The Foundations of Welfare Economics

Author(s): J. R. Hicks

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THE FOUNDATIONS OF WELFARE ECONOMICS [1]

1. THE subject of this paper is a matter of very fundamental importance, both for economic theory and for the proper attitude of economists towards economic policy. That being so, it is not surprising that it should have been a matter of controversy, controversy which has even tended to widen into a profound difference of opinion. During the nineteenth century, it was generally considered to be the business of an economist, not only to explain the economic world as it is and as it has been, not only to make prognostications (so far as he was able) about the future course of economic events, but also to lay down principles of economic policy, to say what policies are likely to be conducive to social welfare, and what policies are likely to lead to waste and impoverishment. To-day, there is one school of writers which continues to claim that economics can fulfil this second function, but there is another which (formally at least) desires to reject it. According to their view the economics of welfare, the economics of economic policy, is too unscientific in character to be a part of economic *science*. So long as economics is concerned with explanation, it can hope to reach conclusions which will command universal acceptance as soon as they are properly understood; but once it goes beyond that point, and endeavours to prescribe principles of policy, then (so they hold) its conclusions must depend upon the scale of social values held by the particular investigator. Such conclusions can possess no validity for anyone who lives outside the circle in which these values find acceptance. Positive economics can be, and ought to be, the same for all men; one's welfare economics will inevitably be different according as one is a liberal or a socialist, a nationalist or an internationalist, a christian or a pagan.

It cannot be denied that this latter view is in fact widely accepted. If it is intellectually valid, then of course it ought to be accepted; and I must admit that I should have subscribed to it myself not so long ago. But it is rather a dreadful thing to have to accept. No one will question the activity of some of our "positivists" in the criticism of current institutions; but it can hardly be denied that their authority to advance such

[1] Based on a paper read to the Economic Society of Stockholm, May 1939.

criticism *qua* economists is diminished by their abnegation, so
that in other hands economic positivism might easily become an
excuse for the shirking of live issues, very conducive to the
euthanasia of our science.

Fortunately there is no need for us to accept it.   The way is
open for a theory of economic policy which is immune from the
objections brought against previously existing theories.

The standard representative of these existing theories is of
course Professor Pigou's *Economics of Welfare*. It is such, not
only in its own right, but as the culmination of a great line of
economic thought. A whole series of economists, among whom
Dupuit, Walras, Marshall and Edgeworth deserve particular
mention, had sought to find in utility theory a sure basis for
prescriptions of economic policy. In those of its aspects which
particularly concern us, the *Economics of Welfare* is essentially
a systematisation of this tradition.

I am not so much concerned in this paper with Professor
Pigou's conclusions (most of which are very readily acceptable,
and are abandoned with reluctance even by the positivists),
as with the grounds on which those conclusions are based. It is
not surprising that these grounds should have caused so much
trouble. Professor Pigou derives his prescriptions from the
postulate that the aim of economic policy is to maximise the real
value of the social income. In order to arrive at such a *real
value*, the quantities of the various commodities produced must
be weighted by a *given* set of prices—and the prices actually
selected are those ruling on the market in the actual circumstances
considered. In order to justify this procedure, a long argument
is needed, which occupies most of Part I of the book. There are
three steps in this argument which cause difficulty. The first
is at the very outset, when the reader is asked to accept a direct
correlation between economic welfare and social welfare in
general (whatever that may be). This is not easy to swallow;
in any case it is open to the positivist objection that it reflects a
particular social outlook, held by certain classes at certain times,
and never likely to be acceptable universally. At the next step,
we have to admit the possibility of comparing the satisfactions
derived from their wealth by different individuals. (This is
where Professor Robbins parts company; for my own part, I
go with him.)   And then further, even if these things are admitted,
a third jump has to be taken.[1] Strictly speaking, the quantity
to be maximised is the sum of the consumers' surpluses derived

[1] *Economics of Welfare,* 4th edition, p. 57.

from the various commodities in the social dividend. This is too awkward to handle, so it is replaced by the real value of the dividend—which is not the same thing at all.

I do not think that anyone can be blamed for declining to entrust himself to a chain containing three links as weak as these. If there were no alternative foundations for the theory of economic welfare, it would be nothing more than the development of an interesting ethical postulate—the status Professor Robbins allows. Alternative foundations are, however, available. A way round the first difficulty has been shown by Mr. Harrod; [1] round the second by Mr. Kaldor; [2] while Professor Hotelling, in a most valuable and suggestive paper covering the whole subject, has provided a mathematical analysis in which all these difficulties are in fact overcome.[3]

Therefore my own task is mainly one of synthesis. I propose to set out briefly and simply the main lines of the new welfare economics. It will appear that the main propositions can be established quickly and easily, and at the same time their significance can be made perfectly clear.

2. The *positive* theory of economics exhibits a system in which people co-operate with one another in order to satisfy their wants. We assume each individual (each free economic unit [4]) to have a certain scale of preferences, and to regulate his activities in such a way as best to satisfy those preferences. As Pareto put it, in his famous masterpiece of generalisation, the economic problem consists in an opposition of " tastes " and " obstacles," each individual endeavouring to satisfy his tastes as far as is possible in view of the obstacles to satisfaction which confront him. Looking at society as a whole, the obstacles are technical obstacles—the limited amount of productive power available, and the technical limits to the amount of production this productive power will yield. Looking at a single individual, the obstacles which prevent him from attaining a fuller satisfaction of his wants are not only technical obstacles but also the wants or tastes of other people. He is prevented from being better off than he is, not only because total production is limited, but also because so much

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[1] " Scope and Method of Economics," ECONOMIC JOURNAL, Sept. 1938, pp. 389–395.

[2] " Welfare Propositions and Inter-personal Comparisons of Utility," ECONOMIC JOURNAL, Sept. 1939, pp. 549–52. See also Viner, *Studies in the Theory of International Trade*, pp. 553–4.

[3] " The General Welfare in Relation to Problems of Taxation and of Railway and Utility Rates," *Econometrica*, July 1938.

[4] It would appear from Mr. Harrod's analysis that we ought to be prepared, on occasion, to reckon public and semi-public bodies among our " individuals,"

of total production is at the disposal of persons other than himself. The same thing holds, of course, for any group or society of individuals, so long as that group is less than the totality of a closed community.

Now as soon as the economic problem is conceived in this way (and it is in some such way that all modern economists regard it), we are really obliged to go on and to consider as part of our business not only the objective consequences of this pursuit of satisfactions (the quantities of goods produced and exchanged, and the prices at which they are exchanged—the problems of positive economics) but also a further problem. We ought to examine how far these activities are effective in achieving the ends for which they are designed, to be able to examine the efficiency of any particular economic system as a means of adjusting means to ends. We are obliged to go so far, because the subject-matter of our study is something which is defined relatively to its purpose. We are not like geologists, comparing rocks laid down by natural forces; we are like archæologists, comparing flint implements made by man for a purpose, one of whose functions must be to compare the relative efficiency of these implements, and by tracing the ups and downs of that efficiency, to trace out the tortuous course of human evolution.

The task of examining the efficiency—in this sense—of any given economic organisation is thus one which we should like to regard as an integral part of economics. But before we can accept it as such, we have to face the second difficulty which lies in our way, the difficulty of inter-personal comparisons. Although the economic system can be regarded as a mechanism for adjusting means to ends, the ends in question are ordinarily not a single system of ends, but as many independent systems as there are " individuals " in the community. This appears to introduce a hopeless arbitrariness into the testing of efficiency. You cannot take a temperature when you have to use, not one thermometer, but an immense number of different thermometers, working on different principles, and with no necessary correlation between their registrations. How is this difficulty to be overcome ?

We may list three possible ways of dealing with it, two of which have to be rejected as unsatisfactory. One is to replace the given thermometers (the scales of preference of the individuals) by a new thermometer of one's own. The investigator himself decides what he thinks to be good for society, and praises or condemns the system he is studying by that test. This is the method which is rightly condemned as unscientific. It is

the way of the prophet and the social reformer, not of the economist.

Secondly, one may seek for some way of aggregating the reports of the different thermometers. This is the traditional method of Marshall, Edgeworth and Pigou. The fundamental reason why it cannot be accepted is that it is impossible to arrive at an aggregate without " weighting " the component parts; and in this case there is no relevant reason why we should choose one system of weights rather than another. (The equal weights, 1, 1, 1, . . . are just one possible system of weights like the rest.) As a matter of fact, when they are composing their aggregate, Marshall and Pigou pay no attention to variations of the marginal utility of money between rich and poor—a point which, on their own principles, ought plausibly to be taken into account.[1] Thus although their method can produce results, the significance of those results remains quite uncertain.

. The third method is Mr. Kaldor's. It consists in concentrating attention upon those cases which have been admitted, even by some of the positivists,[2] to be an exception to their general rule that the impossibility of inter-personal comparisons prevents any estimation of the general efficiency of the economic system. Mr. Kaldor's contribution is to have shown that these cases are not the mere trifling exception they appear to be at first sight, but that they do actually offer a sufficient foundation for at least the more important part of welfare economics.

3. Let us go back to the Paretian scheme referred to a little while ago. For society as a whole, the only *obstacles* to satisfaction are the limited quantity of physical resources, and the limited quantities of products which can be got from those resources. For the individual, however, the wants of other people have to be reckoned among the obstacles which limit the satisfaction of his wants. There are usually some ways in which he can improve his position without damaging the satisfactions of other people; there are other ways in which an improvement in his position (an upward movement on his scale of preferences) involves a downward movement for other people on their scales. Now these latter movements, which make some people better off and some people worse off, cannot be reckoned as involving an increase in " social satisfaction " unless we have some means of reducing the satisfactions of different individuals to a common

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[1] Cf. Kahn, " Notes on Ideal Output," ECONOMIC JOURNAL, 1935, p. 2.
[2] Cf., for example, G. Myrdal, *Das politische Element in der nationalökonomischen Doktrinbildung*, p. 288.

measure—and no unambiguous means for such reduction seems to exist.   But the former movements, which benefit some people without damaging others, stand in another category.   From any point of view, they do represent an increase in economic welfare— or better, an increase in the efficiency of the system as a means of satisfying wants, that is to say, in the efficiency of the system *tout court*.

Let us then define an *optimum* organisation of the economic system as one in which every individual is as well off as he can be made, subject to the condition that no reorganisation permitted shall make any individual worse off.   This is not an unambiguous definition of an optimum organisation; it does not enable us to say that with given resources and given scales of preference, there will be one optimum position and one only.   That is not so; there will be an indefinite number of different possible optima, distinguished from one another by differences in the *distribution* of social wealth.[1]   In spite of this, we are able to lay down the conditions which must be fulfilled in order that a particular organisation should be optimum, and so we can test whether an actual organisation is optimum or not.   If it is not optimum, then there is a definite sense in which its efficiency can be increased. Some at least of the individuals in the system can have their wants satisfied better, without anyone having to make a sacrifice in order to achieve that end.

The significance of this definition may be illustrated by taking the familiar case of comparative costs in inter-regional trade. Suppose that the supplies of two commodities are each derived from two regions, each region producing each commodity. Suppose that each commodity, in each region, is produced under diminishing returns, and that no migration of factors between the regions is possible.   Then, as is well known, the technical possibilities of production in each region can be represented by a *substitution curve*.[2]   The abscissa of each point on this curve represents a certain quantity of the one commodity, and the corresponding ordinate represents the maximum amount of the

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[1] If we start from a given organisation which is not optimum, there will be several different optima which can be reached subject to the condition of no one being damaged, since the " increment of wealth " can be divided in different ways.   In addition to these there will be many other optima which cannot be reached from the initial position, since they involve some people being worse off than they were initially.   These are optimum positions all the same, although they could only be reached by a " permitted reorganisation " if we begin from some other starting-point.

[2] Haberler, *Theory of International Trade*, p. 176.

other whose production is consistent with the production of that
amount of the first. A and B (Fig. 1) represent the substitution
curves of the two regions. Under the assumed diminishing
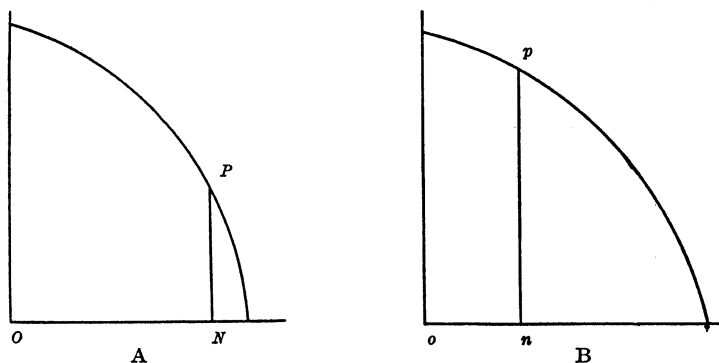returns, each substitution curve will be concave to the origin.

FIG. 1.

Suppose we start with a case where the quantities of the goods
produced in the two regions are *ON*, *PN* and *on*, *pn*. Then,
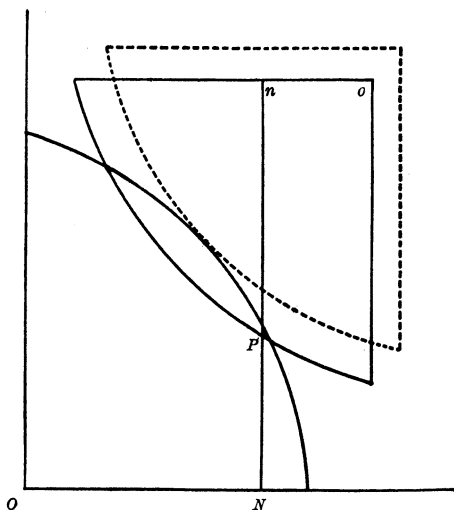taking the two regions together, the total amounts produced of

FIG. 2.

the two commodities are *ON* + *on*, *PN* + *pn*. These total
amounts might be plotted on a third diagram, but a more in-
structive method of compounding is to " sit " the one curve on
the other, keeping the axes parallel, as in Fig. 2. It will be

observed that the curve B is reversed before being superposed,[1] so that it is the co-ordinates of o with respect to the A-axes which represent the total amounts produced. This reversal has a definite advantage, since it shows us at once what condition must be fulfilled in order for the distribution of production between the regions to be optimum. If, when the diagrams are superposed, the curves intersect, a reorganisation of production will enable the outputs of both products (in the two areas taken together) to be increased. It is only when the curves touch (as in the dotted position) that an optimum organisation is realised.

When two curves touch, their slopes are the same; and the slope of a substitution curve measures the ratio between the marginal costs of the two products. It is thus a condition of optimum organisation that the marginal costs of the two commodities should be in the same ratio in the two regions. If this condition is not satisfied, the position is not an optimum; for the production of both commodities can be increased by a suitable re-arrangement.

An exactly similar construction can be used for the case of exchange between two individuals. Here again we can construct a substitution curve (an indifference curve, as it is more commonly called), showing the various quantities of two commodities which would yield a particular individual the same amount of satisfaction. His whole scale of preferences can be represented by a series of such curves. Now if the first individual only moves from one position on his scale to another position by exchanging goods with the second, every movement of the first individual implies a movement of the second in the opposite direction. We can then draw the second individual's indifference map upon the same diagram as the first's, but his curves will naturally all turn the other way.[2]

Once again, if the amounts possessed by the two parties are such that their indifference curves through that point intersect, the position cannot be an optimum. For it will be possible for either party to reach a preferred position (a position on a higher indifference curve) while the other party remains on the same indifference curve as before. One party can be made better off without the other being worse off, so the position is not an optimum position. The position will only be an optimum if the curves touch—in this case, if the ratio of the marginal utilities of the two commodities is the same for both parties.

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[1] I owe this device to Mr. Kaldor.

[2] Bowley, *Mathematical Groundwork of Economics*, fig. 1.

4. The general conditions for the attainment of an optimum organisation may now be set out in a formal manner.[1]

The first set of conditions are *marginal* conditions. They state—in the terminology I prefer—that the marginal rate of substitution [2] between any two commodities must be the same for every individual (who consumes them both) and for every producing unit (which produces them both) in the whole economy. In the older terminology, the ratio of the marginal utilities of the two commodities must be the same for every individual; the ratio of the marginal costs must be the same for every producing unit; and these ratios must be equal. Exactly similar conditions must hold between factor and product, and factor and factor, as between product and product. Thus the marginal product of labour in terms of a particular product must equal the marginal disutility of labour in terms of that product. And so on.

If these conditions are not fulfilled, some " tightening-up " (of the kind illustrated in our diagrams) will always be possible.

The second set of conditions are *stability* conditions. Their rôle is to ensure that the position established is one of maximum, not minimum, satisfaction. They can be defined in terms of the curvature of the substitution curves; but it does not seem necessary to elaborate them here, because their importance for the theory of the optimum is largely eclipsed by that of the third set of conditions—which we may call the *total* conditions.[3]

The function of the total conditions is to ensure that no improvement can be brought about by the complete abandonment of the production or consumption of some one commodity, either in one producing or consuming unit, or generally; and that no improvement can be secured by the introduction of new commodities, which could have been produced or consumed, but were not being produced or consumed, either partially or generally, in the initial situation, Similar conditions must hold for factors— thus conditions referring to the mobility of labour (occupational or local) arise in the form of total conditions.

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[1] It should be observed that it is not at all necessary to raise the awkward problems about the definition of real income, which gave so much trouble to Professor Pigou. We can *proceed directly* to the analysis of the optimum. This is, of course, not to deny that a definition of real social income is wanted for other (statistical) purposes, and that the issues raised in the search for that definition are very cognate to those in question here. In my ideal *Principles of Economics* the theory of economic welfare and the theory of the social income would be the subjects of consecutive chapters—but they would not get into the same chapter.

[2] See my *Value and Capital*, pp. 20, 86.

[3] Compare the triple classification of the conditions of equilibrium in positive economics, given in *Value and Capital*, chap. 6.

The working of both these latter sets of conditions can be readily understood by reference to our diagrams. In Fig. 2 (the inter-regional trade case) both the stability condition and the
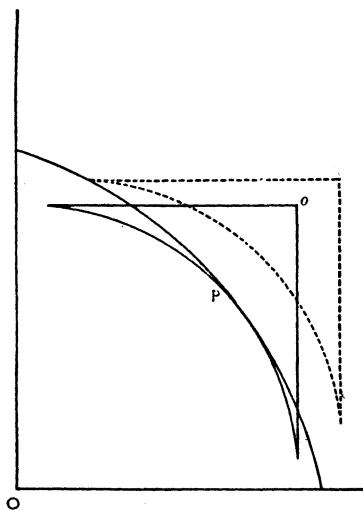

FIG. 3.

total condition were in fact assumed to be satisfied—as a consequence of the assumption of diminishing returns. Complications arise from increasing returns. In Fig. 3 the marginal
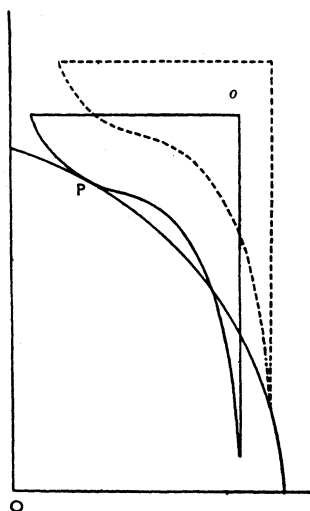

FIG. 4.

condition is satisfied, but neither of the other conditions. In Fig. 4 we have both the marginal condition and the stability condition, but not the total condition. In both these cases, it

is only possible for an optimum position to be reached if production of one commodity is abandoned in one of the regions. (Optimum positions are such as those indicated by the dotted curves.) There must be specialisation in the inter-regional case; more generally, there must be a change in the kinds of goods produced or consumed somewhere.

5. These are the general conditions for optimum organisation; they are universally valid, being applicable to every conceivable type of society. No economic system has ever existed, nor (we may be sure) will any ever exist, to which they are irrelevant.[1] But for us the most interesting application which they offer still lies in their use as a means of criticising or testing the efficiency of production by private enterprise.[2] It is this which I shall take as my topic for the remainder of this paper.

When we are dealing with the system of private enterprise, there is one point which requires special attention, although it is (in a sense) nothing but the practical aspect of that theoretical difficulty which has concerned us all along. Under private enterprise, any ordinary change in economic policy involves a change in the price-system, and any change in prices benefits those on one side of the market, and damages those on the other. Thus no simple economic reform can be a permitted reorganisation in our sense, because it always inflicts a loss of some sort upon some people. Nevertheless, this does not prevent us from applying our criteria to the case of private enterprise, because we can always suppose that special measures are taken through the public revenue to compensate those people who are damaged. A " permitted reorganisation " must thus be taken from now on to mean a reorganisation which will allow of compensation being paid, and which will yet show a net advantage. The position is not optimum so long as such reorganisation is possible.

The critique of private enterprise naturally begins by pointing out the one conceivable case in which an optimum position may be attained by perfect *laisser-faire*. This occurs when competition

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[1] Most of them are still relevant even if there is only *one* free economic unit.

[2] Another important application of Welfare Economics, which should perhaps be distinguished from this, is the application to Public Finance. Welfare Economics, defined as we have defined it, cannot lay down what is *the* optimum method of raising a given revenue—the " least sacrifice " method, as taxation theorists would call it. That is impossible without inter-personal comparisons. It can, however, distinguish between those methods of raising revenue which are consistent with optimum production and those which are not. In practice, this would seem to be a quite sufficient achievement.

On these questions of optimum taxation Professor Hotelling (*op. cit.*) has thrown particular light.

is *perfect* in all industries, so that every producer and every consumer takes for granted the prices of all those things he buys or sells, and contents himself with adjusting quantities to these (for him) given prices. If these conditions are realised, the *perfection* of the consumers' market ensures that each individual consumer equalises his marginal rate of substitution between every pair of goods to the ratio of their market prices; and the *perfection* of the producers' market ensures that each producer makes the marginal cost of every article he sells equal to its price. Thus the marginal conditions for the optimum must be satisfied. The fact that such universal perfect competition is only possible under universal diminishing returns [1] ensures that the stability and total conditions for the optimum must be satisfied too. Thus, so it appears, an optimum position must be reached.

There are, however, certain reasons why an optimum position may not be attained, even in these favourable circumstances of universal perfect competition and universal *laisser-faire*. The first is one which has been rightly emphasised by Professor Pigou.[2] It is of enormous importance that only some of the ways by which human beings affect one another's prosperity are controlled through the mechanism of the price-system. We are all of us affected by the economic activities of other people in ways for which we do not pay, or are not paid. Thus it is not necessarily to the social advantage (even in the narrow sense in which we are using that term) that a person should be able to acquire a particular product so long as he is willing to pay a price equal to the marginal cost of that product. This condition ensures that he can acquire it without making anyone else worse off because that person has to bear a part of the ordinary costs of production of that commodity; but there are other ways in which other people may be injured (or benefited). The ultimate implications of this exception are indeed very large. Hidden under this heading are some of the gravest philosophical issues about the relationship between the individual and society.

This qualification is generally admitted; but there are other qualifications, of a more dynamic character, whose place in the

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[1] Since these particular technical conditions are necessary in order for universal perfect competition to be a possible state of affairs, the true basis for the criticism of monopolistic output is always to compare it with optimum output, not with competitive output (which may easily be a meaningless term in the state of affairs assumed). Whatever the technical conditions, an optimum output always exists.

[2] *Op. cit.*, pp. 172 ff.

theory is less generally appreciated. When they are taken strictly, the optimum conditions can only be interpreted *ex post*; it is only *after the event* that we can say whether an optimum organisation has in fact been achieved. Now even under perfect competition, producers only equate prices to marginal costs *ex ante*; it is anticipated marginal costs which are made equal to anticipated prices, so that if any of these anticipations are wrong, actual prices will not equal actual marginal costs, and the position achieved, though planned to be an optimum, will not turn out as such in fact. Of course, the utmost which can be done by wise economic policy is to secure equality *ex ante*—the planned optimum, but it is as well to remind ourselves that this does not necessarily imply a realised optimum, in order that we should be quite clear about the part played by foresight in economic efficiency.

Nor is this all; if the optimum conditions are interpreted *ex post*, they can make no allowance for risk, since risk is a phenomenon due to uncertainty of the *future*. On the other hand, the policy of the individual producer, being *ex ante*, is greatly influenced by risk; consequently prices always tend to exceed the relevant marginal costs by a risk-premium. Consequently production is carried less far in the more risky industries than is theoretically desirable.

If foresight is very bad, there may be little harm in this; for the refusal to embark resources in risky enterprises may prevent much mal-investment and waste. Indeed, so long as it confines itself to deflecting resources from more risky to less risky sorts of *production*, wo may not need to have much quarrel with the risk factor in practice, the trouble is that it may go beyond this. Liquidity-preference is only a form of risk-aversion; and the effect of liquidity-preference on the general activity of industry is well known. When liquidity-preference manifests itself in a large amount of "involuntary unemployment," a monetary policy directed to the reduction of interest rates, and even a public works policy which calculates the profitability of public enterprise at an "artificially" low rate of interest, may be measures which promote movement in the direction of the optimum as we have defined it.[1]

[1] In spite of the close dependence of actual interest rates upon risk factors (expressed by Mr. Keynes in his liquidity-preference theory), it must not be supposed that the payment of interest is itself inconsistent with optimum organisation. For a convincing demonstration of this, see Lindahl, "The Place of Capital in the Theory of Price" (*Ekonomisk Tidskrift*, 1929, appearing in English as Part III of his *Studies in the Theory of Money and Capital*). The

6. I do not propose to say very much in this paper about the welfare economics of monopoly and imperfect competition, for this is altogether too large a subject to be capable of useful treatment on the scale here available. A very large part of the established theory of imperfect competition falls under the head of welfare economics, and it is actually much the strongest part of the theory which does so. Considered as a branch of positive economics, the theory of imperfect competition is even now not very convincing; the assumption that the individual producer has a clear idea of the demand curve confronting him has been justifiably questioned, and the presence of intractable elements of oligopoly in most markets has been justifiably suspected.[1] When it is considered as a branch of welfare economics, the theory of imperfect competition has a much clearer status. Oligopoly and monopolistic competition fall into their places as reasons for the inequality between price and marginal cost, whose consequences are then a most fertile field for study along welfare lines.

It is perhaps rather to be regretted that modern theories of imperfect competition have not been cast more overtly into this form; for the general apparatus of welfare economics would have made it possible to state some of the most important propositions in a more guarded way than usual. Take, for example, the very important question of the optimum number of firms in an imperfectly competitive industry, which is so near the centre of modern discussion. Since (*ex hypothesi*) the different firms are producing products which are economically distinguishable, the question is one of those which falls under the heading of our *third* set of optimum conditions—the *total* conditions; we have to ask whether a reduction in the number of products would be conducive to a movement towards the optimum.

Suppose then that a particular firm is closed down. The loss involved in its cessation is measured by the compensation which would have to be given to consumers to make up for their loss of the opportunity to consume the missing product, *plus* the compensation which would have to be given to producers to make up for the excess of their earnings in this use over what they could

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economy with perfect foresight and perfect competition, elaborately analysed by Professor Lindahl, is automatically an economy with optimum organisation and yet it has a rate of interest (of course a pure time-preference rate). The time-preference element in interest is that element which is consistent with the optimum, the liquidity-preference element is that which is not.

[1] Cf. Hall and Hitch, *Price Theory and Business Behaviour*, Oxford Economic Papers, Number 2.

earn in other uses.   The loss is therefore measured by Marshall's
Surplus (Consumers' Surplus [1] *plus* Producers' Surplus).   Under
conditions of perfect competition, this loss is a net loss.   For
when the factors are transferred to other uses, they will have to
be scattered about at the margins of those uses; and (since the
earnings of a factor equal the value of its marginal product) the
additional production made possible by the use of the factors in
these new places is equal in value to the earnings of the factors
(already accounted for).   Under perfect competition, the marginal
productivity law ensures that there is no producers' surplus
generated at the new margins; while, since the marginal unit
of any commodity is worth no more than what is paid for it,
there can be no consumers' surplus either.   Thus there is nothing
to set against the initial loss; there cannot be a movement
towards the optimum if the number of products is reduced.

But if competition is imperfect, there is something to set on
the other side.   The earnings of a factor are now less than the
value of its marginal product by an amount which varies with the
degree of monopolistic exploitation; and therefore the increment
to production which can be secured by using the factors at other
margins is worth more than the earnings of the factors.   There
is a producers' surplus, even at the margin, and this producers'
surplus may outweigh the initial loss.   The general condition for
a particular firm to be such that its existence is compatible with
the optimum is that the sum of the consumers' and producers'
surpluses generated by its activities must be greater than the
producers' surplus which would be generated by employing its
factors (and exploiting them) elsewhere.

The rule usually given is a special case of this general rule.
If entry to the industry is " free," price equals average cost,
and the producers' surplus generated by the firm as a whole can
be neglected.   If the products of the different firms are very
close substitutes, or merely distinguished by " irrational pre-
ferences," consumers' surplus can perhaps be neglected as well.
With these simplifications, the number of firms in an imperfectly

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[1] This use of Consumers' Surplus is not open to any of the objections which
have been brought against Marshall's concept; it does not involve either inter-
personal comparisons or the measurement of utility.   Consumers' surplus is
the measure of the compensation which consumers would need in order to main-
tain them at the same level of satisfaction as before, after the supply of the
commodity had been withdrawn.   It is, however, not exactly equal to the
area under the ordinary demand curve (see my *Value and Capital*, Appendix to
Chapter II).   This inequality (usually only a slight inequality) was responsible
for the difficulties about the aggregation of consumers' surpluses which troubled
Professor Pigou.

competitive industry is always excessive, so long as price is greater than marginal cost anywhere in the industry. (Or, if we can retain the identity of price with average cost, the number of firms is excessive until average cost is reduced to a minimum.)

These, however, are simplifications; it is not always true that the number of firms in an imperfectly competitive industry is excessive, though very often it may be. Before recommending in practice a policy of shutting down redundant firms, we ought to be sure that the full condition is satisfied; and we ought to be very sure that the discarded factors will in fact be transferred to more productive uses. In a world where the most the economist can hope for is that he will be listened to occasionally, that is not always so certain.

7. By adopting the line of analysis set out in this paper, it is possible to put welfare economics on a secure basis, and to render it immune from positivist criticism. That is a great gain in itself; but, as often happens in such cases, other gains are secured with it. The main practical advantage of our line of approach is that it fixes attention upon the question of compensation. Every simple economic reform inflicts a loss upon some people; the reforms we have studied are marked out by the characteristic that they will allow of compensation to balance that loss, and they will still show a net advantage. Yet when such reforms have been carried through in historical fact, the advance has usually been made amid the clash of opposing interests, so that compensation has not been given, and economic progress has accumulated a roll of victims, sufficient to give all sound policy a bad name.

I do not contend that there is any ground for saying that compensation ought always to be given; whether or not compensation should be given in any particular case is a question of distribution, upon which there cannot be identity of interest, and so there cannot be any generally acceptable principle. This being so, it will often happen in some particular case that the economist will find himself not at all anxious for compensation to be given [1]; but his personal feeling in that direction will be based either upon the non-economic ground that the persons damaged

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[1] The typical hard-boiled attitude is, of course, to reject all compensation on the ground that such risks *ought* to have been allowed for. In view of the importance of foresight for economic efficiency, there is something in this; when applied to ordinary changes in data which promote productivity (such as inventions) it is probably a decisive consideration; nevertheless, if it is always regarded as decisive, the case for an active pursuit of economic efficiency in other ways is seriously weakened.

do not deserve much consideration, or upon the only quasi-economic ground that the loss inflicted on them is nothing but the materialisation of a risk they may be expected to have allowed for. Nevertheless we must expect that there will be many other cases where the redistribution, resulting from a sound measure carried through without compensation, would be regarded by him as deplorable; and then, if he considers the measure in isolation from the question of compensation, he will pay no more than lip-service to its productive efficiency, and probably reject it in practice. From this it is only a step to the state of mind which judges measures solely by reference to their distributive justice, without reference to their bearing on efficiency. If measures making for efficiency are to have a fair chance, it is extremely desirable that they should be freed from distributive complications as much as possible.

We can make this separation in our own minds if we accustom ourselves, whenever we can, to thinking of every economic reform in close conjunction with some measure of compensation, designed to render it approximately innocuous from the distributive point of view. Since almost every conceivable kind of compensation (re-arrangement of taxation, for example) must itself be expected to have some influence on production, the task of the welfare economist is not completed until he has envisaged the total effects of both sides of the proposed reform; he should not give his blessing to the reform until he has considered these total effects and judged them to be good. If, as will often happen, the best methods of compensation feasible involve some loss in productive efficiency, this loss will have to be taken into account. In practice, it is not unlikely that we shall have to reject on these grounds many measures which would be approved of by the traditional analysis, but which would only be reckoned by that analysis as offering a small gain. (It is not very surprising to find that some of the fine points in welfare theory are nothing but snares.)

Further investigations of such matters would lead us far beyond the " Foundations " which have been the subject of this paper. I have accomplished my end if I have demonstrated the right of Welfare Economics—the " Utilitarian Calculus " of Edgeworth—to be considered as an integral part of economic theory, capable of the same logical precision and the same significant elaboration as its twin brother, Positive Economics, the " Economical Calculus."

                                        J. R. HICKS