_2	"	£28	B_2	"	£11
A_3	"	£26	B_3	"	£15
A_4	"	£24	B_4	"	£17
A_5	"	£22	B_5	"	£20
A_6	"	£21	B_6	"	£21:10s.
A_7	"	£20	B_7	"	£25
A_8	"	£18	B_8	"	£26
A_9	"	£17			
A_{10}	"	£15			

IV.IV.3

To complete the scheme, it must be added that all the competitors appear simultaneously in the one market; that all the horses offered for sale are of equal quality; and, finally, that the buyers and sellers make no mistake about the actual state of the market, such as would prevent them from really pursuing their own egoistic interests.*8 We ask now, What will happen in this situation?

IV.IV.4

The circumstances of A_1 are such that he considers a horse to be worth £30 to him; it would therefore be to his advantage to buy even at £29; and it is quite certain that any of the eight sellers would be glad to sell him a horse at a price so advantageous to them. But, evidently, A_1 would be a very poor business man if he rashly bought at such a high price. For his self-interest demands from the exchange not merely a profit, but the greatest possible profit. Instead, then, of buying at the highest price—which, all the same, he might do in the worst possible case—he will prefer to begin by offering a price as low as his least capable rivals, and will only raise his offer when, and in the degree that, it is necessary to save himself from being shut out of the market.

IV.IV.5

In the same way B_1 who, economically, could quite well sell at a price of £11, and at that price could very easily find buyers, will carefully hold back from offering his horse at the lowest figure which he would accept, and will not reduce his price below what he must take if he is to keep his place in the competition. It may be assumed, then, that the transaction will begin with the buyers holding back and offering low prices, and with the sellers holding back and asking high prices.*9

IV.IV.6

Suppose the buyers begin with an offer of £13. It is at once clear that—putting aside the case of gross error as to the condition of the market—the buying cannot be concluded at this price. For at £13 all the ten buyers would be willing to buy, since all of them put a greater value on the horse than £13; but, at that price, only two horses, those of B_1 and B_2, could (economically) be offered for sale. Now evidently B_1 and B_2 would be very poor sellers if they did not make use of the active competition of buyers to raise their price, and the others would be as poor buyers if they let the best chances of purchasing be snatched away by two of their members without attempting to obtain the preference by bidding a price somewhat higher, but still advantageous to themselves. Exactly, then, as in the case discussed in last chapter, the surplus buyers will be weeded out by means of mutual overbidding. How long will this weeding process go on?

IV.IV.7

At any price under £15 all ten buyers can compete. From that point the least capable competitors must, one after another, withdraw from the competition. At £15 A_{10} is knocked out, at £17 A_9, at £18 A_8, at £20 A_7. But as the bids rise on the one side, the number of those sellers who, economically, become capable of selling increases on the other side. At any price above £15 B_3 may seriously think about selling, above £17 B_4 and above £20 B_5. Thus the marked disproportion, which existed at first between the horses demanded and the horses actually offered for sale, is gradually reduced. At £13 there was an effective demand for ten horses, and only two could, economically, be offered; while, at any price over £20, only six horses are demanded and five offered, the majority of buyers over sellers being thus reduced to one. So long, however, as the rival buyers are in the majority, and this fact is accurately known in the market, there can be no final settlement. For, on the one hand, the sellers have always the chance, and the temptation, to take advantage of the excess of buyers and stand out for higher prices; and, on the other hand, the mutually opposed interests of the rival buyers compel them to bid still higher against each other. Obviously, A_6 would scarcely consult his own interests if he were calmly to look on while his five rivals went off with the five cheapest horses, and left him no chance of an exchange, and, therefore, no chance of a profit.*10 But, at the same time, no one of these rivals would allow A_6 to purchase one of the five horses most "strongly" offered for sale. For, if so, the man who withdrew in favour of A_6 might indeed purchase a horse, but only under less favourable conditions—the conditions, that is, offered by the most conservative sellers B_6, B_7, and B_8, and at a price which, at least, exceeds the subjective valuation of £21:10s. that B_6 puts on his horse. Thus if the buyers know their own interests, the whole body of them will feel impelled to continue their bidding against each above the level of £20.

IV.IV.8

Finally, the situation becomes essentially different when the rising bids have reached the limit of £21. At that price A_6 is compelled to cease bidding, and there are now only five sellers against five buyers. These buyers can all be satisfied simultaneously, and there is no occasion for further competition among themselves: on the contrary, as against the sellers, their common interest is to close at the lowest possible price. The bidding of buyers against each other, which hitherto has prevented the final settlement, now comes to an end, and the bargains *may* be concluded at the price of £21. But they need not be concluded at that price. The sellers may possibly be stiff and refuse £21, in hope of a still higher offer. What will happen in this case? First of all, the buyers, rather than have a fruitless errand and go away without making any exchange, will bid higher. But their limit is now very near at hand. If the sellers stand out for a price above £22, A_5 must give up all idea of purchase, and there will be five sellers against four buyers. One of the sellers, then, will have to fall out, and as no one would care to be that seller there will—from motives quite analogous to those which before prompted the surplus buyers to overbid each other—ensue a mutual underselling among the surplus sellers, till such time as the fifth seller meets a buyer: this will be the case somewhere under the limit of £22.*11

IV.IV.9

Indeed, in the present case, the limit must go still lower. So long as a price over £21:10s. was possible; there would be a sixth possible seller in the person of B_6; this would give the sellers a majority of one over the five buyers, and compel them to offer under each other, if they are not to be shut out from the exchange.

In this competition the weakest must first go to the wall, and this fate will overtake B_6 the moment that his rivals are content to take a price below the level of £21:10s.—at which figure the number of competitors on either side will be equalised, and the level of price found at which the competition may cease. Thus assuming, as we do in this illustration, that each competitor knows what is the condition of the market, and intelligently follows his own interests, the limits within which the price must necessarily be determined are narrowed to £21 and £21:10s.; those being the only limits within which there occurs the relation favourable to the final settlement—that all who are able to take a share in the business find it their advantage to do so, while all who do not find it their advantage, the unsuccessful competitors, have no power to prevent the others from coming to terms.*12

IV.IV.10

Let us try now to apply the results of these lengthy analyses to our theory of price.

IV.IV.11

We notice, first, that what decides success in two-sided competition is, as in the case of one-sided competition, the degree of "capability" for exchange. On either side it is the most capable competitors who come to terms, namely, those buyers who put the highest value on the commodity (A_1 to A_5), and those sellers who put the lowest value (B_1 to B_5), while all less capable competitors are excluded. And, indeed, if we look more closely, we shall find that the series of successful competitors includes all competing pairs, arranged by capability, between whom there exists the relation necessary for exchange, viz. that the buyer considers the commodity worth more than the seller does. In our illustration A_5 considers B_5's horse worth more than B_5 himself does, and, accordingly, they can exchange with each other.*13 A_1, on the other hand, values the horse of B_1 at £21 only, while B_6 values it at £21:10s., and therefore they cannot come to terms—and still less can those competitors who are less capable.

IV.IV.12

Very closely related to the grounds on which are decided the successful competitors in the struggle of competition are, secondly, the grounds on which is decided the market price that results from this struggle. This price—to recur to our illustration—cannot, in any case, be higher than the valuation of A_5, nor less than that of B_5; otherwise the fifth buyer in the one case and the fifth seller in the other would not have come to terms. But, again, the price cannot in any case be higher than the valuation of B_6, nor less than that of A_6; otherwise in the former case a sixth buyer would begin competing with the other five buyers, and in the latter case a sixth seller competing with the other five sellers; the equilibrium would thus be destroyed, and the overbidding and under-offering would inevitably be continued till such time as the price was forced within the limits already indicated.

IV.IV.13

To put these results in general form: —In two-sided competition the market price is determined within a latitude of which the upper limit is constituted by the valuation of the last buyer who actually exchanges (the last buyer) and that of the most capable seller excluded (the first excluded seller), and the lower limit by the valuation of the least capable seller who actually effects a sale (the last seller) and that of the most capable buyer excluded (the first excluded buyer). The meaning of this double limitation is that, in every case, it is the narrower limit that decides. *14 If, finally, we substitute the short and significant name of "Marginal Pairs" for the detailed description of the four parties whose competition determines the price, we get this very simple formula: The market price is limited and determined by the subjective valuations of the two Marginal Pairs.

IV.IV.14

This suggests a number of reflections.

IV.IV.15

The first thing that strikes us is the analogy between the formation of price and the formation of subjective value. We saw that the subjective value of any good, unaffected by the more important uses to which single members of the same stock might be put, was a "marginal value"—a value determined by the good's marginal utility, or that utility which stands on the very limit of the economically permissible. Now we see that every market price is a "marginal price"—a price determined by the economical relations of those competing pairs which, also, stand on the very limit of exchangeability. It is easy to see that the analogy here is no chance coincidence, but one that results from closely-related and internal causes. In the case of subjective valuation, the motive of economical advantage demanded that the available stock of goods should be employed in satisfying the wants that stood highest on each man's scale, the last of the wants thus supplied indicating the "marginal utility." In the case of the formation of price, the motive of the competitors' economical advantage demands that the pairs which are most capable on the scale of competitors should come to terms, and one of these again is the last, the "marginal pair." In the former case, the provision for all satisfactions more important than the marginal utility was assured without the particular good whose value was the subject of discussion, and the only utility dependent on this latter good was the last, the marginal utility. In the latter case, all the contracting pairs more capable than the marginal pairs may come to terms at prices higher or lower, and here again it is only the fate of the last, the marginal pair, that depends on the price just reaching a definite height, neither greater nor less. And, finally, as in the former case the importance of the last dependent want, in virtue of its dependent relation, gave the good its value, so, in the latter case, the economical circumstances of the last dependent pair—here also in virtue of their dependent relation—confer on the commodity its price.

IV.IV.16

But this analogy does not exhaust the connections between price and subjective value. Of still greater consequence is the fact that price, from beginning to end, is the product of subjective valuations. Look back over what we have said. It is the relation of the subjective valuation of commodity and price-equivalent which decides the persons who may consider it worth their while to compete, either as buyers or sellers; that is to say, decides which parties are "capable of exchange." It is the same relation which decides on the degree of each competitor's capability of exchange. With perfect exactness it decides for each man the figure at which his advantage calls him to join in the competition, and it decides, at the same time, the limit at which he is beaten and obliged to withdraw from it. As further result, it decides the parties who, among the most capable competitors, actually come to terms; it decides to which pair falls the rôle of being marginal pair; and, finally, it decides on the price at which the bargains are concluded in the market. Thus, as a fact, in the whole course of the formation of price—so far as it is conducted on purely egoistic principles—there is not a single phase nor feature which is not traceable, wholly and entirely, to the position of subjective valuations as its cause. And this is at bottom perfectly natural. For, as we know, these subjective valuations point out whether any importance, great or little, attaches to a good as regards our economic wellbeing, and how great the importance is; and, consequently, these valuations, wherever we acquire or part with goods solely with regard to our economic wellbeing, mark out the natural, indeed the only possible compass of our transactions. We are, therefore, fully justified in defining price as the resultant of subjective valuations put upon commodity and price-equivalent within a market.*15

IV.IV.17

Of course it is a resultant of a peculiar kind. The amount of price is not the resultant of the sum, or of the average of all the valuations that come to the surface: in the formation of price these take very different shares. One class of them has no effect on price at all; viz. those valuations made by all the unsuccessful competitors except the most capable pair. It is all the same whether there are no such valuations, or whether there are scores of them in the market: they make not the slightest difference on the resultant price. In our illustration, whether there are unsuccessful buyers A_7 to A_{10} or not, whether the category of the unsuccessful is composed of them alone, or of a hundred others besides,—so long as they cannot bid more than £20, it is easy to show that the resultant price will always run between £21 and £21:10s. The excluded competitors may increase the congestion of the market, but they are not factors in that condition of the market which determines the formation of price.*16

IV.IV.18

A second group plays a very peculiar part in this resultant, viz. that consisting of the valuations of all the contracting parties who actually come to terms, exclusive of the last. What they do is simply to bind and neutralise each other. Recur again to our typical illustration. If we inquire what, for instance, the presence of A_1 contributes to the formation of price, we find that he takes up one member of the opposing series, namely, B_1, with the result that now the formation of price proceeds exactly as if neither A_1 nor B_1 were in the market. Similarly it is not difficult to see that the efficiency of A_2, A_3, and A_4 simply consists in cancelling the efficiency of B_2, B_3, and B_4: if they are in the competition the resultant price falls between £21 and £21:10s.; if they were all absent A_5 and B_5 would still make their exchange at a price between £21 and £21:10s. And it is worth emphasising that the *degree* of the subjective valuations made in this group is quite indifferent to the result. A_1, for instance, whose valuation, in our scheme, is put down at £30, would cancel B_1 not less thoroughly if his valuation amounted to only £25 or £22; and, conversely, suppose that his estimate were £200 or £2000, of this enormous amount absolutely nothing would affect the resultant price except the sum, in any case, absorbed in neutralising B_1.

IV.IV.19

If, however, the valuations of this group have no direct influence on the formation of price, it cannot be said that they are quite without effect. When the valuations of A_1 to A_4 cancel those of B_1 to B_4 they have a twofold result. First, they prevent any stronger seller than B_5 getting into the marginal pair which immediately determines the price. And second, they prevent the strongest sellers from cancelling the next strongest buyers—as they might do if not cancelled already—and they thus prevent any weaker member of the buying series than A_5 from getting into the marginal pair.*17 The part played by all those exchanging pairs who are stronger or more capable than the last may therefore be accurately characterised in the following words: Their valuations contribute nothing directly to the formation of the resultant price, but they do indirectly, in so far as they neutralise each other, and thus reserve the rôle of marginal pair for another couple.

IV.IV.20

Finally, the real decision of price lies exclusively with a third group, and that a small one—the valuations of the two marginal pairs. All weaker competitors being, absolutely, without influence, and all stronger ones cancelling each other, they and they alone are the directly effective components, and the market price is their resultant.

IV.IV.21

At first sight it may appear strange that so few person,, and those so little conspicuous, should decide the fate of the whole market, but on closer examination this will be found quite natural. If all are to exchange at one market price, the price must be such as to suit all exchanging parties; and since, naturally, the price which suits the least capable contracting party suits, in a higher degree, all the more capable, it follows, quite naturally, that the relations of the last pair whom the price must suit, or, as the case may be, the first pair whom it cannot suit, afford the standard for the height of price.*18

Notes for this chapter

8.

If, *e.g.,* a buyer erroneously imagines the number of horses brought to market to be much less than it really is, it may very well happen that he hastily consents to pay a higher price than he would have found necessary if he had given better attention to his own interests. The influence of errors like this on the formation of price must not, of course, be overlooked in a theory of price, but where we are merely trying to bring out the simplest fundamental law it is not necessary to go into such details. See *Grundzüge,* as before, part ii. p. 486.

9.

The more experienced both parties are, and the more familiar with the condition of the market, the shorter will be the time spent in "trying the market" by preliminary offers. In an old and well-organised market competitors will save themselves the trouble of making offers that are not meant to be taken, and will make their first offers at least somewhere near that zone within which the market price will finally be fixed. The extreme limit of this curtailment is given in the "fixed prices" of sellers. In this case, trying the market is entirely dispensed with, and sellers undertake at one throw, as it were, to hit the very zone into which the condition of the market will force the price. They must try to hit this zone quite exactly; for if they put the price lower they lose their profit, while if they put it higher the buyers in the market get supplied by other competitors, and the sellers are left with their commodities. Fixed prices, however, are less common in the open market than in shops, where selling is never conducted under the full pressure of competition, and where, consequently, any mistake in the price asked is not so hazardous.

10.

If the horses of B_1 to B_5 are sold, the most capable seller remaining is B_6, who values his horse at £21:10s—that is, higher than A_6. As we know, then, an exchange between A_6 and B_6 is economically impossible, and the same is true *a fortiori* of the less capable sellers B_7 and B_8.

11.

It need scarcely be said that the gradual bidding up of buyers, and the gradual undur-offering of sellers, do not usually take place in two separate and succeeding stages, but generally occur simultaneously.

12.

In the nature of things the result shown in our abstract scheme will be the more exactly realised in practice, the better known the total condition of the market is to all interested; that is to say, the more organic the market, and the more publicly the negotiations are conducted. Where, on the other hand, as is usually the case, transactions are conducted in groups that are, indeed, in communication, but are yet somewhat separated from each other either in space or time, the relations of competition that would prevail over an entire market will, naturally, not be quite active in the single groups, and this has for result that the prices formed in the single groups are frequently only more or less approximate to the ideal market price represented in our scheme, without necessarily exactly coinciding with it.

13.

Or with one of the more capable competitors, but in no case with a weaker one. See more exactly on this point in my *Grundzüge,* p, 499.

14.

In our illustration it is the valuation of the excluded parties A_6 and B_6. If, however, the valuation of A_6, instead of being £21, had been £19, and that of B_6, instead of £21:10s., had been £23, the limits would have been determined by the valuation of the last pair who actually came to terms: the price would have been fixed between £20 and £22.

15.

Sax, who, in his theory of value and price, stands wholly and entirely on the foundation laid by Menger, repeatedly and with emphasis characterises market price as an "average of individual values" *(Theoretische Grundlegung der Staatswirthschaft,* p. 276 and *passim).* This expression, if given without commentary, is exceedingly unfortunate, indeed directly misleading. As may be seen from what follows above (and more exactly from what I wrote in my *Grundzüge,* pp. 505 and, particularly, 522), the characteristic thing, on the contrary, as regards the resultant price, is that it is *not* an "average" in the usual sense of the word.

16.

At least under the assumption distinctly made in our inquiry, that the competitors who appear in the market have a correct knowledge of the condition of the market. If we depart from this assumption, the appearance of more than a hundred demanders might give rise to the erroneous opinion that there may be among them a great many persons of higher "capability," and this might mislead the few capable competitors who are present into rashly making higher offers.

17.

To show this, suppose we leave A_1 to A_4 out of our illustration. The position of the parties, then, is as follows:—

A_5	£22	B_1	£10
A_6	£21	B_2	£11
A_7	£20	B_3	£15
A_8	£18	B_4	£17
A_9	£17	B_5	£20
A_{10}	£15	B_6	£21:10s.

B_7	£25
B_8	£26

Here we see that the last pair within which the economical conditions of exchange are present consists of A_8 and B_4. The buyers, therefore, are now represented in the decisive marginal pair by a weaker member, the sellers by a stronger one. Accordingly the limit of price, which in the last case stood between £21 and £21:10s., moves down to between £17 and £18.

18.

Students of economic literature will not fail to notice an interesting relation in which the above theory stands to certain doctrines that have for long obtained full recognition. When Thünen—and with him the whole body of economic doctrine—said that the rate of interest was determined by the productivity of the "portion of capital last applied," and the rate of wage by the return of the "last worker employed in the undertaking"; or when, much earlier, the question as to which, among several costs, regulates market price was decided in favour of the "highest costs of production that were still necessary to provide for the market," *i.e.* in favour of the "last seller,"—we recognise in all these, without difficulty, adaptations to special cases of the same principle on which we have built the doctrine of marginal utility and the theory of the formation of price. The only thing is that at that time economists were not yet conscious of the universal importance of these peculiar lines of thought. They meant simply to state a couple of special rules of limited range, while in reality they had hit upon the dominating *Leitmotiv,* which underlies the entire mechanism of industry carried on under the guidance of self-interest, and which, therefore, runs through the entire formation of value and price.

End of Notes