ESSAY 8

THEORY OF IMPERFECT COMPETITION
REVISED

Three interconnected problems will be discussed in the following pages.

1. Are any of the doctrines of imperfect competition, as now generally accepted, insecurely based on the premises from which they purport to be derived?

2. Does empirical evidence suggest that entrepreneurs fail to any important degree to act under the pure motive of profit maximisation which the theory of imperfect competition assumes?

3. To what extent does the conduct of entrepreneurs in conditions of imperfect competition cause a maldistribution of productive resources as among their various employments?

The words 'doctrines of imperfect competition, as now generally accepted' need a gloss. In the last twenty years there has been much specialist writing on this topic. This has focused attention on many complexities inherent in the facts analysed and introduced new refinements of analysis. It cannot be said that in the process the conclusions have become more clear-cut; rather the contrary. An expert might raise the question whether there are now any 'generally accepted' doctrines.

The words in point are intended to refer not so much to these specialist writers as to the general body of economists, especially of the younger generation. The two great works on the subject, by Mrs. Robinson and Professor Chamberlin, made a strong impact on the minds of economists; certain broad conclusions seemed to have been successfully established and have come to constitute part of the mental furniture of most economists; they have even had some
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influence on thinking, if not on action, in regard to public policy. The fact that specialist work has tended to show that the questions at issue are more difficult and doubtful than at first appeared has not substantially changed the position; the original conclusions continue to be accepted as rough approximations, subject no doubt to many qualifications; it seems better to work with these, however rough they may be, than to revert to earlier doctrines that are clearly false. They will tend to hold their place until better workable approximations of nearly equivalent simplicity are substituted for them.

I

Doctrine of Excess Capacity

My first task is to submit that one of these rough approximations, which has played quite a notable part in the non-specialist literature, is altogether wrong, and should cease to be used by economists as a working assumption. I refer to the alleged tendency of conditions of imperfect competition regularly to give rise to the creation of excess capacity, especially when there is relative freedom of entry into the business. I do not wish to imply that such a tendency is never operative. In Essay 3 on this subject (see page 84 above) I gave reasons for holding that 'long-period equilibrium is compatible with there being too many sources, that is, too many centres with a core of permanent equipment, and every one or many of these centres working below their optimum capacity'. I see no reason to question the validity of the arguments (concerning decreasing cost conditions) that led to this conclusion. But the scope for this phenomenon, as there defined, is far narrower than that suggested by the arguments later developed by Mrs. Robinson and Professor Chamberlin, and the reasons for it brought forward by me are quite different from theirs.

1 With all due apologies to Professor Chamberlin, I use the expression 'imperfect competition' in a broad sense, to comprehend some of the phenomena, for which he thinks the words 'monopolistic completion' a better description.
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I would further concede that the tendency may occasionally operate outside the scope originally defined by me, but strongly challenge the view that it normally operates where there is imperfect competition and free entry. Considered as a roughly approximative account of what usually happens in such circumstances, it appears to me to be wrong.

The fact that Mrs. Robinson and Professor Chamberlin, working independently, approaching the same problem from different points of view and using different tools of analysis, reached the same conclusion in regard to excess capacity was singularly impressive. They both held that, in the normal course of events, firms in imperfect competition would find equilibrium at a point where their total cost curve had the same downward slope as the demand curve with which they were confronted (point of tangency); as this total cost curve must become horizontal at the point of the optimum use of the available equipment, production only up to a point at which the short-period total cost curve still had a sizable downward slope would clearly mean production well below that for which the plant was best suited. In the conspectus of the doctrines of imperfect competition which I wrote after studying these two treatises (pages 111-38 above) I incorporated this finding, albeit not without misgiving. I did not hold that this would be the normal position of equilibrium, but that it was a possible position only ‘on the unlikely (italics not in original) condition that, in spite of imperfect competition, new competitors can enter the business and find a market as easily as pre-existent sources’. These words show that my misgivings in regard to this doctrine centred on the doubt whether ‘free entry’ was an appropriate assumption in the case of imperfect competition.

At this point I must burden the reader with a short digression on Mrs. Robinson’s views. For the purpose of drawing a total cost curve it is needful to incorporate some figure for normal profit per unit of output. She chose to define normal profit as a rate of profit just high enough to attract (or, what is the same thing, not to attract) new
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entrants. Thus there might be a rampant monopolist, well secured, who is able to obtain a very high rate of profit without fear of challenge; yet there must be some point at which even he, if sufficiently exorbitant in his charges, will eventually provoke competition. It is at this high level of profit that, according to Mrs. Robinson's definition, he is earning a 'normal' profit. This inflation of profit, if I may so call it, alters the shape of his total cost curve. Postulating a very high rate of profit on his fixed capital as 'normal' raises the amount of fixed cost that has to be spread over the output in computing total cost and causes the total cost curve to slope downwards over a much bigger range of output than it would if a more modest profit rate had been used in making the computation. Take the case of a monopolist who, if 'normal' profit is defined in a more modest way, is working his plant to optimum capacity, viz. at the point when total cost, including a normal profit per unit of capital, is at its lowest, and enjoying in addition to this normal profit a surplus monopoly profit. His position is shown in Fig. 6 on page 124 above. But if his surplus profit, which he is able to continue to enjoy owing to the difficulty of others entering into competition with him, is reckoned as part of his 'normal' profit, then the diagram representing his position is automatically transformed into Fig. 7 on page 127; this inflation of normal profit and the inclusion of the high rate of profit as part of his cost makes it look as if he were using his plant below its optimum capacity. This is a mere trick. If we are concerned to show how imperfect competition may cause a waste of productive resources, it is most important to represent the monopolist as using his plant to full capacity and making a surplus profit (as in Fig. 6) and not as using his plant below capacity and earning a normal profit.

In the article which challenged the utility of this definition of normal profit (printed on pp. 103-7 above), I made play with the fact that she stated that 'if profits are more than normal, new firms will tend to enter the industry, and if profits are less than normal, firms will tend to leave the industry'. I observed on this that normal profit so defined would not be a unique rate of profit but a wide range of possible rates. In the present text, however, I have not drawn attention to this weakness in Mrs. Robinson's definition, since it seems irrelevant to the matter in hand.
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It was for this reason, among others, that I felt it needful, in controversy with Mrs. Robinson, to define normal profit in a different way and not simply as that profit, however high, which would, in circumstances however monopolistic, just not attract new entrants into the business. I chose to define it as the rate of profit which the entrepreneur would himself deem just sufficient in considering whether or not to undertake an extension of his plant. This is explained in the essay printed on pages 103-7 above.

This surely brings us back to the common-sense position that where there is free entry profit tends to be reduced to the normal level as defined by me, but that where there is not free entry a monopoly profit may be earned. The existence and amount of the monopolist’s equilibrium profit thus depends, not on the slope of the demand curve with which he is confronted, but on the amount of impediment there is to the entry of rivals into competition with him. The possibility of monopoly profit when there are impediments to competitive rivals is old-established doctrine, in no wise dependent on the special analysis of ‘imperfect competition’. One proviso must be made. Profit may stand above the normal level as defined without being such as to attract new entrants and without representing a monopolistic position, if it is the result of superior efficiency. This point should be borne in mind throughout the following analysis.

What in connexion with imperfect competition we have now to consider is whether, when there is free or relatively free entry, there is a tendency towards the creation of excess capacity and whether that tendency is stronger the more steeply downward sloping is the demand curve with which the individual source of supply is confronted. Under the influence of Mrs. Robinson and Professor Chamberlin I tended to acquiesce in the view that there is such a tendency, and focused my doubts on the question whether free entry would often be the correct assumption.

Subsequent study has not confirmed those doubts. This is a question of fact, not of analysis, and it is therefore proper to give weight to the testimony of practical persons. While field enquiry fully confirms the view that imperfect competi...
tion is widely prevalent, if not omnipresent, throughout the field of manufacturing industry, a lively fear of the possibility of the incursion of new entrants, should excessive prices be charged by those already producing a certain article, is very widespread. While there are many cases of fairly securely established monopolistic (or oligopolistic) positions, in the majority of cases it seems to be assumed that sustained high prices will attract new entrants. (An exception must be made for periods of continuing inflation.)

Mr. P. W. S. Andrews, who has recently been doing most valuable work in this field, has brought an important point into prominence. Having regard to the difficulties in modern conditions confronting one who would establish a new business on a large scale — and large scale is needed for production at a competitive price in many lines — some economists have been inclined to doubt whether it is easy for new entrants to come into business at all readily. Mr. Andrews has stressed the point that the ‘new entrant’ may often, indeed usually, be an existing firm which is induced to take on a line of production hitherto new to it. Most firms produce a number of products. It is comparatively easy for an established firm, with its permanent cadre of management in existence, its buying and selling organisation and its attachment of skilled and unskilled labour, to switch part of its organisation, which may only be a small part, to producing an article not before produced by it, and to do so on a scale quite adequate to secure the necessary cheapness of production. Sometimes this may simply be due to the firm’s vexation at having to pay an undue price for a component that it needs. More often it is due to a vigilant look-out for profitable ways of expanding its operations. Its attention may first be drawn to a new profitable line by some fortuitous event in the course of its business dealings; accident plays some part in determining the direction of expansion of firms; it may accordingly decide to take on a new side-line. What begins as a side-line sometimes becomes the main line of a firm’s output. Entrepreneurs usually have the notion that there is no lack of potential rivals, should they expose themselves by charging an unduly high price.
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If the possibility of the relatively free entry of rivals is fairly widespread, it is clearly expedient to examine, with the sharpest tools available, the doctrine that this free entry tends, in conditions of imperfect competition, to create excess capacity.

In this connexion attention should be drawn to an article by Dr. Kaldor, published in *Econonica* in February 1935, which challenged the excess capacity doctrine. Part of that article contains a line of thought which I now propose to develop.

The analysis of imperfect competition, beginning with the short period, postulates a source of supply having a given quantity of fixed equipment. This being given and known, it is able (in theory) to draw its own short-period marginal cost curve; it ascertains the point at which this intersects the marginal revenue curve with which it is confronted; it decides to produce a volume of output corresponding to this point of intersection, and charges a price which will secure the sale of that amount of output. This price may often exceed the total cost of production per unit, including normal profit, for that amount of output. Thus at this price the firm makes a surplus profit. If this position is typical, i.e. if the firm does not enjoy any advantages peculiar to itself, and if other firms act in a similar manner, new entrants are likely to come into this line of production — for free entry is the case we are considering. The increased supply thereby generated tends to reduce the price at which each and every firm can market a given volume of output of this kind; the particular demand curve confronting each such firm is pushed to the left and its marginal revenue curve also; this process continues until surplus profit is eliminated and with it the stimulus to new entrants. In this equilibrium position each firm, or perhaps we should say, the representative firm, makes no more than a normal profit. It is still guided in its output and pricing policy by the intersection of its short-period marginal cost curve and the marginal revenue curve with which it is confronted. This point will have moved to the left in consequence of the arrival of new competitors; the new price is exactly equal — by definition of the
equilibrium — to total cost including normal profit per unit. The double condition thus required for equilibrium in these conditions that marginal cost is equal to marginal revenue, and that total cost, including normal profit, is equal to price, is satisfied when the demand curve with which the particular source of supply is confronted is tangential to its total cost curve (see Fig. 7 above). If the particular demand curve is downward sloping, as we suppose, the total cost curve of the firm must have a downward gradient. Whether before the incursion of the new competitors the firm in question was or was not producing to optimum capacity, it will certainly not be doing so in the new equilibrium; it will be further removed from its optimum capacity than it was before. Thus although the representative firm is not earning more than a normal profit, the supply to the consumer will be unduly restricted, in relation to the welfare optimum, and the price will be unduly high. The representative firm will be loading into its price an unduly high cost since, the volume of output being reduced in relation to optimum capacity, overheads cannot be so widely spread; but by hypothesis they are covered and a normal profit on capital earned. Since the representative firm and presumably the majority of the others are working below capacity, it can be said that there are too many firms in relation to the output that is being produced. The consumers are having to pay for an unnecessarily large amount of overheads in all. This is one of what I have called the 'generally accepted doctrines' of imperfect competition. It is deemed to apply wherever there is free entry and to a less degree when the impediments to new entrants are not severe.

Prima facie this seems a dubious story. It essentially depends on the decision of the firm, when in its initial position, to limit its output to the point at which the short-period marginal cost curve intersects the marginal revenue curve, and to charge a price appropriate to that decision. Even at this stage of the analysis we may ask whether a firm would think this the right thing to do. If aware of no advantage peculiar to itself, it must regard the prospect of maintaining its market at this price as likely to be short-
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lived (as 'accepted doctrine' deems that it in fact is). By charging the high price it forgoes the present opportunity of establishing itself in a somewhat larger market, and thus deliberately makes its position weaker for the time when it has to face the incursion of new entrants. Surely it will rather seek immediately to entrench itself in as large a market as it profitably can. But if the representative firm does this, the feared incursion of new entrants will not take place, and each firm will be able to retain its original market.

The case against supposing such a line of policy, which would seem to be the prudent one, may be put as follows. To take, for the sake of argument, the strong case of absolutely free entry, a firm has the following choice. If it is to entrench itself firmly in available markets before new competitors arrive, it must confine itself to a normal rate of profit. If, on the other hand, it charges a higher price, it can make a surplus profit while the sun is shining, and later, after its own market has been invaded by new entrants, it will enjoy a normal profit on its capital. Thus by one line of action it can only make a normal rate of profit on its capital throughout, while by the other it can make a surplus profit for an initial period and a normal rate of profit on its capital thereafter. Consequently, it is suggested, it will make more profit in total by the high pricing policy.

This is the argument, but it surely carries little weight. By all accounts and on all hypotheses, the future is largely uncertain. No firm, which is interested in a certain line of production, wishes to sacrifice markets available to it for the sake of a fleeting surplus profit. Such a sacrifice will tend to make it weaker in facing the various contingencies of an unforeseeable future. I submit that any experienced man of business would pronounce it most 'unsound' to make a temporary surplus profit by charging a high price at which it is known that sales are unlikely to be capable of being maintained in the long run. It is surely wrong for economists to insist, on the basis of a partial theory, that this is none the less what entrepreneurs normally do.

It is not in conflict with this conclusion to suppose that
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there may be occasions on which entrepreneurs can and do seize a short-lived surplus profit. We are now concerned with the doctrines of excess capacity. The market conditions may temporarily be such that entrepreneurs can safely charge prices well above their costs including normal profit, safely in the sense that the temporary prevalence of such profits will not attract new competitors. A general willingness to snatch surplus profits that is confined to such cases has by hypothesis no tendency to create excess capacity. In times of persistent inflation, open or suppressed, this opportunity may be fairly protracted.

The argument against the tendency to excess capacity can be greatly strengthened, if we take a somewhat more extensive view. In the foregoing analysis the amount of fixed equipment was taken to be an unalterable datum in the situation, and the marginal cost curve was deemed to be computed by reference to it. But fixed equipment has to be created, and the intentions of the entrepreneur at the moment when he decides to make such equipment must be brought into the picture.

One must not regard most fixed equipment — though it is true of some — as having been created once and for all in a remote past, when the present was still shrouded in a thick mist of uncertainty. In most firms the existing fixed equipment has been built up by stages, with replacements made from time to time as deemed expedient. At each stage careful consideration is given to the use to which such extra plant will be put. What is the nature of such consideration?

The 'accepted doctrine' of imperfect competition is as follows. The entrepreneur assesses the marginal revenue curve with which he will be confronted; he also estimates his long-period marginal cost curve. Let $x$ stand for the amount of output indicated by the intersection of these curves. He will choose to install the amount of fixed equipment at which he can produce $x$ units most cheaply, using a normal rate of profit in computing and comparing the overhead costs required for each amount of output. The long-period marginal cost (which includes overheads and profit) of producing $x$ units will be identical with the short-
period marginal cost of producing \( x \) units. (Once the equipment is made, the short-period marginal cost of producing an amount other than \( x \) will be higher than the longer period marginal cost.) The entrepreneur is deemed to contemplate that, when he has the equipment ready, he will, if the market conditions are precisely what he expected they would be, charge a price that enables him to sell \( x \) units, neither more nor less. This price may be substantially higher than the cost per unit, including normal profit, of producing \( x \) units. He will then become subject to the pressures of new competitors, which will prevent his maintaining such a surplus profit in the long run. And he will only be able to obtain a normal profit by producing less output than that for which his capacity was designed.

What I have so far set out is the 'accepted doctrine'. But has it not an internal inconsistency? If the entrepreneur foresees the trend of events, which will in due course limit his profitable output to \( x - y \) units, why not plan to have a plant that will produce \( x - y \) units most cheaply, rather than encumber himself with excess capacity? To plan a plant for producing \( x \) units, while knowing that it will only be possible to maintain an output of \( x - y \) units, is surely to suffer from schizophrenia.

What, then, should he plan to do? To have a plant which gives him the lowest cost of production per unit for \( x - y \) units only? Thereby he would save a futile waste of capital outlay and make a bigger profit on the \( x - y \) units to which he finally settles down, than he could if he had a plant designed to produce \( x \). This, however, will not save him from inconsistency, if he persists in the maxim of equating short-period marginal cost to marginal revenue; if he does this, he will charge a price that cannot be sustained in the long run without loss of market. As his market shrinks, he will find thereafter that he can only profitably sell \( x - y - z \) units. This argument may be extended to show that, however small the plant he designs, he will always be pushed backwards, so that it will be redundant. Apparently it is impossible to be an entrepreneur and not suffer from schizophrenia!
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It must by now have become plain that the radical flaw lies in the way in which the equation of marginal cost to marginal revenue has been interpreted. It is necessary to have a consistent integrated concept of the entrepreneur's plan in regard to the plant he creates and the pricing policy that he will adopt when he has obtained it. The whole of the foregoing argument implies that the entrepreneur pays attention only to the short-period marginal revenue. But when he plans his plant the concept of long-period marginal revenue is indispensable. In planning his plant he certainly has in mind long-period marginal cost (viz. cost including overheads and normal profit) and he must relate this to long-period marginal revenue, viz. the proceeds that he can hope to get during the expected life of the plant, to the best of his ability to calculate them, having regard among other things to potential competition. The radical mistake is in assuming that as soon as he has his plant he forgets about long-period marginal revenue. In fact when he has the plant, he will continue to adapt his pricing policy to the potentialities of long-period marginal revenue.

There is an asymmetry here, which is probably at the root of the confusion. Once the plant is constructed, long-period marginal cost is irrelevant, since the decision to have the plant is irreversible; short-period marginal cost is the sole guide for policy. But the difference between short-period marginal revenue and long-period marginal revenue relates to the future and long-period considerations on the demand side remain just as relevant to day-to-day pricing policy, after the plant has been constructed as it was before. What the entrepreneur has to consider is not what the revenue is that he can get by fully exploiting the situation to-day or this week, but what the revenue is that he can get and maintain. He must have had this longer period in view on the supply side in deciding on the size of plant; he should equally have had it in view on the demand side and should retain it in view on that side if he is to avoid the charge of schizophrenia. Long-period marginal revenue, relating to any given price, is the revenue which will continue to accrue in response to that price. If a price is charged that
new competitors can undercut, the loss of potential revenue due to the consequent loss of market must be subtracted from the immediate revenue yielded by the price charged.

The long-period demand curve has greater elasticity than the short-period curve, just as the long-period cost curve has less slope than the short-period curves. Consequently the long-period marginal revenue curve will cut all the cost curves at points further to the right than does the short-period marginal revenue curve; consequently the entrepreneur will plan to have a larger fixed equipment, if he has regard to the long-period marginal revenue curve, than he would if he had regard to the short-period marginal revenue curve.

The conclusion is that, if there is free or relatively free entry, the entrepreneur, if he is to avoid schizophrenia, will plan to charge a price yielding only a normal profit, save to the extent that he is aware of possessing an advantage peculiar to himself, will plan to have equipment on a scale that gives the lowest cost for producing what he can sell at such a price, and, having acquired the equipment, will sell at that price, even although the short-period marginal revenue yielded by such a policy is less than the marginal cost. The equipment required for this policy will be larger and the price charged lower, and nearer (though not necessarily equal to) the social optimum than those entailed by ‘accepted doctrine’.

It is to be observed that the foregoing reasoning does not imply that an individual entrepreneur can himself by his own pricing policy affect the appearance or non-appearance of new competitors, i.e. the analysis does not imply oligopoly. If he pursues a prudent pricing policy and his existing competitors do not, his individual action will not prevent the arrival of new competitors, and this may damage him. But what he can do to mitigate the ill effects of the short-sighted policies of his competitors is by charging a low price from the beginning, to make his own market less vulnerable. It is of the essence of imperfect competition that the markets of each firm are subject to separate influences.

But the analysis takes us further than this. If the con-
siderations which I have set out are those which would normally actuate an entrepreneur in his investment and pricing policy, we can conceive of the representative entrepreneur being so actuated. But if the representative entrepreneur is so actuated, new competitors will not normally appear. Thus no excess capacity will be created.

This conclusion is derived exclusively from theoretical premises. No support has had to be drawn from the testimony of entrepreneurs about what in fact they do. It is theoretically proper that an entrepreneur should consider long-period marginal revenue in deciding on the size of his plant, since the plant is expected to have a long life in this sense. It is theoretically correct that, even after his plant is constructed, he should in his pricing policy continue to have regard to long-period marginal revenue.

I conclude that there is no foundation in theory for the view that imperfect competition combined with free entry usually tends to create excess capacity. I make an exception for the special case referred to on page 84 and page 140 above. No one, I believe, claims that imperfect competition without free entry usually tends to create excess capacity. Consequently we may conclude that imperfect competition does not usually tend to create excess capacity. Economists should therefore discard the 'generally accepted' doctrine to the contrary effect.

The doctrines of imperfect competition were developed rather rapidly in the years from 1930. A number of important British industries had for a considerable time been suffering from excess capacity for some special reasons that are well known. After 1929 most industries in the world were suffering from excess capacity owing to the world slump. It is possible that this particular doctrine of imperfect competition (viz. its tendency to excess capacity) was accepted more readily than it would otherwise have been, because any additional explanation of an evil so widespread was apt to the times and therefore assimilable. It does not follow that the explanation provided was correct. Sufficient explanations of the excess capacity present in those years may be derived from other considerations.
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The foregoing theory has assumed that entrepreneurs are able to calculate long-period marginal revenue. Very great practical difficulties beset any attempt to calculate short-period marginal revenue. These difficulties would have to be considered very seriously, if we retained the assumption on which the previously ‘accepted’ doctrine, now rejected, was based, viz. that entrepreneurs use a calculated short-period marginal revenue in determining their investment and pricing policies. It might be supposed that it would be no less difficult to calculate long-period marginal revenue. This matter will be dealt with in the next section.

One further point remains to be considered before we finally dismiss the doctrine of excess capacity. It might be objected that the foregoing argument assumes that entrepreneurs know to what extent a given price will make their market vulnerable to new competitors, whereas in fact they have no such knowledge. It may be admitted that their opinions on this matter may be little more than ‘hunches’.

It has been much debated to what extent equilibrium theorists should assume knowledge on the part of the individual. In some cases the matter is easily settled. Many future developments, e.g. technological changes, are in principle unforeseeable, and in these cases the correct assumption is ignorance. The theory of profit rests essentially on this assumption. At the other extreme one might cite the case of an arbitrageur. He has certain quotations before him and can readily calculate that by effecting two or more operations he can make a clear gain. The economist can quite safely assume that he acts accordingly. If it were in fact theoretically proper for entrepreneurs in the circumstances envisaged to relate policy to the value of short-period marginal revenue — but we have shown that it is not — this would be a borderline case.

It is to be stressed that the great majority of entrepreneurs have scarcely any knowledge about the value of short-period marginal revenue. This applies even to those who conduct intensive market research. There appear to be few cases in which an entrepreneur could decide with confidence whether a drop in price of 10 per cent would cause, other things being
equal, an increase of sales of 10 per cent or 15 per cent or 20 per cent. While there might be a vague opinion that the increase of sales would not be likely to lie far outside these limits, there might be complete uncertainty as between 10 per cent and 20 per cent. Yet this would make the difference between a marginal revenue consisting of a loss per unit of one-ninth of the price and a positive marginal revenue consisting of four-ninths of the price. No little difference.

The prevalence of ignorance in regard to short-period marginal revenue is commonly understood. It is not as well appreciated that ignorance in regard to short-period marginal cost, while not quite so devastating, is great enough to make fine calculation impossible. Fig. 1 provides what may be regarded as a typical realistic marginal cost curve.

![Fig. 1](image.png)

About the range in which the line runs horizontally there may be fairly good knowledge. This is the cost accountants' direct cost. If the theorist, however, insists on including Keynes's 'user cost' in short-period marginal cost, the computation of it becomes much more complicated and probably impracticable. But imperfect competition analysis is mainly concerned with the range in which the curve is moving upwards. About the values in this range the entrepreneur is very much in the dark. The rise is due to sundry bottle-necks and breakdowns that occur when the plant is working near its maximum capacity. The entrepreneur will be lucky if he gets a precise account at the end of a period of the extra direct costs due to high-pressure working. It is most unlikely that he will be able to translate that information into a curve giving the 'true values of
marginal cost as a function of the level of output. This problem is immensely more complicated in the usual case of a multi-product firm, since there is then the problem of imputing the high pressure to the various products. To make an approximate prognostication of the upward slope of the curve would be still more difficult.

In this kind of case the theorist is inclined to assume that the entrepreneur will, despite his ignorance, somehow gravitate, by hunches, by trial and error, even by the survival of the fittest, to the highest profit position. In certain circumstances, when nothing better is available, such an assumption may have its uses. A sharp distinction, however, should always be drawn between an equilibrium which will be reached through the use of knowledge that actually exists, as in the case of arbitrageurs, and an equilibrium which will only be achieved on the more doubtful assumption that trial and error will be an adequate substitute for knowledge.

We now turn back to the question whether it is proper to assume that entrepreneurs usually know, when it is in fact true, that prices above a certain level will render their markets vulnerable to new competitors, and also whether it is proper to assume that they will base their pricing policy on this knowledge. Theorists of excess capacity postulate that certain prices will in fact make markets vulnerable to new entrants. The question is whether it is proper to assume that entrepreneurs will also perceive the likelihood of this development and shape their pricing policy by reference to it. These same theorists are content to assume that entrepreneurs tend to act as they would if they knew the values of short-period marginal revenue and cost, although in fact they have not this knowledge; then surely they ought, by parity of methodological procedure, to assume that the entrepreneurs will act as though they knew the extent to which a certain price is likely to make their markets vulnerable to new entrants, whether they have this knowledge or not.

Whether it is proper to assume that in the absence of full knowledge entrepreneurs tend by inscrutable processes towards the position they would take up if they had this
knowledge, may depend on how complete and blank their ignorance in fact is. Now how complete their ignorance is on any topic is a question of fact; the theorist, as such, has no special qualifications for assessing the degree of ignorance. On such a point it may therefore be appropriate to question a sample of entrepreneurs.

At this the fur of the theorists tends to rise and they become cynical and indignant. 'The entrepreneurs', they cry, 'do not understand what they do or why they do it.' This attitude may be appropriate in certain cases. If entrepreneurs claim to adopt a policy which the theorist can indeed show to be likely to involve loss, it is proper to consider carefully whether the entrepreneur may not be deceiving himself or failing to understand all the bearings of the type of action he claims to be describing, or even have a sinister motive for deceiving his questioner. But in the case in point, namely how ignorant entrepreneurs normally are about certain classes of fact, such a sceptical attitude about their testimony is quite out of order.

The vast majority of entrepreneurs claim that they are completely ignorant about the value of short-period marginal revenue—when the meaning of that esoteric expression has been explained to them—if that they do not, because they cannot, act by reference to it. They often express a wish that they did know it; they would give much money for the information, but are aware of no means of obtaining it. *Per contra* they usually claim that they have a very good idea, although not of course precise knowledge, about the extent to which a given price is likely to render a market vulnerable to new competitors, and that they are continually adapting their policy in the light of their opinions on this matter.

The theoretical exponents of the doctrine of excess capacity assume that entrepreneurs tend to act as though they knew the value of short-period marginal revenue; the entrepreneurs on the whole claim that their ignorance of its value is blank and deny conscious adaptation of policy by conjectures about that value. These same exponents assume that the entrepreneurs do not act as if they had
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knowledge about the long-run vulnerability of a given price; the entrepreneurs usually claim that they do have shrewd and fairly reliable ideas on this topic and are constantly guiding their policy in the light of them.

We may conclude that the particular combination of two assumptions by which the doctrine of the tendency to excess capacity is reached is perverse. It assumes that entrepreneurs know, or, lacking knowledge, strive to base their policy decisions on their best guess about matters in regard to which they deny having knowledge or basing their decisions on their best guess; it assumes that they are ignorant and do not strive to base their policy decisions on their best guess about matters, in regard to which they deny that they are ignorant and affirm that they do base their policy decisions on such knowledge as they have. Accordingly the doctrine of excess capacity may be finally rejected.

Full Cost Principle

Among the British entrepreneurs interviewed by the Oxford Economists Research group, a majority explained that they were normally in the habit of arriving at prices of their products for quotation by assessing their direct cost and average overhead cost of production, including in the latter, or by making a further addition to it, a proportionate share of the overhead costs of the firm and some allowance for profit. I define this procedure as adhering to the full cost principle.\(^1\) It cannot be claimed that this rule was adopted by all or that those who adopted it did so rigidly or without sometimes departing from it. The testimony was, however, such that one could fairly say, by way of rough approximation, that this is the most usual procedure in British manufacturing business.

The economist lays down that in fixing a price with a view to maximising profit overhead cost is an irrelevant

\(^1\) This does not imply that the entrepreneur always gets his full cost; all depends on the market and on the procedure for determining the average overheads, for which see p. 105 below.
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consideration; on the cost side all that need be taken into account in pricing is short-period marginal cost. Attention must also be paid to marginal revenue so as to determine how far above marginal cost to fix the price. This should be done so as to limit sales to the amount of product indicated by the intersection of the marginal cost and marginal revenue curves. This price may be above direct plus average overhead cost or, in adverse circumstances, below it. An entrepreneur, it is claimed, cannot do better for himself than charge such a price and will suffer needless sacrifice of profit or needless additional loss if he fails to do so.

The marginal principle must in general be accepted as correct.

If entrepreneurs habitually adopt another criterion in pricing, it appears at first sight that they must make a needless sacrifice of gain, and this, it is claimed, is hardly to be believed. Does it follow that there is something wrong in the entrepreneurial testimony? It is not to be dismissed lightly. It is necessary to examine how the 'full cost' principle works out by reference to a variety of possible cases.

In the following pages, which profess to give a realistic, although, of course, greatly over-simplified, account of entrepreneurial behaviour, it is assumed that the producer fixes his own price for quotation. This contrasts with perfect competition where the price is fixed in an organised market. This assumption may seem to jar with a situation which, though probably not obtaining in the majority of cases, is very typical and widespread. Entrepreneurs often claim that although there is no organised market and sales have to be promoted through the firm's own channels or by advertisement, none the less the market does dictate a price from which the entrepreneur will deviate at his peril. This does not mean that he can sell any amount he pleases at that price, as with perfect competition; far from it. This seems to imply that the producer is doubly a prisoner, both as to the price he must charge and the amount he can sell. But in fact he has room for manoeuvre in two respects, namely, in the quality of the article which he offers at the price imposed on him and, in certain cases, in his expenditure on selling. I
do not propose to examine the causes or consequences of this type of case. My object is to concentrate on the full cost principle and to consider its consequences both for the normal equilibrium position and for deviations from the social optimum, and, in order to do so, I shall assume that the entrepreneur has the liberty to quote his own price. I suggest that the same consequences would emerge if, instead of assuming that the entrepreneur decides what he wants to produce and bases his price on the full cost of producing it, we assume that he accepts a ruling market price for a certain general kind of article and then decides what quality of article he can produce at that price so as to cover his full cost. In both cases the intention to sell at approximately full cost is the actuating principle governing his size of plant and pricing policy. The following arguments should apply *mutatis mutandis* to the case where the entrepreneur has to accept a market price. In the real world situations may be a subtle blend of the two types distinguished above. The entrepreneur may begin with an idea of the article he would like to produce and then, having assessed his full cost, modify his idea somewhat if the price looks unsuitable. I return to the variety of possible cases.

First we take the class of cases where the entrepreneur anticipates that there will be absolutely free entry and that he will have no special advantage in production compared with representative competitors. He then has to anticipate that if he plans to charge and does charge a price which gives him more than a normal profit — save in consequence of superior efficiency — he will render himself vulnerable to new competitors and his projected output will not continue to be sellable at the projected price. Within this class we take the case where the condition of the market is identical with that anticipated when it was decided to install the fixed equipment.

In order to decide on his proper size of plant, the entrepreneur, basing himself on the full cost principle, cannot avoid considering the various prices which he would get and the various costs he would incur, according to whether he plans to operate on a smaller or larger scale; to arrive at a
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correct decision about the right size of plant he cannot avoid having to compare these two sets of quantities, a set of prices and a set of costs. In principle he has to solve two simultaneous equations (cost as function of amount produced and sales as a function of price); no doubt the matter is not usually so formally schematized in his mind, and his solutions can only be approximate. He may have fairly accurate data about the various costs. It is to be noted that the rate of the upward slope of the short-period marginal cost curve, which is so difficult to determine and would present an intractable problem to anyone having to compute the values of a short-period marginal cost curve in this range of it, will not greatly affect the slope of the long-period curve, with which alone he is (on any theory) concerned when deciding on the scale of equipment. He will be hazy about demand and make the best guess he can. Again it is to be noted that this uncertainty will not reduce him to the impasse of one who had to compute short-period marginal revenue. A mistaken estimate of prospective demand of 10 per cent either way will prove no great disaster. A similar mistake made in the calculation of short-period marginal revenue might easily show that revenue to be two or three times greater than it really is.

It would not be reasonable for an entrepreneur to assume, when he orders fixed plant, that he will be producing a given fixed amount of output per unit of time throughout the life of the plant. He will anticipate fluctuations and may also anticipate a growth of orders at a given price with the mere procession of time. The latter point will be especially important, if he is putting forth a new product.

For the purpose of a simplified analysis we may assume that he plans a plant which will give the cheapest possible cost for the mean quantity per unit of time that he anticipates producing, which I shall call \( x \). It is in this sense that I shall refer in what follows to his plant having been designed to produce \( x \) units. It should be noticed that, if his output is subject to the law of increasing returns, the plant that produces \( x \) units most cheaply would produce a larger number of units more cheaply (see Fig. 2 on page 100 above).

If, when he has produced his plant, the market proves to
be what he had expected when he planned it, he will be able to quote a price that covers his overhead costs and gives a normal profit — more if he has superior efficiency — and be able to sell on average, taking good times and bad, \( x \) units per unit of time.

Now this price at which he can sell \( x \) units is in fact an equilibrium one. There is no need for him to refer to short-period marginal cost or marginal revenue. It does not follow that the doctrine of equalising these marginal values is invalid. It so happens that in the circumstances of free entry — which may be frequent in the realm of imperfect competition — he can find a shorter and more manageable way of reaching the same result as he would if he could assess these elusive quantities, as I must now explain.

The proposition is that if he raises the price appreciably above direct plus overhead cost he will render his market vulnerable; the demand for his own product will recede in due course and he will finally be driven back to a position of lower output at which he can make no more profit on his capital than he could if he had been content to charge a 'full cost' price for \( x \) units. It is true that he might for a brief interval enjoy a higher rate of profit. It is assumed, in accordance with the arguments of the foregoing pages (pages 146-8), that he will not choose to do this (i) because he will be in a weaker position to meet the uncertainties of the future if in consequence of snatching a temporary profit he only maintains thereafter a regular market for \( x-y \) units instead of one for \( x \) units, and (ii) because, had he intended, to allow this recession of market to happen he would never have wasted his capital on plant designed to produce as many as \( x \) units. Accordingly it is assumed that he will think any restriction of output involving a backward movement along the demand curve from the position of producing \( x \) units disadvantageous to himself. This may be expressed by drawing a long-period demand curve, which takes account of the vulnerability of his market if he charges a higher price. This long-period demand curve is flatter than the short-period demand curve.

If the entrepreneur plans as I have suggested, he must
anticipate that at a price covering full cost the long-period demand curve has a value \( x_n \). During the life of the plant the short-period demand curve will move to and fro; its average value at the anticipated price will also be \( x_n \), if the market proves to be what was anticipated.

If it is assumed that any backward movement up the short-period demand curve from \( x_n \), which would be entailed by charging a higher price, is disadvantageous in the long run, it follows that the long-period demand curve does not rise to the left of \( x_n \), above the long-period cost. Nor does it rise to the right above the long-period cost. If it did so, the entrepreneur would have planned a higher output than \( x_n \). Therefore, at the level of output \( x_n \), the long-period demand curve is tangential to the long-period cost curve; therefore it is also tangential to the short-period cost curve, since these are tangential to one another at \( x_n \). Therefore at \( x_n \), the long-period marginal revenue curve and the short-period marginal cost curve will intersect at \( x_n \). Therefore \( x_n \) is the true equilibrium level of output. So long, therefore, as we are subject to the proviso that the entrepreneur dare not charge a price above full cost without rendering his market vulnerable, the ‘full cost’ criterion gives the same answer as the marginal criterion. The difference is that the former provides a practicable criterion for calculation, while the latter does not. But it is important to show that the latter criterion is also fulfilled, for, if it were not, the entrepreneur would always be tending to move away from the price yielded by the former, however practical for purposes of calculation it might be.

Thus we have to come to a new form of a doctrine of equilibrium in which the demand curve is tangential to the full cost curve. But in this situation equilibrium does not entail the presence of excess capacity. The old doctrine was partial and, as it turns out, incorrect, because it considered pricing policy in isolation from investment policy. The new doctrine rests on an integrated theory of investment and pricing policy.

The new doctrine, in this not differing from the old, is schematic, and thereby gives a simplified picture of a complex reality. It need not be denied that there is often much
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Jiggery-pokery in the fixing of prices. It is only claimed that our account provides the best approximation to the truth at the level of simplification inevitable in this kind of analysis.

While so far only one sub-class of cases has been investigated, it is important to observe that it is one of central importance. If the full cost principle of pricing is valid in this sub-class, then it should occupy a leading place in any general exposition of the theory of imperfect competition.

We must next turn to the cases where the market deviates from expectation, so that if the planned price is charged, more or less than \( x \), units will be sold.

Before proceeding it may be well to emphasise the point that there is often a strong bias in favour of maintaining a stable price in the face of changes that are not too great. I do not refer to the reasons represented in the famous Hall-Hitch kinked demand curve. These have their importance, but it is not needful for me to go over the ground so well explored by those authors. Their argument implies some degree of oligopoly, a matter with which I am not directly concerned.

I refer rather to the maintenance of good-will, which is important in imperfect competition. This militates both against an upward movement of price and also against a downward movement, if it is anticipated that this may have to be followed by an upward movement later; thus it militates against any short-period change in price, unless this can be justified by some public event, such as the change in the price of an important raw material or, notably, a change of excise duty. It must be admitted that this constancy of price is sometimes only a façade. An entrepreneur may adapt himself to a change of circumstances by reducing the quality, or, it is to be hoped, on appropriate occasions, by improving the quality of his commodity, and this is equivalent to a price change.

Still greater emphasis should be placed on the need for maintaining a uniform mode of arriving at a price quotation. Some manufacturers have to get out catalogues at intervals quoting prices for thousands of items; others have to answer
enquiries relating to a large variety of items each with its own particular specification. Fairly simple rules for arriving at a quotation are indispensable. It need hardly be repeated that it would be impossible for an office in fixing the prices of a large number of items to make a full marginal analysis in each case — if indeed that were possible at all. The marginal cost of each item depends on the amount produced and thereby on the price and thereby on the marginal cost of every other. If there were a thousand items in regular production, this would involve solving two thousand simultaneous equations — and the correct coefficients in them are often not exactly known — to arrive at the price of any one. A simpler procedure has to be adopted. It is no use complaining of this as being a mere ‘ritual’. Some ritual there must be, and it is up to the objector to a particular ritual to state what other he proposes to put in its place. Reference to marginal cost and marginal revenue is not a feasible procedure in practice. Furthermore it is highly useful to the economic theorist to know what rituals are commonly adopted, since this will assist him in his analysis. Of course if it can be shown that in certain circumstances the full cost principle has a systematic bias against the most profitable policy, then it is reasonable to expect that entrepreneurs will modify the rule in those circumstances, presumably by the substitution of a somewhat different ritual. It is not a valid complaint against any particular ritual that it does not in each case give precisely the right answer. Any loss resulting therefrom might well be small compared with the loss due to the chaos that would ensue if there were no ritual at all. To neglect the fact that a ritual is and has to be adopted in many cases would show just as serious a lack of realism on the part of a theorist as if he were to assume that all markets were perfect.

One further point must be made in connexion with the need for a ritual. Direct cost is usually precisely ascertainable over the range where the short-period marginal cost is running horizontally, but only very roughly, if at all, in the range where the short-period marginal cost curve is rising. True oncost, by which I mean the proportionate share of all
overheads to be attributed to one unit, depends on the volume of output. This in turn depends on the price charged. We are brought back to the simultaneous equations that had in principle to be solved, however roughly, when the decision to install plant was made. One may assume a mental process roughly equivalent to solving the equations to take place on the occasion of decisions to install new plant. If the market proceeds to fluctuate thereafter, some simpler procedure, even if it is of the nature of a ritual, may be preferred to reiterated attempts to solve these equations.

Entrepreneurs, testifying to the Oxford economists, described their varying methods of deciding on the volume of output to be used in calculating oncost per unit; most of these had what theorists would regard as a 'ritualistic' flavour. One stated — and his practice was not widely dissimilar from that of the others — that he had a standing rule by which, for purposes of calculating oncost, it was assumed that his plant would be working to 80 per cent of capacity. If 100 per cent of capacity is taken to be the point of cheapest output per unit,\(^1\) beyond which short-period marginal cost per unit rises above total cost per unit, 80 per cent of capacity might well represent a level of output not far removed from \(x_n\), viz. the level of output for which the plant was designed. If this were so, this entrepreneur could be regarded as one who, in the face of moderate fluctuations of demand, calculated cost per unit on the assumption that he would produce \(x_n\) units. One might at least say of his attitude that it was not altogether untypical. This formula may be regarded as a ritualistic modification of the full cost principle \textit{stricto sensu}. More generally it may be said that entrepreneurs are not ready to modify their oncost percentage in response to small changes of output. This may be linked with the fact that \(x_n\) is not conceived as a level at which output will run steadily, but rather as the mean value of a range of fluctuating outputs. If this anticipation is correct and the entrepreneur calculates his oncost on the basis of \(x_n\), he will be charging a true oncost, taking good times with

\(^1\) Cf. p. 100 above. It may often be that the point of cheapest output is somewhat less than the official 100 per cent capacity.
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bad, and neither jeopardising his hold on his market on the one hand nor running into loss on the other.

We may now consider more closely the range of output between x, and 100 per cent of capacity, as defined by me.

In this range full cost *stricto sensu* is falling gently. This decline may be too nice a point to be considered at all in the rough-and-tumble of price-fixing. It is to be noted that the decline of full cost in this whole range (from x, to 100 per cent of capacity) is not so great as the difference between total overheads divided into 100 units and total overheads divided into 80 units, since in at least part of this range the decline in overheads per unit is partly offset by the rise in short-period marginal costs per unit. All the arguments in favour of a stable price will make the entrepreneur reluctant to make the fine change called for by a strict interpretation of the full cost principle.

There are further reasons. It seems on the face of it somewhat against nature to reduce a price at once in the face of an unexpected increase in demand. There is reason for this. If demand at the old price is carrying sales above x, units, there is danger that further stimulation of them by price-lowering may carry demand into the range beyond 100 per cent of capacity and this is attended with great difficulties, shortly to be explained.

If it is believed that the increase of demand is temporary only, the entrepreneur will not fear that the small surplus profit due to maintaining a stable price and over-covering overheads will stimulate new entrants. If, on the other hand, it is believed that the increase is permanent, he will already be planning an increase of equipment. If he is subject to increasing returns, he will then contemplate the possibility of a substantial lowering of price when he has the equipment in. He will be likely to await this opportunity of making a sizable price reduction, in accordance with his ritual, rather than make a small reduction which may stimulate demand beyond the point at which he is ready to meet it.

I conclude that the entrepreneur is not likely to depart from the price appropriate to x, units in the range between x
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units and 100 per cent of capacity; this means that he will continue to apply the full cost principle as slightly modified by 'ritual'. This range of output is, in normal times, an important one in the sense that actual output will often lie within it. If the full cost principle holds within it, this reinforces the case for affirming that importance should be attached to that principle.

Beyond 100 per cent of capacity, short-period marginal costs are likely to rise steeply. It is to be noticed that in this range the prices determined by the various criteria stand in a different order from that which they do in the lower ranges of output. Up to 100 per cent of capacity, the price indicated by the pure principle of equating short-period marginal cost to short-period marginal revenue is usually the highest, the full cost price comes next and the social optimum price is the lowest. Beyond 100 per cent of capacity, the social optimum price (=marginal cost) moves above the full cost price. A point may come when the short-period marginal cost curve begins to rise vertically — nothing more at all can be extracted out of the existing equipment. Then the price indicated by the intersection of short-period marginal cost and short-period marginal revenue and social optimum price become identical; it is in fact simply a question of producing the greatest possible amount and charging a price high enough to clear the market. But a partly 'ritualistic' full cost price may remain below the other two. While we must suppose that even the most conservative entrepreneur will tend to let his price move upwards, he may hold it well below the level indicated by the intersection of the demand and supply curves, whether marginal or average. How, then, can he satisfy the market?

He may establish a waiting list. He may continue to charge a price below that required for short-period market equilibrium, and delay delivery to his customers. Waiting lists have been widespread since 1939. They suffice to prove that entrepreneurs do not always or even usually base their prices on short-period considerations alone. In certain cases there may have been price controls or profiteering legislation rendering the prices required for market equilibrium
illegal. But the phenomenon is too prevalent for this explanation to suffice. Entrepreneurs have in many cases deliberately preferred a conservative pricing policy.

Fear of competition is a two-edged argument in this connexion. High prices might stimulate competition; but so also might the waiting lists, if rivals could acquire the necessary materials and machines. I have no analysis to offer in regard to this choice, but merely note the low-pricing policy as a fact.

The social welfare criterion is not unambiguously on the side of high prices. Waiting lists, by allowing available supplies to go where the need is less great, cause a deviation from the optimum position; where the articles are components in a further productive process, the lists may gravely reduce productive efficiency. But there is a social argument on the other side. High prices have a tendency, not shared by waiting lists, to cause a 'spiral' of wages and prices. It may be often a nice point whether the admitted evils of suppressed inflation (waiting lists) are or are not greater than that involved in the danger of spiralling. To proceed further with these considerations relating to an inflationary situation would take me away from the matters with which we are primarily concerned in the analysis of imperfect competition.

Outputs below \( x \), must next be studied. It is to be observed that while the full cost pricing principle may be regarded as a 'ritual', it is one which in the case first chosen for consideration (free entry and demand proving to be that expected when the plant was installed) gives precisely the right answer, viz. the price required by the intersection of the long-period marginal revenue curve and the short-period marginal cost curve. Onto the ritual of full cost pricing entrepreneurs have some tendency to impose a further ritual, already described; they do not re-calculate the oncost percentage for every moderate fluctuation in their own output, but have some tendency to maintain a stable percentage. If they took the full cost ritual literally, i.e. without superimposing a further ritual, they would lower prices as short-period demand increased and raise them as short-period demand weakened. This they do not normally
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do. We have already considered what is done in the range above \( x \). What happens below?

It is commonly observed that manufacturers often reduce prices when a recession occurs. This does not necessarily mean that they reduce the oncost percentage. If the recession is part of a general slump, raw material prices will be falling and this fall will be transmitted to semi-processed components. The prices of these components and of fully processed articles may fall in accordance with the full cost principle, not because the oncost percentage has been reduced, but owing to the reduction in direct costs. In what follows, in order to concentrate on the oncost percentage, I shall assume that direct costs remain constant.

When the market recedes, so that \( x \) units can no longer be sold at the previous price, the need to render markets invulnerable to new entrants becomes less prominent and the struggle to avoid loss (or the shrinkage of profit below normal) more so. One would therefore expect the full cost principle to give way to short-period marginal considerations, obscure though these may be.

Experience suggests, however, that the full cost principle, as ritualistically modified in the way already described, is maintained in the face of moderate recessions in demand, and only gives way in the face of very severe recessions. There is a good theoretical explanation of this phenomenon, which may most easily be shown diagrammatically.

In the figure on page 170 a price \( y \) is charged in normal times in accordance with the full cost principle, and \( x \) units are sold. Short-period marginal revenue (\( Q \)) is below the marginal cost of \( x \) units (but long-period marginal revenue is not, owing to the long-period demand curve, not here represented, being flatter than the short-period demand curve, and tangential to the full cost curve). The dotted lines represent the short-period demand and marginal revenue curves after a recession in the market. If the price is maintained at \( y \), \( (x - a) \) units can be sold at that price; short-period marginal revenue (at R) will still be below short-period marginal cost (at S); therefore short-period marginal considerations call for no reduction in price below \( y \).
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Demand must recede much further before the marginal cost exceeds short-period marginal revenue at the amount of output corresponding to \( y \) on the demand curve. This situation will be expedited, however, if during the recession the short-period demand curve gets flatter \(^1\) and the marginal revenue curve is raised in consequence. Once this situation is reached, short-period marginal revenue becomes all-important. The fact that short-period considerations do not call for a reduction of price for a range of outputs below \( x \), is the direct and necessary consequence of the short-period demand curve having been steeper than the long-period demand curve at \( x \), and the previous price having been adapted to the latter.

Thus, theory suggests that the full cost principle gives a good working approximation for the policy required for profit maximisation in the lower range, except in the case of a very severe depression in the firm's market. This seems to accord with experience. In moderate recessions the entrepreneur maintains his normal pricing procedure; only when facing loss does he reconsider his oncst percentage; he then takes short-period marginal considerations into account and willy-nilly has to have resort to guesswork as regards short-period marginal revenue, being prepared, at

the worst, to move his price downwards towards short-period marginal cost.

Thus in regard to the whole field where there is free entry (and the case of nearly free entry may be assimilated to this), it seems that the full cost principle may be justified on analytic grounds in times of normal or fairly normal business, but that deviations may be expected where there is a very big departure of the market from the level for which the fixed equipment was designed.

We now have to turn to the different case where there is no free entry. We lack a vocabulary that is both well-established and appropriate. I believe that it is not appropriate — pace Professor Chamberlin — to apply the word monopolistic in a field in which the producer dare not continue for a substantial period to earn a profit above normal (allowing, however, reasonable limits of tolerance, including a margin for superior efficiency) for fear of provoking competition. An exception must be allowed, of course, for a period of continuing inflation. I believe it would be more conformable to what is ordinarily understood by monopoly to confine the use of that word to conditions in which there is not free entry. I shall do so in what follows.

When there is free entry, investment policy and pricing policy, in so far as these are governed by demand, depend on long-period considerations. Where there are hindrances to new entrants, long-period considerations must still play a part, but there is more scope for short-period considerations to have influence. In this case, long-period considerations provide a belt of indeterminate within which short-period considerations may operate. The entrepreneur will not undertake investment if the likely return is below a certain level; if there is free entry, this minimum return is also the maximum for which he dares plan, although with good management he may get something more; he is imprisoned by potential competition and dare not deliberately aim at a surplus profit. If there are obstructions to entry, on the other hand, there is a higher rate of profit at which he may feel that he can aim without courting danger. For instance,
he may regard 5 per cent net profit on turnover as the minimum rate which would make an investment worth undertaking, while believing that he could safely take 25 per cent without the slightest danger that a new competitor would enter the business. Twenty-five per cent is available to him, so far as competitive considerations are concerned. It does not follow that he will be able to get 25 per cent, for the short-period demand curve and its correspondent marginal revenue curve may be such that he cannot by any methods of expansion or restriction get more than 10 per cent. In this case the short-period considerations would be those effectively limiting his price.

The situation might be the opposite of this. If the short-period demand was fairly inelastic, he might find that he could easily charge a price and get sales yielding 40 per cent on his turnover; but he would not go for this, since, although he has greater freedom than the entrepreneur where there is free entry, who dare not plan for more than 5 per cent, he may reckon that it is unsafe even for him to charge a price yielding more than 25 per cent. In this case he, like the entrepreneur working where there is free entry, is ultimately governed in his pricing policy by long-term considerations.

Thus if there are hindrances to entry, pricing policy may be governed either by short-term considerations (short-period marginal revenue) or by long-period considerations (danger of market being invaded by new competitors). The entrepreneur would confine himself to the maximum return governed by either set of considerations, whichever is lower; he cannot get more than the short-period situation allows and would be unwise to get more than the long-period considerations allow.

It would seem natural to use the expression 'degree of monopoly' for the size of the impediment to the appearance of competitors to a given entrepreneur; this 'degree of monopoly' would be measured by the rate of profit that could be safely earned without provoking competition; with free entry the degree of monopoly thus defined would be zero, whatever the slope of the particular short-period demand curve. Refining, one might refer to this as the
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degree of potential monopoly', and use the expression
degree of actual monopoly' for the profit that could in fact
be earned in a certain market having regard to the short-
period marginal revenue curve; in the long period the
degree of actual monopoly could not be greater than the
degree of potential monopoly, but it could continue for a
long period to be less.

We may now consider how the monopolistic competitor
stands in relation to the full cost principle. Whatever
calculations he may choose to make in regard to short-period
marginal cost, it is needful for him to estimate his full cost,
in order to guide his policy in the face of potential competi-
tion. The surplus which may, if it rises too high, attract new
entrants is not the surplus of price over marginal cost but
the surplus of receipts over full cost, for it is on this latter
surplus that the potential new entrant has his eye fixed;
he will have to incur full costs if he is to come in.

Thus the monopolistic competitor will need to establish
the value of his own full cost, in order to assess the price
which gives the greatest surplus above full cost that he dare
allow to accrue to himself. If the market is such that he is
able to secure such a surplus in full, he need pay no regard to
marginal revenue. He can get the highest surplus that he
dare get in view of long-period considerations; it would be
as foolish for him as for the entrepreneur subject to free entry
to aim at a short-period rate of surplus above this level.

But it may be that the market does not allow him to enjoy
so high a surplus as the maximum that his safety from new
competitors would allow him to enjoy. In this case short-
period considerations, which may be schematised in the
marginal revenue curve, will be the limiting factor. He may
have a very vague idea as to the precise values of the short-
period marginal revenue curve. That curve gives formal
expression to the restraining influence of the elasticity of
demand, when it prevents a monopolist charging so high a
price as he might, if he only had to consider the limit where
new entrants would begin to be attracted.

In the whole of the foregoing analysis the short-period
marginal revenue has appeared as the governing considera-
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...tion in two sets of circumstances: (i) where there is free entry and market demand is far below that anticipated when the fixed plant was ordered, and (ii) where there are impediments to entry sufficiently great to make short-period considerations impose a lower limit to price than that provided by the fear of eventual competition. The latter case is the modern version of the hoary principle that the elasticity of market demand may protect the consumer from the worst excesses of the monopolist.

One final point, which is important, must be made in this context. All entrepreneurs, even those enjoying a considerable degree of potential monopoly, have in mind the vast uncertainties of a relatively distant future. The best method of insuring against them is to attach to oneself by ties of goodwill as large a market as possible as quickly as possible. If one can get a substantially larger market by earning no more than a normal profit than one could get by earning a surplus profit — even without fear of attracting new competitors — one may well choose to do the former, as an insurance against future uncertainties. Paradoxically the producer in imperfect competition is more anxious to expand his market than the producer in perfect competition; the latter knows that an unlimited market will always be there, good or bad, independently of how much he markets now. Marketing a large quantity now at a questionable profit will in itself bring in no future return; the entrepreneur in perfect competition should therefore be most careful at no time to let his marginal cost exceed the price. But for the imperfect competitor present sales improve future prospects and have their own importance on this account. This uncertainty in regard to the future is always operative in tempering the price policy of those in imperfect competition, including those in monopolistic competition.

III

Increasing Returns

The 'Law of Increasing Returns' played an important part in the origins of thought about imperfect competition;
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there may have been some tendency more recently to give it less attention than it should have in this connexion.

Alfred Marshall and Professor Pigou both held that in a competitive economy the output of articles produced in conditions of increasing returns would be below the social optimum. This doctrine led to the quest for a sharper analysis of the equilibrium position under increasing returns. This matter was brought to a head by the famous article of Mr. P. Sraffa which roundly declared that increasing returns were incompatible with competitive equilibrium. There were also older problems raised by the marginal productivity formulations of the eighteen-seventies concerning the distribution of the product of a firm among the factors of productions, and these had not been solved to the satisfaction of economists.

The marginal revenue concept provided a double clarification, first in respect to the possibility of equilibrium under increasing returns, and secondly in respect to the distribution of the product among the factors.

1. A distinction was drawn between perfect competition, when each producer could sell as much of his product as he wished at a price quite independent of the volume of his own supply, and imperfect competition, when the sales outlets were so organised that this was not possible. Product differentiation was stressed as one of the factors which made the achievement of perfect competition difficult or impossible. Under perfect competition marginal revenue would be equal to the price, but under imperfect competition less. Recently there has been some tendency to multiply the conditions required for the concept of perfect competition; this has led to confusion. Until the very recent growth of organised restriction schemes, most food and raw materials in the world — a sizable part of total production — were produced in conditions of perfect competition. The area in which perfect competition operates is still important and may well become more so in future. Perfect competition may continue even if there are subsidies or other forms of government interference — all depending on the modes of operation of the interferences. It has been vexatiously
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suggested that perfect competition implies complete knowledge and foresight.\footnote{1} On the contrary, uncertainty about the future is usually greater in conditions of perfect competition than in those of imperfect competition, and fluctuations between profit and loss — the specific rewards and penalties of uncertainty-bearing — are often greater in the former sphere.

Increasing returns are compatible with imperfect, but not with perfect, competition.

There has been a tendency, having taken perfect competition as the limit in which the particular demand curve is horizontal and the marginal revenue curve coincident with it, to class together all other cases as to some extent monopolistic, the degree of monopoly being measured inversely by the elasticity of the particular short-period demand curve confronting the firm. I suggest that this is unfortunate.

2. The second problem in regard to which the marginal revenue concept yielded clarification concerns the distribution of the product among the factors when increasing returns are present. If the reward of each factor is equal to its marginal product, will the whole product be divided among the factors without residue, plus or minus? If returns are diminishing or constant, it can be shown with the aid of appropriate concepts of rent and profit that the product will under the marginal productivity principle be divided without residue. But if there are increasing returns and each factor is to be paid at the rate of its marginal product, there will be over-payment to the factors and the entrepreneur must make a steady loss. (This is precisely the loss which public enterprises are now exhorted by some to incur.) But entrepreneurs are not usually willing to continue to make steady losses. Professor G. Cassel, no doubt with this problem in mind, boldly declared that, in conditions of increasing returns, the price would be equated not to the marginal but to the average cost.\footnote{2} Such an unexplained

\footnote{1} It is to be noted that Professor Chamberlin uses perfect competition for this unrealised and unrealisable state of affairs, reserving 'pure' competition for the frequently realised and practically important state of affairs which I have designated perfect competition in the text. I justify this because perfect competition so defined is the alternative possibility to imperfect competition.

\footnote{2} Theory of Social Economy, p. 101.
abrogation of the marginal principle is not acceptable. The marginal revenue concept satisfactorily solves this problem. The entrepreneur recoups his loss out of the excess of price over marginal revenue.

I now wish to focus attention upon the conditions in which imperfect competition distorts the level of output away from the optimum. It is ancient doctrine that, where a monopolist or semi-monopolist secures a steady monopoly profit, output is unduly restricted. This doctrine is supported and clarified by the imperfect competition analysis and is not to be challenged. It may be worth, however, restating the point made at the conclusion of the second section above, that the uncertainties of the future have a tendency to restrain the monopolist from raising his price much above a competitive level, even if all known factors indicate that he could do so with safety.

Further to this ancient doctrine, we have, prior to the elaboration of imperfect competition theory, the position held by Marshall and Professor Pigou that the output of industries subject to increasing returns will tend to be restricted below the optimum level. I believe this position also to be correct.

Next we must squarely face the question whether the existence of a downward-sloping particular short-period demand curve provides an independent cause, additional to those already specified, for a distortion of output away from the optimum. I believe it to be widely supposed that it does, but that this belief is due to confusion of thought, and that there is no such additional independent cause of distortion.

It may at once be objected that I have posed a meaningless question, on the ground that wherever there is a downward-sloping particular short-period demand curve for a firm’s output there must be some degree of monopoly and that this admittedly causes distortion. On this view the doctrine of imperfect competition does not provide a new independent cause of distortion, but gives a schematic account of the cause resident in monopoly (or quasi-monopoly)

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1 Cf. pp. 99-6 above.
2 P. 174.
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itself, and also points to this monopoly cause being far more pervasive than was previously supposed. For since the whole of manufacturing industry and most of the services of distribution are confronted with downward-sloping particular short-period demand curves, the distortions due to monopoly must be correspondingly widespread. This position I do not accept.

It is needful to revert to the distinction between the cases where the entry of new competitors is free and those in which it is not. The latter cases fall naturally within the concept of monopoly (or quasi-monopoly) as entertained prior to the doctrines of imperfect competition. Now in the early literature of imperfect competition it is, I believe, commonly implied that the downward-sloping particular short-period demand curve will always cause a distortion of the level of output away from the optimum position, whether there is free entry or not. If this were correct then we should indeed have a new additional cause of distortion, for the older traditional doctrine did not contemplate any distortion occurring save where there was restricted entry.

It is easy to understand why initially it was supposed that the downward-sloping particular short-period demand curve would give rise to distortion, whether there was free entry or not. For, according to this initial doctrine, a downward-sloping particular demand curve would in conditions of free entry give rise to the creation of excess capacity in accordance with the principles discussed in the first section of this essay. Given a downward-sloping particular demand curve, there would, with restricted entry, be distortion on ordinary monopolistic principles, and, with free entry, there would be distortion owing to the inevitable tendency to the creation of excess capacity.

But, if we discard the doctrine of the tendency to excess capacity, a radical revision of the doctrine of distortion is needed by way of corollary.

I have already suggested that the expression monopolistic competition should be confined to cases where there are substantial impediments to new entrants. If imperfect competition is used for all cases other than perfect competi-
tion, as appears to be logical, we have no commonly accepted expression for the cases of imperfect competition with free entry. ‘Free competition’ is an expression often used in popular literature, and it might be convenient to adapt this for technical purposes. It would be natural to use it for all cases where there is unrestricted (or relatively unrestricted) entry, and these would be divided into those of free competition with a perfect market and those of free competition with an imperfect market (downward-sloping short-period particular demand curve). There would then be an overlap between free competition and imperfect perfection — which is not necessarily objectionable — both applying to the sphere in which there is free entry but imperfect markets. It is to this sphere, which may be a very important one, that I will now direct attention.

It has been noted that increasing returns in equilibrium and perfect competition are incompatible; but constant returns and imperfect competition are quite compatible (and probably frequent). I hold that with increasing returns at an existing equilibrium position — this implies a downward-sloping short-period particular downward demand curve — output will be restricted below the social optimum, in accordance with the doctrine of Marshall and Professor Pigou. I further hold that, with constant returns in equilibrium and a downward-sloping short-period particular demand curve, output will normally attain the social optimum level. This last proposition is, I believe, in conflict with doctrine that has become current since the formulation of imperfect competition theory.

I assume that if there is free entry the entrepreneur will plan to fix his price — except after a large unexpected fluctuation of the market — at his full cost, and that he will plan to have a plant of the size best adapted to the sales expected at such a price. It is needful to pay particular attention to the long-period average and marginal cost curves.

In the figure on page 180 I have drawn a long-period average cost curve which does not eventually slope upwards. There has been some controversy about this eventual
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upward slope. It is quite possible that, even if there is an eventual upward slope, the long-period curve has a flat bottom for a considerable range of output, and it is not necessary for our purpose to go beyond this.

If the entrepreneur whose position is represented in the figure has succeeded in achieving a market represented by demand curve A, he can realise all economies of scale and produce under conditions of constant returns. In these conditions the long-period average cost is equal to the long-period marginal cost. If the total cost of producing $n$ units is $y$, the average cost will be $\frac{y}{n}$. With constant returns the total cost of producing $(n + 1)$ units will be $\frac{(n + 1)}{n} y$ and the average cost $\frac{y}{n}$. The marginal cost of producing the $(n + 1)$th unit will be $\frac{(n + 1)}{n} y - y = \frac{y}{n}$.

If the entrepreneur charges a price equal to the average...
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cost (full cost principle) — and he dare go no higher in conditions of free entry — he will be charging a price equal to marginal cost. Therefore despite the downward-sloping short-period particular demand curve there will be no distortion.

But if his market is more restricted, as shown by the Demand Curve B, he will charge a price shown by P on the diagram although his long-period marginal cost (which includes normal profit) is only Q. This involves a distortion.

What comes out clearly is that in conditions of free entry the cause of the distortion, if there is a distortion, is the existence of increasing returns at the equilibrium position, and not the downward slope of the particular short-period demand curve; for where the particular short-period demand curve has a downward slope and there are constant returns at the equilibrium position, there is no distortion.

It is true that a downward-sloping particular short-period demand curve is a necessary condition for distortion; that is because it is a necessary condition for the existence of increasing returns in equilibrium. It is not true that a downward-sloping particular short-period demand curve by itself entails distortion, for where this is present but there are constant returns, there will be no distortion.

Thus the Marshall-Pigou position remains intact. The downward-sloping particular short-period demand curve does not provide a new independent cause of distortion, but merely explains how increasing returns (which cause the distortions) are consistent with equilibrium.

A further point is brought out by this diagram and should be emphasised. Increasing returns are an independent cause of restriction of output below the social optimum (as suggested by Marshall and Pigou), which has nothing to do with monopoly. In neither of the cases represented in the diagram is there monopoly, but there is distortion in one (increasing returns) and not the other (constant returns). The lumping together of all cases other than those of perfect competition as imperfect (monopolistic?) competition has tended to obscure the part played by increasing returns. Since it came to be held that there was some kind of mono-
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polistic element in all these cases, it tended to be assumed that the distortions which occur are all due to this monopolistic element. But in fact they are not. Where there are impediments to entry there will be distortions due to the monopolistic element and these may exist in conditions of constant returns. But where there is free entry, the distortions, if any, are due to the presence of increasing returns at equilibrium, and to that alone. Some specialists in this subject may insist, despite my plea to the contrary, in holding that every case where there is a downward-sloping short-period particular demand curve should be called monopolistic (because, for instance, they might hold that some degree of product differentiation was involved); that advances us not at all; for if that were the right use of the word ' monopolistic', it would only follow that 'monopoly' does not in itself cause distortion.

The amount by which price exceeds long-period marginal cost gives a prima facie index of the amount of distortion away from the social optimum. A more thoroughgoing analysis would require reference to consumers' surplus or indifference curves. I shall not attempt this.

In conditions of free entry the excess of the long-period average cost and thereby price over long-period marginal cost depends on the elasticity of the long-period average cost curve. The elasticity of the particular short-period demand curve plays no part.

If there is a monopolistic element the distortion due to it is over and above that due to increasing returns. If the entrepreneur represented in the above figure had, when confronted with demand curve B, an assurance that there were serious obstacles to the entry of new competitors, he could gain a surplus profit by raising his price above P (his 'full cost'). The size of this additional distortion would depend in the first instance on what was called above his 'degree of potential monopoly'. The elasticity of the short-period demand curve might play a part if it was such as to limit the amount of monopoly profit actually realisable to something less than that allowed by the degree of potential monopoly.
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Thus, the elasticity of the short-period particular demand curve plays no part in determining the amount of distortion if there is free entry. If there is restricted entry this elasticity will play a part if, and only if, it is great enough to make the realisation of the profit as determined by the 'degree of potential monopoly' unobtainable.

In the foregoing discussion 'increasing returns' has been used in the analytic sense; there is in economics a time-honoured distinction between an instantaneous cost curve representing the existing condition of productive and managerial techniques and showing the amount of output per unit of cost as an increasing function of the amount of output produced on the one hand, and an increase of output per unit of cost through time in consequence of improving techniques on the other. There is, however, a kind of increasing returns which it is difficult to assign unambiguously to either category. This must be explained.

Many entrepreneurs testify that if they were in a position to produce twice (or ten times) as much as they actually produce, they could do so at a substantially lower cost per unit. When asked why they do not at once put themselves into this more favourable position by increasing their scale of operations, their answers are diverse. One answer, which, although characteristic, only represents a minority of cases, is that they simply have not the market. It is to this class of cases that the concepts of the downward-sloping particular demand curve and the marginal revenue curve are particularly appropriate. Thought may be given to the possibilities of public interference, such as compulsory standardisation, rationalisation, etc., and to the rationality or irrationality of consumers' preferences for product differentiation.

Another typical answer, also only representing a minority position, is that finance is lacking. It has long been recognised that a perfect market for the supply of capital to particular enterprises should not be assumed, and Mr. Kalecki has expounded the 'principle of increasing risk'. More important is the entrepreneur's fear of loss of control. To obtain too high a proportion of capital on a fixed interest
basis is dangerous; to obtain it on an equity basis may involve loss of control. This obstruction to expansion cannot be fully overcome by the public provision of funds or by corporations constituted to assist small enterprises. The entrepreneur may only be willing to expand if he can do so mainly with his own money. This is partly based on a rational fear of the injurious interference of new-comers lacking experience of the firm's particular problems, still more to the entrepreneur's belief, which may often be irrational, that no other person can guide his business as well as himself. Although this belief may well not be founded on fact, it would be feather-headed for public policy to ignore it or seek to frustrate it; for it is one of the greatest engines of economic progress. It may well be that the desire to maximise profit and the love of business power, of which much is heard, are motives to strenuous endeavour of less force than a man's belief that he can do a particular job better than anyone else. The accrual of profit may be one criterion in his mind, but it will not usually be the only one, for whether the job is being well done. This very strong human motive, which we may call by the unflattering name of vanity, should be harnessed to the cause of economic welfare. Pernicious when it actuates a dictator, it can be turned to good account when it actuates a private entrepreneur. It is true that the value of the service it causes him to render may not be as great as he deems it; none the less the service is normally of substantial value, and consequently frustration of its motive, which is likely to cause the entrepreneur in question to relapse into a cushy life, will tend to reduce national income. This has an important bearing on taxation policy, including death duties.

The preponderating answer to the question why an entrepreneur does not move forward along his increasing returns curve is somewhat different. The entrepreneur avers that he could in principle and indeed hopes in practice to produce twice (or ten times) his present output at a sub-

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1 The deleterious effect of high death duties should be noticed in connexion with this. Some firms deliberately restrict their scale of operations so as not to attract death duties at a rate so high as to involve loss of family control.
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stantially lower cost per unit, but cannot do so immediately. His enterprise is a delicate organism with complicated labour relations and managerial relations. There is an optimum rate at which labour can be diluted and management formalised in the way required for larger scale; to accelerate beyond this rate would not yield increasing returns. It is somewhat difficult to categorise this condition, which is widely prevalent. From the point of view of the economy as a whole, it is an instance of analytic increasing returns; the various techniques and types of skilled labour or management are immediately available and could in principle be brought together as required for the larger scale of operation; this is quite a different case from those ‘historical’ increasing returns which can only eventuate as and when still undiscovered technological inventions are made. But for the particular source of supply — and all supply comes from one or other particular source — this happy combination of the relevant factors can only be made by a process which takes considerable time; the higher returns are not immediately available. It is doubtful, therefore, whether, when we apply ‘increasing returns’ to a firm which cannot achieve higher returns per unit of cost save by a slow process of growth, these are increasing returns in the strict analytical sense.

When we assert that much of British Industry is here and now subject to the law of Increasing Returns, it may be that a substantial proportion of the area referred to is subject to them in this intermediate sense. It is clear that quite a different remedy is appropriate in this case. Where a firm could here and now produce on a larger and cheaper scale if only it had the market or the finance, it is possible that some policy could be devised for securing a quick transition. But if the increasing returns are of the other sort, then nothing can be done save to encourage the study and application of techniques for the solution of the complex labour and managerial problems that arise when rapid growth is attempted. I have referred to this point because imperfect competition doctrine with its concentration on marketing problems, which are extremely important, might suggest the
wrong inference that the limited-market is the sole or principal cause holding firms back from larger scale production at lower unit cost.

It is needful to summarise this third section.

1. I define imperfect competition as the condition in which a particular source of supply is confronted by a downward-sloping particular demand curve.

2. I divide imperfect competition into free competition (which also includes perfect competition) and monopolistic competition. A source is in free competition if it cannot hope for long to enjoy a supernormal rate of profit, save in consequence of superior efficiency.\(^1\) I define a normal rate of profit as one the contemplation of which would be deemed by the source itself to make a marginal investment in plant extension just worth while.

3. Increasing returns are compatible with any kind of imperfect competition, but not with perfect competition. But increasing returns are not necessarily present in imperfect competition.

4. A monopolistic element may normally be expected to restrict the level of output below the social optimum.

5. I measure the degree of potential monopoly by the level of profit that is the highest that the monopolist should expect to be able to enjoy without provoking an invasion of his monopolistic position.

6. The maximum price which a monopolist would normally charge would be governed either \((a)\) by his degree of potential monopoly or \((b)\) by the short-period marginal revenue curve confronting him, whichever price was lower. Thus if the degree of potential monopoly is sufficiently great, but not otherwise, the amount of restriction will be governed by the slope of the short-period demand curve. A wise monopolist, however, having regard to the uncertainties of the future and the desirability of entrenching himself in as large a market as possible, may set a price that is lower than either of the

\(^1\) It would only darken counsel to define the possession of a superior efficiency as the possession of a kind of monopolistic element.

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maxima enjoined by the considerations mentioned above. (It may also be possible to have a 'conscientious' monopolist, who charges a lower price because he considers that it is right to do so. Cf. pages 208-17 below.)

7. In the case of imperfect but free competition there will normally be no restriction of output below the social optimum, save if increasing returns obtain in the equilibrium position. In this case the amount of restriction will be related to the rate of increase of returns. For the purpose of the last two propositions 'increasing returns' should be taken in the narrow sense, viz. should be limited to those realisable (if only a sufficient market were present) as soon as additional plant was constructed and labour recruited.