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Statics and Dynamics in Socialist Economics

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## STATICS AND DYNAMICS IN SOCIALIST ECONOMICS

§ 1. THIS article is in the main a protest against the developing tradition, in approaching the problems of socialist economics, of starting from the consideration of competitive equilibrium, instead of going direct to the more fundamental principle of marginal opportunity cost. This approach is not only subject to methodological criticism as indirect and cumbersome, but is a fertile source of actual error deriving from unrealised implications of the static nature of competitive equilibrium. As a text on which to hang my lesson I choose a recent article by Mr. Durbin,<sup>1</sup> which proposes a scheme for socialist accounting that is more practicable than one previously outlined by Mr. Dickinson,<sup>2</sup> and which also refutes anew the well-known thesis of Professors Mises, Hayek and Halm that a socialist economic calculus is impossible. In singling out Mr. Durbin for this purpose, I do not mean to suggest that he is peculiarly guilty in this matter. I use his article because it conveniently summarises the weaknesses of analysis that are common in this field (and are not unimportant for other departments of economics). Apart from section 15 (which shows how the static approach that I criticise may even fail to answer objections of the "Mises" type to socialist planning schemes and which tries to make good such a failure), the present article is concerned to defend the adequacy of a simpler and more direct approach to the positive problems of socialist economics.

§ 2. If we so order the economic activity of the society that no commodity is produced unless its importance is greater than that of the alternative that is sacrificed, we shall have completely achieved the ideal that the economic calculus of a socialist state sets before itself. Mr. Durbin notes this most general principle of economic calculus when he says (p. 677), "The costs of one commodity must be assessed in quantities of alternative goods," but, in common with all previous writers on this topic, he fails to

<sup>1</sup> E. F. M. Durbin, "Economic Calculus in a Planned Economy," *ECONOMIC JOURNAL*, December 1936.

<sup>2</sup> H. D. Dickinson, "Price Formation in a Socialist Community," *ECONOMIC JOURNAL*, June 1933.

recognise its sufficiency. As a basis from which to work he therefore chooses the perfectly competitive equilibrium instead of the enunciated principle of marginal opportunity cost (whence, indeed, the competitive equilibrium borrows all the attractiveness that it possesses).

§ 3. Mr. Durbin then examines the usefulness for his purpose of three methods of economic analysis. These are: (1) the Marshallian supply and demand analysis, (2) the Austrian marginal analysis, and (3) the Walrasian general solution by simultaneous equations. Although a reasonable account of modern economic theory by any one of the three methods of exposition will contain the identical doctrine, the techniques of economic administration suggested by them may well be quite different. When Mr. Durbin, therefore, rejects the third or equational "method" on account of its lack of usefulness or realism, he must be taken as referring to a technique of economic administration suggested by it rather than to the system of economic analysis itself. There is, indeed, no indication in the article of any recognition of the difference between the system of analysis and the technique of administration. But this again is not peculiar to Mr. Durbin, for except upon a basis of some such confusion it is difficult to imagine any economist putting forward as a technique of administration a scheme, like Mr. Dickinson's, in which all the equations have to be solved before any economic decision is reached.

§ 4. It is natural that just that form of analysis which best elucidates the nature of competitive equilibrium should be the least useful in suggesting a practical technique of economic administration that will bring about such an equilibrium position. The ideal of the former is the inclusion of *all* the relevant conditions, and in this the general analysis of the equational method far surpasses the particular analysis of the two first methods. (At least until the necessary corrections and complications have turned them into clumsy versions of the third.) But the ideal of the latter is that any officer shall have only a manageable number of things to consider. For this the incomplete or partial analyses are more useful. Instead of describing the nature of the whole system, they indicate what this implies at each point in it. This is done most consistently by the second, the Austrian or marginal, method. If at each point the more desirable alternative is chosen, marginal costs are equated to marginal revenues and an equilibrium is reached. The second method, then, suggests that if all the officers of the economic administration equalise their marginal

revenues to their marginal costs—and this is what they would have to do if each is simply enjoined to maximise the profits of the enterprise under his control—this will suffice to set in motion all the forces necessary to achieve the equilibrium. We may call this rule, suggested by the second method, Rule Two.

§ 5. But the equilibrium attained will be the desired competitive equilibrium only if all the decisions are made under conditions of perfect competition. A check on the principle of administration suggested by the second method is therefore necessary to make certain that the equilibrium is the right one. Such a check is suggested by the first method—the Marshallian supply and demand analysis—which concentrates attention on the fact that in the perfectly competitive equilibrium price is equal to average costs. If the application of Rule Two results in a deviation from this norm, the officers may be instructed to subordinate Rule Two to another rule, which we may call Rule One, derived from the first method and calling for the equalisation of price to average cost.

§ 6. Whenever there exist the objective conditions of perfect competition, the exercise of Rule Two automatically, though indirectly, brings about the equalisation of price to average cost, so that Rule One is unnecessary. Whenever Rule One has any effect at all, it has the effect of substituting one symptom of perfect competition for another symptom, so that the actual competitive position, which includes our true desideratum, is not reached in any case. No proper choice can therefore be made between these two symptoms until we know their relationship to the true desideratum. And if we have this, we need no longer be concerned with perfect competition at all. The impossibility of a compromise between the two rules is not surprising, since compromise is in place only between different *ends*, and never between different *means*.

Further, it may be that even if both of these rules happen to be satisfied, our end is still unreached. Mrs. Robinson has shown in her analysis of imperfect competition that if there is freedom of entry to an industry, an equilibrium is reached when for each firm not only is marginal revenue equal to marginal cost (which is what Rule Two prescribes), but price is equal to average cost (which satisfies Rule One). Yet the equilibrium is not one of perfect competition, and the qualities we desire may well be missing from this situation in spite of the satisfaction of *both* rules. It is not possible, merely by giving rules which provide some of the *symptoms* of perfectly competitive equilibrium, to set

up such an equilibrium if the objective conditions for its establishment are absent. We must therefore aim *directly* at our real object, *the most economic utilisation of resources*. What does this imply?

§ 7. If we assume that the members of the society, in spending their income, do not take into account the effect of their individual purchases on the prices of consumption goods, we can take the ratio between the prices at which goods sell freely on the market as measuring the ratio between the marginal significance of the commodities. This is because every individual, in using his income to the best advantage, will purchase more significant shillingworths of commodities in preference to less significant shillingworths, until all the shillingworths have the same attractiveness at the margin to each individual and the same marginal social significance.<sup>1</sup> If the prices of all goods are such that the resources set free, whenever a shillingworth less of any good is produced, are just enough to produce another shillingworth of any other good, then it will be true that whenever an individual chooses between marginal shillingworths of different commodities which give him the same marginal satisfaction, he will be causing the same marginal sacrifice of the society's resources.

This is the condition that must be fulfilled if the resources are to be economically distributed. For if it is not fulfilled, the consumer will be led to choose a product which gives him less satisfaction at the margin (but costs him less) in place of some preferred alternative which would have cost society less (but him more) than the one he actually chooses. This waste will not be limited to the misdirection of resources between different final consumption goods, but will be repeated at every stage of production where different and substitutable means of production are used to produce any intermediate or final product.<sup>2</sup>

When manufacturers bid against each other for the factors of production, they will not always take the price as given. In trying to produce any output at the least cost, they will combine the factors in such proportions as make their productivities equal

<sup>1</sup> This assumes that individuals choose best for themselves. Whenever this is not considered to be the case, others—normally in the form of the State—can choose for them either wholly or partly (*i.e.*, by influencing particular prices by taxes or bounties). These others are then the consumers and the whole scheme formally remains the same.

<sup>2</sup> The social significance of the first kind of loss has been questioned—I think without justification. See M. H. Dobb, *ECONOMIC JOURNAL*, December 1933; *Review of Economic Studies*, February 1935; A. P. Lerner, *Review of Economic Studies*, October 1934, February 1935.

not to their prices, but to the cost to the manufacturer of buying another unit. This will be greater than the price in the proportion

$$\frac{\eta + 1}{\eta},$$

where  $\eta$  is the elasticity of supply of the factor to the manufacturer. Unless the (different) elasticity of supply of each factor happens to be exactly the same for every buyer, its marginal productivity will not be the same in different uses; and unless the elasticities of supply of the different factors happen to be exactly equal to each other, their productivities will not be proportional to their prices. This will mean that the optimum distribution of resources is not achieved. The product could be increased, in the first case by moving factors from places where their productivity is less to where it is greater, and in the second case by using more of the factors with a greater productivity relatively to their prices and less of the others.

This waste can be prevented by issuing instructions that the use of every factor is to be extended up to the point where the marginal physical product multiplied by its price is equal to the price of the factor. Or, in other words, up to the point where the price of the product is equal to the physical quantity of any factor needed to produce another unit of product, multiplied by the price of the factor. This value, which has to be equated to the price of the product, we shall call the marginal cost.<sup>1</sup>

If this principle is universally observed, there can be no loss due to the wrong use of economic resources. The guiding principle that we seek is none other than the equation of price to marginal cost.

§ 8. The true principle seems to be recognised by Mr. Durbin in a hesitant sort of way when he says, "The responsible Authority . . . could instruct the firm to carry production to the point where *price* covered marginal cost. As long as the plant is regarded as a technical fixture equivalent to land (bygones being bygones), this is the theoretically desirable course" (p. 685). He seems, however, to consider this to be applicable only where demand has fallen below the originally expected level, and raises

<sup>1</sup> The concentration on the *price* of a factor is achieved under conditions of perfect competition because then the *price* happens to be equal to the extra cost of buying one unit more. This has very aptly been called the parametric function of prices under perfect competition. See O. Lange, "On the Economic Theory of Socialism," Part One, *Review of Economic Studies*, October 1936, p. 59. With our rule we need not rely on the conditions of perfect competition being present, and we are not upset if, because of the growth of the unit of production or for any other reason, the parametric function of prices breaks down.

a series of objections to the exclusive use of the marginal principle. These are : (1) The suggestion, in the sentence just quoted, that the existing plant need not be considered a technical fixture. This is a confusion between the economically relevant idea of the existing plant which, with all the potential uses to which it might be put, is technically given, and the book-keeping notion of the "capital" in the plant which can in a sense be extracted and re-embodied in some other form.

(2) "It might be impracticable if anything less than everything were in the hands of the State" (p. 685). This is based upon a vague belief that marginal cost is less than average cost, so that the policy would lead to losses. It arises from the gratuitous assumption that the principle is to be applied only "when demand decreases" (p. 684), and would otherwise seem to be rebutted by Mr. Durbin's recognition that "losses in one direction would always be offset by equal profits elsewhere as long as total expenditure were constant" (p. 685). It is probable, however, that Mr. Durbin has in mind a state of affairs where a Labour Government has skilfully avoided the class struggle, while achieving "socialism" with inevitable gradualness by nationalising only such parts of the economy as have to be run at a loss. This would indeed mean that the State would, for budgetary reasons, have to depart from the principles of a rational economic calculus, and in fact would become responsible for running at a profit such monopolies as had become too unpopular for capitalists to continue to maintain. This is essentially a problem of the transition of socialism (though it does not seem too promising a road), and adds one more to Dr. Lange's already imposing list<sup>1</sup> of *economic* arguments in favour of a speedy transition from Capitalism to Socialism.

(3) "Solutions concerned exclusively with marginal products . . . would have to be based upon *estimated* and not upon realised marginal products. Now estimates of marginal-value products are extremely liable to error. . . . Unless the process . . . can be submitted to another type of check . . . the problem is only roughly solved" (p. 679). It is true that imperfections of foresight will mean that the solution is inaccurate, but it is surely illusory to suppose that the loss due to this inaccuracy can be overcome by anything other than the improvement of foresight. Examination of the degree of error made in the past is of course useful, and is indeed essential for improving our estimates of the

<sup>1</sup> O. Lange, "On the Economic Theory of Socialism," Part Two, *Review of Economic Studies*, February 1937.

future, and past errors are reflected in the deviation of actual from expected proceeds and costs. But these do not represent any independent principles which can serve as a substitute for foresight.

(4) "The order to carry production to the point where price is equal to marginal prime cost can be justified only on the assumption that it is possible to distinguish between the payment of prime costs and the maintenance of fixed capital. . . . But in fact no such clear distinction exists . . . the instruction . . . would often involve the maintenance of redundant capital indefinitely" (p. 696).

This difficulty arises only because of a confusion between prime and overhead costs. It appears also in another connection where it is argued that "If, for example, the 'maintenance of capital' consisted in the replacement of one-tenth of a railway line in each unit period of time, no capital would ever be available for re-investment, because all the capital would be lost if one or two depreciation quotas were missed" (p. 680, n. 1). If it is really true that one-tenth of the railway must be rebuilt every year if it is to be of any service, then the expense involved in this is a *prime cost*. If it is not covered by price, there is no excess of revenue over prime cost, and there is no "free capital" in the railway that might be extracted for other purposes. The capital has already been entirely lost, and the railway should be abandoned at once. The resources that have to be applied to keep the railway running are more urgently needed elsewhere. If, on the other hand, these prime costs *are* covered (and there are no other overhead or replacement costs), there is no reason for wishing to liquidate the railway.

(5) "In practice the result of the policy would entirely depend on the definition of the *unit of output*. If the unit of output [on the British railways] was a 'passenger mile' marginal cost would be zero; if it were a 'train mile' it would be appreciable; while if it were a mile of railway it would be greater still. The general directive would lack all precision" (p. 685, n. 1). This objection reflects a widely held opinion which has prevented our simple marginal principle from being given its due place in the theory of socialist accounting. It is based on a confusion between long- and short-period problems, and is best dealt with after we have considered these and their interrelations.

§ 9. Mr. Durbin's rules for short-period output are: "Here is a plant. . . . Make the largest output you can consistent with normal profit on the cost of replacing your plant. When . . . you



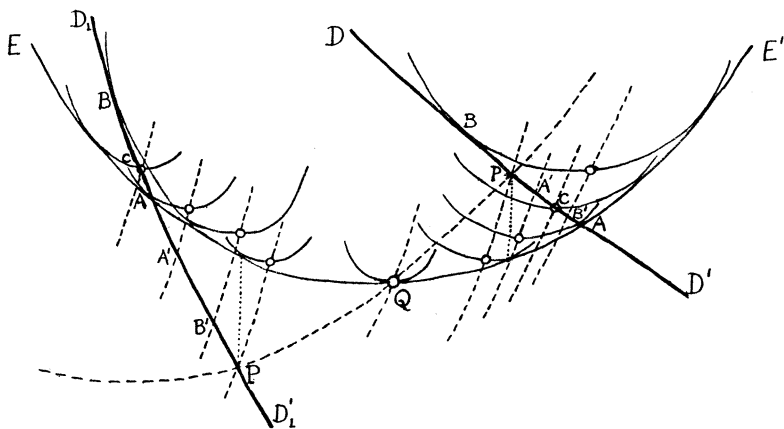
cannot earn normal profit at all, then earn the biggest profit you can (*i.e.* produce at the point where marginal revenue equals marginal cost)" (p. 686). The asymmetry—Rule One in the first case and Rule Two in the second—is the first indication that there is something wrong.

The first rule appears to be based on some implicit condemnation of abnormal profit (even when it accrues to the State!) as indicating a monopolistic restriction of output.<sup>1</sup> An alternative explanation is that the equilibrium whence the rules spring is one that is reached under conditions of "complete mobility" (p. 679). In other words, it is a long-period static equilibrium in which the net quasi-rent of instruments of production (after allowing for depreciation) are equal to the current rate of interest on their cost of reproduction. This condition, which is a *symptom* of the absence of any change, indicates the benefits arising from the perfection of foresight that is implied in such a situation. Mr. Durbin's compromise between the two rules implies that the benefits of perfect foresight (a long-run phenomenon in any case) can be reaped whenever it is possible to establish this symptom in the short period.

In defence of the second rule, it is suggested that the existence of unused resources would serve as an index of the necessity of not replacing them. The cost of this index is that whenever a mistake is made, society will not merely have a less useful instead of a more useful instrument, but must punish itself further by refusing to use the less useful instrument, so that the resources wrongly invested are lost altogether and society has nothing at all. The rule would also destroy the benefits from any special, non-recurring, facilities for the cheap construction of a plant, for as soon as the special facilities disappear, the cost of replacement rises and monopolistic restriction is authorised. Neither would the unused resources form any index of how much of the equipment should be allowed to perish (or be destroyed?). For the attempt to maximise profit may well result in the use of less resources than should be provided according to Mr. Durbin's long-period rules for the determination of the size of the equipment. Surely it is possible to refrain from repeating a mistake without this flagellation! There remain no grounds—as far as short-period output is concerned—for departing from the general principle of making price equal to marginal cost.

<sup>1</sup> Mr. Durbin recognises that these are not connected when he considers the case where "the normal profit can only be obtained *because* the weapon of monopoly restriction is being used to hold profit up to a normal level" (p. 682, n. 1: my emphasis).

§ 10. For the long-period problem—the determination of the equipment to be provided for the manufacture of a particular product—we shall have to examine a series of suggested equilibrium positions. These can conveniently be shown in the accompanying figure. The figure is a development of one given by Mr. Durbin (p. 681), in which there appear only the smaller U-shaped curves which represent the expected short-period average cost (including interest on the cost of constructing the plant) for different plants. These are so arranged that the envelope to them (the long-period average-cost curve) would itself be U-shaped, as it is in our diagram ( $EE'$ ). That is, the centre curves are lower than those to the right or to the left, showing that there is an optimum size of the industry, for which



the plant would produce the product more cheaply than either larger or smaller plants.

The small circles mark the minimum points on the average curves where they are cut by their corresponding marginal curves, and are put in to show which marginal curve belongs to which average curve. The marginal curves are all drawn in broken lines, and the average curves in continuous lines.

Mr. Durbin's first proposal, that "of producing *the largest physical output upon which normal profit would be earned*" (p. 682, n. 1), is shown at  $A$  where the demand curve,  $DD'$ , cuts the long-period average-cost curve,  $EE'$ .

Mr. Durbin's second proposal, which he identifies with and considers to be merely an elucidation of the first, is that "the Trust would construct a plant for which maximum profit . . . gave a total profit equal to the market rate of interest on the cost of constructing the plant" (*ibid.*). It is shown at  $B$  where a U curve just touches the demand curve.

*A* indicates the plant for which the *output*, when extended to the point where abnormal profit disappears, is *largest*. *B* indicates the *largest plant* which can just earn normal profit at *some* output. At *B* the plant is larger, but the output is smaller. The identification of these two with each other is closely related to the mistake made by Professor Viner and brought into the light by his obstinate draughtsman.<sup>1</sup>

Mr. Durbin rejects both of these solutions in favour of one taken with acknowledgments from unpublished work by Mr. H. T. N. Gaitskell—namely, that that plant should be built which will just be able to make normal profits when selling the output which it can produce most cheaply per unit. Price will then be equal to average and marginal cost. This solution is shown at *C*, where the demand curve cuts a *U* curve at its lowest point (where the latter is also cut by its corresponding marginal-cost curve). Unfortunately, however, this solution does not fit in with Mr. Durbin's short-period rules. Only with solution *B* will a fall in demand (relatively to cost) always prevent normal profits from being made, and bring Rule Two into operation. At *A* or at *C* normal profits are made without profits being maximised. Demand may fall a long way, or costs rise, or efficiency fall, without normal profit falling off or any indication appearing of anything needing adjustment. It will *not* be true that "the maximisation of profit will possess the advantage of revealing automatically the existence of surplus capacity" (p. 686).

At *A* price is below both long- and short-period marginal cost. The correct short-period output, if this wrong plant has already been built, is shown at *A'*, where price is equal to short-period marginal cost. At *A'* price is still below long-period marginal cost. This indicates that the plant is too large. At *B* not only is price *above* both long- and short-period marginal cost, but short-period average cost is above long-period average cost (indicating that some other plant could produce the same output more cheaply). *B'*, where price equals short-period marginal cost, shows the correct short-period output, if the plant is already there. At *B'* price is *below* long-period marginal cost (indicating that this plant is too large).

At *C*, too, short-period average cost is above long-period average cost (indicating that some other plant could produce the

<sup>1</sup> See J. Viner, "Cost Curves and Supply Curves," *Zeitschrift für National-ökonomie*, September 1931, p. 36, n. 2, where Professor Viner identifies the plant which can produce a given output at least total (or average) cost with the output that can be produced by a given plant at least average (*not* total) cost.

same output more cheaply). This is not compensated by the fact that no other output could be produced at a lower average cost by this plant. The consideration of the cheapest output for any plant may satisfy the æsthetic feelings of the designer of the plant, but it is not an economically relevant consideration. Professor Viner's mistake lurks in Mr. Gaitskell's solution too. Price is equal to the short-period marginal cost (indicating that, given the plant, the short-period output is correct), but it is less than the long-period marginal cost (indicating that the plant is too large).

$P$  shows the true long-period solution. Price is equal to both long-period and short-period marginal cost, and short-period and long-period average cost are equal to each other.

If the demand curve cuts  $EE'$  on the left-hand or downward-sloping side, most of these relationships will be reversed, as can be seen from an inspection of the figure. If the demand curve cuts  $EE'$  at  $Q$ , its lowest point, we find that  $A$ ,  $A'$ , and  $C$  coincide with  $P$ , and these wrong formulations give the right result. If the demand curve is horizontal and touches  $EE'$  at  $Q$ , the six positions  $A$ ,  $A'$ ,  $B$ ,  $B'$ ,  $C$ , and  $P$  all coincide in  $Q$ . It is these coincidences, which are a result of the existence of the conditions of perfect competition, that give plausibility to the theories here combated. The preoccupation with perfect competition has obscured the fundamental relationships, because in perfect competition all the different treatments give the same result.

§ 11. There remains to be considered the relationship between short-period and long-period problems. This is left beautifully vague in the simplified directives given by Mr. Durbin to the managers: "When you cannot earn normal profit, you will be producing less than the capacity for which the plant was built, and you must then consider what smaller plant would, working to capacity, produce a lower output and earn normal profit. In the fullness of time that plant must be built" (p. 686). We have already seen that the need for the plant to work "to capacity" is a purposeless fetish. What is significant here is the phrase "in the fullness of time," which is the only guide we have as to when and how quickly the new plant is to be built. This must surely be the nearest English expression for the untranslatable word by which the citizens of such countries as Russia or Spain show their refusal to recognise time as an economic factor.

The problem of transition from short- to long-period considerations disappears as soon as we recognise that every act of replacement has to be considered, like any other act of investment,

in the light of our general principle. Any marginal item must be undertaken if it is anticipated that the price of the service it will provide, discounted over the appropriate period at the appropriate rate of interest, is greater than the cost incurred. Short-period decisions differ from long-period only by the length of time elapsing from the moment of deciding to make the investment to the moment (or period) of the emergence of the product.

This shows us how to deal with the problem of replacing a plant by another which is considered to be more suitable in the long run. While the greater part of the equipment is still good for some time to come, it will pay to renew such small items as wear out quickly. This will be so as long as the return to these—which includes the return to the whole equipment minus interest on its scrap value—is greater than the cost of replacing them. As time goes on, the number of items to be replaced increases, while the return diminishes because the time is approaching when to continue using them would entail the replacing of the whole of the old equipment, which it will not pay to do. This will not be expected to happen, so that the items which are being replaced have a shorter and shorter period of useful life to look forward to. When the cost of replacement becomes equal to the return calculated in this way, replacement ceases, and the old equipment is sold for scrap. The new plant, meanwhile, anticipating this moment of dismantling of the old plant and perhaps benefiting from the diminished efficiency of the old plant, is prepared to take over. This procedure, of course, involves a good deal of guesswork on the part of the people in charge. To that incompleteness of human knowledge we must reconcile ourselves. It has existed in all forms of human society, and has always been responsible for a certain amount of loss. That the loss becomes more *explicit* in a socialist society is certainly a point in favour of socialism rather than against it.

It should be noted that depreciation quotas and supplementary costs are not mentioned, so that the pseudo-problems connected with the difficulty of distinguishing prime from supplementary costs dissolve into thin air. The only costs that are relevant are costs the incurrence of which is in question. They are therefore *all* prime. Supplementary costs are for us nothing but a useless carry-over from capitalistic book-keeping practices.

The hostile suspicion which generally meets the proposal to leave out “supplementary cost” altogether rests, I think, largely on the identification of “supplementary cost” with long-period (prime) cost. The user of any plant which has already been built

is forcibly reminded of this cost by the interest (and repayment) that he has to pay on the capital borrowed for that purpose. Our proposal therefore looks as if it does not take into account at all the cost of building the plant. This is, of course, not so. Our procedure is to take into account the cost of building a plant whenever the question of building or rebuilding arises, in which case the cost is, from the longer-period point of view then taken, a *prime* cost. It does not take into account the cost of building when the plant is already built, and the problem in hand is the quite different one of *using* it.

§ 12. We can now deal with objection 5 (see § 8, p. 259 above), which, although appearing to be concerned with some ambiguity about units, is really concerned with the relationship between decisions of different degrees of "looking forward"—different "periods" in the scale between the short period and the long period. This is hidden by the form in which the objection is put. It takes the British railways as they are now being run, and supposes our principle of making price equal to marginal cost to be applied to them. This is not permissible, because our problem is essentially concerned with the ideal distribution of resources, so that to consider the output given and to use our principle to give us some "ideal" price naturally leads to nonsensical results.

(In the case of such a commodity as a railway journey, there is the complication that the railway undertaking finds it convenient to fix the price of the tickets *before* it can provide the service. This must not be allowed to obscure the fact that our problem is the adjustment of output to that at which price equals marginal cost, even if we have to adjust output *via* price manipulation.)

The British railways are not run on our principle; so that there are many empty seats and unused carriages, the charge for using which is greater than the marginal cost. To allow people to ride in empty seats is a different service from providing another train, and both are different from the service of building another railway line. In the first service price is certainly above marginal cost, and it may often be so for the second, while for the third it is very unlikely. But this appears to present a difficulty only if the three services are gratuitously assumed to be identical. The price for journeys in the trains that are running should be lowered until these are full (or until price equals marginal cost at zero if that is reached first). Additional trains should be run (and the price lowered so as to enable the additional service to be used) until the marginal cost of that service is equal to the (anticipated) price of the product. And similarly for the construction

of a new bit of railway. In a stationary society, all these prices would be equal, since they are the prices of similar services at different times. In a dynamic society they will be different, and there will be correspondingly different marginal costs.

The moral of all this argument is that it is not the unit of *output* which is basic, but the unit of *input*. Where input is divisible, the units may be considered as small as is convenient. Where there are large indivisible units of input—as when a railway is to be built (it being of no use if it is not completed)—the principles are to be applied to this unit. If the returns on it are expected to be greater than the cost, it should be undertaken, and if not, it should not be undertaken. If we know whether any suggested economic activity should be carried through or not, that is all that we need to know.

§ 13. The principle that no item of economic activity should be undertaken if the return (the price of the product) is expected to be less than the extra cost, might be thought to imply that every firm or enterprise should cover its cost. This is not the case. The principle applies only to each indivisible item of economic activity, but not to any complex of activities such as those carried on by a firm, or included in any “industry.” It is possible for a firm to run at a loss while keeping to this principle, since no account is taken of the effect of one item (or atom) of activity on the revenue from some other part of the firm’s activity. Thus if there is *some* output of any product which, if it were produced, could, by discriminating monopoly or any other means, be made to sell for an amount that would cover the total costs of producing the output, that, according to our principle, is an indication that the production of that commodity should be undertaken. The fact that people are willing to pay so much for it means that the product is desired more urgently than any alternative for which the resources might be used.

But such a position is not the final one, for our principle requires that in any section of the market where the price is greater than the cost of producing another unit, that unit must be produced. This will lower the price and destroy the discriminating monopoly, and may reduce total revenue below the total cost in the final position where there is a uniform price equal to marginal cost. The effect of the increase in output on diminishing the revenue from another activity (the previous output) carried on by the firm finds no place in our principle, since it has no social significance, being nothing but a transfer from the seller to the buyer. Questions of distribution of wealth between individuals

are dealt with in another department of a socialist society, and need not be allowed to interfere with the optimum distribution of resources. If there exist the technical and economic conditions of perfect competition, the sale of the extra unit will not affect the price, and price will also be equal to average cost. Again we see that where the symptoms of perfect competition are rightly to be found they look after themselves.

§ 14. In spite of all the criticisms of Mr. Durbin's scheme that have here been put forward, it remains a workable one, inasmuch as it does give definite directions governing both the kind of equipment that should be aimed at and the size of output from given equipment, and it does this in a way which, judged from the point of view of the ideal distribution of resources to a given demand, is probably better on the whole than the way in which this is done in a competitive economy.<sup>1</sup>

§ 15. In the penultimate section of his article (§ 5) Mr. Durbin quotes the following passage from Dr. Hayek :

“Take the case of some unique instrument of production which will never be replaced and which cannot be used outside the monopolised industry, and which therefore has no market price. Its use does not involve any costs which can be determined independently from the price of its product. Yet it if is at all durable and may be used up either more or less rapidly, its wear and tear must be counted as true cost if the appropriate volume of production at any one moment is to be rationally determined. . . .”<sup>2</sup>

In an attempt to deal with this criticism of socialist costing systems, Mr. Durbin misses the point of the example, and makes an unnecessary concession to Dr. Hayek. He begins by denying that there is “any difficulty over depreciating factors. However specific a factor might be in the short period—as long as it wears out, the depreciation allowance made for it continuously converts

<sup>1</sup> In this comparison we must take the theoretical system in both cases—*i.e.*, leaving apart such sociological questions as incentive, etc. In general Mr. Durbin refuses to discuss these matters in the article considered and he is well justified in refusing to accept in the context of the problem of economic accounting such criticisms of socialism as depend upon these considerations. He is, however, guilty of a similar sin in the opposite direction when he declares it to be a disadvantage of capitalistic production that the managers of joint-stock companies will reinvest their quasi-rents in their own enterprise, even if the yield is greater elsewhere, because by so doing they safeguard their own jobs (p. 680, n. 1). This is not an accounting but a personal or sociological problem which may well be even more serious in some forms of socialist economy.

<sup>2</sup> *Collectivist Economic Planning: the Present State of the Debate*, § 8, pp. 226-228.



it into a non-specific factor" (p. 689). This may merely mean that in the long period the factor is non-specific, so that the short period is not really dealt with at all; the use of the word "continuously" suggests, however, that the device of charging a depreciation allowance solves the problem of determining the social cost of using an instrument as against not using it, and thus of deciding how intensively to use existing resources in the short period. This involves the error of regarding the depreciation allowance, which is calculated on *bygone* costs, and perhaps based on a *bygone* estimate of the rate of depreciation, as relevant for decisions as to the maximisation of either individual profit or social benefit by *current* enterprise. What is relevant for this purpose is the value of the extra wear and tear (prime user cost<sup>1</sup>). In long-period static equilibrium long- and short-period average and marginal cost are all four equal to each other and to the marginal revenue. The depreciation allowance (in the widest sense, including allowance for using up raw materials—the excess of long-period average cost over prime factor cost) is then equal to prime user cost (the excess of short-period marginal cost over prime factor cost). There is then no *quantitative* error if one puts the depreciation allowance in place of the prime user cost. But such an *analytical* error becomes *quantitative* as soon as one moves out of the long-period static equilibrium. Furthermore, the long-period static equilibrium in which the depreciation allowance is equal to the prime user cost may well be monopolistic, and not perfectly competitive, so that the depreciation allowance can never serve as a substitute for prime user cost.

Mr. Durbin's defence consists of (a) maintaining that Dr. Hayek's point applies only to eternal instruments—though the argument rests entirely on the instrument *wearing out* at a rate that can be varied; (b) showing that even in the case of eternal and specific instruments there is no problem as to how they are to be used (since their specificity rigidly determines that), but only the problem of determining the relative intensity of use of several such eternal instruments specific to the same use, and (c) denying that this is likely to be important because the only example that occurs to him is that of "a bunch of tunnels all conveying traffic between the same two places—and all through very hard rock!" (p. 690).

The quite unwarranted concession about "bunches of tunnels,"

<sup>1</sup> Prime user cost is not the same as Mr. Keynes' "User Cost" (*The General Theory of Employment, Interest and Money*, Chapter 6).

the sarcasm notwithstanding, is of the utmost importance, because in the short period—in which we actually live—all economic decisions reduce to just such questions of the degree of utilisation of (= degree of application of mobile factors to) different items of equipment which are largely specific.

Dr. Hayek's point is simply that in determining whether to use an instrument more intensively, recourse has to be made to an estimate of the future uses that are thereby sacrificed, and that this is not shown as a cost item independent of the price of the commodity being produced. In a competitive economy, however, the hiring of the instrument involves a cost which appears as an objective item to be considered by the hirer.

Of course, there is a catch in this. The objective cost of hiring the instrument depends upon the estimated value of the future use that is sacrificed to the present when the instrument is hired, since this governs the hiring fee charged. The question is then the sociological one, whether the Socialist Trust is able to estimate this future value more accurately or less accurately than the competitive owner of the hired instrument, and here we leave pure economic theory.

It is not strictly accurate to say, as Dr. Hayek does, that the cost of using the instrument depends upon the price of the product itself, and thereby to suggest that the derivation of a supply price from the cost would involve circular reasoning. The cost depends not on the present price, but on the *expected future price*; and this must be true whatever the form of the economy. Dr. Hayek's movement from the "expected quasi-rents" of an instrument to "the price of its product" forms an effective, if unintentional, trap for economists who are sufficiently preoccupied with static equilibrium to take it for granted that price and expected price are the same thing.

§ 16. We have seen that the simple principle of adjusting output to the point where price is equal to marginal cost is able to deal with all the situations for which considerations of averages have seemed to nearly all writers in this field to be necessary. The introduction of this second principle is in many cases completely inoperative, and in all other cases harmful. What our simple principle does, in fact, is to bring about the situation to which Professor Pigou's scheme of taxes and bounties intended to guide the competitive economy. In the socialist State it is so much simpler, because there is no need for any particular firm or industry to cover its costs. It is only another carry-over from the capitalistic economy which causes Mr. Durbin to quail before

the necessity of what he calls a "complex system of taxes and bounties" (p. 686). There are no taxes or bounties. There may, indeed, be for any industry or firm a difference between the total revenue from sales and total outlay for factors, and anyone who wished would collect these figures and call them taxes and bounties. But there is no point in doing this that I can see.<sup>1</sup> There is no second general principle. Price must be made equal to marginal cost. This is the contribution that pure economic theory has to make to the building up of a socialist economy.

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<sup>1</sup> Although a somewhat similar procedure might be useful in discovering whether the population is above or below the optimum. This, however, is quite another problem.