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USE OF DIFFERENTIAL PRICES IN A REGIME OF COMPETITION

[JUSTIFICATION of this Paper, which appeared in the ECONOMIC JOURNAL for 1911, is to be sought in an earlier contribution to the Journal, now reprinted in the Mathematical Section (ζ). In that article it was argued that differentiation of prices, discriminating between classes of customers whose demands were different, is generally advantageous to both parties in a regime of monopoly; and may well prove so even in a regime of competition. Mr. Bickerdike, with his usual acumen, disputed the latter clause (in the ECONOMIC JOURNAL for 1911); questioning whether in cases where there is " uniformity of charge based on cost of production," under free competition, any system of discriminating prices could be " better all round," more advantageous to both producers and consumers. And his contention is virtually admitted here, upon a certain definition of " cost of production " and a congruent limitation of the methods by which discrimination may be introduced. Consider, for instance, the case put below of two species of seaweed for which the demand is markedly different (one perhaps required as manure, the other for its medicinal qualities). Yet if the capital, manual labour and so forth—all the cost-of-production abstracting the profits of the entrepreneur—are the same per ton for each species, it is good Ricardian economics to argue that in a regime of competition the price of both articles will be the same, the profits of the " capitalists " will be equal. It is the orthodox doctrine and practical truth that the regime of competition is better all round than any mixture of monopoly. A firm consisting of an employer gaining normal profits, employees earning normal wages and so forth, could not with advantage to all parties either raise or lower the price of either article. But it is not necessary so to lump the remuneration of the employer into the cost of production. It is possible—and usual throughout this Collection (see Index, " Entrepreneur ")—to fix attention separately on the motives and action of the entrepreneur (*cp.*

below, p. 104). In the case before us suppose that the entrepreneurs form a combination for the regulation of buying prices, not affecting the cost of labour and of other factors. It will certainly be to their advantage to raise the price; but not necessarily both prices. Likewise it is probable that the customers may gain *in globo* by a departure from the old pair of prices. The " demand-schedule " for the respective articles being so different, it is highly probable that the money-measure of the total " consumers' surplus " will be increased by raising one price and lowering the other to a certain extent. Thus it is in the interest both of the producers and the consumers to move away from the original position. To be sure, the directions in which they respectively want to move are not the same. But they are most probably not *diametrically* opposite. Whence it follows that certain changes of price, some degree of discrimination, will in general be advantageous to both parties. The reasoning will be better understood after a study of the second part of ζ, II. p. 407 *et seq.*

The conclusion might be worded more strongly than now at the end of this paper, if there were no danger of its being taken as other than a *curiosum.* (*Cp.* below as to the bearing of the argument on Socialism.) At the bar of pure theory my defence might be summed up as follows: Whereas it is alleged that outside Monopoly discrimination can be practised with advantage all round only in some peculiar cases, I reply: firstly, the cases in which discrimination advantageous to both producers and consumers can (theoretically) be practised without any change of the existing regime are very common; and secondly, in cases of pure Competition the advantages of discrimination may (theoretically) be secured by a change of the existing system, substituting Combination for Competition.]

Mr. Bickerdike's criticism is forcible and fairly aimed; yet I hope to show that it is not very damaging. His main contention is thus stated:—

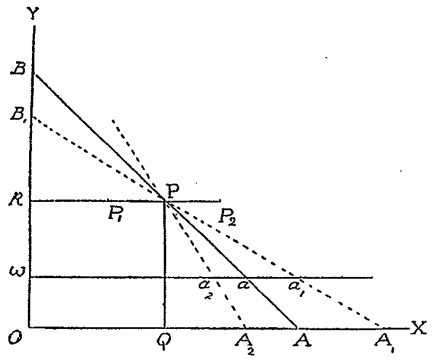
" My argument is that increasing returns, or joint costs, must come in in some way or other if discrimination is more advantageous than uniformity of charge based upon cost of production."

" I question whether any system of discrimination can be better all round than the prices which would be attained under free competition in the absence of any tendency to increasing returns or of joint costs."

"It is difficult to see how any discriminating system would be better for the public."

"It [such a system] could not be socially economical."

In considering the truth and relevancy of this statement, it will be convenient to have before us one of the diagrams [1] employed in the article against a part of which the statement is directed. Let the axis of x in this diagram represent (quantities of) a commodity for which the law of production is not that of increasing returns. The axis of y representing price, let the "demand-curve," for the sake of simplicity, be a straight line. This line is not drawn in the figure, but it may easily be constructed from the line BA, which represents *half* the amount of



commodity demanded at any price. Thus there would be demanded at the price OR, *twice* the amount RP, and at the price $O\omega$, *twice* the amount ωa. To consider discrimination of prices, let us suppose that the class of commodity breaks up into species which differ in respect to the demand of the customers, but not in respect of cost to the producers; for instance, equal hauls of goods, equal in weight, bulk, and facility of handling, and all other circumstances affecting cost, but differing in the value which they acquire by transportation. Let the *dotted* lines form each the demand-curve for one of the differentiated species. Then the *average* of the amounts of the two species demanded at any one-and-the-same price (*e. g.*, $O\omega$) is represented by the corresponding point on the line BPA (*e. g.*, the point a, since $\frac{1}{2}$ $(Oa_1 + Oa_2)$

[1] Fig. 2, ECONOMIC JOURNAL, Vol. XX. p. 447.

$= Oa$). Beginning with the case in which the cost is constant, let us suppose the constant cost to be $O\omega$. If then the uniform charge based on cost of production is $O\omega$, Mr. Bickerdike's statement, as I understand, imports that this unitary price cannot be replaced by a system of different prices for the different species; with advantage to all concerned, both producers and consumers.

The truth of this statement may be shown by observing that if the customers are to benefit by discrimination, one at least of the prices must be lowered below $O\omega$. Suppose, then, that the price of one of them, *e. g.*, that for which the demand-curve is B_1PA_1, is lowered from $O\omega$ to $O\omega'$, ω' being a point on the axis below ω, not shown in the figure. And let the intersection of a horizontal drawn through ω' with the demand-curve $B_1\,PA_1$ be a_1' a point on that line below a_1, the point a_1' as well as ω' being left to the imagination of the reader. The gain in Consumers' Surplus is then measured by the area of the quadrilateral $\omega a_1 a_1' \omega'$. But the loss of Producers' Surplus is measured by the larger area of a rectangle which includes that quadrilateral, namely, the rectangle (not completed in the diagram) of which one side is $\omega\omega'$ and another side $\omega' a_1'$. Likewise if the price is raised above $O\omega$ the consumers lose more than the producers gain. Therefore, the public as a whole, producers *plus* consumers, are losers. *A fortiori*, if the cost is not constant, but increasing (in accordance with the law of decreasing returns).

Mr. Bickerdike's proposition is true, and it may be added, with reference to State regulation of what M. Colson calls "public works," important. But is it contradicted by the proposition which Mr. Bickerdike impugns? The answer is *primâ facie* affirmative. Mr. Bickerdike has accurately quoted the passage in which it is enunciated that "the gain to consumers [through monopolistic discrimination] may well be so great that they are better off than they would have been, other things being equal, under a regime of competition." He has rightly understood that the proof primarily applied to the case in which there is no cost of production is meant to be extended to the general case of substantial cost. He is right, too, in conceiving my thesis to imply that in the case supposed the producers as well as the consumers would be better off than under the regime of competition. He has placed a very natural interpretation upon the passages which he criticises. It would have required a degree of intellectual sympathy beyond what can be fairly expected in a critic to have thought of the explanation which I proceed to offer.

The interpretation of the impugned thesis turns upon the definition of two terms, one of which has received different definitions from classical writers, while the other has, perhaps, not generally been used in any definite sense. These terms are: (1) "cost-of-production," and (2) that which is predicated of the customers of the discriminating monopolist when it is said that "they are better off than they would have been, other things being equal, under a regime of competition." J. S. Mill sometimes employs the term "cost of production" to denote the outlay of the capitalist-employer—the Ricardian "capitalist"—on labour; exclusive of "the reward of abstinence." [1] What if our $O\omega$ represent *this* kind of cost of production! Then the selling price would be well above the point ω; and there would be room for that drop of (one) price, which the fulfilment of the thesis requires. No doubt we ought to include among the "other things that are equal" in the monopolistic and competitive regime payments of interest made to lenders who take no risk. But we cannot suppose the remuneration of the entrepreneur proper to be among those equal things. If a set of entrepreneurs form by combination a monopoly, it is to be supposed that their gains are replaced by what is called in the article under consideration monopoly profit. Likewise, in the converse change, monopoly profits are replaced by entrepreneurs' gains. The preconception that these gains were substantial was naturally present to one who has consistently maintained [2] that the remuneration of the entrepreneur is not to be equated to zero. I am aware that from the point of view of one who surveys all time, the "quasi-rents" enjoyed by the entrepreneur appear as the reward of work and waiting. And if the true rents tend to be evanescent with the progress of freedom and education,[3] what remains of gain proper to the entrepreneur may be so minute and invisible as not to be

[1] J. S. Mill, *Pol. Econ.*, Book III. ch. i. § 1.—"The cost of production, together with the ordinary profit, may therefore be called the *necessary* price or value of all things made by labour and capital."

Ibid., "unless that value is sufficient to repay the Cost of Production and to afford, besides, the ordinary expectation of profit the commodity will not continue to be produced."

Ibid., par. 3, "the outlay [of the producing capitalist] that is the cost of production."

In a later passage, Book III. ch. iv. § 4, par. 1, Mill includes profits in cost of production. In the following section, par. 1, he hesitates between the two definitions.

[2] Most recently in *Scientia* (Rivista di Scienza), Vol. VII. Ann. iv. (1910), pp. 92–94; a passage which may be referred to for further elucidation of the idea expressed in the here following paragraph.

[3] As Mangoldt's *Unternehmergewinn* seems to suggest.

worth disputing about. But it may be questioned whether we have yet approached this limit. There is weight in some observations which Professor Lehfeldt has recently made on this subject [1] :—

" Modern writers on economics have been inclined to describe a class of entrepreneur, who is head of a business and yet buys capital as he buys labour and materials. Now this type, though an important one to describe, is hardly to be found pure . . . financiers' profits are to be classed with true rents."

Thus the conception of a surplus normally accruing to the entrepreneur is not altogether untenable.

But, indeed, I was not thinking specially of perfectly normal competition, but of competition in a more general sense, as opposed to monopoly—not so much " industrial competition " as defined by Cairnes, as that " commercial " competition which he conceives to act among the members of what he calls " non-competing groups." * The profits accruing to members of such groups may be described in the phrase of Mr. J. A. Hobson as " forced gains."

As a type of this case, imagine an island on the shores of which seaweed of rare quality is periodically deposited by the unlaborious sea. The inhabitants, each owning a strip of the coast, exchange seaweed for foreign goods. Competing against each other in what may be called a perfect market, they set up a uniform rate at so much per ton of weed. Now let the competing islanders form a monopoly by combination; and let the monopolistic Directory discriminate between two species of weed, before sold indiscriminately. There is apt to result benefit all round, to both producers and consumers, as compared with the original competitive regime.†

The existence of " forced gains " may properly be postulated with reference to the controversial passage about Socialism which Mr. Bickerdike has quoted. This is a dialectical rejoinder to the

[1] ECONOMIC JOURNAL, Vol. XX. (1910), p. 554 and p. 558, and contexts.

* I was thinking also of another species of imperfect competition, or partial monopoly, " industrial " without " commercial " competition; as in the case of a hotel where, with respect to many articles, *e. g.* a cup of tea, bread-and-butter, cake, the hotel-keeper enjoys the characteristic attribute of monopoly, the power of fixing prices; and yet it is open to anyone to become an hotel-keeper (see II. p. 97).

† That is, supposing the seller of sea-weed to possess the character of an entrepreneur in a degree sufficient to render the reasoning on p. 101 (par. 1) applicable. For instance, he might have to lay out money on the purchase of implements or the hire of common labour; which outlay plus compensation for his trouble would be more than covered by the price of the seaweed.

individualistic argument that under a Socialist regime values and the distribution of goods would be much the same as at present. Now, those against whom this argument was directed mostly believe in the prevalence of " forced gains " in the present system. Accordingly, the rejoinder would not be convincingly rebutted by a contention which presumes the absence of such gains.

But, indeed, the rejoinder (to the individualist argument) is more than an *argumentum ad hominem.* The rejoinder does not depend altogether on the proposition disputed by Mr. Bickerdike—that there may be beneficial discrimination in the absence of joint cost or increasing returns. For the character of increasing returns is present wherever there are " supplementary " or general, as distinguished from " prime " or special costs; that is very generally in the modern industrial world. Whether we consider the establishment (and education) of lawyers, or the plant of railways and waterworks, " there is, up to a point, increasing returns," as well remarked by Mr. Bickerdike; and accordingly relative value is apt to be altered by discrimination. It is true that some discrimination may occur in a regime of competition. Our islanders before their combination might possibly have hit upon the plan of selling the two species of seaweed at different prices. Mr. Acworth has adduced some remarkable instances of differential prices occurring in the present regime.[1] But it will be admitted that such discrimination occurs more readily and effectively under a regime of monopoly. It is conceivable, then, that a Socialist Directory should have an advantage in this respect over individualist competition.

Altogether, whatever dialectical value may belong to the passage about Socialism is not much affected by Mr. Bickerdike's observations. Perhaps they were not intended to bear on this passage.

As he has remarked, the main part of my arguments has reference to the comparative advantages of discrimination and uniformity when production is monopolised. I have attempted to investigate some of the conditions on which this comparative advantage depends. With reference to the method of that investigation, I am glad to have the present opportunity of again acknowledging obligation to Mr. Bickerdike's article on Incipient Taxation.[2] In the course of the investigation it appears that

[1] *Railway Economics*, ch. ix.—As to discrimination in a regime of competition, see the article criticised by Mr. Bickerdike and here all along referred to; ζ II. p. 407 *et seq.*

[2] ECONOMIC JOURNAL, 1907, p. 101; *cp.* ECONOMIC JOURNAL, 1908, p. 399 *et seq.* 1910, *loc. cit.*

the comparative advantage does not rest so fundamentally, as sometimes conceived, on the principle of joint cost or increasing returns. For example, suppose the State to own and work two distinct railways or canals, similar as touching their cost, but differing in respect of the demand for transportation. Probably in such a case the State might prescribe a different scale of rates on two lines, with benefit to the public as a whole. The benefit need not depend at all on joint cost or increasing returns. We might suppose, for the sake of illustration, natural waterways for which the costs of construction and all *general* expenses, involving the possibility of increasing returns, are negligible. The benefit depends on a quite different principle, the avoidance of that *perte sêche*, in M. Colson's phrase, that loss of Consumers' Surplus which is incident to a unitary price. That the benefit may be measured by comparison with the state of the customers as it " would have been, other things being equal, under a regime of competition "—whatever that may mean in the case supposed —is at best a secondary proposition.[1] It is an *obiter dictum* not worth disputing about, but for its accidental connection with more important topics to which attention has been called by Mr. Bickerdike.

[1] So described, ECONOMIC JOURNAL, Vol. XX. p. 448, par. 2.