

We often hear that economists speculating in their cloistered seclusion hold themselves too aloof from the rough and tumble of ^{work-a-day} practical life for their conclusions to be of practical utility; their speculations are too theoretical, in the sense that they are based on hypotheses which have little correspondence with the facts of business.

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This is closely related to a criticism couched in more academic terms, but similar in substance. Economics, it is said, pays too little regard to psychology. It consistently uses the assumption of an economic man, omniscient and acquisitive; it ascribes all behaviour to a single motive, instead of setting out to investigate, catalogue and analyse all the varied and heterogeneous motives, which jostle together within the breast of the imperfect and wayward human being, who set the wheels of economic activity in motion.

That there may be something in these criticisms we are driven to suspect by the results of economic studies. The best accredited masters of the subject, who may be deemed above making a slip in the logic of their arguments, appear ~~to~~ unable to contrive to avoid differing in their conclusions. These differences indicate a difference of assumpt premises and in the last resort a difference of assumptions about how men react to various circumstances. Is it beyond our powers to disentangle these assumptions and by an empirical ~~investigation~~ investigation to determine which are correct?

Study of the Trade Cycle is a field fertile in disagreements of the kind described. This has suggested to a group of economists in Oxford that it might be possible to by a process of intensive interrogation to ascertain how entrepreneurs do in fact react to certain specific changes in their environment and so

to reach a state in which the assumptions might be chosen with greater probability of their being correct, on the basis of empirical evidence. The group has had the privilege of securing the presence in Oxford of a number of entrepreneurs from different kinds of industry and subjected them to a heavy ^{also} bombardment of questions; ~~and~~ individual members of the group have ^{also} carried out similar interrogations over a wider field.

I fear I shall not be able to reveal to-day any sensational results of this line of approach. For one thing my lips are for the time being sealed. Furthermore the replies have not yet been sufficiently sorted and digested. We cannot yet be sure that we shall be able to record anything more than negative results of a rather general kind.

But it may be of interest to ~~develop~~ discuss the certain points of method and theory to which these interrogations have continually given rise. And I propose to illustrate them by reference to one particular topic only, the treatment of overhead costs.

In the study of production the sheet-anchor of the pure theorist is the principle that the entrepreneur endeavours to arrange matters, so as to do the best for his firm. This must be conceived, of course, not only in terms of current profit, but with regard to the whole course of prospective profits. So to be precise, it may be said that the entrepreneur endeavours to maximize the present value of his business, since this depends on the ~~size~~ size of the prospective net profit from zero hours onwards.

So equipped it might be thought that we could set out on our speculations with a feeling of security; but at the very outset we are confronted with the fact that the entrepreneur is largely ignorant of the circumstances which we assume him to assess ^{own} wisely for his guidance. He is required to know the state of demand for his product now and in the future. He is also required to know his own costs. It is clear that his knowledge about the future must be strictly limited.

It might be thought that as a preliminary we could divide his decisions into two classes, (i) his decisions with regard to the installation of equipment which must be mainly governed by expectations and (ii) his decisions with regard to current ^{can} output, ~~being~~ ^{being} affected by current conditions only. ~~Could we not~~ obtain a fairly precise theory concerning the second set of decisions? ^{by happily} even these are seriously affected by considerations ^{about} the future. He may charge a price which ^{is} ~~is~~ the right one regard to the current state of demand is the right one

But if in so doing he loses custom, we must deduct from his current receipts the present value of the good will lost in order to determine his true current net revenue. But how can the present value of the good will lost be assessed unless correct pre-^{vision} is possible?

Again even the estimate of his own current cost of production, which, if anything, appears on the face of it capable of accurate assessment, is infected by the virus of doubt about the future course of events. Mr. Keynes has ~~clear~~ well shown, by means of his concept of user cost, how the true cost of the wear and tear of equipment can not be properly judged if it is known whether and to what extent the equipment will be of value in the future. If there will be no ^{future} demand for its product, its present wear and tear should be set down as zero; but not otherwise. I should like to refer in this connexion to an article in the Economic Journal (September, 1936) on Prime and Supplementary Costs by Mr. S. D. A. MacDoyall, which investigates the problem much more ^{elaborately} and brings out the full and horrid complexity of the correct definition of such an apparently simple quantity as current cost of production.

Now, even if we could isolate the present from the infection of uncertainties regarding the future, would full knowledge reign. The entrepreneur is required to have knowledge of the present state of demand. A state of demand can only be represented by a schedule relating various prices to the amounts which the market will absorb at each, and here again we find ourselves plunged into a dense fog. Information on this point can only be obtained by trial and error conducted in an ever-changing environment. Our questions indicated that entrepreneurs are often only able to make the vaguest conjectures regarding the ^{elastic} current elasticity of demand.

A decision to be fully rational ~~requires~~ requires complete knowledge of all the relevant data. This is scarcely ever obtainable. By far the greater part of economic decisions are hardly thus to some extent irrational.

Most entrepreneurs ^{often} readily to admit and even to emphasize and exaggerate their ignorance of the relevant data. But ^{large} differences may be found with regard to their confidence in the validity of their own decisions. This no doubt depends largely on temperament. Some readily admit that they act ~~on~~ on guess-work with little to go on and that their decisions are often as likely to be wrong as right. Others incline to the view that

despite their ignorance of data expressible in quantitative terms they arrive by the process of judgement at conclusions which are approximately correct.

Now it is no doubt quite possible to arrive at a correct conclusion which has quantitative implications as regards its premises without being explicitly aware of those quantitative implications. This is the general rule of a skilled motion of the body. ~~If~~ ^{from} the conclusion is ~~in fact~~ it should be possible to argue back to the quantitative premises implied. If p and not $11d$ or $11d$ is the right price to charge, this implies that the demand has a certain specific elasticity and etc. Such complete ignorance, however, is ~~admitted~~ ^{often} affirmed with regard to these premises by those who rely on judgement that some scepticism with regard to their validity ^{of this judgement} may be pardonable.

While ignorance is widely admitted, it is usually possible to set limits to it. Thus there may be certainly based on good reasoning that it would be wrong to charge double or half the price chosen. Thus there may be a ~~definite~~ determinate range of ignorance.

The economist who argues from the assumption of full knowledge might justify his procedure in this way. If decisions are distributed at random within the range of ignorance, then, if there are a sufficiently large number of agents operating, the ^{net} result would be the same as if perfect knowledge obtained. This ^{would give a} reason ~~why the~~ additional to those associated with the theory of imperfect competition, why traditional competition analysis is becoming less applicable in the real world. The sphere in which ~~the justification~~ there are a sufficiently large number of operators to justify the assumption of knowledge by the theory of probability is becoming more restricted.

Now if we are to make progress away from the assumption of omniscience, it is necessary to be able to make some classification of the factors affecting decisions within the range of ignorance. The greater the confidence the entrepreneur has in his judgement the less easy is it to do this. When pressed for an explanation he has nothing to add. But if he is more difficult ^{and perhaps more realistic}, he may be willing to admit that he is ~~some~~ governed by this and that consideration, albeit not strictly relevant.

An investigation into factors governing action within the range of ignorance might be divided into those which affect judgement consciously and those which affect it unconsciously. The latter is perhaps the field in which the economist might in principle hope to learn most from the psychologist. The so-called psychological theory of the trade cycle, with its alternating waves of optimism and pessimism, is well

known, though its psychological basis is something of an improvisation on the part of economists. I have never been altogether able to understand it. It is usually assumed that optimism leads entrepreneurs to produce more than in view of the facts they ~~ought to~~ ^{ought to} ~~should~~. Why should it not equally well lead them to expect to be able to get ask too high a price and so produce too little? In the whole field in which goods are disposed of at prices stated in a catalogue and also in that at which orders are obtained by competitive bidding, the effect of optimism seems doubtful. Optimistic opinion may take the form of a belief that the demand is ~~any inelastic~~ and that more elastic than it is and that exaggerate the possibility of expanding the market by price reduction; or it may take the form of a belief that the demand is inelastic and that if you ask a high price, you will get it. The psychological theory seems to require an additional and surely unwarrantable assumption that optimism is tantamount to a belief in ~~elastic~~ firm faith in elasticity and pessimism to a firm ~~fact~~ ^{fact} in inelasticity.

The method of questionnaire is clearly ~~not very~~ ^{not very} appropriate to unravelling ~~unravelling~~ ^{unravelling} unconscious factors. It is possible that the lessons of experience may bring up into ~~the~~ ^{the} ~~consciousness~~ ^{consciousness} for condemnation, factors which had been unconsciously guiding him in the past. But the lessons of experience may remain in the unconscious also. Moreover in practical life the urgency of present ~~problems~~ ^{problems} makes the past recede very quickly. In many ~~cases~~ ^{cases} ~~the~~ ^{the} ~~problems~~ ^{problems} and struggles of 1931 have already taken their place with 1866 and all that.

What of the conscious factors? I have chosen ~~overhead costs~~ ^{overhead costs} as the subject from which to draw my illustrations for the following reasons. Though I do not propose to present any definite findings, it appears that the treatment of overhead costs ~~illustrates~~ ^{illustrates} the kind of factors that may operate within the range of irrational choice.

Strictly speaking it is a common place among economists that overhead costs should play no direct part in the fixing of a price. Entrepreneurs should not, save in a case to be mentioned, quote a price below the direct or prime cost of production. They should charge such a price above the prime cost as will bring regard (i) to the current elasticity of demand and (ii) to repercussions of their present price on the future demand for their goods as to maximize their profit present and future, in such wise as to maximize the present value of their business. They may go below the prime cost if they estimate that the present value of the loss of ~~future~~ ^{future} profit resulting from the loss of future customers due to their

charging a prime cost price rather than a lower one exceeds the present loss constituted by the difference between prime cost and the said lower price.

This is the strict rule of theory. Unhappily the two facts in question, namely the present elasticity of demand and the future loss of profit due to charging a particular price now are precisely those about which entrepreneurs are largely in ignorance. Consequently they do not know what is the right price to charge by this criterion.

On the other hand, by contrast with this vague and nebulous factor of demand elasticity, they may or may not have or may seem to have fairly precise information with regard to their overhead costs. They ^{may} ~~are~~ ^{are} surrounded with some doubt and ambiguity. But this doubt is less or may appear on first inspection to be less than the doubt concerning an estimate of demand elasticity present and future. ~~It~~ ~~cannot~~ ~~this~~ knowledge concerning overhead costs be put to good use? Can it not be brought in to fill in the gap due to their ignorance of the state and trend of demand? Specifically, why should they not make it their rule to charge such a price in excess of a prime cost as may be expected to cover overhead costs?

I do not suspect that entrepreneurs invariably or even generally charge a price equal to the prime plus the computed overhead cost. Evidence abounds that this is not so. But on the other hand there is considerable evidence that they do attach some weight to the computed overheads in ~~forming~~ forming their price policy. Practice differs considerably. Some have an almost completely rigid rule that they will not go below the price which covers prime plus overheads. Others pay scant attention to overheads; but it appears to be rare for them to pay no attention at all.

This is ^{may} be of considerable significance for theory. For it suggests the possibility of a quite specific bias within the range of ignorance. If the range of ignorance for a group of producers ^{is not from a point of view} ~~is~~ ^{is} from 15 to 25 and their computed cost ~~for~~ including overheads is $1/9$, it is probable that the mean price charged will be $1/9$ but slightly higher than $1/8$. ^{and} ~~attention~~ ^{may} be justified on rational grounds. The argument would run as follows. We do not in the least know how the market will react to various prices; all that is a matter of the barest conjecture. But we do know this. In the long run overheads must be covered if the firm is to remain in business; and in the long run also

the firm which charges a price in excess of cost including overheads is likely to lose ground to its competitors. There is also a less rational justification. In a firm which has to quote a number of prices, some routine method may be of reaching a price may be necessary. To make a fresh decision based on a complete survey of the market would be too cumbersome and too costly of managerial intelligence. Some rule of thumb may be required. The working principle provides such a rule.

The bias in favour of covering overheads is clearly relevant to the study of the sequence of events in the Trade Cycle. During the depression the margin over prime costs required to cover overheads becomes greater at a time when demand considerations suggest a smaller margin. Thus the bias of operative would hold prices at a higher level and thus reduce production to a lower level than all the relevant circumstances require.

It must not be inferred that attention to overheads ^{tends to} intensify the amplitude of the cycle itself. That would constitute a fallacious inference from the part to the whole. Indeed if a theory of the cycle of the type propounded by Mr. Keynes is correct, it would work the other way.

On this theory the depression recession proceeds until the volume of voluntary saving is reduced to the level required by the investment opportunities then available.

Any deviation of output from the best possible level tends to ^{reduce profits or} increase losses; but the quicker the secretion of loans as production recedes, the smaller has the recession of production to be to reduce saving to the necessary level.

On this view more refined methods of adapting output to demand would intensify the amplitude of the cycle, just as ^a more accurate cutting of the cost according to their cloth by consumers is thought to make the depression worse.

To profess regard for overheads is not a final explanation of policy. It merely leads to the question of how overheads are computed, and in particular to the volume of turn-over presupposed in fixing the margin required to cover overheads.

Of firms expressing allegiance to the overheads principle a surprisingly large number ~~now~~ use very crude methods of computation. This may well be because the attempts to use more refined methods demonstrates the un-soundness of the system and leads to its abandonment.

~~Methods of computation may~~
Systems of working for overheads may be divided into two broad classes, those using a flat rate and those based on forecasting. What I call the flat rate may take one of two forms. 1. Some fixed margin

such as 20% mg to added to direct costs. This is based on past experience and may be revised at long intervals.

2. Overheads may be accurately computed annually or at shorter intervals, but the ^{required} margin ^{is} computed on the basis that the plant is worked to ^{or to some specific percentage, such as 90, of capacity} full capacity. These methods have of the cardinal feature in common, that there is no tendency for the margin to swell as output recedes.

They are clearly very imperfectly designed to fulfil their alleged purpose, namely that overheads should be covered. They both go some way to ⁱⁿ tempering the price to the market and this may account for their survival.

The alternative method is to attempt some kind of forecast. This is more refined. But even in these cases the firms usually make their forecast on some very crude method. The commonest is to assume that the output of the coming year will be the same as that of the year preceding. This method would tend to pile on the oncost during the depression but with the lay of a year. A few very enlightened firms may attempt some more complicated form of extrapolation; but this is very rare. This is not to say that many firms do not have a department which is thinking ahead and making shrewd estimates; but the results of such estimates do not usually filter through into the routine work of costing.

Four points seem to be worth mentioning.

1. The same mistake, which makes a firm pay attention to overhead cost in fixing prices, namely a preference for the mere formula of ascertainable fact to the realm of vague conjecture, would incline it to the crude method of a flat rate rather than one based on forecasting. This may be one reason for the ^{widespread} survival of the crude method.

2. The crude method is likely to be retained, if it achieves its purpose fairly well, namely if it does get overheads covered. This will occur if ~~the~~ the fluctuation in demand is moderate.

3. If the fluctuation is great, no method can succeed in this object. The same cause which makes the crude method unsatisfactory, tends to discredit allegiance to the cost principle entirely. A refined method will pile on the oncost in the vain endeavour to cover overheads, but reference to demand would prescribe a reduction of oncost in order to secure the maximum ^{total} allocation to overheads. Thus if fluctuation is great a reference to overheads would lead price quotations in the opposite direction to that required; in such circumstances the reference tends to be abandoned altogether as in the cotton industry in recent years. Yet even there the

entrepreneurial instinct for regarding overheads is so great, that there is a firm belief that ~~abandon~~ their abandonment is abnormal and even immoral, and recent attempted price agreements contain a proviso enforcing regard for them.

4. In order to obtain an accurate assessment of cost, it is necessary to have precisely that information, the lack of which is the primary reason for regarding overheads at all. No true estimate for cost can be made without an estimate of prospective turnover; turnover depends in part upon the price; but the price itself is what has to be determined. Thus costing procedure, to be perfectly scientific, would have to form an estimate of the volume of demand at each possible price, estimate the cost for each such volume, and ~~then~~ ascertain the price most nearly equal to the firm cost plus cost appropriate to the output which could be marketed at that price. True costing is in fact impossible without an estimate of the whole demand schedule. But if it is possible to make such an estimate, the price may be fixed directly by reference to it and the whole ritual of arriving at a true cost becomes completely unnecessary.

The matter may be summarised more briefly thus:-

1. If the crude method is unsuccessful in getting overheads covered, no method is likely to be successful.
2. A forecasting method which pays more attention to demand than the crude method tempers the price to the demand less than the crude method.
3. If it is desired to avoid the uncharted seas of conjecture of the crude method is available.
4. If it is not considered necessary to avoid these uncharted seas, all reference to overheads is otiose.

In the actual world a large variety of methods exist side by side and varying degrees of attention are paid to ^{the} results of the computation in price formation. I hazard the conjecture that the more refined the method the less attention is paid to the result.

I have the impression that some kind of attention to overheads is very widespread, sufficiently so indeed to have a marked effect on global output and the course of the trade cycle.

It may surprise some that sufficient many firms have sufficient latitude in their price quotations to allow this. A word of explanation is necessary. It often happens that price is related to cost in a slightly more complicated way than ^{that} suggested by the foregoing. The price may be fairly rigidly fixed by competition or market custom; the costing is in these cases often used to determine the quality ~~that can~~ ^{of the} commodity which the firm offers at the price. But to reduce the quality offered at a given price in deference to the cost criterion is similar in principle to raising the price while ~~maintaining~~

maintaining the quality intact. The argument with regard to the effect of such pol's on the course of the trade cycle would be ~~the same~~ similar to that concerning open price adjustment.

I have used the treatment of overheads to illustrate how a rule of thumb, containing a specific bias, may be brought in by ^{the} entrepreneur to fill the gap due to his own un-avoidable ignorance. It is only intended as an illustration. There are many ^{other} matters, that will readily occur to your mind, extension of plant, depreciation policy, reserve policy, to give but a few examples, in which there is the same ignorance of all the relevant data and the same tendency to adhere to some criterion, tested perhaps by experience, but not strictly relevant or rational.

Tradition probably plays a considerable part in the formation and conservation of these rules of thumb. If some arbitrary procedure has stood the test of time, it tends to be retained. Quasi-ethical considerations, what is considered "fair" treatment of customers, of employers, of shareholders may also come in; all such considerations should be carefully sifted for a possible factor biasing ~~the~~ random choice within a field of ignorance.

These reflexions suggest a different interpretation of the process by which competition leads to the survival of the most efficient firms. We are apt to think of the most efficient firms as being more intelligent, industrious, punctual etc. But it may be that industrial evolution proceeds more on the lines of evolution in nature. New businesses arise and as a matter of practical expediency are bound to adopt some routine procedure with regard to many matters of policy ^{in the field of} ^{and we must remember that it is} ignorance. In so far as they lie within this range, ^{no firm} one procedure can be regarded as more intelligent than any other. Yet in fact one may find results lying, on the average over a term of years, nearer to the optimum than another. Competition will weed out the procedures less well adapted to the environment.

The adoption of new procedures is analogous to mutations in the theory of natural selection. The more frequent the occurrence of new mutations, the greater the opportunity for industrial adaptation. The greatest opportunity for new mutations occurs on the birth of new firms. Adaptation to environment would in our analogy consist in the spread of a procedure which in fact resulted in the closer approximation to the level of output required to maximize profit. Such adaptation is more likely to occur if ~~more~~ mutations are frequent. And it might be the case that in circumstances of a very high birth-rate of firms, the assumption of profit maximization would be a closer

appreciation to the truth, than in those of a much lower
birth rate. Advocates of universal civilization should
bear this in mind. It may be long before ignorance
can be so narrowly circumscribed that intelligence
can take over the part performed by the healthy process
of natural selection.