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STUDIES IN ADVANCED ECONOMIC THEORY

By

J. K. MEHTA

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1964

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PREFACE TO THE FOURTH EDITION

The book has been thoroughly revised and is now offered to students as a comprehensive and up-to-date treatise on Advanced Economic Theory. Fresh matter has been added to Chapters IV, V, VI, VII, VIII, X, XI, XII, XIII, XIV, XV, XVI, XVII, XVIII, XIX, XXI, XXII, XXIV, XXV, XXVI, XXVIII and XXXI. Besides, the coverage of the book has been widened by the addition of five new chapters on *Demand Theory and Indifference Curves, Development of Backward Countries: Causes of Under-growth, Process of Development: Capital Formation, The Problem of Employment in Classical and Keynesian Economics* and *Growth Through the Multiplier and the Accelerator.*

Studies in Advanced Economic Theory differs from ordinary text books in that, besides stating and explaining the views of other economists, it offers in every chapter the author's own contribution to economic theory. Students are advised to read each chapters several times, beginning with a rapid reading and ending with a slow and intensive study.

Allahabad University, J. K. MEHTA.

April 1964.

PREFACE TO THE FIRST EDITION

In this little book I have discussed some of the problems in pure Economics that have interested modern economists. Each chapter takes up one particular problem and is therefore complete by itself. I do not know to what extent the views expressed by me here can be claimed to be my own. It is difficult for one to be original in a field that is not the private property of any single economist. What I can therefore claim to have done here is to have indicated the views of modern economists and critically examined the same. Yet there are chapters in which I believe my views will be found to differ considerably from those of other economists. Chapters falling in this category are: *The Scope of Economics, The Philosophy of Wants, Price in Relation to Prime and Supplementary Costs, The Determination of Price in Short and Long Periods,* and *Risk, Rent and Profit.* In other chapters the reader will have to find out for himself where and to what extent I differ from others.

As the title of the book indicates, the present work is confined to the treatment of some selected problems in advanced theory. It is not a systematic exposition of the fundamentals of the science of Economics. Students coming to the post-graduate classes do not need to go over the familiar field once again. They are acquainted with the standard doctrines in pure Economics, and all that they need to learn at this stage is to think for themselves, compare divergent views on various topics and finally, co-ordinate them all. Knowledge is imperfect and the ultimate truth always attainable. There is for that reason no particular view on any aspect of theory that can claim to be perfect. Truth lies fragmented and scattered through the entire field of economic literature. The student must learn to gather these bits of truth and put them together. In this *art* he needs the help of others. A teacher who does not thus help the student at the post-graduate stage does very little that the student cannot do for himself. It is my hope that the few problems I have treated here will be of immense help to students in this direction.

The work of every author who does not merely reproduce the ideas of others must possess some distinctive feature of its own.

And the students will find that my writing possesses a psychological tinge. In the chapters on the scope of Economics, The Philosophy of Wants, Co-ordination of the Theories of Interest and Risk, Rent and Profit, for instance, they will find Economics treated from the psychological rather than the business point of view. In the study of advance theories such a point of view is, in my opinion, most essential. But while I thus prefer one point of view, I do not disparage the other; and it has been my constant endeavour to accommodate the divergent points of view wherever such an accommodation was possible.

There are many other problems that I should have liked to discuss in this book. But I think I have perhaps been wise in limiting their number and thus making the book convenient to handle.

I thank the *Indian Journal of Economics* for permitting me to incorporate in this book some of my articles published in it I have, however, made liberal changes in many of them.

There are many to whom I have to acknowledge my debt. To my post-graduate students who for years have kept on pressing me for a book on pure Economics I owe this my final decision to produce this work. To my colleagues I am indebted for their constant encouragement in my work and I am particularly grateful to Mr. P. C. Jain for his criticism and valuable suggestions some of which have been incorporated in this work. He has further helped me in typing the manuscript and arranging the matter for the press. Mr. R. N. Bhargava is another colleague of mine whom I wish to thank for his stimulating comments on some of the topics I have dealt with in this volume. To my mother and wife I owe much. The sacrifices which my preoccupation with this work have imposed on them are many and great. Without their encouragement at home the completion of the book would have been very much delayed.

January, 1948. J. K. MEHTA.

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CHAPTER I

THE SCOPE OF ECONOMICS

Human behaviour, which is the subject matter of the science of economics, is in general the result of a state of disequilibrium of the mind. The reason why our mind is in such a state is that it is influenced by the forces acting upon it from without. It is because the world without is able to arouse a reaction that our mind is in a state of unrest. A mind that could not react to stimuli would be at perfect rest and would consequently be in equilibrium. Disequilibrium of the mind is, as it were, the consciousness of the protest of our mental self against the world that surrounds it.

There are different ways in which different minds react to external stimuli. In some cases a given set of stimuli gives rise to one kind of activity, in others to another kind. There are cases again, in which these very stimuli fail to arouse any activity. Such cases are, however, rare and it is only in infinitesimally small number of cases that external forces do not stimulate even mental activities. In the case of those who have attained the highest degree of spiritual development the reaction is at times altogether absent.

It is the law of the human mind that it dislikes disequilibrium and strives, therefore, to attain the state of equilibrium. Our activities, both of the body and the mind, are the means that we adopt to attain equilibrium. The consciousness of the state of disequilibrium is called pain, while the consciousness of the fact that disequilibrium is being reduced or that equilibrium is being approached, is called pleasure. Thus, pleasure is merely the removal of pain. The greater the initial pain, greater is the pleasure that follows its removal. When the maximum amount of pleasure is obtained the pain is reduced to the minimum.

So far we have made no use of the word want. When the mind is in disequilibrium and strives for equilibrium it can be said to be "wanting" equilibrium. Thus the presence of "want" and that of pain are concurrent phenomena. So long as a want remains unsatisfied there is pain and the process of its removal or satisfaction yields pleasure. When the want is entirely removed there is no further pain left to be got rid of and consequently there is no

possibility of getting any further pleasure. The state of the mind in such a situation is one of equilibrium. There is no pain, no pleasure, but "happiness". Happiness is then, we might say, the consciousness of the fact that our mental self is in equilibrium. Pain is the consciousness that the self is in disequilibrium. Pleasure is the consciousness that the disequilibrium is being fought and reduced.

Our one ultimate want is then that of equilibrium. To satisfy that want we have so to manipulate the situation that our mind ceases to protest against environments. There are two ways in which that can be done. Either the environments can be changed so as to suit the mind or the mind can be put in such a state that it may not get ruffled by the environments. The adoption of the former method which is so persistently adhered to by all of us, consists in the rearrangement of matter around us. Ordinarily it is described as the use of resources. Such a use of resources requires effort; it necessitates the undertaking of so many activities. Such activities are the manifestation of the reaction of the mind to environments. Our mind reacts through the body. When, therefore, the mind is in disequilibrium it causes certain changes in the body (the brain included) that result in the so-called use of resources.

The second method of establishing equilibrium consists in so changing our own inner self that the mind finds itself unruffled by the environments, that is, it does not have any protest to make. It no more reacts to external forces. It continues to be in equilibrium. This method is the more difficult to apply. Most of us do not know what part of our self can educate the mind to submit, as it were, to the forces working on it. There has to be no repression. The mind has not to be prevented merely from reacting: it has to be so changed that it does not react at all. Religion and philosophy have much to teach us here.

Economists, as a rule, have considered only the first method of securing the equilibrium of the mind. It has been supposed that we can remove disequilibrium by making a proper use of our resources. It is true that the disequilibrium of the mind is removed for the time being by the appropriate use of resources. But, it is not possible to attain complete or perfect equilibrium, even for a short while, by adopting the first method of controlling or changing the environments. For, the forces that the mind

generates in order to change the environmental effects, themselves cause some disequilibrium of the mind. In ordinary language, every activity undertaken to remove some existing wants creates some new wants. For instance, if a man is hungry, he walks up to a tree, plucks some fruits and eats them. His want of food is satisfied but the want of rest is created. For, the energies put forth to satisfy hunger causes a tired feeling. The satisfaction of one want creates another.

Nor is it possible to remove fully all the wants that we have at any moment of time. In other words, it is not possible to attain a position of perfect equilibrium even for a while. However, in the absence of the second method available, or in so far as only the first method is considered, economics becomes a study of human behaviour involving the use of resources for the removal of wants or the attainment of equilibrium. Human activities of the mind and body then constitute the subject matter of our science. And we look upon these activities as means to the attainment of equilibrium. It is as means (to this end of equilibrium) that we are concerned with them. Now, since it is not possible for us to attain the position of perfect equilibrium by the adoption of the first method, all those who know this will realise that the actual object of behaviour is the attainment of a position as close to equilibrium point as possible. The activities that we study then become means to such a position.

It may be repeated that for the economist activities are means to the attainment of equilibrium through the use of resources. The study of behaviour, therefore, becomes the study of the manner in which resources are utilised. Each use of resources is considered as a means of getting as close to the equilibrium position as possible. One use differs from another in respect of its ability to take the user towards the point of equilibrium. The classification of the various uses of various resources that we as scientists have necessarily to adopt is, therefore, based on this difference in the capacity of means to take us towards the desired goal.

The resources at our command consist of both external and internal objects. As a matter of fact the use of resources, as already observed, consists in relating the external to the internal objects. Thus we are said to use sugar when we bring it in relation to our organ of the sense of taste.

There are then certain ways of using the resources at our disposal. If we make one particular use of them we are nearer the goal of equilibrium than when we make another use. A man selects that particular use which takes him nearest the goal. And the economist studies human behaviour in order to determine the fundamental laws that govern the selection of such a use. It is possible to determine fundamental laws because they actually exist. And they exist because there is some uniformity and similarity between one man and another in regard to the ways in which the mind reacts to external forces. There is, further, such a similarity and uniformity in the behaviour of the same man at different moments of time. It is because there is such an identity, it is because there is such an uniformity in the universe, that we are able to discover fundamental laws of human behaviour. It is the discovery of "the one in the many" that is the business of the science of economics.

The reason why one use of resources is better than another is that all uses are not equally good. One use takes us nearer the goal than another because there are conflicts between wants. The use of a particular resource is said to take us nearer the goal when it reduces the disequilibrium of the mind to some extent; but it takes us away from the goal when it increases it. In ordinary language, the satisfaction of one want creates another. It is because wants multiply in this fashion during the process of their satisfaction, that every attempt to reach the final goal thwarts itself. However, all ways of satisfying wants are not equally unsuccessful. Some ways are more successful than others. Some create less new wants than others. A man has therefore to think, to reason and to exercise his choice in the selection of the proper way of satisfying wants. We all have the faculty to reason and to think. Some have this faculty in a greater measure than others. The economist assumes that a man has sufficient reasoning power to enable him to make the best choice. There are certain fundamental principles which guide the man in making such a choice. The economist discovers these fundamental principles. These principles or laws constitute economic theory.

The fundamental fact then is that man wants equilibrium. And to get this equilibrium he has to remove disequilibrium. Removal of disequilibrium is, as we have already said, the same thing as removal of pain. And removal of pain is again the same

thing as getting of pleasure. It is for this reason that economists, using more familiar words, say that the one end that directs all human activities is the desire to secure maximum pleasure. Maximum possible pleasure comes from minimising pain as much as possible. And when pain is minimised we are closest to the final end of equilibrium.

So far we have been talking in the most general terms, without making any mention of the important factor "time". Does a man want equilibrium in the present or does he strive for full equilibrium in the end? Does he prefer less equilibrium to-day if that enables him to secure greater equilibrium in the future or does he prefer to have equilibrium now at the cost of the future? In attempting to answer such questions we have to face problems that have the time attribute. A man lives in the present. He has thoughts about and anticipations of the future. But it is in the present that all mental processes are performed and all the consequent psychological states of the mind experienced. We are, therefore, concerned with the present only—not with the dead past or the unborn future. The future has interest for us only in so far as it reflects itself into the present. All our calculus of pleasure and pain and our study of human behaviour are confined to what is currently going on. It is obvious, therefore, that what a man aims at is equilibrium in the present. He utilises the resources at his command in such a way as to enable him to approach the end of equilibrium as closely as possible in the present moment. And since the end of equilibrium can be attained only by getting rid of all wants, what a man strives for is the state of wantlessness in the present moment.

That, however, does not mean that a man has no concern for the future or that he is in any sense sacrificing the future completely for the sake of immediate gains. As we have already said, the future might, and almost always does, reflect itself into the present. We have some idea of the future and the anticipations of the future do have a place in the present in the case of most of us. The future is visualised; the enjoyment that one would secure in the days to come makes some effect on our mind in the present. The distant is always discounted. But the rate of discount is seldom cent per cent. In the psychological state of the mind it is, therefore, not only the present but also the discounted future that is found to operate. But while the future thus has its part to play,

it is always subservient to the present. It is not for the future as future that a man cares; he cares for the future because it has embodied itself into his present. It is, therefore, his present state of the mind that he wants to reduce to equilibrium. And in so doing account is automatically taken of the future to the extent to which it is able to find a place in the present.

And just as a man lives, feels and behaves in the present, so also does the economist take account of and study only the present. He studies the behaviour of a man at a time—naturally the present time—and assumes quite rightly that the object of the behaviour is to approach the state of equilibrium as closely as possible at once. That is the object of every man and the economist observes, classifies and analyses all the actions of men in the light of such an objective. We are at liberty to say either that the aim of all behaviour is to reach the state of mental equilibrium, or that the object is to reduce pain to the minimum or increase pleasure to the maximum, or even that the one final end is to attain happiness. Disequilibrium is painful. The process of reducing disequilibrium or approaching equilibrium is pleasurable. The state of the mind when absolute equilibrium is reached is one of happiness. Pleasure and pain are concomitants of disequilibrium. Pain is associated with disequilibrium; pleasure with the reduction of it. Pleasure or satisfaction is, therefore, merely the mental recognition of the fact that certain processes are going on that are taking the mind towards the end of absolute or perfect equilibrium. Happiness is the end; pleasure only the reflection of it. We feel pleasure when we know that we are going towards happiness. We feel happiness when we know that we have no pain, no wants, no disequilibrium at all.

What then is the real object of behaviour? Do we undertake the various activities, that is, do we satisfy our wants in order to get pleasure or to get happiness? Do we want merely to satisfy wants as they are felt or do we want to get rid of them for all time? Does the man that the science of economics studies desire in reality to eliminate his wants and reach finally the state of wantlessness? Or does he merely want to remove one want after another without attempting to put a stop to the recurrence of any want? Does a man merely fight the wants as and when they come or does he try to prevent them from coming? Does a man, in other words, merely cure the disease of wants or does he also want to prevent such a disease from coming? Are his actions curative or

also preventive? We must know what the real object of a man is. For, we economists study and must study what actually exists. All men strive to reduce wants to the minimum at each moment of time. At any given instant a man has a number of wants and he plans to remove and get rid of as many of them as possible. He wants to see himself without wants. At the moment of planning his behaviour, he has the wish to get himself completely freed from all wants. And at every moment he plans to see his wish fulfilled. Whether by so wishing and accordingly planning he is able to prevent the recurrence of wants in the future depends on what his wants at the moment are. If the man realises the fact that since a want once removed is not for ever removed and that he has consequently to perform his operation again and again, then he will have the desire to prevent the reappearance of wants. In other words, such a man will think also of the future and plan his behaviour in such a way as to prevent as far as possible the recurrence of wants. At the moment of planning, then, such a wise man will have, in addition to his usual wants, one more want of seeing that new wants do not arise in the future. He then plans his activities in such a way as to satisfy the complex of wants to the optimum extent. He will in all probability satisfy the usual wants to a smaller extent; for it is by so doing perhaps that he can prevent to some extent the recurrence of wants. While, then, all men have the object of eliminating wants in the present, some men have also the object of eliminating wants in the future. Such an object of eliminating future wants, as we have said, gets itself embodied in the object of eliminating all wants in the present. For, the want of having no wants in the future is itself a want in the present. It can, therefore, be maintained that elimination of wants is the one universal aim of all behaviour.

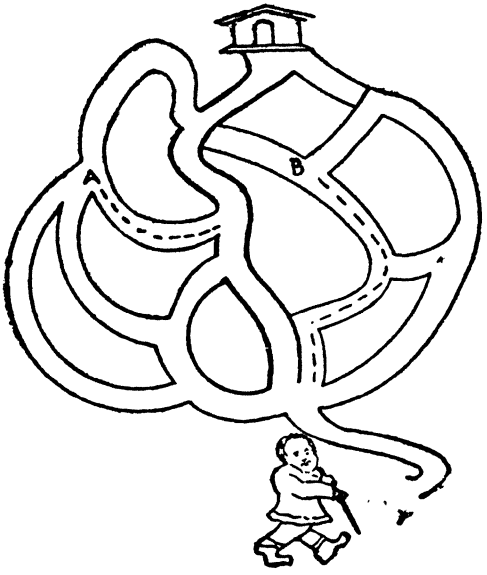
We cannot all at once remove all the wants. Those who have the want of enjoying the state of wantlessness for ever will have no wants in the future when they are able to satisfy all the wants in the present. For when that is done the want of never having any want is also satisfied. But those who have merely the want of removing the usual wants as and when they arise, are not able to free themselves from wants for ever. Nor do such people realise that happiness is superior to pleasure and that the fact that every time a want is felt it has to be satisfied proves that wants are not in their very nature welcome guests. They, therefore, remove their wants in such a way as to encourage their recurrence and help the

generation of new wants. They do succeed in getting pleasure for the time being, but are unable to get happiness in the long run.

Since it is not possible for either of the two types of men to remove all wants at once, all that they can do is to remove their wants to the optimum extent. This optimum extent is that which maximises saisfaction or pleasure. Or, in terms of pain, it is that which minimises pain to the greatest extent. Here the law of equi-marginal utilities operates. Every man satisfies the wants in such a way that the marginal satisfaction obtained from the application of his time and energy to different objects of wants is the same. When wants are considered and taken account of in their individuality, the satisfaction of each individual want becomes a means to the attainment of the final end of gaining freedom from wants. And then the satisfaction of these various wants in different degrees amounts merely to the adoption of so many means leading to the final end of wantlessness. But when the wants are considered collectively then their satisfaction, that is, their removal, becomes itself the end. Whatever the composition of the wants, no matter whether one of them consists of preventing the recurrence of old wants or cropping up of new ones, the aim and object of behaviour is elimination of existing wants. And since the wants are considered collectively the optimum behaviour consists in one that takes the man closest to the ultimate goal of wantlessness.

Let us explain this point with the help of a diagram. In the picture on page 9 there is a rest house representing the final end of wantlessness. The roads stretching out in all directions from the starting point represent the various means to the end, or what appears as such to the tired traveller. This traveller represents the person whose activities are under consideration. He can reach the rest house in any one of the several ways. But there is only one route which takes him continuously towards the rest house without at any moment taking him unnecessarily away from it. In the diagram this route is shown by thick lines. It is this route and no other route which can be regarded as the means to the end. At every crossing there is a right way as well as a wrong one of proceeding to the rest house. Even by taking the wrong way the rest house can be reached ultimately. But it can be reached only by passing on eventually to the correct road. Hence for the traveller there is only one right way to the rest house regardless of the starting point. The man at the position marked A has to take the

dotted course before he can get to the right road. For him therefore the dotted path is the right path. For a man at the position



B it would likewise be necessary to travel backward along the dotted path before he could get to the correct road. Retracing his steps backwards is necessary for him and must be considered as the correct means to the end.

The rest house represents either the final elimination of all wants or the mere elimination of wants at the moment, according as the man under consideration has or has not the want of preventing the appearance of new wants or the reappearance of old wants. The best behaviour is that which takes the man as close to the rest house as possible. In economics we study human behaviour as a way of approaching the rest house. And we study it in order to find out what laws it obeys.

The conclusion then to which we reach is that economics is a science that studies human behaviour as a means to the end of wantlessness. This end, it may be repeated, consists in the total elimination of all the wants existing at the moment under consideration. If one of these wants is the want of eliminating future wants then the end of elimination of present wants becomes the end of elimination of wants in all future periods as well.

There are few amongst us who realise that real happiness is obtained by eliminating for all times all our wants. What almost

all of us think is that real bliss consists in getting as much pleasure as possible. Without wants we think there would be no pleasure; for there would be no want to remove and no pain to get rid of. We have actual experience of pleasure only. That is, we have enjoyed the agreeable feeling that is experienced when a want is removed. We, therefore, think that all that is possible for us to have is pleasure. Pleasure must therefore be increased as much as possible. We should, therefore, have as many wants as we can. If there are a few wants only there would be very little pleasure also. When wants are many and intense there is correspondingly greater pleasure, provided of course we can satisfy them. What we fail to realise is that if we have no wants at all there is no pain either. And it is the absolute absence of pain that is called happiness. It requires imagination to be able to think of a situation in which one would have no wants at all. We have always thought that it is impossible to eliminate all wants. A man cannot exist without wants. He has always had wants and he will always have wants. This belief has prevented us from trying to imagine a state of wantlessness. But those who are prepared to reason and to think will realise that pleasure is pleasure only because some want is eliminated. Unfortunately wants keep on recurring and, therefore, fresh necessity of getting or trying to get pleasure arises again and again. If the wants were not to recur, the enjoyable feeling obtained from the complete satisfaction of a want would continue indefinitely. The very fact that we remove wants as they arise shows that we do not like wants. It may be recalled that human mind wants equilibrium and that it cannot be attained unless all wants are removed. The process of satisfying a want gives satisfaction or pleasure only because the mind becomes conscious of the fact that such a satisfaction of the want takes it towards the goal —it takes it nearer the state of equilibrium. There would be no pleasure obtained from the satisfaction of a want if it was not to take the mind closer to the point of equilibrium. It is because equilibrium is desired for its own sake, it is because a state of wantlessness is the desideratum, that the satisfaction of a want yields a pleasurable sensation. The satisfaction of a want is not desired for its own sake. It is desired only because it is a means to an end— the end of equilibrium or the end of a state of wantlessness.

A person wanting satisfaction of want is, therefore, wanting also the non-existence of wants. Concealed behind the desire to

satisfy a want is the desire never to have it. It is logic that helps us to realise this fact. An appeal to common experiences of life does not help us to realise it. For, as already said, we refuse to think on these lines because there is the firm conviction that a state of wantlessness is an impossibility. And for most of us it is no argument to be told that the fact that a thing appears impossible is no proof that it is not desirable.

We have not discussed so far how the final end of freedom from wants can be attained. One has first to have the conviction that happiness is the real end of life and that it can be obtained only by gaining absolute freedom from all wants. To win such a freedom what is required is control over our body and mind. The mind has to be prevented from reacting to external stimuli in the usual manner. The science of economics is perhaps not concerned with the technique of giving up wants. It is one thing for the economist to say that since the final end cannot be reached by satisfying the maximum number of wants one has to learn to give up some wants, and quite another to point out ways that might be adopted in order to be able successfully to do so. Nor does the economist always assume that a man has the object of winning a permanent freedom from wants. He knows that every man desires such a freedom at the time of planning the use of the resources at his command, without necessarily realising the fact that such a freedom should in his own interest be a lasting one.

It is sometimes said that a man is faced with an economic problem when there are many ends to secure. In cases in which there is only one end, with a number of possible means to it, there is only a technical problem. This distinction between economic and technical problems is interesting but it is doubtful if it can stand the test of logic. For one thing, we economists have to take one end as determining the conduct of a man. That end may be viewed as the attainment of equilibrium or as reaching the state of wantlessness or again as the optimum satisfaction of wants. The end may be expressed as the pursuit of happiness, absence of pain or maximisation of satisfaction. But howsoever one may express the end of conduct, there is only one end. One can, if one so chooses, consider the problem as involving a number of sub-ends. And if such sub-ends are taken as ends, we do certainly have in economics a number of ends to reckon with. But without also recognising the existence of some one end it is not possible to offer

any solution of the problem. And all economists have taken maximisation of utility as this one end. We would prefer of course to describe it as freedom from wants.

What happens then to the distinction between technical and economic problems? If technical problem is defined by the condition that there should be only one end, then all problems that economists are concerned with become technical problems. And in that case what they call economic problems (problems with many ends) become really means to the technical problem of maximisation of satisfaction, minimisation of pain or elimination of wants. It will, therefore, be realised that the distinction between technical and economic problems is hard to make. The economic problem is, as a matter of fact, a technical problem. Every problem whether economic or not has a solution. And there is a technique of arriving at the solution. The term economic problem points to a certain end of conduct. And the term technical problem suggests that there is a certain method—a technique—of solving the problem. The problem of gaining freedom from wants is regarded as an economic problem. There is a way of earning or securing that freedom. That way is called the technique of eliminating wants.

There is one point that remains to be considered now. We have seen that a man satisfies his wants—whatever their composition may be—to the optimum extent. And optimum extent is generally understood as one that maximises satisfaction. In our terminology optimum extent is defined by the nearest approach to the state of equilibrium. Talking, however, in terms of the commonly accepted aim of maximising utility, the question can be posed whether a man satisfies certain wants because he knows that their satisfaction will yield maximum utility? Does a man first think of the utility that he would derive from a certain type of behaviour and compare it with utility that he would obtain from a different kind of behaviour before deciding upon what to do? Or does he somehow decide to do certain things without having a previous idea of what utility he would obtain? Is, in short, utility the guiding force or merely the consequence of an act? If his choice of action is not determined by the anticipated utilities from the satisfaction of various wants, then what is it that helps him to make a decision?

Man is said to be a rational being. He thinks and reasons before he acts. He calculates in advance the consequences of his

behaviour. That is why he is said to be rational. It is the result, as anticipated, of possible alternative activities that helps him to make his decision. Of two wants confronting him at any moment he satisfies that which he thinks will give him more utility. It is, therefore, the expectation of utility that determines his conduct. This view is not incorrect but it needs to be stated and understood properly. To explain human conduct in terms of utilities is to ignore the motive force exerted by wants. As we all know, our physical and mental activities are ordinarily caused by the presence of wants. When we have a want we do something. We should, therefore, be able to explain our behaviour in terms of wants. In time-sequence wants come first, then activities and last of all utilities.[1] Wants should, therefore, be considered to be the cause of action, and action the cause of utilities. To say, therefore, that utility is the cause of our behaviour is, at least in form, like putting the horse before the cart. And it cannot be denied that we often, if not always, do what we think would yield the highest amount of utility. We have, therefore, to reconcile the two views and find the real truth.

The reconciliation has to be sought in the fact that it is the expectation of utility that determines our behaviour through the medium of wants. A man has, say, two wants at a particular moment of time. Whatever action he performs must satisfy either of the two wants, assuming that they are of such a nature and the resources so limited that both of them cannot be satisfied. It is obvious that in such a case both the wants would exercise a pull on the man and the stronger of the two would succeed in having itself satisfied. Whatever anticipation of utility the man might have must exert its influence first on wants. If he thinks that the satisfaction of want No. 1 will give him more utility than the satisfaction of want No. 2 this knowledge will strengthen want No. 1 and enable it to fight successfully the other want.

Utilities then have their part to play. Wants howsoever generated are constantly being weakened or strengthened by the anticipation of utilities. The mental processes of trying to measure and compare utilities in advance are merely efforts to strengthen or measure the intensities of various wants. Now, our anticipations in regard to the utilities to be obtained from satisfying wants

1. It should be noted that even in the absence of wants there would be activities. See Chapter II.

are based on our past experience. We recall to our mind past incidents in which the satisfaction of similar wants was involved. Assuming that in identical conditions identical utilities must be derived, we calculate the utilities that we are likely to get by satisfying various wants. The thought process involved in such calculations—the process of recalling to mind past incidents and analysing them—is in a way the outcome of the natural desire to develop, understand and make fully conscious all our wants. As we have explained in Chapter III wants are not always fully conscious. A fully conscious want is accompanied with more pain than another that is only partially conscious. And, therefore, a more conscious want is expected also to yield more utility. The operations of a rational mind are, therefore, the outcome of a desire to make all wants as conscious as possible.

To say, then, that the object of all behaviour is to maximise utility is the same thing as to say that the most intense wants are satisfied before the less intense ones. The desire to make all wants as conscious as they can be is itself a want. There is, therefore, in the case of all of us the want of making wants fully conscious. It is because this want is normally the strongest of all wants that some rational mental activity is undertaken before the other wants are satisfied. The desire to maximise satisfaction is thus an overriding want. Our normal activities can, therefore, best be described as the outcome of wants. The strongest wants naturally get themselves satisfied first. It would be crude to say that our object is to maximise satisfaction.

It may likewise be pointed out that the desire to attain equilibrium is also a want. We should not, therefore, say that the object of all behaviour is to attain the state of equilibrium. But if we take this point of view then our behaviour becomes purely automatic, with our mind and body being driven to activity by certain forces in the same way as an automobile is driven by the motive power generated by the internal combustion engine. However, it is perhaps less incongruous to say that the attainment of equilibrium is the object of all behaviour than to say that maximising utility is our object. It has, besides, the advantage that it helps us to realise that wantlessness is what we are all aiming at. That our life is an attempt to free ourselves from the bondage of wants and to attain Nirvaña is the fundamental truth to which this way of understanding the object of all behaviour draws our attention.

CHAPTER II

THE MEANING OF WANTLESSNESS

In the last chapter we defined economics as the science that studies human behaviour as the effort to minimise pain in the long run or, in other words, as an endeavour to gain freedom from wants. It is necessary to know what precisely freedom from want consists in.

We observed in the last chapter that different minds react to external stimuli in different ways and noted that in those who have attained the highest degree of spiritual development the reaction is at times altogether absent. Such a statement might create an impression that those who are spiritually most advanced do not perform any bodily or mental activity. That however is not the case. To understand this point we must differentiate between action and reaction. A mind can be regarded as acting when it submits to the sum total of external stimuli. It can be regarded as reacting when it protests against external stimuli. When you go to a tree, pluck fruits and eat them you are in a sense protesting against external stimuli. When you, on the other hand, eat fruits because they have been offered to you to eat you are merely acting in obedience to the command of the stimuli.

A spiritually developed person acts when he is exposed to stimuli though he does not react. This way of understanding the meaning of the word reaction incidentally helps us to realise the fact that wantlessness is identical with non-violence. However our purpose is to clarify the notion of wantlessness here.

It was seen in the last chapter that the state of wantlessness is one in which there is no pain and consequently no possibility of getting pleasure. It was also seen that in the state of wantlessness there is, therefore, happiness as distinguished from pleasure.

Now, then, we can say that when the human mind does not react to external stimuli (which means, when it acts in obedience to them) there is happiness. But there are at any given moment of time a number of external stimuli to which we are exposed. Of course in making such a statement some danger is involved. For, it can perhaps be argued that at any one moment of time one can

only be consciously exposed to one stimulus. And if there is a group of stimuli such a group must be considered as forming only one (composite) stimulus. However we believe much scientific precision is not sacrificed when we proceed to discuss the problem in hand with the assumption that it is somehow possible for the human mind to feel itself exposed to a number of stimuli at the same time. As a matter of fact such an assumption is involved in all definitions of economics in which man is regarded as a choice-making unit.

When a number of stimuli exert their influence at once it becomes in most cases impossible for the human mind to obey their commands. For, some stimuli want the mind to do one thing while others want it to do just the opposite thing. Since wantlessness consists in yielding to the force of external stimuli, it is necessary to determine the net result of the various and contradictory commands of all the simultaneously acting stimuli. This is at once a difficult and an important thing to do. It is here that a man, even when he is absolutely wantless, has to take decisions or exercise choice.

In such situations, if his choice has not to amount to the satisfaction of a want, he has to follow the dictates of his conscience. But how is one to find out what one's conscience says? In fact, what is conscience and where does it reside? These are questions that take us into the realms of metaphysics. But it suffices for our purpose to note that a man has simply to do his duty. For, the voice of conscience consists in the call of duty. When there is a difficulty in finding what conscience has to say, we must go to our Guru—our spiritual master—and take his advice. Our spiritual master has the charge, as it were, of our conscience.

When we do according to the dictate of our conscience we do not satisfy our want: we just satisfy the want of environments as it were. And when we yield to the wishes of our environments or, what comes to the same thing, when we follow the dictates of our conscience, we do not feel any pain, we just experience happiness. This point needs some explanation. But at this stage it may be noted incidentally that, if what is just said is correct, we suffer (pain) only because we do not want to fall in line, as it were, with the rest of the elements in our natural environments. We suffer because we want to act on our own—because we want to do what

we want and not what the entire machinery, of which we are a part, wants.

In brief, then strict obedience to the orders of your (which is the same as any body else's) conscience constitutes a state of wantlessness. Do not do what you want to do; do what conscience wants you to do. Do not be driven by the individual self; be driven by the universal self. Do not be selfish; be selfless. In allowing ourselves to be driven by our conscience we allow ourselves to be driven by what we might call the cosmic forces. These forces emanate from the Ultimate, the Absolute, the one supreme power—God.

Witness here what Dr. Radhakrishnan says, "When we renounce our attachment to the finite ego and its likes and dislikes and place our actions in the Eternal, we acquire the true renunciation which is consistent with free activity in the world. Such a renouncer acts not for his fleeting self but for the Self which is in us all." Placing our actions in the eternal in the above passage means doing things according to the dictates of our conscience.

The above explanation of the meaning of the word wantlessness serves to make one point clear, namely, that wantlessness does not imply actionlessness. Activities, therefore, do not cease when we adopt the policy of wantlessness. A society can adopt an economic policy based on the objective of wantlessness without having to alter its basic pattern of production. The production of goods and services and their consumption would only change (but not cease altogether) in conformity with the ideal of wantlessness.

We repeat, wantlessness is not the same thing as actionlessness. It means action as directed by the cosmic conscience. You should not act as *you*, you must act as an agent of the higher power. Witness here what Dr. Radhakrishnan says while explaining Karma-marga: "For the wise sage who lives in the absolute, it is contended that nothing remains to be done. The seer of truth has no longer the ambition to do or to achieve. When all desires are destroyed, it is not possible to act. Uttaragita states the objection thus: 'For the yogi who has become accomplished as the result of having drunk that nectar of wisdom, no further duty remains, if any remains he is not a real knower of truth'. Sankara admits there is no objection to the performance of work until one reaches death, even after the attainment of wisdom....Though strictly

speaking there is nothing that remains to be done by the wise sage, as by God, yet both of them act in the world, for the sake of world maintenance and progress, *lokasamgraha*. We may even say that God is the doer—God acts through him and the question of right and wrong does not arise, though it is impossible for such a one to do any wrong. Poised in the serenity of the self he becomes the doer of all works. He knows that he is only the instrument for the work of God....The individual intelligence, mind and sense function for the great universal purpose and in its light."

So when we say that in economics we study human behaviour considered as the effort to gain complete freedom from want, we know what that means: human behaviour is to be regarded as action in obedience to the dictates of conscience. For, in such obedience lies happiness. All our desires spring from our challenge to our environments. If we wish to be truly happy we must give up this challenging attitude. The desire to own things and have worldly possessions is the outcome of this challenge and it would disappear when we yield to our environments. In that way we fall in with the universal, cosmic scheme.

Wantlessness then consists neither in not eating and drinking, nor in not earning income. All that is required is to do all such things with a selfless motive: to earn not for our own use but for the use of all those whom our conscience would like to be served. Such a wantless attitude to life would secure, therefore, not only our own happiness but would enable us to contribute to social welfare. The welfare of an individual would be identified with that of society. Such an identity has been emphasised again and again in scriptures. Here in our definition of economics it stands vindicated.

If all of us were to follow the correct path to our happiness, the work of the State would be greatly, if not completely, reduced. It would not be necessary then to tax the rich for the benefit of the poor. Nor would it be necessary to prevent anybody from earning wealth beyond a certain limit. Mahatma Gandhi believed in the trusteeship of the rich. He wanted the rich to earn and keep their own wealth; he only wanted that they should use the wealth for their own benefit as also for that of the poor. He, in other words, wanted the people to be wantless. He drew our attention to the fundamental identity of individual and social welfares. The

solution of all our problems consists in following the path of wantlessness. An enduring social structure can only be built on the foundation of wantlessness. So long as wantlessness is neither understood nor preached and practised, a society cannot relax its efforts to force people to do what is in the interest of general good. The best results can, therefore, be secured only by the adoption of the methods of the true seeker after happiness—by following a policy of wantlessness.

CHAPTER III

THE PHILOSOPHY OF WANTS

In the first chapter reference was made to unconscious wants. First, it was stated that the satisfaction of a want merely relieves pain. Secondly, it was remarked that the process of satisfying a want often gives rise to new wants or makes some unconscious wants conscious. It is proposed to consider here to what extent the generalisations of the first chapter would need to be modified, if at all, when full account is taken of the influence and importance of unconscious wants.

Since in economic literature no mention seems to have been made of unconscious wants let us begin by explaining the meaning of this term. If a person has a want for a commodity its presentation to him should generate a flow of agreeable feelings. And a commodity is said to be presented to a person when it is so placed in relation to him as to be able to influence his conscious self. If therefore the presentation of a commodity gives him pleasure it proves that a want for it must have existed. This want may not, however, have been consciously felt. It is only when a man is conscious of a want that he experiences some pain. For, he then suffers the pang of an unsatisfied desire. While it is necessary that the presentation of a commodity must give pleasure to the person who has a want for it, it is not necessary that its absence should always cause pain. A person who has never seen or heard of a motion picture has no conscious want of seeing it, and consequently he experiences no pain. But were he to see such a picture he would certainly enjoy it. Pleasure in this case is not preceded by pain—the satisfaction of the want does not merely relieve pain. The presentation of the object of unconscious wants, therefore, makes a positive contribution to one's stock of agreeable feelings.

Taking note of this fact we feel the necessity of re-examining the arguments of the first chapter. There our faith in freeing ourselves from all wants rested on the belief that so long as we have wants we must continue to suffer pain and that we cannot, therefore, relieve ourselves of pain altogether. When we take note of unconscious wants we realise, however, that not all wants cause

suffering. Our conclusions, therefore, should apply to conscious wants only and indicate merely that efforts should be made to free ourselves from the bondage of conscious wants. That is correct. But should unconscious wants be at all satisfied? Since their satisfaction makes a positive contribution to welfare it seems all unconscious wants should be satisfied. But unconscious wants can be satisfied only during the process of removal of conscious wants; for, no want that has not entered the conscious region of our mind can give rise to any purposive activity. When, therefore, all desires are somehow given up the unconscious wants naturally remain unsatisfied. If in order to be able to secure the positive contribution that the satisfaction of unconscious wants makes we were to allow conscious wants to maintain their hold on us and make efforts to satisfy them in accordance with the law of equimarginal utilities we would be gaining a little at the cost of much. True it is that with every satisfaction of conscious wants some unconscious wants are automatically satisfied. But once they are satisfied they continue to recur as conscious wants for ever in the future. The rational pursuit of happiness, therefore, consists in following the course of action indicated in the first chapter in callous disregard of the existence of unconscious wants. There seems, therefore, no necessity of modifying the definition of economics as a science that studies human activities as an endeavour to reach the final end of happiness.

It was stated in the first chapter that as far as conscious wants are concerned their satisfaction merely serves the purpose of relieving pain so that the fact of experiencing a want and then having it satisfied keeps us, as it were, at the zero level of feelings. It is necessary, however, to note the fact that since agreeable and disagreeable feelings last over a period of time the question before us necessitates the summation of feelings over a time interval. Thus, for instance, a want causes a painful sensation which lasts so long as it is not removed and, similarly, the process of removal of a want produces an agreeable feeling which continues till the want is entirely satisfied. It becomes, then, necessary somehow to sum up over a period of time the agreeable and disagreeable feelings and weigh them against each other in order to ascertain whether a net balance of pleasure or pain has been caused by the presence and then the removal of a want.

This difficulty is due to the fact that we are driven to the necessity of applying the principle of arithmetic to data that do not easily admit of such an application. It is arguable whether there

is much sense in attempting to add together the intensities of feelings experienced at two different moments of time. Mathematically that is possible but the result that such a calculation yields would perhaps possess no significance from the psychological point of view. The difficulty of adding up feeling into a total of some significance is further increased by the fact that a want might last for a shorter or a longer period of time than that over which the process of its removal might extend.

However, it appears that one can safely maintain that if the removal of a want merely fills the gap, the individual who experiences a particular want and then has it satisfied is in a worse, at any rate not better, psychological position than the one who does not experience that want at all.

This statement is not likely to find ready acceptance on all hands. But it should be abundantly clear that the warrant for it lies in the assumption that the removal of a want merely fills a gap. Consider, for example, the case of a person who loses a shilling and then finds it. He merely gets what he had lost and, leaving the other after-effects of getting the lost money back (for that is the implication of the statement that merely the gap is filled) it can be said that there is nothing to set against the worry caused by the loss of money during the interval between losing the shilling and finding it.

It is essential to be clear on these points if our sympathy for others is not to be misplaced. For instance, it is always maintained that an average poor man is not so happy as an average rich man and that consequently the former is to be pitied more than the latter. There is, however, no scientific justification for the distribution of pity in such an inverse proportion to wealth. A poor man has fewer desires than the rich and though his lower income is able to satisfy fewer wants than the higher income of a rich man, there are also fewer wants that remain unsatisfied. Since the satisfaction of desires merely fills the gap without making any positive contribution, there is nothing, in the case of a rich man, to be set against the excess of pain caused by a larger number of unsatisfied wants. It is true of course that the wants that remain unsatisfied in the two cases are not precisely of the same intensity. In the case of the poor there are perhaps fewer but more intense wants left unsatisfied. Yet when due allowance is made for the intensity of his wants the balance of advantage still is on his side.

It is sometimes argued that the poor man has the same number of wants as the rich and the fact of his having a lower standard of living does not indicate absence of desire for a better standard. This, however, is not correct. The rich no less than the poor have the desire to raise their standard of living. And the rich are, on the whole, worse off as in their case there are a large number of (unsatisfied) wants most of which in the case of the poor continue to remain in an unconscious state. Were there no unconscious wants the difference between the wants of the rich and those of the poor would of course have been negligible. For, in that case the one important source of increase of wants would have been blocked for the rich man.

It should not be concluded from this, however, that since the poor man is happier than the rich, he should be able to bear a heavier tax. In spite of his being happier than the rich the marginal utility of money for him is greater in most cases. Remembering that the satisfaction of a want does not make a positive contribution to welfare and that the happiness or otherwise of a man is to be judged, consequently, by the number and intensity of unsatisfied want, we should measure the burden of a tax by the additional pain that its imposition inflicts by causing some wants to remain unsatisfied. A given tax (of a fixed amount), therefore, imposes a greater burden on the poor than on the rich. The table given below explains this point.

POOR		*RICH*	
Utility obtained from satisfaction of wants	*Cost of satisfying wants*	*Utility obtained from satisfaction of wants*	*Cost of satisfying wants*
	£		£
10,000	2	10,000	15
1,000	1	1,000	25
800	1	800	20
600	155	700	10
500	135	650	40
200	105	600	60
100	85	490	40
80	65	430	50
50	65	510	60
30	55	640	180
20	55	550	105
15	45	530	110
10	25	470	70
		450	30
		390	50
		350	55
		300	56

Here utilities obtained from the satisfaction of wants are expressed in terms of satisfaction. The cost of satisfying wants is expressed in terms of money. The rich and the poor have different types of wants requiring different amounts of expenditure. It is assumed, in order to explain the point with the help of numericals, that the utilities of different individuals can be expressed in terms of a common standard of measurement. The poor man has only £4 while the rich has £400. They are able to satisfy three and ten wants respectively. The poor man is happier because he has fewer wants unsatisfied. But the marginal utility of money (utility of the last £) to him is 800 while for the rich it is only 8. In order to make marginal sacrifices equal the rich would have to be taxed to the extent of nearly £100 when the poor is made to pay only £1. Here taxation becomes proportional, but that is because of the particular figures arbitrarily taken. The purpose of this table is to prove that the fact that the poor is happier than the rich does not mean that the marginal utility of money to them is necessarily lower.

Further, our conception of happiness as the end of living, assigning as it does greater importance to unsatisfied wants than to those that are actually satisfied, enables us to perceive real differences between things which are superficially alike. Thus it is sometimes said that people who give up lucrative sources of income in order to be able to devote their time and energy to the pursuit of such noble ends as freedom of their country all make equal sacrifices. Likewise it is believed that people who serve the poor denying to themselves the ordinary comforts and luxuries of life, make sacrifices such as no ordinarily called self-centred man ever makes. Such conceptions of sacrifice as underlie the above beliefs are based on the common practice of judging the welfare or otherwise of people by the wants that are actually satisfied. As a matter of fact whether the man who spends a major part of earnings on others in making greater sacrifices than those who spend on themselves, depends on the wants that such action leaves unsatisfied in each case. Of two men, for instance, who take up the cause of their country's freedom one may be making far greater sacrifices than the other in spite of their having given up equally lucrative sources of income. For the sacrifices must be measured by the pain that unsatisfied wants inflict in each case. In the case of one there might be more wants than in that of the other, that the lost income

could have satisfied. It is necessary, therefore, to know the entire scheme of wants of a man before a correct idea of the sacrifices he makes by adopting a particular course of action can be formed. Politicians, soldiers, philanthropists and the like have in general greater praise showered upon them than a scientifically correct conception of sacrifice would warrant.

There is, however, no possibility of maldistribution of sympathy and praise and consequently of social injustice when it is clearly borne in mind that happiness depends on the number and intensity of unsatisfied wants. Economics must therefore be defined, it further becomes evident, as the science of human activities considered as an endeavour to reach the state of wantlessness.

CHAPTER IV

MEASURABILITY OF UTILITY

Consumption is a study of the principles that govern the satisfaction of wants. And since the satisfaction of a want yields utility (in proportion to its intensity) consumption can also be defined as the study of the principles that govern the enjoyment of utility. The phenomena with which we are concerned in such a study are quantitatively and qualitatively different from one another. Unless, therefore, we are able somehow to make qualitative distinctions and quantitative comparisons between them we cannot impart to our principles the character of scientific laws. Perhaps no science, unless it tends to be one of a purely metaphysical type, can contrive to formulate its principles without relying in some measure, however small, on the quantitative measurement of the phenomena which it studies.

It is not possible, therefore, to build up a satisfactory theory of consumption without evolving a technique of comparing the utilities of different objects. And here the question arises whether it is necessary for us to be able merely to compare utilities or to measure them as well. It is claimed, or at any rate assumed in most cases, that comparison and measurement are different things. For it is argued by many that though utility cannot be measured it is yet possible to compare the utilities derived from different commodities or different combinations of them. And, further, it is claimed that for a formulation of the theory of value or of consumption such a comparison of utilities is all that is needed. Let us therefore take up this question of the difference between the meanings of the words *comparison* and *measurement* and see whether such difference, as there may be, would justify the modern contention that utility is not measurable.

Before attempting to tackle the problem in a rigorous manner it would perhaps be better if we considered it from the point of view of a layman. Ordinarily it is believed that utility is not measurable for the following reasons:

(1) Utility is an abstract thing. A physical object can be measured, but how can, it is said, one measure an abstract im-

material thing? We cannot answer this question satisfactorily without defining the word "measurability". But without going into the question at this stage let us give to the layman's question a layman's answer, by saying that there are other abstract things which we *are* able to measure[1]. For instance, we measure energy, electricity, heat, etc. To say, therefore, that utility cannot be measured because it is not a material object is wrong.

(2) Utility is not constant, it is changing from time to time. How can such a constantly changing thing, it is asked, be measured? Heat, weight, height, and such things are also not constant and yet we are able to measure them. To be able to measure is one thing; to have the measurement constant is another. The utility of a thing at the time at which it is measured is constant. It can therefore be measured.

(3) Utility has no standard of measurement. Material objects can be measured with the help of certain standards of measurement. Thus, for instance, the length of an object can be measured with the yard-stick. The weight of an object can be measured in pounds. But utility, it is maintained, has no such measuring rod. To this the simple answer is that all satisfactions in Economics are measured in terms of money. Just as all lengths are measured in terms of the yard so also all satisfactions are measured in terms of money. Just as a material object has so many times the weight of a pound, a commodity or a service has so many times the utility of (a unit of) money[2].

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1. It is a mooted question in psychology, as also in economics, whether utility or satisfaction can be measured Whether utility, heat and such things can be measured depends on the precise meaning of the word measurement. This word can be defined in various ways. In the widest sense utility and such abstract things are measurable. Dr. Allen says in The Determinateness of the Utility Function, *Review of Economic Studies*, Vol. II, No. 2, "The rise of temperature from 0°C. to 5°C. has nothing in common, for example, with the rise from 5°C. to 10°C." Further, "Without going into details, it can be stated that temperature is *only* made measurable by *assuming* a connection between temperatures and quantities of heat and so by imposing an additive property on temperature increments." (Italics ours.) Here Dr. Allen obviously uses the word measurement in a narrow and, therefore, specialised sense.

2. This is true only if the marginal utility of money is constant. When the expenditure on the object whose utility is being measured is small as com-

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Material objects in fact are never measured. When we measure a piece of cloth, for instance, all that we do is to measure its length.[1] And length is immaterial in precisely the same sense in which utility is.

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pared to the total income aalvaible for expenditure, the marginal utility of money is constant. It is not impossible, therefore, to express the utility of a thing as a multiple of the marginal utility of money. Moreover, is it correct to say that a thing that has no standard of measurement is not measurable?

1. Do we or can we measure length? Can abstract things like length or utility be measured in the strict sense? In this connection Mr. Harrod Bernardelli says, "The argument in question is, that the degrees of want, of a utility, with which Economics is concerned, are essentially immeasurable, since they are magnitudes of intensity, an intensive magnitude being roughly defined as a magnitude, no parts of which can be distinguished. Now it seems beyond all doubt, that in general the phenomena with which psychology is concerned, have only an intensive magnitude in the sense defined, and, therefore, it is indisputable that an object can be measured in the *strict* sense only if it is divisible. But these two statements are not yet sufficient to condemn the classical methods of Mathematical Economics as an arbitrary transgression of the limits of human reason." *The Review of Economic Studies*, Vol. II, No. 1.

Now if it be accepted that only those things can be measured which are divisible and those things are divisible whose parts can be distinguished from one another, does it follow that we can measure a material object, say a table? What we measure or claim to measure is either the length or the breadth or the height of a table. And are these attributes of a table psychological phenomena? If they are, can they be considered as divisible? It would appear to follow from such considerations that all measurements are measurement perhaps of indivisible psychological phenomena and, therefore, no measurement in the above sense.

Prof. R. L. Bishop says that "Davenport.....while insisting on the importance of relative utility in economic reasoning, treats utility itself as an absolute magnitude." Prof. Bishop cannot conceive such an entity.

Prof. F. H. Knight commenting on Prof. Bishop's article in the *Journal of Political Economy*, April 1946, says that the fact that a variable is not measured does not imply that it is not quantitative in form. We are not, he says, thrown back on mere ranking as the only alternative, implying that order of differences has no reality.

Charles Kennedy in his article Concerning Utility published in *Economica*, New Series, Feb. 1954, agreeing with B. Russell regarding the meaning of certain terms, says that measurement used in the narrow sense should enable us to say that one magnitude is double of another. But utilities cannot be added or subtracted. By adding two utilities we do not get another utility: we just get two utilities. Utility as a magnitude does not possess the property

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What emerges from the consideration of these points is that there is no radical difference between utility and material objects so far as their measurability is considered. For a layman the difference is due to the fact that in one case, he thinks, it is the immaterial utility that is sought to be measured while in the other it is the material object itself that is measured. As a matter of fact in both the cases, as explained above, what is measured or compared is the immaterial thing. The more significant difference between the two cases consists in the fact that while such things as the length of an object can be expressed as a multiple of the length of another object, utility of a commodity cannot be expressed as a multiple if the utility of another commodity is not given equal importance. Whether the recognition of this difference between the measurement of utility and that of material objects (attributes of material objects such as their length or weight) would warrant the statement that utility cannot be measured depends on the precise meaning of the word measurement. But this question need not be taken up here.

If then there is no significant difference between the act of measuring utility and that of measuring other objects, it follows that there must be a significant similarity between the two. That similarity is indicated by the fact that in both the cases what is actually done is comparison of phenomena. Comparison and measurement might appear to differ in the sense that while one is relative the other is absolute. When we say, for instance, that a certain table is two yards long what we mean is that its length is twice the length of the yardstick. We are not in reality measuring the length of the table in the absolute; we are merely comparing its length with that of the yard-stick.

It is doubtful whether there is possibly any way of measuring things in the absolute sense. This is a question that may be

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of divisibility. Hence, he concludes, following Bertrand Russell, that it is wrong to use numbers for utility, for that would suggest that we can add and subtract utilities.

Utility, says Kennedy, is determinate but not measurable, yet "much can be said with definiteness concerning magnitudes incapable of measurements. The immediate judgments of equality, upon which (as we saw) all measurements depend, are still possible where measurement fails, as alos the immediate judgments of greater and less."

left to psychologists to answer. For our purpose it is sufficient to take cognisance of the fact that in all those cases in which we as economists are concerned, the phenomenon of measurement is a relative rather than an absolute one. It is pertinent to note that in the case of utility what we do is to compare the utility of one thing with that of another in precisely the same way in which we compare the length of one object with that of another.

It may, however, be pointed out here that there is a difference between such two abstract things as length and utility. The first is divisible in the ordinary sense while the second is not. One has the attribute of extension while the other has the attribute of depth or intensity. The length of a thing can, therefore, be measured in the sense that it can be considered as being the aggregate of so many units. Such a conception of the whole as being an aggregate of so many units is not quite possible in the case of utility which has merely the attribute of intensity.

Whether the recognition of this difference between the attributes of extension and intensity justifies the view that utility cannot while length can be measured is doubtful indeed. Length is perhaps considered divisible because there is some objective unit in terms of which the extension is viewed. Cannot we view likewise the intensity of utility in terms of some unit? When, for instance, we say that we are willing to pay 25*s*. for a pair of shoes do we not mean that the utility of a pair of shoes is equal to that of 25*s*.? And if we do, can it not be argued that a shilling has been taken to be the unit in terms of which utility is sought to be measured or expressed? But for the not very material point that the utility of each of the twenty-five shillings may be different it is perfectly valid to say that the utility of each of the twenty-five shillings added together equals the utility of the pair of shoes. Though possessing the attribute of intensity, utility can still be conceived of as being a composite of so many bits of utility. We have, therefore, to note that all that is possible for us to do is to compare utilities and not measure them in the absolute sense. Material objects have their attributes length, weight, etc., just as they have utility; and it is these and not material objects themselves that we compare when in common parlance we say we are measuring them.[1]

1. It is, however, worth noting that though utility and length are abstract things, they are different from each other in one significant respect. The

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Let us now see what importance the question of measurability has in the theory of value. It was perhaps Pareto who first emphasized the fact of immeasurability of utility.[1] What he meant by saying that utility was not measurable was that there was no standard of constant value available for the purpose of measuring utility. He wanted to emphasize the fact that utility was merely comparable and not measurable in the absolute sense. Of course, from what has been said above it should be clear that this is true more or less of everything. However, on the basis of this fact he maintained that it was desirable to replace the concept of utility by that of scale of preferences. One could only say, he argued, that one preferred A to B without being able to say what actually the utility of either A or B was. If we knew what utilities these two commodities possessed we could certainly order them out and frame a scale of preference. But if we knew only the scale of preferences we could not from such a knowledge deduce the utilities of the two things.

Later Professors Hicks and Allen, taking this point of view, reconstructed the theory of value in terms of preferences. Since, they maintain, utility or marginal utility is not measurable we cannot state the value theory in terms of utility; we can, however, state it in terms of rate of substitution. Marginal utility, they argue, has no exact sense but marginal rate of substitution has.

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length of an object is an attribute of that object: the utility of a commodity is not the attribute merely of the commodity. It is a function of two variables: the commodity and the want. The length of an object is certainly perceived by the mind and there is no conception of length unless there is the human mind to conceive of it. But that is no peculiarity of length; that is true of every concept. The difference that is relevant to our purpose is that while the length of an object varies only with the subject (the standard of measurement being given), the utility of a commodity varies with the object and the want. Although the immaterial attribute of a material object thus differs from utility it does not follow that utility cannot therefore be measured in any sense similar to that in which length can be.

Graaff, J. De V., takes the extreme view that the weight of an object is not really a factual question. In the last analysis, it is an act of faith to decide by the verdict of a pair of scales.

1. *Manuel d' economic politique.* We are told that similar views are expounded by writers of the school of Lausanne. Professor Bowley states the same postulates in his *Mathematical Groundwork* as were used by Pareto in his *Manuel.*

It is not denied by Professor Hicks or by any of his followers that utility can be *known*. By introspection one *can* feel what utility a certain commodity has for one. But one cannot give an indication of it in terms of an objective, stable thing. All that we can, therefore, say in regard to human behaviour is that a person prefers a certain commodity to another or one combination of commodities to another and that there is a definite manner in which changes in (relative and absolute) prices affect his exchanges. The knowledge of the manner in which a person reacts to change in prices enables us to determine his scale of preferences and construct his indifference curves. And on these indifference curves his reactions to price changes can be indicated. Since these indifference curves show only the rates at which one commodity is substituted for another (so as to keep the total utility—whatever that may be —constant), it is maintained, value theory can be built up without knowing what the utilities of the commodities are. And since it is perhaps impossible to measure utility this method of stating the value theory in terms of the rate of substitution is claimed to have an advantage over the earlier technique.

The question whether utility is measurable or not has in recent years centred round the original postulates of Pareto. The importance of the new way of stating the theory of value (as expounded by Professors Hicks and Allen) depends on whether utility is measurable or not. Pareto made two assumptions. First, that an individual can say whether one combination of goods has utility greater than, equal to, or less than another combination. He can therefore arrange the various alternatives in the order of their preference. Second, that the individual knows whether the change in utility due "to transition from one combination of goods to another is greater, equal to or less than the change of utility due to transition from this other combination to a third". This knowledge does not in any way affect his scale of preferences; it only adds to the significance of these preferences. If any three combinations of goods are denoted by X_1, X_2 and X_3 then the assumptions can be stated as follows[1]:

$$X_3 \begin{matrix} > \\ = \\ < \end{matrix} X_2 \text{ and } X_1 - X_2 \begin{matrix} > \\ = \\ < \end{matrix} X_2 - X_3$$

1. It is interesting to note here what Prof. F. H. Knight has to say. According to him a consumer can say whether a second change in his feeling

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With the use of these two assumptions it can be shown, as Dr. O. Lange has done, that since not only the changes in utility but also those in increments of utility can be compared, the utility is measurable in the sense that the utility function can be expressed as $U=A\phi\ (x, y, z.....)+B$.

1. Dr. Lange who opened this question of measurability of utility again in recent years, says, "Any concept based either on the signs of second derivatives of the utility function or on the value of its first derivatives is linked to the assumption of measurability of utility.

2. "Especially the concept of marginal utility as something being capable of numerical representation by indices (not a mere preference direction) and the laws of diminishing marginal utility are linked to the assumption of measurability of utility."

3. "The two fundamental assumptions used by Pareto and other writers of his and of the Austrian School (and by Professor Bowley), are equivalent to the assumption that utility is measurable. This fact has escaped their attention."

The conclusion at which Dr. Lange arrives is that when the two assumptions of Pareto are taken together they show that utility is measurable. Commenting on this conclusion of Dr. Lange, Professor Bernardelli says, "Measurement of utility in the strict and original sense is impossible But this is only a trivial statement to which no one need object who claims measurability of utility, since, correctly conceived, measurement of utility means only substitutive measurement, effective in the same way as the intensive magnitudes in Physics are measured by extensive substitutes." Further, he states, "Since utility can be represented by utility functions in an essentially unique way, provided we make use of postulates I and II together, the thesis that utility can be measured is proved."

Dr. Allen objecting to this view says that the fact that the utility function can be represented in the form of $U=A\phi\ (x, y, z$

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is greater than, equal to, or less than the preceding change. We can not only say that A is greater than B and B is greater than C, but we can also say, though perhaps less accurately, whether A is greater than B by an amount greater or less than that by which B is greater than C. "We certainly make such estimates in economics."—"Realism and Relevance in the Theory of Demand", *Journal of Political Economy*, Dec., 1944.

....)+B does not mean that utility is measurable. He remarks, "The important point to notice is the presence of the two arbitrary elements in the expression of the utility function....It is necessary to fix both the *unit of measurement* and the *zero* mark of the scale of measurement. The choice of unit is equivalent to allocation of definite value to A and the choice of zero mark to the allocation of a definite value to B. Both choices are quite arbitrary."

It is true that the fact that utility function can be expressed in the form given above does not mean that utility is, in every sense, measurable. For though we may know and be able to say that increments of utility differ from one another by a constant B, we do not know what B is equal to. But this raises the question whether an absolute measure of anything is possible—a question that we have already discussed. Since it is perhaps indisputable that utility, like everything else, can be measured in the relative sense only, the form of the above utility function may be taken to prove that utility is measurable. Nor does Professor Hicks, utilizing only the first of the two postulates of Pareto towards the theory of value in terms of the marginal rate of substitution, deny the fact that utility is measurable. He maintains merely that (and of course Dr. Allen mentions the same fact) if we study the behaviour of consumers who appear in the market as buyers of goods all that we would find is that they give evidence of only one fact, namely, that they prefer one combination of goods to another. For instance, we find that they prefer a certain quantity of commodity (or group of commodities) A in combination with a certain quantity of money to a certain other quantity of A in combination with another quantity of money. It is not necessary for us to do more than merely take note of this, which the behaviour of individuals as buyers and sellers reveals, in order to be able to construct a theory of value.

All this is correct. But does it follow from these considerations that Marshall's theory of value rests on the assumption of some knowledge that we do not and cannot possess? For Marshall price in competition equals marginal utility for the buyers. It is argued that since marginal utility cannot be measured we cannot say what price would be equal to. Now, here again, we have to bear in mind the distinction between the absolute and the relative conceptions of measurability. In the absolute sense utility is not measurable (and perhaps nothing is) but in the relative sense it *is* measur-

able. All that is necessary to make Marshall's way of stating the theory correct is that we should be able to compare the utility of money with that of the commodity in question. There is equilibrium at the point where the utility of the amount paid as price is equal to the utility of the quantity of commodity at the margin. Now, there should be no objection to this way of describing the tendencies that work themselves out to a position of equilibrium even if there could be one to the unqualified statement that utility is measurable. Without asserting that utility is measurable in all senses it is possible to state the value theory in terms of marginal utility. Nor is the necessity, we believe, of thus recognising the measurability of utility in the relative sense obviated by adopting the technique suggested by Professors Hicks and Allen. In their technique the reactions to price changes are indicated on indifference curves. A higher indifference curve indicates greater utility but does not purport to say how much greater. The measurability of utility is, therefore, not postulated. That is true, it does not show what the difference between the two utilities in the absolute sense is. But it does show that the utility gained by passing on to a higher indifference curve is equal to the utility of the additional amount of the commodity represented by the distance between the two curves marked out on the X- or the Y-axis, and on the same curve we compare the utility of one amount of commodity (a combination of commodities) with that of another. We do not know what the amounts of the utilities are; but we do know that the utility of such and such an amount is equal to the utility of such and such other amount. It is precisely on such comparisons that Marshall's theory is based. It maintains that the marginal utility of the commodity is equal to the utility of the amount of money paid for it.

The diagrammatical way of representing the working of the human mind in regard to the consumption or exchange of commodities by indifference curves is quite correct. But let us see how the mental calculus underlying this technique can be expressed in words. When we observe a man exchanging certain amount of money for a certain amount of a commodity all that we can infer is that the last unit of money exchanged has for him the same utility as the amount of the commodity that it purchases. In other words, we can say that the last unit of money has the same utility as the last unit of commodity when the quantity of the commodity that one unit of money purchases is regarded as one unit. More than that

we cannot say. This fact, it is true, can be represented by a diagram. But there is no indifference curve that picturesquely reveals itself to us when we observe the behaviour of an individual. It is the rational and mathematical mind of the observer that translates his conclusion into a diagram. Now, what does Marshall's technique postulate?

Marshall says that a man purchases that amount of a commodity at a given price the marginal utility of which is equal to the price. That is, the last limit of the commodity has the same utility as the amount of money paid for it. This is an exact translation of the indifference diagram into words. How does Marshall represent this fact diagrammatically? He draws a demand curve showing the amounts that a man would be willing to buy at different prices. The curve slopes downwards to the right. The fact that he buys at any given price Y the quantity X of the commodity shows again that the last unit of it has for him the same utility as the price he has to pay. The curve does not show directly the utility of the commodity. But it could be taken to represent the utility of the commodity (in terms of some given constant) when the utility of money is constant. The utility of money is, however, not constant and so the demand curve cannot be looked upon as utility curve unless the amount of money spent on the commodity is so small that for all practical purposes its marginal utility can be considered to be constant. But there is no reason why the demand curve should also be considered as representing the diminishing marginal utility of the commodity. Such a consideration is not essential to Marshall's technique; though it is convenient to identify demand curve with utility curve as a first approximation. The downward slope of the demand curve indicates that in the first place the utility is diminishing and, in the second, that utility of money is increasing. Or to be more precise, the demand curve shows that the utility of the commodity is decreasing relatively to that of money.

All this does not imply that Professor Hicks's technique has no advantage over that of Marshall. But it is certainly worth noting that (1) utility can be spoken of as being measurable in more or less the same sense in which all other things are considered to be measurable and (2) that Marshall's theory of value does not postulate measurability of utility in any sense other than that in which Professor Hicks's reformulation of it does.

Recently the question of measurability has been tackled by a number of economists from various angles. The names of a few of them may be mentioned here as making useful contribution to our understanding of the meaning of measurability of utility. They are R. H. Strotz, I. N. Herstein and J. Milnor, H. Tyszynski, Milton Friedman and L. J. Savage, F. Mosteller and Philip Nogee, Morgenstern and Newman Alchian, S. A. Ozga, D. Ellsberg, D. H. Robertson, K. Boulding, Charles Kennedy, Marcus Fleming and J. R. Hicks.[1] This is not a complete list; there are others who have taken part in what one might call a symposium on Measurable Utility.

Some of these writers support the view that there is a sense in which utility can be regarded as being measurable, others regard the indifference curve technique to be superior to Marshallian demand curve analysis on the ground that utility is not measurable in that significant way in which material objects are.

In view of what has recently be written on this topic, some further observations may be made on the nature of measurement. In its most fundamental sense measurement is a process that is born out of the relation of the human mind to external stimuli. It is a process of acquiring knowledge of the external world; and such a knowledge is symbolised by a notation. What is of the greatest importance to note here is that in the widest sense the word 'measurement' involves no physical activity. And it must be emphasised that since measurement is a process of acquiring knowledge and since knowledge consists in grasping the connotation of an external object, measurement has of necessity reference to properties or aspects of things. Such an understanding of the meaning of the word 'measurement' enables us to make out a *prima facie* case for

1. R. H. Strotz, Cardinal Utility, *Am. Econ. Rev.*, May 1953; I. N. Herstein and J. Milnor, An Axiomatic Approach to Measurable Utility, *Econometrica;* H. Tyszynski, Comparisons between Increments of Utility, *Eco. Journal*, June 1954; Milton Friedman and L. J. Savage, The Utility Analysis of Choices Involving Risk, *Journ. Pol. Eco.*, Aug. 1948; F. Mosteller and Philip Nogee, An Experimental Measurement of Utility, *Journ. Pol. Eco.*, Oct. 1951; A. A. Alchian, The Meaning of Utility Measurement, *Am. Econ. Rev.*, Mar. 1953; S. A. Ozga, Measurable Utility and Probability, *Econ. Journ.*, Sept. 1956; D. Ellsberg, Classic and Current Notions of Measurable Utility, *Econ. Journ.*, Sept. 1954; D. H. Robertson, Utility and All That, *Econ. Journ.*, Dec. 1954; K. Boulding, *Survey of Contemporary Economics*, pp. 10-11. Charles Kennedy, Concerning Utility, *Economica*, Feb. 1954; Marcus Fleming, *Quart. Journ. Econ.*, Aug. 1952; J. R. Hicks, The Measurability of Utility, A Revision of Demand Theory, 1956.

measurability of utility. Now it may be noted that this is the widest sense in which the word 'measurement' can be understood. For purposes of the convenience of handling this tool, however, measurement has been classified into a number of groups. For instance, there is measurement that is correct up to monotonic transformation and that which is so up to linear transformation. And the latter is of two kinds, one with an additive constant, the other with a multiplicative constant.

To understand this point let us suppose that there are five commodities arranged in ascending order of their utilities. Now, let us say that the utility of the first commodity is 1, that of the second 3, and of the rest, 5, 7 and 9 respectively. What is then implied in such a series of numbers? The series brings out one significant fact, namely that the utilities go on increasing as we pass from one commodity to another. But these particular numbers appear to tell us more than what the mere order of commodities suggests. For instance, they suggest that the utility of the second commodity is thrice that of the first. If, however, this relationship between the two utilities has to be ignored, we can select any other series of numbers such as 1, 2, 3, 10, and 11. In fact, any series that represents magnitudes of utilities in the ascending order serves our purpose. And since such a series of numbers represents magnitudes of utilities it can be maintained that utility is measurable. But since many series serve the purpose equally well, utility cannot be said to be uniquely measurable. Mathematically, utility here is said to be measurable up to monotonic transformation.

Now suppose that the above series represent total utilities of a commodity when consumed in units. Thus, the utility of one unit is 1, that of two units is 3, of three units 5, of four units 7 and of five units 9. The marginal utilities are: then 2 throughout. In the second series the marginal utilities are, 1, 1, 1, 7 and 1. In all series within monotonic transformation, the marginal utilities will be positive. More than this sign of marginal utility the measurement up to monotonic transformation does not reveal about utility.

If, however, it is known not only that marginal utilities are positive but that they go on increasing and utility is then to be represented by a series of numbers, we have to choose particular

types of series. For example, all the following three series reveal the same fact of increasing marginal utilities:

3	4	4
8	10	11
15	18	21
24	28	34
35	40	50

Mathematically we can say that here we know the sign of marginal utility and the sign of the rate of change of marginal utility. Not all series of increasing numbers but certain series will give the required information now. The utility now becomes measurable up to linear transformation. Some economists regard utility to be a cardinal concept when it is represented by a series of numbers belonging to a family given by linear transformation.

Whether utility is measurable in one sense or the other (up to monotonic transformation and up to linear transformation) depends on the fact whether we can arrange in order utilities of commodities or also differences between utilities of commodities. It is now generally recognised that it is possible in most cases to say whether differences in utilities are greater or less. Thus according to most economists utility is measurable up to linear transformation. It is further maintained that if we can make a choice between alternatives involving some element of risk, as we actually do, it shows that differences can also be compared and ordered out.[1]

1. Friedman and Savage, *op. cit.*

CHAPTER V

NATURE AND MEASUREMENT OF DEMAND

The word demand has been defined in various ways. In the widest sense, it signifies a person's desire to procure a commodity or service for the satisfaction of his want. It is only in this sense that Crusoe can be said to have a demand for a thing. In all other senses, its use is necessarily limited to the case of exchange economy. Crusoe, like any individual living and moving in a society, has wants and the desire to satisfy some of them. In an exchange economy wants are usually satisfied by procuring commodities through acts of exchange. Thus, satisfaction of wants involves two parties—the one that demands and the other that supplies the objects concerned. In the case of Crusoe, on the other hand, wants are satisfied in a more direct manner. Here the two parties, one demanding and the other supplying, are merged into one. Crusoe demands from and supplies to himself. In his case, just as in that of a society, there is balancing of demand and supply.

The essential requisites for demand are: (1) the existence of a want, (2) consciousness of its existence, and (3) the desire to procure the object of the want. Demand thus understood can be satisfied when one is able to make necessary sacrifices to procure the object concerned.[1]

Some economists have defined the word 'demand' in terms of quantity, that is, in terms of the quantity of the commodity purchased instead of defining it in terms of the essential desire as we have done above. Thus, Mill writes, "(We must) mean by the word

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1. The word *procure* as against the word *have* implies effort. It is not necessary to add that the desire should be to procure a thing by an act of exchange. That would limit the connotation of the word 'demand' by making it applicable to cases of exchange economy only.

We cannot identify demand with mere desire unqualified by the word *procure*. There are three stages leading up to demand. First, there is an unconscious want, next there is the process of unconscious want becoming conscious. It can then be called a desire—a desire to possess. After that comes the third stage when the desire to possess gives rise to the desire to procure the thing wanted. To procure, in this context, does not mean necessarily to get it from another person.

demand, the quantity demanded", and Messrs. Weston and Crew, in their dictionary of economic terms, define the word demand as "the amount of the article which will be bought at a given price", but later, changing the viewpoint, express the essentials of demand by saying that demand is a wish to purchase plus purchasing power. To define demand thus in terms of the commodities purchased is to confuse the connotation of the term demand with the quantitative measure of its denotation. Yet we often use the word in this sense and in the pages of this book it has frequently been so used.

According to our definition, every man who desires to procure an object can be said to have a demand for it regardless of the fact whether he can make the necessary sacrifices to procure it or, in an exchange economy, pay the price at which it is offered for sale. Such a definition is not likely to be accepted by all. For many would wonder how persons who can offer only a few paise for, say, a precious diamond can be said to have a demand for it. Such an objection to our definition is the result of confusing the connotation of the term demand with its denotation. As we shall see later, such poor persons certainly have a demand for diamonds though they are not able always to make the necessary sacrifices to procure them. In the case of poor men the demand curves, as commonly drawn, are too low to cut the corresponding supply curves, but their demand is there all the same. For the sake of clarity, it becomes necessary sometimes to prefix the word "effective" or "efficient" to the term demand.[1] Marshall, however, is more careful and he preserves the true sense of the term demand when he says that a person's "demand becomes efficient, only when the price which he is willing to offer reaches that at which others are willing to sell".

It is really the measure of effective demand that people have in mind when they define demand in terms of the quantity of the

1. Many other writers have explained the term correctly, but a few only have made an attempt to frame logical definitions. Ely says, "Effective demand is sometimes defined as desire coupled with the ability to pay". Seager writes, "Demand denotes effective desire coupled with ability to pay the current price for the desired object" and Cairnes defines demand as "the desire for commodities and services, seeking its end by an offer of general purchasing power".

commodity bought. Walker's statement, "Demand means the quantity of a given article which would be taken at a given price" becomes more correct when the words, "effective demand is measured by" are substituted for the words "demand means".

There are two ways in which demand is generally measured. Some writers measure it by the units of the commodity bought while others measure it by the quantity of purchasing power offered in support of the desire for it.

Demand, being defined as a desire, its measurement must involve the consideration of the intensity of the desire for the commodity which is to be procured. Hence, the demand for a unit of a commodity is measured by the intensity of the desire or the keenness with which that unit is desired. The desire, being a mental phenomenon, cannot be directly measured and hence recourse has to be had to the medium of money—the measuring rod of all motives and desires. If a person is willing to offer 20 rupees for the first unit of a commodity, we may, for practical purposes, argue that 20 rupees measure the intensity of his desire for that unit, and that, therefore, the same amount also measures his demand for that unit. His total demand for the commodity is measured by adding together the amounts which he is willing to pay for the successive units of the commodity. If he is willing to pay 14 rupees for the second unit, 4 rupees for the third, and nothing for the succeeding units, we can measure his total demand by adding up these amounts and say that his total demand for the commodity, when measured in money, is 36 rupees.

But such a measurement of the total demand is of very little use except when the chief object is to calculate the total utility or the consumer's surplus. The common method of measuring demand is first to assume a fixed price and then to calculate the total demand satisfied at the price. If the market price in the above example was given as 12 rupees, we know that the person would purchase only two units and his effective demand would be measured by 32 rupees. To say that at that price his demand is 32 rupees is to express in a crude and confusing way what can be clearly and directly expressed by saying that his demand for two units of the commodity is measured by 32 rupees.

Though technically correct, our method of measuring demand is of very little use. Some writers, perhaps for this reason, prefer

to measure demand, in terms of money, by the total amount paid for the commodity bought at a fixed price. But we should remember, the amount actually paid can never be said to measure demand which is a desire to buy a commodity. The desire can be measured by the amount which a person is willing to pay and not by the amount he actually pays under a competitive system of purchase and sale. Although the amount that he actually pays varies directly with that which he is willing to pay, yet it does not necessarily vary proportionately with it and, therefore, in no way can the amount actually paid for the commodity be said to measure the demand for it.

The effective demand for a commodity, which means the desire to purchase it at the prevailing price, varies with the intensity of the desire with which the various units of the commodity are wanted and with its price. In other words, we can say that the intensity of effective demand is a function of three variables, the initial intensity of desire (the desire for the first unit), the rate of decrease of this intensity, and the price.[1] The price being fixed, the effective demand varies with the other two variable factors: the initial intensity of desire and the rate of its diminution. Hence, one man's effective demand, measured in money, differs from that of another due to difference in (1) the initial intensities of their desires, and (2) the rates of their decrease, both these being expressed in terms of money. All that can really be measured when the number of units of a commodity purchased at a given price is known, is the marginal intensity of the desire, that is, the intensity of desire for the marginal unit. For instance, if a person buys 4 units of a commodity at the price of 10 rupees, it is obvious that the intensity of his desire for the fourth unit of the commodity is not less than 10 rupees. More than this we cannot measure with these insufficient data. It is true of course that the greater the number of units which one can buy at the given price, the greater, other things being equal, is the intensity of the total demand. But this only shows that the number of units purchased at the given price is an indication of the intensity of the demand and not its measure. The method of measuring demand by the number of units purchased is,

1. It also depends on the utility of money, but when the desire is measured in terms of money this factor is eliminated. This raises the question of the possibility of measuring utility or the intensity of desire in terms of money. For a discussion of this point, see Chapter IV.

therefore, as much open to objection as the former method of measuring it by the amount of money actually expended in the purchase of the commodity.

Effective demand, being that demand which can be satisfied by exchange or purchase of a commodity (we are talking of exchange economy), should really be measured by the total amount a person is willing to pay for all the units of the commodity purchased. If I am willing to pay 10 rupees for the first unit, 6 for the second and 4 for the third, I will buy 3 units when the price is 4 rupees. My effective demand is, therefore, measured by 20 rupees.

However, demand as used in the enunciation and explanation of the law of demand, is not thus measured. There demand stands for effective demand, as defined and measured by the units of the commodity which are purchased or intended to be purchased. In the above example, therefore, the demand at the price of 4 rupees is said to be three units. And when it is stated that demand increases when the price falls, it is the increase in the number of units purchased that is meant to be indicated and not the increase of the intensity of the desire with which those units are purchased.

Sidgwick has pointed out that demand may increase in two different ways. A clear understanding of these two kinds of increases is necessary in order to perceive the precise causal relationship between price and demand. In the absence of two different terms to signify the two distinct kinds of increase of demand, a great deal of confusion is likely to arise.

Demand increases when the price falls. This law of demand states that the effect of a fall of price is the increase of demand. Hence the increase of demand is the result of the fall of price. But when it is said that an increase or rise of demand leads to a rise of price, the change of demand is the cause and the change of price the result. The causal relationship is reversed. The first type of increase is called by Sidgwick extension of demand and the second, intensification of demand.

It will be clear from what has already been explained that in the expression "extension of demand", the term demand is used in the sense of effective or efficient demand, for when the price falls the intensity of the desire for a particular unit of the commodity does not necessarily increase; only a greater part of the total desire is satisfied.

In the expression "intensification of demand", the term demand is used in its true sense, signifying the desire to procure a commodity. The increase of demand that tends to give rise to an increase of price is a real intensification of the desire for the commodity. It may be noted that intensification of demand is represented by raising the demand curve to a higher level.

A word may now be said about the difference between demand as here defined and want. It will be remembered that demand is usually defined as a desire coupled with the ability to pay the price. It is thus made to stand out clearly from want which is understood as a mere desire without implying any willingness or ability to make sufficient sacrifices to satisfy it. No distinction is, of course, made between what we have called conscious and unconscious wants.

It might appear to many that want and demand as defined by us are synonyms. That, however, is not correct. A want merely signifies a constitution of the type whose reaction to external stimuli would generate an agreeable feeling when the object of want is presented. The subject may or may not be conscious of the possibility of experiencing such an agreeable feeling on the presentation of an object. When he is conscious, the want is said to be conscious. We have often called a conscious want a desire. Desire as here used does not imply wish to procure the object concerned. It merely implies the fact that the person is conscious of the possibility of getting some enjoyment from an object if and when it is available for use. There may, therefore, be a desire in our sense without any willingness to make sacrifices to procure the object concerned. When, however, the desire is coupled with the wish to procure the thing concerned, it becomes a demand. A man who is hungry but is deeply absorbed in work has an unconscious want of food. When the work is done he becomes conscious of the want, and yet he may not have a demand for food. For, under medical advice, he may be observing a long fast. In this case he has a desire in our sense without a demand for food. The conscious want of food is overpowered, as it were, by another and stronger one of fasting.

This distinction between a want and a demand helps to explain what was said in the first chapter, namely, that happiness can be attained by giving up wants. It is not sufficient merely to give up demand. That is an act of satisfying a particular want in pre-

ference to another that is rival to it. Thus a man who gives up the use of a car preferring to walk his way in the interest of health satisfies the want of walking without actually giving up that of a car. The pain caused by the want of a car remaining unsatisfied continues to be felt, though not perhaps in the same degree in which it would have been felt had the want of walking (a competing want) not been satisfied. What is necessary in the interest of happiness is not merely to give up the demand for a car but also the want of it. Not only should we not *satisfy* a want (give up demand) we should also not have it. A want cannot be satisfied without its first giving rise to a demand. And the satisfaction of a want requires some exertion either of the body or of the mind. Action is necessary for the satisfaction of want. Thus when a demand is given up without giving up the corresponding want, action stops without a wish disappearing. What is necessary for the attainment of the final end of happiness is, therefore, not the suspension of action but the giving up of wants. All this is not philosophy divorced from Economics. It is Economics undivorced from philosophy. If we study wants in Economics, we must know the full implications of *satisfying* and *not satisfying* wants as also those of *having* and *not having* them.

The difference between extension of demand and intensification of demand points our attention to the difference between induced and autonomous demands. When the price of a commodity falls we buy a larger quantity of it. This is extension of demand. Such an increase of demand (of the quantity bought) is price-induced. In the statement of the law of demand it is only such an increase of demand that is implied. But the amount we buy of a commodity can also increase independently of any change in its price. Such change of demand (of the quantity bought) is autonomous—it is not induced by a fall of price. The law of demand is not concerned with such changes; it is not concerned with intensification of demand, *i.e.*, with autonomous demand.

It is important to bear this fact in mind. In the study of the trade cycle and the theory of employment we have an occasion to make a distinction of such a kind. Investment, for example, be induced or autonomous. It may be induced by rise of consumption or of income or it may be an autonomous investment. The *multiplier* effect is witnessed when there is an autonomous investment. The principle of *acceleration* says that when consumption or demand

or income increases the demand for capital-goods (investment) increases by a multiple of that increase. Here the demand for investment is of an induced type.

Professor J. R. Hicks in his book *The Revision of Demand Theory* falls into a pitfall by ignoring to make this distinction of induced and autonomous demand, *i.e.*, extension and intensification of demand. The exceptions to the law of demand that he mentions, except the one due to the existence of *inferior goods*, are not genuine exceptions for the reason that this law is concerned only with induced increase of demand.

CHAPTER VI

SHORT AND LONG-PERIOD DEMAND CURVES

Demand, like supply, varies differently during periods of different lengths. A change in price causes both of them to vary and the adjustments needed to bring about these variations require time. In the case of supply the period of time required to complete all those adjustments that are called for by the forces acting on the production unit at a moment of time under consideration is called the long period. Likewise, we can define a long period in the case of demand to consist in the period of time that is necessary to make a consumption unit complete all the adjustments that are called for by the force acting on it at the moment of time under consideration.

The moment of time that is considered for the purpose of the determination of the length of the period is naturally that at which a change in the price (actual or expected) occurs. The forces acting on the unit—production or consumption—comprise the price of the commodity under consideration together with such other reactions as the price-change might bring into operation.

In the case of demand, the increase of demand caused by a fall in the price of a commodity is in general less or more, according as the time allowed to the consumption unit to register effectively its reactions to the fall is short or long. In other words, the quantity of a commodity demanded increases in general, more and more as time passes, till a certain level is reached.

Just as it is necessary to take the period of time into consideration while drawing the supply curve, so also it is necessary to take the length of time into account while drawing the demand curve. In general, the elasticity of the long-period supply curve is greater than that of the small-period one. Or, to be more correct, the elasticity of the supply curve varies directly (though not proportionately) with the length of the adjustment period. The elasticity of the demand curve also varies in the same fashion.

The maximum amount that a seller can sell at any given moment of time equals the stock that he has on the spot, while the amount that he chooses to sell is determined by the marginal cost

of selling. When the period of time increases from a moment to a short period of, say, a day or two, the maximum amount that he can sell equals the amount that he has plus the amount that he can procure from other sources within that time. And the amount that he would sell is determined again by the marginal cost of selling. The act of selling, in this case, would include the act of procuring from neighbouring sources. Likewise, the amount that a person can buy at any given point of time is limited by the sum of money that he has set apart for expenditure on the commodity concerned. By habit and a certain fixed budget scheme an individual has a more or less fixed amount that he can spend on any particular commodity or service. And the quantity that he actually buys is determined by the marginal utility of the commodity. When the price falls, for instance, he may buy a larger quantity than before but, due to diminishing marginal utility, may not spend as much as before on its purchase. Even when the utility does not decline rapidly he cannot spend more than the sum that he has habitually been spending, unless some time is allowed to vary his expenditure on other commodities (savings included).

In some cases, however, the maximum amount that one can spend is not so rigidly fixed. For, even when no time is allowed to make appropriate adjustments it is always possible to change one's planned budget within certain narrow limits. And whenever there is some saving this possibility is greatly strengthened. Yet in the case of a large number of goods the maximum demand is more or less limited to what one can buy with the amount habitually spent on their purchase.

When, however, a person has some time to make suitable adjustments in the budget of consumption, the amount that he or she can spend on a commodity becomes more flexible. One can then (when the commodity becomes cheaper) draw upon the amount habitually spent on other commodities. And the amount actually purchased would, as before, be determined by the marginal utility of the commodity.

Just as the marginal cost of production (selling being included in the act of production) increases—unless there is impure competition—as more is produced and the rate at which it increases is lower the longer the period of time allowed, the marginal utility of the commodity decreases as more is purchased and the rate at which

it decreases is lower the longer is the period of time allowed to make necessary changes in the budget of consumption.

The amount that one can spend on the purchase of a commodity can increase not only by the decrease of the amount spent on other commodities or the decrease of the amount saved, but also by the actual disappearance of some commodities from the scheme of consumption. Such changes, however, require longer periods of time than those that involve merely a cutting down of the expenditure on other items.

The marginal utility of a commodity depends not only on its amount but on those of other commodities also. For instance, the utility of tea depends also on the amounts of coffee, milk, sugar, etc., that are available. The greater the quantity of substitutes consumed the less is the utility of the commodity, and the greater the amount of complementary commodities consumed the greater is its marginal utility. In order, therefore, to secure the greatest amount of utility from any addition to the consumption of a commodity that a fall of its price makes possible, one has to make appropriate changes in one's consumption of other commodities, both rival and complementary. Thus when the price of tea falls, in order to secure the maximum possible utility from the additional pound of tea purchased, the consumer has to decrease his consumption of coffee (the substitution effect becomes operative) and increase that of milk. In this particular case, the increase in the consumption of milk would take place only if the buyer was using greater quantity of milk with tea than with coffee. Otherwise, the increased consumption of milk would be confined only to that additional quantity of tea that is purchased due to its lower price. Such adjustments in the purchase of other commodities take time, so that the greater the length of time allowed the greater and more effective are the adjustments and, consequently, less rapid is the decline of utility.

In the case of supply, the amount offered for sale increases in a period of sufficient length by the manufacture of fresh and increased quantity of the commodity concerned. The demand likewise may increase in the long period due to the increase of income of the consumer. This, however, is likely to happen only in exceptional cases. For, the fall in price, even if it is a general fall in the price level, is likely to leave an individual's distribution of his time and resources between production and consumption unaltered. Cases are even conceivable in which a fall in the price level may

lead to the decrease in the income of an individual. A rise in the value of money (fall in the price level) causes the marginal utility of money to diminish, so that the individual finds it to his advantage to redistribute his real resources between the earning of money and their direct enjoyment, transferring them from where they have less to where they have greater marginal utility.

In cases in which a fall in the price of a commodity has such an effect on income, the quantity demanded does not increase (and may actually decrease) in the very long period. Hence, the limit to the increase in demand is reached in a period of time of a moderate length. The conclusion is further strengthened when we consider a fall in the price of a single commodity or a small fall in the price of one or a few commodities.

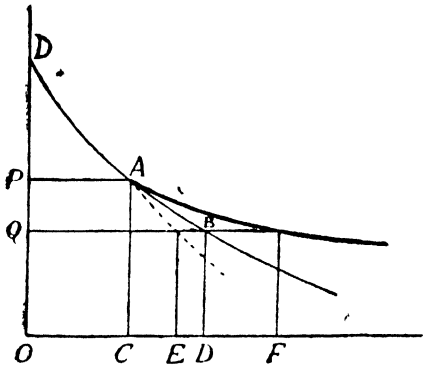
The above conclusion has, however, to be modified in the case of a heavy fall in the price of commodities or a very substantial fall in the price of even a single commodity on which a considerable part of one's income is habitually spent. For, in such cases it is possible so to alter the general standard of living as to increase rather than decrease the marginal utility of money. And when the marginal utility is increased a shift of resources from direct enjoyment to productive use becomes profitable. Suppose, for instance, that a man of moderate income finds it difficult to buy a car the price of which is Rs. 5,000. Now suppose its price, due to some phenomenal change in the method of production, falls to Rs. 1,000. It then becomes possible for the man to purchase the car, and to get the most out of it he would find it necessary to change his entire mode of living by shifting, for instance, to a more distant but perhaps an otherwise cheaper locality, and correspondingly adjusting his budget of consumption. The possibility of shifting himself to a higher plane of living when the marginal utility of money is greater, comes within his reach. It will then be again to his advantage to work harder and add to his money income. A shift of resources from direct enjoyment to production use takes place. The demand for the car then increases further due to this increase of income.

In this case, however, the demand increases from zero, that is, in non-mathematical language, a new demand is created rather than an old one increased. But, if we consider the aggregate market demand for cars, it does increase even in this popular sense of the word, in the fashion described above, when a substantial fall in the

price occurs. However, the increase in the demand for a commodity caused by an increase of income is often negligible as compared to the increase of supply that is effected by fresh manufacture of a commodity. The two increases—of demand and of supply—are not, however, quite alike in nature. In the case of demand the increase is brought about by an addition to income which is not neutralised at all by a subtraction of income in other directions. If a man works harder and thus adds to his income he does not do so by withdrawing his resources from other occupations in which they were employed for the production of income. What he does actually is to transfer resources, as already explained, from consumption to production, that is, from leisure, rest and peace to active use in production. In the case of supply, increased production of one commodity may often entail decreased production of another. At any rate, that is bound to be the case when the resources are already fully employed. For, in that case, increased production can be secured merely by the withdrawal of resources engaged in the production of other commodities. It is unlikely, however, for a situation to exist in which the resources, either of an individual or of the community as a whole, are fully employed. It is, therefore, possible for the supply of a commodity to increase by the transfer of resources to productive use from their employment in the direct satisfaction of wants.

We have seen that the demand for a commodity can increase in three ways. First, it can increase within the limits set by the habitual expenditure on it. We might call it the income effect on demand. Second, it can increase by the retrenchment of expenditure on other commodities. This might be called the substitution-effect on demand. And in the third place, the demand can increase by the increase of a person's total income. This may be called the production-effect. As already explained, these three kinds of increase require different periods of time. And the extent to which it is found desirable to push the demand in either of the latter two ways depends on the rate and extent to which the marginal utility of the commodity can be changed. And since the marginal utility can be increased more the longer the period of time, it follows that the time element affects demand in two ways. In the first place, it enables one to release a larger amount of money for expenditure on a commodity and, in the second, by increasing the marginal utility of the commodity to a greater extent, it enables one to spend profitably a larger amount of money on it.

The three ways in which the demand for a commodity can increase are shown in the diagram below. D is the demand curve



showing that at price OP, OC is bought per unit of time. Let the price fall to OQ. In the very short period, that is, the next unit of time, the amount OD can be purchased at the new price, OD being such that area POCA is equal to area QODB. Whether this amount will actually be purchased during the short period, depends on the rate of decline of marginal utility. If the marginal utility of OD amount is greater than BD the amount will be purchased. If it is less it will not be purchased. If the marginal utility is as represented by the dotted curve, only OE amount will be purchased. But efforts would be made to raise the marginal utility. To take a very simple example, suppose the commodity under consideration is tea. When its price falls, you do not find it worth your while to purchase the amount ED because its utility is less than the price. If you now decrease the consumption of coffee to a certain extent the utility of tea will increase. ED of tea would now have more utility than before, perhaps more than the price. Such a substitution of tea for coffee was not possible at the previous higher price of tea. If the utility of tea now rises as shown by the continuous curve it becomes possible to purchase the amount OD. The substitution of tea for coffee, however, raises the marginal utility of coffee and whether such substitution is profitable or not depends on whether one gains more by spending the amount ED on tea by consuming less coffee or by spending the amount on some other commodity (or by saving it) and continuing to consume the same amount of coffee as before. If, however, the utility of tea is increased as shown by the continuous curve by decreasing the consumption of coffee, then incidentally some more money becomes available for

expenditure. A part of this also would be spent on tea if the marginal utility is sufficiently greater than the price.

The substitution of tea for coffee and other adjustments of this nature do not require a long period of time. But there are other adjustments which do require a moderately long period. For instance, if the commodity considered is electricity, a fall in its price would require adjustments that take a sufficiently long time to complete themselves. In the case of such a commodity, therefore, the continuous curve would rise still further in a period longer than the one we have been considering. If the utility curve actually rises as shown by the thick continuous curve it becomes possible to buy the additional amount DF of the commodity. The money required to buy it is obtained partly by the release of expenditure effected by the adjustments. If sufficient amount of purchasing power is released to enable a person to buy the whole amount OF, no further change will take place. If, however, the full amount needed to buy the extra quantity DF is not released by the adjustments made, the individual would have to work more and raise his income to enable him to buy the full amount. However, as the man works more the utility of leisure increases and so it does not become profitable for him to buy the full amount OF. In other words, as he works more the cost of earning unit of money increases. It has the same effect as that of raising the marginal cost of money. The utility curve of the commodity, expressed as it is in terms of money, would then fall and thus make it unprofitable for the man to purchase the whole amount OF.

In the short period the demand curve is, therefore, as shown by the dotted curve and terminates on the vertical line through D. In a slightly longer period substitution effect operates to a certain extent giving us the demand curve as shown by the thin continuous curve. It proceeds beyond the line through D, as some money is released from other items of expenditure, making it possible to spend more money on the commodity than that given by the area QOBD.

In a still longer period better adjustment can be made—(at least in the case of some commodities) and the demand curve takes the position shown by the thick continuous curve. It, however, terminates only a little to the right of the point at which the thin curve terminates. Sometimes long-period adjustments do not release any additional purchasing power; they might even require a little

increased expenditure on other commodities. In such cases, if savings are not utilised for the purpose, actually a smaller amount than before would become available for expenditure on the commodity under consideration. The thick curve would then terminate at a point left of that at which the thin curve does.

In the very long period the individual would work harder, substitute production use for consumption use of his resources and make available a larger income for expenditure on the commodity. The thick curve would, therefore, extend further to the right.

The importance of the long-period demand curve has not figured in economic literature as it should have. Time analysis on the side of supply has engaged our attention for a long time. In the discussion of the trade cycle and of the theory of employment we have made extensive use of the concept of the gestation period. We have recognised the fact that economic adjustments take time and economic units respond with time-lags to forces acting on them. Production and investment lag behind changes in income and consumption. We have introduced lags in our models of growth but our emphasis has always been on the supply side. Some models have introduced time-lags on the demand side by taking cognizance of the fact that income can be spent only *after* it has been earned. Perhaps a more extensive use of the concept of long-period demand curve is needed.

In this connection it might be of some interest and importance to note the fact that supply and demand are in a way two sides of the same phenomenon. Not only do we need to remember that the supply of a commodity can be spoken of as the demand for money but also the fact that supply and demand of the same thing are convertible into each other by a mere change of price. He who buys a commodity would begin to sell it (provided he has or can procure a stock of it) when its price rises beyond a certain level.

Take the case of a normal demand curve starting from a point on the Y-axis (price-axis). The height of that point gives the maximum price at which the commodity in question would be bought. Project the curve to the left of the Y-axis. It will then show that at higher prices the demand would be negative. Negative demand is the same thing as (positive) supply. *Vice versa* is also true: when the price falls beyond a certain level supply turns

its self into demand. That being so one should realise that what is true of supply should also be true of demand.

That time analysis is possible on the side of demand can further be seen from the fact that after all an act of buying a commodity is an act of production. Production does not merely consist of manufacture; it consists also of transportation, storing and ordering of goods. When this fact is realised it becomes easy to see how what is true of supply can also be true of demand.

CHAPTER VII

DEFINITIONS OF CONSUMPTION AND PRODUCTION

Want as ordinarily understood means a desire[1]. But in Economics this term has a wider denotation than most economists seem to have realised. Thus, for instance, there are wants which may be unconscious as well, as explained in Chapter III. It was there pointed out that a want that has entered consciousness is accompanied with a painful feeling which lasts as long as the want remains unsatisfied. When the removal of the want begins the pain is turned into satisfaction which continues till the want is fully removed. A want of which we are not conscious is not accompanied with pain and yet its removal, brought about by chance or otherwise, is attended with satisfaction. A want must be regarded as due to the presence of a factor affecting our physical or mental constitution. A factor opposed to such a one would therefore remove the want. The state of a man's physical and mental constitution at a particular time can be regarded as being subjected to a number of factors (say, roughly expressed as the presence of warmth, darkness, moroseness, etc.). Some of these are pleasure-affording while others cause a painful or disagreeable feeling inasmuch as they affect our state of consciousness. The former category of factors might be regarded as constituting objects of wants. The latter, on the other hand, are just the reverse of these, their opposites, constituting the objects of want.

Let us call all those factors which afford pleasure anti-want factors and those that are opposed to them want factors. Want factors are those, therefore, that cause a want to appear while anti-want factors those that remove a want.

The effects of want and anti-want factors may either enter consciousness or not. When the anti-want factors enter consciousness

1. The connotation of the term want has not been carefully analysed by economists. Most of them pass on to the discussion of the characteristics of want without defining the term. However, it is evident, they use the term want more or less as a synonym for desire. Chapman is perhaps the only writer who calls it an ambiguous term. He says, want might refer to a craving or longing or to a decision to make sacrifices, if need be, to possess some particular thing or perform some particular action.

(and to the extent to which they do) they produce a pleasant feeling while the want factors produce a painful feeling. The state of consciousness at a particular moment (agreeable or otherwise) is the result of the combined effects of all want and anti-want factors that have entered the conscious region of the mind. The satisfaction obtained by the removal of a want, that is by the presentation of an anti-want factor is measured by comparing the state of consciousness before the removal of the want with that after its removal. The amount of satisfaction, it can be seen, depends on the two states of consciousness. The one being given, the satisfaction is greater or less according to the degree of the other. For example, the state of consciousness after the removal of the want being given, the satisfaction is greater the more painful or the less agreeable the state of consciousness before its removal. The more fully is a man conscious of the presence of a want factor, other things being the same, the less pleasant or agreeable is his state of consciousness and, therefore, the presentation of an anti-want factor, that is, the removal of the want (factor) would, other things again being the same, afford by contrast greater satisfaction. But the more fully is a man conscious of the presence of a want-factor the less, generally speaking, is he conscious of the presence of anti-want factors, and the less pleasant is the state of his consciousness and, consequently, the greater is, by contrast, the satisfaction obtained by the removal of the want. Thus, the more fully is one conscious of one's disease, the greater is the satisfaction obtained by the use of an efficacious medicine. The more you are absorbed in work and the less mindful of the heat of the day you are, the less is the satisfaction that you obtain from a fan running overhead. In summing up we may, therefore, say that the satisfaction due to the removal of a want depends on the extent to which the man is conscious of the want and anti-want factors present before and after its removal.

Wants thus understood are of two kinds. In the first place, we have wants which when removed give us direct satisfaction such as we get while eating a cake. In the second place, we have wants which when removed give us derived satisfaction such as we get while making a cake. The act of satisfying the former kind of wants is known as consumption, while that of satisfying the latter kind is called production. Thus consumption and production both satisfy wants though of different kinds. It is for this reason that it becomes difficult in real life to separate an act of consumption

from that of production. Consumption, as defined above, cannot carry with it any painful efforts such as those which are necessary for production. On the other hand, production always involves some painful exertion although it is always more than counterbalanced by the derived satisfaction that accompanies it. Where it is not so, an act of production would never have been undertaken. The pain involved in production is due to the effort which is necessary to get derived satisfaction; and since pain must be due to a want of which we are conscious, it follows that the pain caused by an act of production is due to the (conscious) wants that arise during the process of production. For instance, when I am making a cake my want that leads me to this act is that of "making a cake" and so the removal of it gives me derived satisfaction and is therefore an act of production. But this act of production causes some pain, for I have to work both physically and mentally and this effort is painful inasmuch as it gives rise to a new want of rest and ease. An act of consumption is never painful. In those cases in which it appears to cause pain, it must be realised that the act is not really one of consumption. As explained above, production and consumption always go together. For example, there is no want the removal of which does not give some derived satisfaction. For example, if eating a cake involves some pain experienced in taking the hand to the mouth, this process of taking the cake to the mouth is an act of production giving us derived satisfaction. It will be realised that for every direct or final satisfaction (afforded by consumption) there is a long series of derived satisfaction (afforded by production).

It has been said that an act giving direct satisfaction is consumption while that giving derived satisfaction is production. Now, as already mentioned, every act gives both direct and derived satisfaction. When considered as a mere act, a given end to be accomplished, it gives us direct satisfaction. But when the same act is considered as a means to some remoter end, an act necessary for the accomplishment of some object, it gives us derived satisfaction. In the former case the act is consumption, in the latter production.

Hence, the difference between consumption and production is of the order of that between an end and a means. No act is an end in itself, nor is there any act which cannot be considered as an end. Thus there is no act of production that cannot be considered also as one of consumption and *vice versa*.

Let us now see how these conceptions of consumption and production fit in with the statements of increasing and diminishing utilities, namely that consumption decreases (marginal) utility and production increases it. It may be wondered how production can create or increase utility when it is said to be an act of satisfying a want. Does not, it may be exclaimed, the act of satisfying a want yield diminishing utility always as the satiety level is approached? When I make a cake I get derived satisfaction and it would appear that the reaction of such an act on utility must be of the same kind as that of consumption. But a little reflection on the point will make it clear that when I am engaged in making a cake, although I am deriving satisfaction, that satisfaction—derived as it is—naturally increases with the approach of the consumption of the act of making the cake. My more ultimate want being that of a cake and the derived satisfaction being obtained merely from the assuring thought of finally having a cake, the satisfaction that accrues during the process of production must naturally increase with every approach to the ultimate want. Consumption, on the other hand, being the enjoyment of direct or final satisfaction, and involving no act of approach to the ultimate object of want, must naturally yield decreasing satisfaction.

These definitions of consumption and production now enable us to explain away the limitations of the law of diminishing utility which are sometimes found mentioned in text books. A true law should have no exception, and therefore if consumption and production are correctly defined one should be able to show that the law of diminishing utility has no exception.

It is sometimes said that when a commodity is consumed in a very small quantity at a time increasing utility is obtained. Thus, it is maintained, coal consumed ounce by ounce gives increasing utility up to a certain limit and that, therefore, such a case must be regarded as an exception to the law of diminishing utility. And in recognition of such exceptions as these the law is sometimes slightly modified by the addition of the words, "provided the units of consumption are sufficiently big". Now if at all this modification is permissible, one does not know what quantity in each case should be taken to constitute a sufficiently big dose.

In the light of what has been said above, however, it will be clearly seen that the process of using coal, as long as the utility is increasing, is not an act of consumption. For, our final want being

that of cooking food, let us say, it does not begin to be satisfied till we have secured a quantity of coal that can be utilised for that purpose.[1] The act of acquiring coal by ounces, thus, gives us derived satisfaction, although it satisfies an immediate want. Hence, as we approach the position where coal can begin to satisfy our final want the satisfaction must increase. Being derived satisfaction the act of using coal by ounces must, therefore, be regarded as an act of production. The example of a collector of rare articles can be placed in the same category and explained in the same manner.

That the law of diminishing utility is based on the assumption that the nature of the consumer's want remains unchanged seems to have been generally well understood. Our concept of utility is always related to a particular period (moment) of time, or more precisely, to a particular commodity of a definite kind and a particular state of consumers' wants. Taussig points out that "the second or third reading of noble verse, or hearing of beautiful music, often gives greater pleasure than the first". Referring to another example of increasing utility, he says, "In such cases, however, the tastes of the purchasers may be said to have changed in the interval". The same remarks should apply to the cases of noble verse and beautiful music. It is in recognition of this very fact that Marshall says that "we do not suppose time to be allowed for any alteration in the character or tastes of the man himself", and Ely remarks that "the law relates only to the consumer as he is at any given time".

There is one point of a rather subtle nature that must be clarified in order that our conceptions of consumption and production may become absolutely clear. We have said earlier that both production and consumption are acts of satisfying wants. Giving the example of making a cake it was explained that the act of making a cake was production as it gave derived satisfaction. Now, this act is, as already explained, production when considered as a means

1. In the footnote on page 94 of his *Principles* (eighth edition) Marshall makes this point clear by saying "that a small quantity of a commodity may be insufficient to meet a certain special want; and then there will be a more than proportionate increase of pleasure". But he does not mention the fact that the use of the commodity giving more than proportionate increase of pleasure cannot be called consumption and thus such a case does not contradict the law. Omission of this point in the text is apparently excused by the observation that "the fact is of but little practical importance".

to the end of a finished cake. When thus considered as a means can the process of making a cake be regarded as an act of *satisfying* a want? Do we *satisfy* the want of a cake or do we *approach* it? Do we *remove* the want or make *preparation* for its removal? The latter is certainly the better expression. But preparation for the removal of a want is not a technical expression. The fact is that a man has a series of wants each related to the next as a means to an end. At every moment of time there is only an immediate want that is satisfied. The remoter ones are, in non-technical language, approached. The satisfaction of the want considered as a want,—that is, as an end in itself—affords what we have called direct satisfaction, and is considered as an act of consumption. The same act—same in the objective sense—is production when it is considered as a means to the satisfaction of a remoter want. If production is not an act of satisfying a want can it in any sense yield satisfaction? If not, how can we reconcile the two statements that production yields (derived) satisfaction and that it is not an act of satisfying a want. The only possible way of reconciling these apparently irreconcilable statements is to consider *preparation for the removal of a distant want* as a want in itself. But then its satisfaction becomes a case of consumption, leaving nothing to be called production. A way out of the difficulty is to be found perhaps in the meaning of the word act. There are two wants in the previous example of making a cake. First, there is the want of making a cake and, second, there is the want of making a preparation for a finished cake ready for consumption. These two wants are objectively one and the same; they give rise to what is, objectively viewed, only one act. But subjectively there are two acts, one of making a cake, the other of making a preparation. Now, it is possible to say that production is an act of satisfying a want of preparation, while consumption is an act of satisfying all other wants. Perhaps the same idea is better conveyed by saying that production is an act of satisfying the want of a means while consumption is the act of satisfying the want of an end.

There is another way of explaining the difference between consumption and production. Let it be said that consumption is an act that cannot be broken up into bits. It is an unbreakable whole and hence its performance is, in the strict sense, instantaneous. Take, for example, the case of eating a cake. We call it consumption. But eating a cake is an act that has time-dimension. It lasts

for a period of time and consequently is composed of a series of smaller acts. We extend our hand, pick up the cake, carry it to our mouth, put it in the mouth and so on. All these acts constitute production. But if we could look at the whole process of eating the cake as one indivisible act it would be devoid of its time-dimension and, therefore, become instantaneous. It would then be possible to conceive of it as a pure case of consumption.

It can, therefore, be said that when an act is viewed as consisting of a series of acts it becomes production, for in that case each individual act is a stepping stone to the succeeding act: each individual act becomes a means to the following act. Production can thus be made to appear as a means to an end. But when an act cannot be viewed in such a light or when we choose not so to view it, it becomes an unbreakable whole and, therefore, an instantaneous event. There is then no way of it appearing as a means to an end. It becomes an end in itself. An act is, then, consumption when, or to the extent to which, it is conceived of as a complete act in itself, incapable of being broken up into parts.

The case of increasing utility derived from the use of coal by ounces can thus be easily explained. Using coal by ounces is not consumption, it is production in the light of what has just been said. And being production it must yield increasing utility. In the case of consumption there is no *approach* to an end. There is, as it were, an instantaneous accomplishment of the object.

Much confusion in economic theory can be avoided by keeping this distinction between consumption and production in mind. A producer is one who has to plod his way to the desired end. He is one who is looking forward and has to wait for the distant object. And the act of waiting, involving other necessary sacrifices, is painful. A producer is, therefore, one who has to make sacrifices. A consumer has to do nothing of that kind. His eyes are fixed on the present moment and not having to wait for a distant event he enjoys immediate satisfaction. The notion of sacrifice is alien to the concept of consumption.

CHAPTER VIII

CONSUMER'S SURPLUS[1]

No act of production is undertaken by an individual unless he expects to obtain a surplus of income over cost. Income as also cost has of course to be understood in the psychic sense. In other words, the individual must expect to find himself better off after the completion of the act of production than he is at the start of it. This anticipated surplus of satisfaction over cost is known as rent. The conditions in which such a surplus can arise and the manner of calculating it have been explained in the chapters on rent. Here we shall confine our attention merely to one kind of surplus, or rather to the surplus looked at from one particular point of view.

In the widest sense of the word every act has a production aspect. The act of exchanging things, the act of buying goods and the act of using the so-called consumption goods or even the act of taking a meal are all acts of production in the sense that they have a production aspect attached to them. In all acts, therefore—since every act has a production side to it—one must expect to find a surplus of income over cost. Since this surplus is known as rent we can say that everything that a man does is done in the expectation of getting some rent. When the act is one of buying a commodity or a service the expected rent from it may be called buyer's rent or buyer's surplus. Marshall's consumers' surplus is merely this buyer's surplus.

Every buyer of a commodity or service is also necessarily a seller of something else. Thus the surplus or rent that he expects to get may be called either buyer's rent or seller's rent, according as we wish to associate the gain from the act of exchange with the thing parted with or with the thing procured. When we associate the rent with the thing obtained rather than with that parted with, we call it buyer's rent or consumer's rent for the reason that the

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1. For interesting matter relating to consumer's surplus *see* Professor Knight's article on "Realism and Relevance" in the Theory of Demand, *Journal of Political Economy*, December 1944, and Professor Robert L. Bishop's article on Professor Knight and the Theory of Demand, in the same Journal, April 1946.

thing obtained is always bought or consumed. It is less ambiguous to call it buyer's surplus since the man who gets a thing by an act of exchange is always called the buyer. It is not so unambiguous to call it consumer's surplus, for, the act of getting a thing is not necessarily an act of consumption. But as against this ambiguity of a superficial character it can be said that the getting of a thing, as getting, is pure consumption and when it appears as an act of production it is only by virtue of the fact that it requires the surrender of certain other things. Thus on a closer view of the matter it becomes clear that Marshall's label of "consumers' surplus" is perhaps as good a description of this rent as any other. (It must be noted that we cannot get rent unless we undertake an act of production and that we never undertake such an act unless we expect to obtain some utility in return.) Thus, the act of production is the means and a necessary means to consumption. The rent that accrues can, therefore, be associated either with production or with consumption. Whether the rent that a buyer of a book gets is called consumer's rent or producer's rent is a matter of indifference to us. What is required for the surplus to emerge is that that the book should be obtained or consumed. And to consume it or obtain it, something has always to be parted with, that is, an act of production has to be undertaken. If one wished one could say, perhaps with a greater claim to clarity, that the surplus is consumer's surplus obtained through an act of production.

It has been explained in a later chapter that every rent must be associated with land. A person obtains rent only in his or her capacity as land. Rent of the so-called labourer is in reality the rent of the "man" who labours. Thus consumer's surplus is rent of the land aspect of the man who buys or procures otherwise a commodity or a service.

It is not difficult to conceive of consumer's surplus that accrues to a man when he buys a commodity. This surplus he experiences at the time of making the purchase. It is the difference between the utility that he expects to derive from the consumption of the commodity and the cost of buying it. The utility of the commodity that he expects to get has to be discounted at the appropriate rate of time-preference, in order to reflect the satisfaction backward into the present. The surplus of this discounted utility over the cost of buying the commodity is the surplus or rent of the buyer. Alternatively, the rent can be calculated by waiting till the con-

sumption of the commodity actually takes place. At such a future period the surplus would consist of the (undiscounted) utility obtained from the consumption of the commodity minus the entire cost of consumption. The cost of consumption here includes the price of commodity, other incidental costs of procuring it and the sacrifice of waiting to consume the commodity. The two measures of consumer's surplus (we may call them ex-ante and ex-post) would be equal if the rate of time-preference was equal to the interest on the investment on the purchase and procurement of the commodity. As a matter of fact the two measures of consumer's surplus are bound to be unequal to a certain extent. What we have called the ex-ante measure is, rightly speaking, the surplus from *buying* the commodity, while the ex-post measure is the surplus from finally *using* the commodity. In what follows consumer's surplus will refer to the surplus from the purchase of a commodity.

Consumer's surplus can, as explained above, be understood in terms of satisfaction, but has to be measured in terms of some objective units. It is this measurement that has offered the greatest difficulty to economists. If the consumer's surplus from a certain commodity is, say, 100 in terms of satisfaction we have to put it equal to an amount of money or other commodity whose utility is also 100. As a matter of fact to say that the satisfaction is 100 or 150 has no meaning. One can only say that it is a quantity equal to the satisfaction of a certain amount of money or of another commodity.

The most convenient medium in which to measure consumer's surplus is money. Marshall said that the difference between the price that a consumer would be willing to pay for a commodity rather than go without it and the price that he actually pays is the money measure of his consumer's surplus from that commodity. If a man is willing to pay for a book Rs. 20 rather than go without it and is able to get it for Rs. 5, his consumer's surplus from the book is equal to Rs. 15 in terms of money. That means that he is as much better off after buying the book as he would be if he were given a sum of Rs. 15. If he had to pay actually Rs. 20 he would have been in the same position as he was before the purchase of the book. He is, therefore, as much better off as he would be if he had to purchase the book for Rs. 20 and was given a sum of Rs. 15.

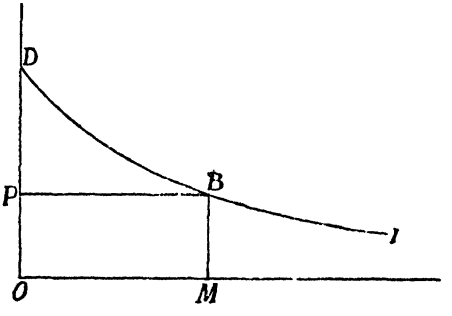
It will be obvious from the above example that if the utility of money, that is, its marginal utility, is not constant, the consumer

cannot be compensated adequately for the loss of his consumer's surplus, in the case of non-availability of the book, by a sum of Rs. 15. For money has less utility to him when a part of it has not been spent. Hence the loss of surplus that he would suffer in case of non-availability of the book can be correctly indicated by a sum of money greater than Rs. 15.

If, however, he is allowed to purchase the book for Rs. 5 a penalty of only Rs. 15 paid before the purchase would entirely wipe off his consumer's surplus. We see, therefore, that the fact of diminishing marginal utility of money makes no difference to this measure of consumer's surplus in terms of money. That is, however, due to the fact that we are considering here the case in which only one book is purchased.

It is interesting to measure consumer's surplus in terms of money, and in terms of the commodity itself, in each of the two cases of diminishing and constant marginal utility of money.

Let us begin with the famous diagram of Marshall. He takes the demand curve of the commodity and a given price. In the diagram below DB is the demand curve and OP the price. The demand curve shows the diminishing marginal utility of the commodity measured in terms of money. At the price PO, OM units of the commodity are purchased. The consumer's surplus is given by the area DPB. If the marginal utility of money is taken to be constant this measure of consumer's surplus is quite satisfactory. It shows that for OM units of the commodity the man is willing to pay the amount DOMB, but he is able to purchase it for the amount POMB. He saves the amount DPB which is, therefore, his consumer's surplus.

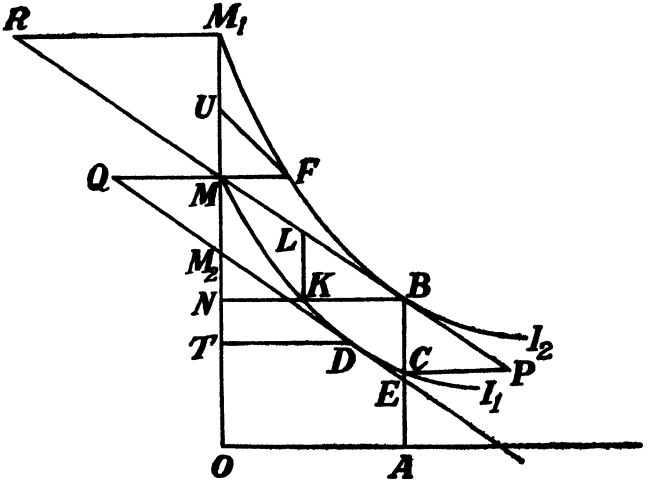


When the marginal utility of money is not constant, this measure becomes less meaningful. For, the diagram shows that for the

first unit of the commodity the consumer is willing to pay DO, but gets it for PO. The consumer's surplus is DP. For the second unit he is willing to pay less but gets it again for PO. The consumer's surplus is less than DP. And so on for the rest of the units he purchases. Now, DP amount of money does not have the same utility per unit as a smaller amount. The significance of money goes on changing. It is as if DP was in terms of rupees, and the subsequent amounts in terms of other currencies of higher utility. The total area DPB is, therefore, not a meaningful geometrical representation of consumer's surplus. What is required is to have an area composed of homogeneous units. That can be done by redrawing all the strips of area in terms of a common unit of money. If we express consumer's surplus in terms of money having marginal utility (of the stock left after purchasing OM of the commodity) we would have to represent DP by a smaller length and so also all the other subsequent units. The consumer's surplus would then be represented by a (homogeneous) quantity of money, say EPB. The only difficulty here would be to determine the exact position of the line EB.

For this reason Marshall's way of representing consumer's surplus is satisfactory only when the marginal utility of money is constant, as it nearly is when a small percentage of one's income is spent on the purchase of a single commodity.

Professor J. R. Hicks and others have, therefore, adopted a different method to represent consumer's surplus diagrammatical-



ly. In the diagram, consumption indifference curves represent an individual's positions of indifference between commodities X and Y. We may take Y to be money.

Suppose the consumer has OM units of money and I_1 is his indifference curve passing through M. Let the price of the commodity X be indicated by the slope of the line MB. This line touches a higher indifference curve I_2 at the point B. At this point the marginal rate of substitution of commodity for money is the same as the price. The consumer will, therefore, buy OA units of X for MN units of money. Since he rises to the higher indifference curve it is obvious that he has obtained consumer's surplus. The problem is to indicate this surplus in terms of money or commodity.

When the consumer has already purchased the commodity there are two ways of depriving him of the consumer's surplus that he has obtained. The first is by taking away BC units of money from him and thus bringing him down to the original indifference curve. The second is by taking away KB units of the commodity from him and bringing him again to the original indifference curve.

Hence, BC money or KB commodity are two measures of consumer's surplus. It must be noted that for purposes of measuring consumer's surplus that the buyer has actually obtained we have to remember that he is left with NO units of money and NB units of commodity in his possession. Further that BC is the money measure of consumer's surplus in the sense that if this amount of money was taken away from him he would be deprived of all his consumer's surplus. But this is not the only way of measuring, in terms of money, his consumer's surplus after his having actually purchased the commodity. We can determine the amount of money that he would need to get, when he is at the point B, in order to raise him to still higher indifference curve such that the difference between this curve and the curve I_2 is the same in terms of satisfaction as the difference between the curve I_2 and the curve I_1. When the marginal utility of money is constant the quantity of money needed to take the buyer to such a higher indifference curve is obviously BC. But when the marginal utility of money is diminishing it will be an amount greater than BC.

In like manner we can express consumer's surplus in terms of the commodity. It would be KB units when the marginal utility of the commodity is constant. When it is diminishing it will be greater than KB.

The consumer's surplus of KB units of commodity can be converted into money at the market price and represented by the amount LK of money. That is how Professor F. H. Knight would like to measure consumer's surplus in terms of money. Likewise, if we wished we could convert the consumer's surplus of BC units of money into CP units of commodity at the market rate of exchange. But these are misleading measures of consumer's surplus. For, the buyer enjoys a surplus equal to the utility of BC units of money to him. The market value of the amount is CP units of commodity. But this quantity of the commodity does not have the same utility to the buyer as BC units of money. For similar reasons it is also misleading to express consumer's surplus by LK amount of money.

There are other ways of measuring consumer's surplus that can be adopted before the commodity has actually been bought. The consumer is at the point M on the indifference curve I_1. If the commodity is not available or if he is not allowed to purchase it he would need to have M_1M amount of money to compensate him for the loss of consumer's surplus. Alternatively, he would need to be given MF quantity of the commodity provided it was available but not offered for sale. M_1M of money and MF of the commodity can both take him to the higher indifference curve I_2.

If the commodity is available for purchase and we start calculating the consumer's surplus when the consumer is at the point M, we could say that he would need to be deprived of MM_2 amount of money to rob him of all his consumer's surplus. For, then, after purchasing the commodity he would be on the same indifference curve as before. Hence, MM_2 is another measure of consumer's surplus.

But there is a difference between these two money measures of consumer's surplus. M_1M indicates the fact that the consumer would get consumer's surplus from purchasing OA units of the commodity at the price given by the line MP, equal in amount to the satisfaction that he would get from M_1M amount of money when he has OM of money and no amount of commodity. MM_2 is not a measure of this consumer's surplus. It indicates the fact that the consumer's surplus that he would get if he were to purchase TD units of the commodity at the price given by the line MP would be equal to the satisfaction that he would get from MM_2 of money at a time when he had TO of money and TD of the commodity. In

other words, to deprive him of the consumer's surplus that he would get from TD units of the commodity purchased at the market price, he would have to pay MM_2 of money after purchasing the commodity. It will be seen that this is not a true measure of consumer's surplus. For, it does not involve the comparison of the situation in which he is at the point M with that in which he is at the point B.

One could, if one liked, convert M_1M of money into M_1R of commodity and say that consumer's surplus is M_1R units of commodity. Likewise, MM_2 of money could also be converted into QM of commodity. Further, the consumer's surplus represented by MF units of the commodity can be converted into MU quantity of money. The conversions are made at the market rate of exchange. But as argued earlier these are misleading measures of consumer's surplus.

We have then twelve different measures of consumer's surplus. They are, BC, an amount greater than BC, KB, an amount greater than KB, LK, CP, M_1M, MF, MM_2, M_1R, QM and MU. Of these two are indefinite measures, namely amount greater than BC and KB. Of the remaining ten definite measures, five are misleading ones, namely, LK, CP, M_1R, QM and MU. That leaves us with five definite and true measures of consumer's surplus: they are, KB, BC, M_1M, MF and MM_2.

When the marginal utilities of money and commodity are constant the two indefinite measures of consumer's surplus given above disappear, while some of the remaining ten become equal to each other. For instance, when the marginal utility of money is constant the indifference curves become vertically parallel. BC then becomes equal to M_1M and also MM_2. Further, M_1R equals MQ and also CP.

When the marginal utility of the commodity is constant the curves are horizontally parallel. And in that case, KB becomes equal to MF and LK becomes equal to MU. It is less likely for the marginal utility of the commodity to be constant, than it is for that of money to be constant. In fact, the marginal utility of a commodity can never be constant. But when a small percentage of one's income is spent on a particular commodity, the marginal utility of money can be taken to be almost constant. And if we assume it to be quite constant, then five measures of consumer's surplus disappear, namely, M_1M, MM_2, MQ, CP and the indefinite measure greater than BC. We are then left with seven measures of con-

sumer's surplus of which one is indefinite and three are misleading. If we eliminate these we still have three serviceable measures of consumer's surplus. They are BC, KB and MF.

We have seen how the consumer's surplus derived from the consumption of a commodity can be calculated and expressed in terms of money or the commodity itself. Can, however, the consumer's surplus obtained from all the commodities that enter into the budget of consumption of a man be determined? That we cannot do so by merely aggregating the consumer's surpluses that the man obtains from individual commodities is perhaps quite obvious. The consumer's surplus from tea is small so long as coffee is there and that from coffee is small so long as tea is available. But the consumer's surplus from both these stimulants taken together is considerably greater than the sum of the consumer's surpluses taken separately. Is there then any method of calculating the aggregate consumer's surplus? Doubts are sometimes expressed about the possibility of making such a calculation. Consumer's surplus, it is believed by some, has no meaning when the concept is applied to the consumption of all the commodities. This, however, is too extreme a view to take.

When a diagram is drawn to show the consumer's surplus from all the commodities consumed, on the X-axis is measured the aggregate of all commodities. And since all the commodities are purchased with money, we might as well say that in such a diagram the horizontal axis measures not the quantity of a commodity but the quantity of money spent on the purchase of commodities. It is naturally assumed in such cases that every unit of money is spent where it fetches the greatest possible amount of utility. Just as the utility from succeeding units of a commodity decreases, so also the utility from the succeeding units of money decreases. What are we then to measure on the vertical axis? So far we were measuring money on that axis. There money was the alternative thing. It was money that was exchanged for the commodity under consideration. Here since we have money itself represented on the horizontal axis we have to use the vertical axis to represent the thing that is exchanged for money. What is the alternative to the expenditure of money on the purchase of commodities? One answer, and perhaps the most appropriate one, is that the alternative to expenditure of money on goods is saving of money for future use. We shall here ignore the difficulty that arises when

saving is considered as the expenditure of money on the purchase of securities. For, savings can take that form also. Let us, for purposes of simplification however, suppose that all savings take the form of putting by of money and storing it in one's own house. Or alternatively, we might say that securities shall not be regarded as commodities.

When the consumer's surplus from all goods purchased is thus diagrammatically represented we get indifference curves showing a person's indifference as between different combinations of saving and expenditure of money. The same technique as before can now be applied to measure consumer's surplus. The various measures of consumer's surplus would in this case refer to consumer's surplus from commodities in general, expressed in terms of savings (instead of money in the previous case) and in terms of spending (instead of the commodity in the previous case). Just as in the previous case it was felt more convenient to measure in terms of money, in this case it should be more convenient to measure consumer's surplus in terms of saving.

Consumer's surplus from all the commodities purchased or purchasable, therefore, consists in the advantage that one has in spending money (on commodities) rather than in saving it. And since savings are made for purposes of utilising them in the future, the advantage just mentioned consists in reality in having for consumption commodities now rather than in the future. The consumer's surplus is therefore greater the greater is our want for commodities now as compared to the wants for them in the future. When the wants are the same and the income per unit of time is constant, the consumer's surplus becomes merely an expression of time-preference.

This particular way of measuring consumer's surplus from all the commodities gives us in reality the consumer's surplus derived from present consumption or expenditure of money. One difficulty would however be encountered here in applying the technique of indifference curves. Suppose a man has a thousand rupees. From which point will his indifference curve start? Suppose he saves the entire amount; what will be the utility of this amount? It will be a finite quantity. Now suppose he obtains a small amount of commodities. If he has not already got some commodities, the utility of this small amount is very great. It is perhaps infinitely great. To keep the total utility constant the man must, therefore,

reduce his savings. Perhaps he will not be able to keep the utility constant even if he reduces his savings to zero. It is not possible, therefore, to have the normal type of indifference curves here. What we have to do, therefore, is to start from some point away from the vertical axis. That is, we have to suppose that the consumer has already got some commodities with him. For purposes of diagrammatical representation, once this assumption is made, the curve can be made to start from a point on the vertical axis.

The price line in the case of such indifference curves will be a straight line inclined to the axes at an angle of 45 degrees. For, here if the consumer saves one rupee less he can spend just one rupee more. And since the scale is the same on both the axes the price line is naturally inclined at an angle of 45 degrees.

As already mentioned, this measure of consumer's surplus is in reality the measure of one's consumer's surplus from the *present* consumption of all the goods. It is, therefore, the surplus of utility obtained from not postponing the consumption of goods or, what comes to the same thing, money. If we have to calculate, however, the consumer's surplus from commodities (services included) in general, we have to compare the utility obtained from goods with that which can be obtained from some substitute for goods. What would the consumer get if goods were not available either for present or for future consumption? He would then make some other use of money such as its use in buying satisfaction obtained from charity. Assuming that donating money to charitable institutions is not a case of purchasing some service, it becomes possible to draw indifference curves showing different combinations of money given in charity and money spent on the purchase of goods and services yielding constant utility. Here too it has to be assumed that the consumer in question has a certain stock of essential goods with him or is otherwise assured of a regular flow of such goods for some time to come.

In both the cases considered above consumer's surplus is really the surplus that a man obtains from making a particular use of money. It is the surplus that he gets from spending money now instead of keeping it for expenditure later on or from spending it on buying goods and services instead of giving it away in charity.

There is yet another way in which one can conceive of consumer's surplus from goods in general. In the previous cases we

considered two uses of money. Money was either spent on goods or (*a*) was saved in one case and (*b*) used for charitable purposes in the other. We can now consider two uses of one's faculties. A man has the faculty of earning money or goods directly. But he can use this faculty to enjoy rest. In other words, one can, as it were. *consume* his faculties or put them to *productive* use. In the first case one gets direct satisfaction, in the second indirect satisfaction. The extra satisfaction that a man gets from putting his faculties to such a productive use is the third measure of consumer's surplus obtained from the aggregate of all commodities and services. While the previous two measures of consumer's surplus were the rent of a particular use of money, this third measure is the rent of a particular use of a man's faculties.

For diagrammatical representation of consumer's surplus we can draw indifference curves showing the different combinations of consumption use and production use of a man's faculties yielding the same utility. Here too it becomes necessary to assume that the consumer has a certain quantity of essential goods with him. For, it is only then that we can have the normal type of indifference curves. Consumer's surplus would be measured here in terms of hours of rest (that is, as so many hours of consumption use of the faculties) or in terms of hours of work (that is, so many hours of production use of the faculties). The price or exchange line here also would be inclined at an angle of 45° to the axes of reference. For, by taking one hour's less rest you can work for just one hour more.

It would be interesting to apply the above technique of measuring consumer's surplus obtained from a single commodity as also that got from all the commodities consumed to the case of Crusoe. Crusoe does not buy goods in the normal sense, but he can be considered as buying goods from himself. It should be clear, however, that each commodity produced by him has its opportunity cost. He can forego the plucking of fruits in order to be able to kill birds. The utility enjoyed by consuming birds would then be greater than the utility that he would have got from eating fruits. This surplus of utility is his consumer's surplus.

In the same way one can think of Crusoe's consumer's surplus from all the commodities he consumes. He has the option of producing and consuming the various commodities or enjoying leisure. He can utilise his time and energy to produce and consume goods

or he can put them to consumption use, *i.e.*, he can rest and enjoy Nature's gifts. He will distribute his time and faculties between these two uses so as to maximise consumer's surplus.

What is the cause of consumer's surplus? Why does Crusoe or any other person get surplus? This question can be answered in simple words by saying that consumer's surplus is due to the possibility of putting one's resources to multiple uses which are not equally beneficial to the consumer.

CHAPTER IX

DEMAND THEORY AND INDIFFERENCE CURVES

Every individual has certain resources or certain means wherewith to satisfy his wants. In the type of economy in which we are living today we are able to satisfy some of our wants ourselves but for the satisfaction of most of them we have to depend on the help or co-operation of others. One way in which we can induce others to help us is by offering them a similar help. Finally, however, most of us satisfy our wants through market operations. That is, we buy with money whatever we want. And in our turn we sell for money what others want. In this money economy in which we are living money becomes the principal means of satisfying our wants.

Let us, therefore, see how an individual spends money when he is confronted with certain market forces. He who spends money on consumption-goods is generally called a consumer. It might be noted, however, that a buyer of goods is in reality a producer. Buying is an act of production. It is better for this reason to call the spender of money simply a buyer. The study of the behaviour of a consumer is, therefore, the study of the behaviour of a buyer. The problem we have chosen to study is how does an individual who has a certain amount of money decide what to buy and how much of it to buy? Marshall said that an individual spends each unit of money on the commodity that gives him the maximum utility. When the whole amount of money is thus spent (on present and future goods—saving) all the commodities have the same marginal utility per unit of money, or to be more correct, their marginal utilities are proportional to their prices. As far as a particular commodity is concerned the quantity of it to be bought is determined by the equality of the utility of the marginal unit and the utility of the price paid for it—remembering that the utility of money is derived from the utility of the things that money can buy. This fact points to the ultimate expenditure of money according to the law of equi-marginal utilities. Consistently with this simple and obviously correct explanation Marshall drew a demand curve for a commodity with price or marginal utility on the vertical axis and the quantity of the commodity on the horizontal axis. This

technique goes by the name of the demand curve theory of consumer's behaviour.

Marshall's demand curve shows the marginal utility of the commodity bought. Evidently it is somehow measured in terms of psychic units and then equated to the similarly measured utility of money. Objection has been raised against this technique on the ground that it assumes the marginal utility of money to be constant. For, it is only when it is constant that the demand curve can give the right amount that the buyer would buy at a given price. As the expenditure on the commodity increases the marginal utility of money increases and so the utility of the commodity that is measured on the vertical axis has to be accordingly adjusted to the increasing measuring rod of utility. That is true; if the demand curve is the marginal utility curve then the utility of each unit of the commodity is measured in terms of money that has a different utility.

There is a way out of this difficulty. The demand curve can be so drawn as to show the amount of the commodity that would be bought at different prices. If OM units of the commodity are bought at price PM let it mean that the utility of the OMth unit of the commodity is equal to the utility of PM amoun of money spent *on it*. A demand curve so drawn cannot be objected to. Even when it is not so drawn it can yield correct results provided the amount of money spent on the commodity is a small part of the total money in possession of the buyer. For, then the marginal utility of money spent on the commodity would be almost constant.

In recent times a new technique has been adopted to explain the behaviour of a consumer. The credit for that technique (called the indifference-curve technique) belongs mainly to Professor Hicks. Let us first explain what an indifference curve is.

We suppose that there are only two commodities to be considered. Let them be called X and Y and let us measure them on the axes of X and Y, respectively. Suppose an individual has OA of commodity Y. There must be a certain amount of the other commodity X that would give him the same utility as OA of Y. Let that amount be OB. If he were to give up AD of commodity Y he would need a certain amount of commodity X to compensate him for the loss of utility suffered. Let that amount be DC. Similarly let us say, he needs FE of commodity X to compensate him for the loss he would suffer if he were to give up AF of Y. A, C,

E and *B* are, therefroe, four points on his indifference curve. The curve becomes continuous when for every little surrender of Y we

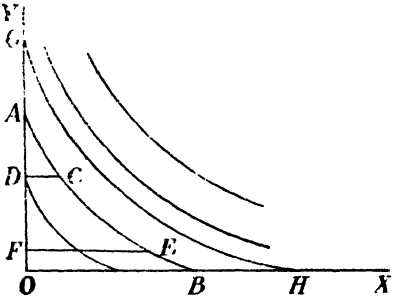


Fig. 1

mark out the quantity of X that the individual would need as compensation. Let *ACEB* be such a continuous indifference curve. Each point on this curve represents a combination of two commodities X and Y that has the same utility. The terminal points *A* and *B* represent a combination in which the quantity of one or the other commodity is zero.

W can draw a family of such curves each representing a given amount of utility. *GH* is one member curve of such a family. The utility it represents is greater than the utility that the curve *AB* represents. That is because while the curve *AB* stands for the utility that is equal to the utility of *OA* of Y, the curve *GH* stands for the utility that is equal to the utility of *OG* of Y. The latter is obviously greater. From this the conclusion can be drawn that the more distant the curve from the origin the greater the utility it represents.

Indifference curves possess certain properties which might be mentioned in passing. When the marginal utilities of the commodities are diminishing or when the marginal utility of one in terms of the other is diminishing the indifference curve is convex when looked at from the origin. When the marginal utilities of the commodities are constant (in terms of each other) the indifference curve is a straight line. When marginal utilities are increasing the curve becomes concave when looked at from the origin.

The other property is that no two indifference curves cut each other. Nor can they touch each other. For, if there is a common point on two curves it means that the same combination of goods gives two different amounts of utility.

Nothing further can be said about the shape of the curve as it depends on the rate at which utilities, absolute or relative, diminish. We have said that when the utility of one commodity in terms of the other diminishes the indifference curve is convex. Professor Hicks prefers to say that when the marginal rate of substitution is diminishing the curve is convex. Since substitution depends on utility the two statements are interchangeable.

When there is a maximum limit to the quantity of a commodity or rather when there are maximum limits to the quantities of the two commodities that an individual would like to have (*i.e.*, when the marginal utility becomes zero after a certain amount of a commodity is bought) the indifference curve turns upward and then backward and finally downward. In that case an indifference curve becomes a closed figure.

In Figure 2 *a b c d* is such an indifference curve. The utility of X becomes negative when *Ob'* units are consumed so that to keep the total utility constant the quantity of the commodity *y* has to be increased. The curve, therefore, turns upward. The utility of Y becomes negative when *Oc'* units are consumed and so to neutralise it the quantity of X (which has negative utility) has to be

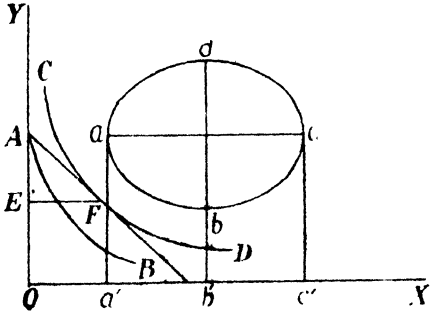


Fig. 2

decreased. The curve, therefore, turns backward. When *Ob'* units of X and *db'* units of Y are consumed the utility of X begins to be positive again while that of Y continues to be negative. To keep utility constant the quantity of Y has, therefore, to be decreased. The curve for that reason turns downward. The indifference curve eventually becomes a closed figure.

Indifference curves are horizontally parallel (horizontal distances remain the same at all heights) when the marginal utility of X is constant. They are vertically parallel (vertical distances

remain the same at different points) when the marginal utility of Y is constant. In other cases (normal cases) the curves are neither horizontally nor vertically parallel.

If we draw vertically parallel indifference curves and assume that Y is money and X a commodity the case would be parallel to Marshall's demand curve. Let us see how the indifference curve technique can be used to explain the behaviour of a buyer. Let us repeat, much of the credit for the use of this technique must go to Professor Hicks. His books *Value and Capital* and *A Revision of Demand Theory* are standard works on the subject.

Suppose a buyer has *OA* of the commodity Y and the rate of exchange of Y for X is given by the slope of the line *AF*. That means that the commodities can be exchanged at the rate of *OA* of Y for *OH* of X. Thus, the price of Y in terms of X is *OH/OA*. Will the buyer who has *OA* of Y buy X and if he does how much of it will he buy? We know how Marshall would have answered these questions with the help of the demand curve of the buyer for X. Professor Hicks draws the whole family of indifference curves and selects that which is tangential to the price line *AH*. The buyer would buy *EF* of X giving away *AE* of Y for it. F is the point of tangency where the indifference curve CD touches the price line. By so exchanging *AE* of Y *EF* of X the buyer passes on from the indifference curve *AB* to the indifference curve *CD*. As the latter curve is farther removed from the axes it represents greater utility. The difference of utilities, as he passes from one to the other curve, is the gain of the buyer. Of all the possible indifference curves to which the buyer can shift by buying X, at the price given by the price line, the curve *CD* is the farthest removed from the axes. Hence our buyer buys *EF* of the commodity X; his gain is then maximum. If we suppose that Y is money and if we further suppose that the expenditure of money on X is a small proportion of the total amount of money the buyer has, *i.e.*, if we suppose that *AE* is a small part of *AO* then the marginal utility of *AE* of money would be constant so that the indifference curves *AB* and *CD* would be vertically parallel over the small range covered by the amount *AE* of money. The solution would then be precisely the same that is yielded by Marshall's demand curve.

We can say, therefore, that Hicks's technique is superior when the demand curve is a pure and simple marginal utility curve (if

of course such a curve can be drawn), *i.e.*, when it is not drawn taking into account the increasing marginal utility of money as less and less of it is left with the buyer. It is not superior when the demand curve takes account of the increasing marginal utility of money. There is no other significant difference between the two techniques.

But there is an important difference yet between the two techniques. In the indifference curve technique the utilities of the commodities are measured in terms of the commodities themselves. Thus, the utility of Y is measured in terms of X and that of X in terms of Y. We had an occasion to mention this fact while saying that the normal type of indifference curve is convex to the origin. This can be claimed to be an advantage of the indifference curve technique. But fundamentally there is no difference between the demand curve and the indifference curve techniques.

In this connection the mooted question whether utility is measurable or not might be brought into the picture. We have said all that we could about measurability in the chapter on Measurability of Utility. Here a few words would suffice. Hicks claims with *some* justification that his technique does not need to make any specific assumption in regard to measurability of utility. We need only to compare utilities of the two commodities X and Y in the above example. To draw the indifference curves we have to ask the buyer how much of X he would need as a compensation for a given loss of Y. If he can answer the question all is well. And he can certainly answer such a question and we have no right to question the judgment of the buyer.

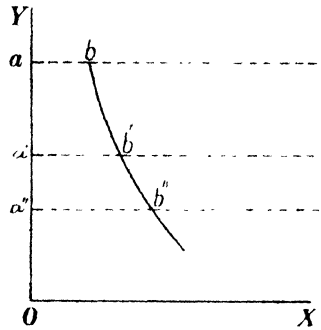


Fig. 3(b)

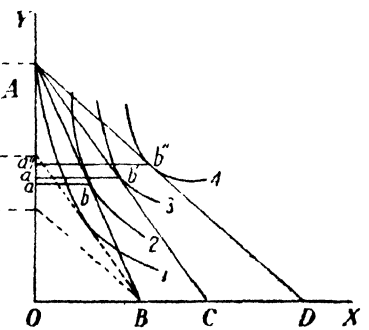


Fig. 3(a)

However, we need not discuss this point any further. Whether utility is measurable or not depends, as we have explained in the

chapter on Measurability of Utility, on the meaning of the word measurement. Let us see now how we can derive a demand curve from a family of indifference curves.

In Fig. 3(a) above we have drawn four indifference curves marked 1, 2, 3 and 4. The buyer has OA of commodity Y in his possession (which may be taken to be money as we are going to construct a demand curve. Otherwise it matters little whether it is money or any other commodity). When the price is as given by the line AB the buyer buys ab of X for Aa of Y and palces himself on the indifference curve 2 at the point b. We show this in Figure 3(b) by marking out ab there equal to ab in Fig. 3(a), at the height OA. Thus, Oa in Fig. 3(b) is equal to OA in Fig. 3(a). The point b is then a point on the demand curve in Fig. 3(b).

Let now the price change and the price line take the new position AC. At this price the buyer buys $a'b'$ of X for Aa' of Y and places himself on the indifference curve 3 at the point b'. Draw a broken line from B parallel to AC and mark off its intercept on the Y-axis in Fig. 3(b) and show it as Oa'. Let $a'b'$ be equal to $a'b'$ in Fig. 3(a). The distance Oa in Fig. 3(b) then shows the price and $a'b'$ the demand. We take OB in Fig. 3(a) to be equal to one unit of commodity X so that the intercepts on the Y-axis of broken lines from B in Fig. 3(a) may indicate the price. The point b' in Fig. 3(b) then is another point on the demand curve.

Change the price line again and let it assume the position AD. At this price the buyer buys $a''b''$ of X for Aa'' of Y and places himself on the indifference curve 4 at the point b''. We draw a broken line from B parallel to the new price line and mark off the intercept it makes on the axis of Y in Fig. 3(b) as Oa'' and make $a''b''$ equal to $a''b''$ of Fig. 3(a). Thereby we get b'' in Fig. 3(b) as the next point on the demand curve.

Marking out all such points for various prices we can get a demand curve as shown by $b\ b'\ b''$ in Fig. 3(b). It will be seen from the Fig. 3(a) that the gentler the slope of the price line the cheaper is the commodity X. It will also be seen that when the price falls from AB to AC, though a larger quantity of X is bought, a smaller expenditure of Y (money) has to be incurred. And when the price falls still further to AD the total expenditure of Y is further reduced. This shows that the demand for the commodity X, as shown by the family of indifference curves, is fairly inelastic.

The indifference curves in Fig. 3(a) are neither vertically nor horizontally parallel. That means that the marginal utilities are not assumed to be constant (the marginal rate of substitution is not constant). The demand curve derived from Fig. 3(a) and as shown in Fig. 3(b) is, therefore, one that takes account of the increasing marginal utility of the money left over with the buyer as he buys more and more of the commodity X.

A demand curve howsoever arrived at shows that when the price falls we buy more. This presupposes that other things remain the same. In these other things we would include also the nature and character of wants. If a thing is looked down upon because it is cheap the demand for it would not increase. This is the case of what Hicks calls *inferior* goods. Here the commodity satisfies two wants: one by its intrinsic properties and the other by the social status its consumption gives to the consumer. The change of price does not alter the intrinsic properties of the commodity but it does change its capacity to satisfy the want of social distinction. Leaving aside this case, which might be taken to be ruled out by the assumption of other things remaining the same, let us see why the demand increases when price falls. The most general statement that we can make is that it increases because, when the price falls, the last unit of the commodity bought has more utility than the money that has to be paid for it as price. This is the only explanation of increase of demand though it can be broken up into two parts.

In the first place, we can say that if a buyer buys the same number of units of a commodity as before he is left with more money than when the price was higher. This additional amount of money in his possession then becomes available for spending. As always, he will buy with it a number of commodities according to the law of equimarginal utilities. He will spend a part of it on the commodity that has become cheaper and a part on other commodities. If the marginal utility of the commodity that has become cheaper falls rapidly he will spend a large part of the additional money left with him on other commodities.

One change that always occurs is that when the price of a commodity falls the buyer, after buying the same amount as before, has an additional amount of money left with him. This will be spent, as we have said above, partly on this very commodity. So there is an increase of demand for the commodity because *virtually*

his income has increased. In deciding how much more of this commodity to buy with the virtual increase of his income he will keep the fact in mind that it is cheaper than before. Were the price now was to rise to its former level he would still be able to buy a certain amount of the commodity with the virtual increase of income. But now being cheaper he is able to buy a little larger amount of it. This brings to light what Hicks has called income effect and substitution effect.

Let us explain the above points with the help of a diagram. In Fig. 4 at the price given by the line *AB*, *OE* of X is bought for

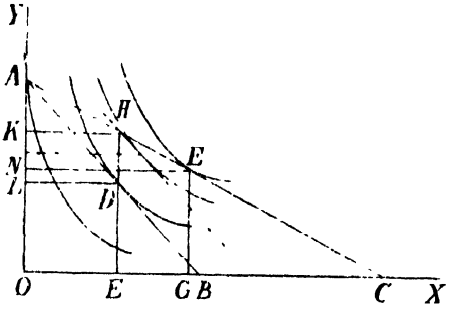


Fig. 4.

AL of Y. Let the price now fall and let the new price line be *AC* At this price *OG* of X is bought. The buyer could, however, have bought the amount *OE* of X (the amount bought at the old price) for only *AK* of Y, thus saving *KL* of Y. This virtual increase of income becomes available to the buyer for expenditure on X and other commodities. As we said earlier if the marginal utility of X diminishes rapidly a smaller amount of this virtual increase of income would be spent on it and a larger amount on other commodities. It will be seen from the figure that not the whole of KL is spent on X; only *KN* is spent on it. A part of it would not have been spent on X had the price, after buying *OE* of X at the new price, risen to the old level. This is shown in Fig. 4 by dotted lines. From *H* we have drawn a dotted line parallel to the old price line and it touches a new indifference curve at a point considerably to the left of the point E. That shows that less of the commodity X would have been bought had it not been cheaper. This reveals the substitution effect.

CHAPTER X

WELFARE ECONOMICS

It is commonly believed that the science of economics has two branches: the positive and the normative. In the positive study of the science, it is alleged, we concern ourselves with what men do; in the normative with what they should do. Thus, the positive science of economics is said to consist of the laws that *actually* govern the behaviour of people, while the normative science is believed to consist of the principles that *should* govern such behaviour.

The difference between the subject-matter of study in the positive and the normative branches of economics is thus supposed to be a clear-cut one: in one case it is what a man does, in the other it is what he should do. But since a man always does what he thinks he should (in some sense of the word *should*), the distinction between the positive and the normative studies is not, in fact, as clear as it is supposed to be. Every man does what he thinks is best for him. It may be that he does not often do what others consider to be best for him. But in such cases the fault may be as much with the judgment of the other man as with his own. The probability of mistake being thus a common factor in both the cases, it is reasonable to conclude that what is done and what should be done are one and the same in every case. The difference then on this score, between the positive and the normative aspects of the study, disappears altogether.

While there is no difference between positive and normative economics judged from the individual point of view, it is possible yet to make out a difference between the two by adopting the social point of view. There is, for instance, a difference between what a man thinks is best for him and what he (or anybody else) thinks is best for the society. Thus when a man does what he thinks is best for him, he does not necessarily do what is (thought to be) best for the society. If then the word *should* is given a social import, the difference between what is done and what should be done becomes clear enough. It is thus the adoption of the social point of view that is responsible for the common belief that economics

can be studied from two different points of view, namely, the positive and the normative.

Assuming that the word *should* necessarily has such a social import, let us proceed to give further thought to this distinction between the positive and the normative. The normative study of economics uses the concept of social welfare. The first question that arises then is—What precisely are the contents of social welfare? Much time need not be wasted in defining the word welfare. In simple words, welfare consists of pleasure or satisfaction. A man's welfare at any given time (or during any period of time) is measured by the amount of satisfaction that he enjoys at that time (or during that period of time). He strives to maximise this satisfaction. Although it is the satisfaction in the present that is the real entity to reckon with, it is necessary, of course, to take account of the satisfaction that one expects to get in the future. Every man tries to maximise the present worth of the total satisfaction that he expects to obtain over the entire period of time that enters into his reckoning. In computing the present worth of the total satisfaction much difficulty might be encountered. But theoretically the concept of welfare is clear enough.

The problem still remains as to what precisely is meant by social welfare. Since social welfare is a kind of welfare, and since welfare must necessarily be located in *a mind,* it follows that social welfare is a kind of welfare located or felt in the mind of *a* particular man.[1] It cannot be located in several minds in the sense that it is spread over a number of different minds. Even if social welfare is somehow understood as the summation of the welfares of all the individuals in a society, such a sum-total must reside in some *one* mind. It is possible, however, that there may be a number of minds in each of which social welfare, thus understood, resides. In the final analysis social welfare, by virtue of the fact that it is welfare, must be found to dwell undivided and unfragmented in one

1. J. Bentham first set the ball rolling by defining welfare of the society as the sum-total of the happiness of all the individuals. In recent years, problems of welfare economics have been discussed, among others, by Pigou, Hobson, Robbins, Hicks, Hotelling, Kaldor, Lerner, Lange, de Scitovzsky, Reder, Little, Myint, Bergson, Baumol, Samuelson, Radomoysler, Arrow, Boulding, Fleming, Mishan, Graff, Meade, Robertson, Majumdar and others.

particular mind (or in each one of many minds).[1] Maximising social welfare then is the problem of maximising the welfare in the mind of a certain individual. Theoretically, it may be that it is the individual who identifies himself with the society as a whole whose mind registers, as it were, all the pleasures and pains felt by all the persons in the society to which he belongs. If social welfare is the sum-total of the welfares of all the individuals, it is that sum-total which is recorded in somebody's mind. In theory, as also for matters of policy, there is no other way in which social welfare can, with reasonable justification, be conceived.

The difficulty of measuring social welfare is thus shifted to the task of finding out such a sensitive man whose mind records correctly the experiences of others. When you or I talk of social welfare and attempt to get an idea of it, we imagine ourselves to be such sensitive persons. We place ourselves in such a sensitive frame of mind. Unless social welfare is understood as residing in one mind there is no justification in defining it as the sum-total of the welfares of all the persons in a society. I am not referring to the difficulty of interpersonal comparison of utility; I am referring rather to the fact that the sum-total, in order that it may be a *sum* —a quantity—must be in one place as a lump. The difficulty, incidentally, of interpersonal comparison of utility and its non-additive nature, is thus got over.

Just as an individual can make mistakes in selecting the right course of action for himself, similarly such a sensitive man can also make mistakes. That is, his record of the joys and sorrows of others may not be accurate. But for purposes of theory one can proceed on the basis that a perfectly sensitive and farseeing person with perfect foresight does exist. The algebraic processes of addition and subtraction can then go on in the mind of such a person.

Much fuss has been made of the difficulty of comparing the

1. It is not necessary, as we have shown later on, that a perfectly sensitive man should exist. To insist that social welfare should be the welfare that is located in the mind of such a sensitive man is to assume that social welfare is necessarily the sum-total of the welfare of all individuals. As a matter of fact, it is just an over-all picture of the state of welfare prevailing in the community. We do not know really how that picture is painted. It is considerations such as these that have made some people think that welfare is best judged by the mind of the superman.

utilities of different people and of adding them up. Once it is realised that such a comparison can be made only in the mind of a man, the problem almost automatically disappears. Utility is not an objective entity. It is futile, therefore, to attempt to compare and add up the utilities of different people in the same objective fashion in which concrete goods are compared and totalled up. The failure of such an attempt should be no cause for despair. Being subjective, being a feeling, utility can reside only in the human mind. Comparisons and additions of utilities must, therefore, necessarily take place within the chamber of our mind. The very word social welfare smacks of such a subtle and subjective nature of the concept. Social welfare is not a collection of individual welfares in the sense in which a dozen books is a collection of twelve books. And yet, social welfare is a sum-total in some sense; it is a total in the sense in which it has been explained above.

If one man is better off and another worse off, what, it is asked, is social welfare? Is it greater or less than before? This is the bugbear of many economists. One welfare resides in one mind while the other resides in the other. How are we to reduce to a common denominator the welfares of the two individuals and how are we to add them up? Such fears are the result of an attempt to do what cannot and need not at all be done. If a description of the society in terms of welfare has to be given, the straightforward way of doing it is to say that one man is better than what he was while the other is worse off. That is all that can be said and should be taken to be a satisfactory description. If, however, something more than that is desired, all that is possible to say is that "I" feel on the whole happier to find this man better off and the other worse off. Or, it may be that "I" find myself less happy than before. This should be sufficient to satisfy the curiosity of one who wants to have an overall picture of the society. If a merger of the states of welfare of various individuals is required—and that is what social welfare can after all mean—it should be clear that such a merger can only be found in the mental trust of a man. For theoretical purposes, it is convenient to suppose that the mind in which the satisfactions of different individuals merge themselves is an accurate and sensitive mind. To attempt to find the sum-total of individual states of welfare, outside the closet of a mind, is as foolish as it is futile.

The desire to maximise social welfare as the sum-total of the welfare of all the individuals stems from the belief that the mind of a person is able and willing to record faithfully all the feelings of the members of a society. After all, when social welfare is in this sense maximised who is it that is raised to the optimum position?[1] Naturally, not any one individual nor even a few. For, when the sum-total of individual welfares is maximised, there would be a number of persons who would be worse off than before. The only answer can be that it is the man who judges and conceives of social welfare that is raised to the optimum position.

It will be realised, therefore, that the desire to increase social welfare (conceived of as the sum-total of all welfares) has its seed in the desire to make ourselves most satisfied. Apart from the maximum welfare of the man who has social welfare in mind, there is nothing that is raised to the highest level when social welfare is maximised. The conviction that when one thus maximises social welfare greatest good is done to the people at large is rooted in the subconscious mind that feels that there is an ultimate identity of interest of one man and another. The same idea is vaguely expressed in other words when it is said that in the ultimate analysis social good is identical with individual good. Were it not for this conviction, howsoever loosely held by the mind, the desire to maximise social welfare would not have won the admiration and approbation of the mass of people, as it has always done.

This much about the broad contents of social welfare and its legitimate abode. It has often been emphasised that welfare depends as much on the distribution of wealth as on the magnitude of wealth itself. In other words, it is pointed out that our welfare depends not only on our absolute income but also on our relative income. The knowledge that somebody else has more than us takes away from us some of the enjoyment that we should otherwise get from our income. In the context of the discussion of social welfare, it is said that a larger total income very unequally distribut-

1. Those who think that social welfare is outside the mind of a man but is somehow reflected on it, should be put this question. There is only one sense in which social welfare can be thought of as existing outside an individual mind. Perhaps individual minds are the reflection of a universal mind on the brains of different individual persons. Even so the fact remains that there is no way in which the welfare in the universal mind can be conceived except through the medium of an individual mind.

ed is often worse than a smaller aggregate income more equally distributed. This is true as can be seen in the light of our definition of social welfare. The man who receives and records in his mind the feelings of others naturally takes note of the fact, in so recording, that people's satisfaction depends also on their relative wealth. Besides this, his own preference for a particular pattern of distribution is bound to affect his estimate of other people's feelings of satisfaction. Theoretically it is convenient to suppose that the man who attempts to measure social welfare is an accurate and faithful keeper of accounts. His mind should act as a true mirror and receive as images the feelings of other people. It should not act as an image itself. This, however, is too much to expect of a mind that has all along been entertaining its own feelings too. To act as an impartial and dispassionate observer is difficult indeed.

A man's own preference for a certain type of distributional pattern in the society is, therefore, bound to affect his estimate of social welfare. Be that as it may, the fact relevant to the point under discussion is that in computing social welfare no separate account has to be taken of the distribution of wealth.[1] For, the satisfaction of a man depends on his relative as well as absolute wealth. The sum-total of individual welfares includes all that needs to be included in social welfare.

As we have already observed, since social welfare is located in the mind of a man, all that we have to do to measure it is to look at the welfare of the man whose mind is the repository of the feelings of other people. How these different feelings get totalled up in one mind is an interesting question though not one that should worry us here. For, it is not a question of how we have to total up the feelings but of how these feelings are automatically summed up. Such an enquiry has theoretical interest for us, but the measure of social welfare does not depend on our ability to answer such a question.

There are some economists who hold views somewhat similar to those we have expressed above. Yet there is one significant point of difference. They talk in terms of a superman who is competent

1. This is the additional advantage of our concept of social welfare. Many of the economists mentioned in the footnote on page 87 have emphasised the fact that separate account has to be taken of the distribution of wealth among the members of a society. The difficulty of measuring, adding and comparing utilities which makes distribution a separate question, does not confront us.

to determine the values of life for a society.[1] Welfare becomes an ethical concept—the superman giving to the society the ethical premises from which welfare conclusions can be deducted. That ordering of social affairs is conducive to maximum social welfare which conforms most closely to the scheme of values formulated by the superman. What wants should be satisfied and in what measure, whose wants should be given preference to and in what way the total wealth should be distributed among the members of the community are questions which the superman answers for us. His superior wisdom ensures the correctness of his judgment—he knows what maximises social welfare. How he comes to acquire this knowledge is not a pertinent question here. It is enough to know that he *is* a superman. His verdict is final and the lines he lays down for the economic development of a community, therefore, command respect.

This view offers perhaps the simplest solution to the problem of social welfare. All the difficulties of comparison, summation and measurement of utility are got over by the assumption of the existence of a superman and the people's resignation to his will.

It will be realised, however, that social welfare so conceived exists only in the mind of the superman himself. And if it exists in the minds of others, it is because the verdict of the superman is accepted by them. Such a view of social welfare, therefore, enforces on the members of the community the acceptance of the judgment of one single individual. Where such an acceptance is not forthcoming, the concept of social welfare loses its significance. If I do not consider the superman's judgment correct, the significance of the concept of superman disappears. I am either left without the criteria of social welfare or have to determine them myself—a case in which I become my own self-appointed superman.

A word may be said in passing about the ethical premises that the superman can build his conclusions on. It is left to such a man to decide for himself, and so also for all the rest, the contents of social welfare. It is not necessarily maximum when the sum-total of the welfares of all the individuals is maximum. It is not necessarily maximum when wealth is equally distributed. It is not necessarily at the highest level when the most urgent wants of the

1. Mr. Bergson and Professor Samuelson proceed on the basis of social welfare function as determined by, say, the superman.

people are satisfied first. It is not necessarily maximised when production and distribution are determined according to the wishes of the majority of people. It is maximum when the superman thinks it is maximum.

The concept of the superman may not be a useful concept and is certainly one that is open to the objections which we have raised above. It serves, however, one useful purpose, namely, that it makes us realise that social welfare is a lump of satisfaction in the mind of *a man*. This is its valuable feature which it shares with our own definition of social welfare. But the commonly held conception of social welfare is a different one. Most of the economists from the early to the modern times have taken a different stand. They attempt to calculate social welfare by some process of arithmetical or algebraic addition of the welfares of all the individuals carried out by a mind but somehow outside it. Thus, they say that (social) welfare is increased when all individuals become more satisfied; or when one or some become more satisfied without any other individual becoming less satisfied. If some become more and some less satisfied the gains and losses of satisfaction have to be added up to find the net result. But such a summation, since it is outside the mind, confronts the difficulty caused by interpersonal comparison of utility. It is possible therefore to make a categorical statement about social welfare only in those cases in which one or more are better off without others being worse off or in which one or more are worse off without anybody else being better off.

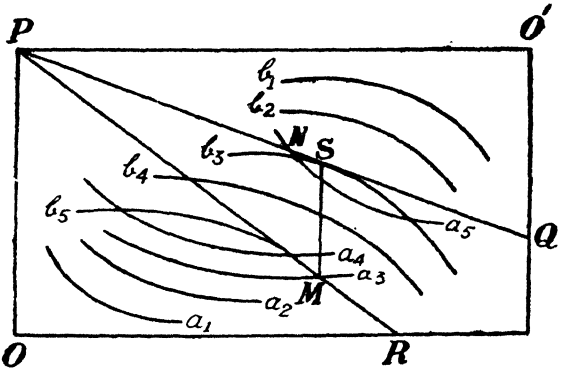
But it is hardly possible to find instances in which some are better without anybody being worse off. In such cases they propose to compensate the losers out of the gains of the gainers before applying the above criterion. Thus, if A is better off and B worse off than before, a compensation is made to B out of the gain of A till B finds himself as well off as he was before. If when that is done A is still better off than before, it can be said that social welfare has increased. When there are many individuals who have gained and many who have lost due to a certain change, the easiest way of applying the above criterion is to tax those who are better off till their gains are wiped off and give bounties to all those who are worse off till their losses are wiped off and then subtract the total amount paid as bounty from the total amount realised by taxation. If the resultant amount is positive it would indicate that social welfare has increased; if negative it would indicate a decrease of social welfare.

It has rightly been pointed out that welfare cannot be said to have increased merely by the fact that it would be *possible* to compensate the losers out of the taxes realised from the gainers and yet have a surplus left over. What is necessary is that such compensations should *actually* be made. In the absence of such operations being actually carried out it would be admissible to say only that the change under consideration is one which can increase welfare provided some suitable alterations were made in the distribution of wealth. To say that welfare is increased because compensation to losers by taxation of the gainers is possible, is to assume that marginal utility of money to different individuals is the same. For, if the utility is the same it matters little whether the money is left in the hands of the gainers or actually transferred to the losers. Thus those who adopt this Paretian technique or criterion of welfare fail to realise the fact that they tacitly assume what they openly condemn. To make the criterion free from its dependence on the assumption of inter-personal comparison of utility actual compensation must be insisted on.

A change in the economy of a society must in the final analysis express itself in terms of an altered production of goods (services included) and a changed distribution of the same. It is theoretically conceivable that a change may leave the production and distribution of goods unaltered, changing only the expenditure of resources. But such a thing is hardly possible in actual practice. Moreover, if the stock of resources is also included in the inventory of goods, an increased (decreased) expenditure of resources may be taken in effect to be the same as a decreased (increased) production of goods. To study the effect of a change in the economy of a country it is sufficient, therefore, to take into consideration the case of increased output of goods or a changed distribution of wealth. The study of either of these cases is sufficient for our purpose. It is convenient to take the case of a change in the price of one good in terms of another; for, that is, in effect, equivalent to the case of a change in the distribution of wealth. Let us now use the technique of indifference curves to consider the effect of a change in the price of a good on welfare. Suppose there are two persons and two commodities. Let these be traded at a certain price.

In the diagram (on p. 95) the indifference curves of two individuals A and B are drawn. They are indicated by letters *a* and *b*. The origin for A is *O*, that for B is O^1. A has *OP* of commodity Y and

B has $O'P$ of commodity X. Suppose the price of one commodity in terms of the other is given by the line PQ. If A allows B to determine the amount to be traded, exchange will take place till the point N is reached. B reaches his highest indifference curves at this price. If the price be now changed to PR and B is given the



lead to determine the amounts to be exchanged, the point of equilibrium will shift to M. B passes on to a higher indifference curve, the price being more favourable to him. A is the loser here as he descends to a much lower indifference curve. What can we say about the effect of this change in price on (social) welfare? One man has more welfare and the other has less than before. Since it is realised that the welfare of one cannot be compared with that of another it is not possible to say whether the gain of B is greater than the loss of A or *vice versa*.

In such cases the principle of compensation is applied. If B were now to compensate A by giving him a quantity of Y less than MS, some point on the line MS would be reached.

At such a point in the space enclosed by curves a_3 and b_3 both A and B would be on higher indifference curves than in the previous situation when the goods were exchanged at the price PQ. It is, therefore, maintained that since compensation can make both the individuals better off than before the change of price from PQ to PR increases welfare.

As we have already observed, unless compensation is actually given it is not correct to say that the change has increased welfare. Moreover, a reverse argument is also possible. We can say, for instance, that the price PQ is better than the price PR. The price

PQ benefits A but inflicts a loss on B. But A can now compensate B by giving him some Y and thus raising him to a higher indifference curve at some point in space between a_3 and b_3. In other words, with price PQ and a compensation from A to B both are shifted to higher indifference curves than they were on with price PR.[1]

The condition laid down for the increase of welfare is, therefore, not sufficient. By a change of price whether from PQ to PR or from PR to PQ, welfare can be increased provided compensation is made. This would create an impression on one's mind that each situation was better than the other. That however is not the case. And logically such a thing can never be possible. What follows from the study of the above diagram is that welfare can be increased by re-distribution of wealth.

In whatever fashion we make use of the indifference curve technique, it is impossible to say whether a particular change of economy that is better than some other change is better than every other possible change. In other words, of two desirable positions one cannot always say which is better. Theoretically all that is at all possible to say is that reorganisation of the economy of a country is the best from the point of view of welfare which increases the utility of every individual to the greatest extent. But such a thing is hardly possible. In the first place, it is not possible for a change to increase the welfare of every individual. And if somehow that does happen, it is impossible for the welfare of all of them always to increase in the same proportion. Thus, we are left without a criterion for judging welfare.

We, therefore, realise that the only satisfactory way of conceiving social welfare and consequently of measuring it is to identify it with the welfare of an individual who sets himself the task of measuring it. Social welfare is not to be computed by adding up the welfares of all the individuals. It is just an idea of the welfare of all in the mind of a man. It is just an idea of the welfare of one composite unit—the society. If one prefers one might think of the mind that conceives of and measures social welfare as the repository of the feelings of all the members of the community. But that is far from saying that social welfare is the algebraic total

1. *See* Professor de Scitovsky's "A Note on Welfare Propositions in Economics and A Reconsideration of the Theory of Tariffs". *Rev. Eco. St.*, 1941.

of the welfare of all the individuals. The mind does in some sense total up these sensations. But it is a total in a sense quite different from the ordinary sense in which all quantities are totalled up.

To sum up, we have seen what welfare or social welfare consists in. We have seen how a distinction between positive and normative studies can be made when the concept of welfare is given a social import. We have shown how welfare can be measured. We have considered the prevailing views on welfare and its measurement and found them unsatisfactory. We saw how economists have been unnecessarily bothered by the question of measurability of utility and its inter-personal comparison. They have given unnecessary importance to the problem of distribution of wealth as an independent and separate factor. It now remains for us to see what welfare economics is.

As already hinted, every study of economics is and has always been a welfare study in some sense. To study what men do is to study what they do to increase their welfare. But the term welfare economics has come to mean the study of that branch of economics which attempts to establish and apply criteria whereby we can judge whether the economic policy of a community is right or wrong. In other words, welfare economics consists of a body of doctrines that explain the meaning of welfare and tell us how it can best be achieved. It thus turns out to be the economics of a society, or more correctly, the economics of a State. It differs from economics pure and simple in that it is necessarily a social study. But it also differs at least superficially in one more important respect. While the former does not specifically mention that certain things should be done, the latter categorically lays down certain principles in the light of which government policies are to be judged.

As we had an occasion to see, such a distinction between welfare economics and economics pure and simple is made possible by the fact that whereas a man always knows what is best for him (at least he is supposed to know what is immediately the best course of action for him) he does not always know what is precisely the best thing for society as a whole.

This being the meaning and contents of welfare economics, people have discussed the various ways in which (social) welfare can be increased. The classical economists as a rule believed that welfare could be increased by increasing the output of goods and

services. It was also believed that welfare could be increased by a better allocation of resources among different uses.

It is convenient to consider this problem in the light of Professor Hicks's criteria of social welfare. He mentions two kinds of criteria, marginal and total. To understand them we must note, to start with, that the constituents of economic problem are individuals (firms included), products (that is, goods and services), and resources. These can be related to different periods of time. It is maintained that to maximise welfare what is required is that there should be no scope left for increase of welfare by making small transfers from one place, individual, product or time to another. These give us what are called the marginal conditions. Hence, welfare is maximised when marginal significance of products to different individuals is the same; the marginal significance of products to the same individual at different times is the same; the marginal significance of factors to different individuals is the same; the marginal significance of factors to different products is the same; and the marginal significance of all factors taken together to different products should be the same. These yield the famous seven marginal conditions associated with the name of Professor Hicks. But as utilities cannot be directly compared the conditions are stated in terms of rates of substitution and rates of transformation. If factors are treated as negative products their number is reduced to five.

Then there is one more fact to be noted. The satisfaction of these marginal conditions guarantees either a maximum or a minimum position. To ensure that their satisfaction yields a maximum position all indifference curves should be less concave to the origin than the transformation curves.

Professor Hicks adds to these what is called the total conditions. Maximum welfare requires further that it should be impossible to increase welfare by producing a product not otherwise produced or produced by one firm only; or by using a factor not otherwise used or used by one firm only. It is possible to amalgamate the marginal and total conditions and say as Professor Reder does that if welfare is to be a maximum, it should be impossible to increase it further by varying the output of any products by any firm, including variations from zero, by varying the amount of any product consumed by any consumer, including variations from zero;

and by varying the amount of any factor unit used to yield direct service to any individual, including variations from zero.

All these conditions serve the purpose of ensuring that individuals, either as consumers or as producers, are shifted to the highest possible indifference curves. When all are not simultaneously pushed up, that is, when some are pushed up and some brought down, the principle of compensation explained above has to be applied. We have already seen that the mere fact that it is possible to compensate the losers out of the gain of the gainers does not ensure that welfare is increased by the change under consideration. For that an additional condition has to be satisfied, namely that the marginal utility of a thing is the same to all, or at any rate it is the same for the losers and the gainers.[1]

What is then the significance of welfare economics? Theoretically we know when welfare is maximum and when it is not. If we go by the criteria of Kaldor, Hicks and de Scitovsky, to maximise welfare we must introduce all those changes which make the gainers gain more than the losers lose. Later, compensations should be given. What, however, is the significance of these principles to state policy? How is the statesman to utilise for practical purposes these theoretical principles of welfare economics? It has been said by some that we need not actually bother about compensation. For, small changes in distribution of wealth are likely

1. It may be of interest to note here the view expressed by R. S. Weckstein in his article on Welfare Criteria and Changing Tastes in *The American Economic Review* of March 1962. He emphasises the fact that welfare depends not on real income alone but its relationship to income aspired for. Underlying this is the fact that satisfaction is a function (decreasing) of unsatisfied wants and thus it lends support to the view that *bliss* requires wantlessness.

Kelvin Lancaster in his article on Welfare Propositions in Terms of Consistency and Expanded Choice in *The Economic Journal* of September 1958 shows that the optimum conditions for exchange can be demonstrated with no utility or indifference apparatus, employing direct approach to welfare in terms of expanded choice which does not rest on a substructure that lies in the shadows between economics and psychology.

Peter B. Kenen in his article On The Geometry of Welfare Economics in the *Quarterly Journal of Economics* of August 1957 explains all the welfare propositions geometrically by a modified box diagram, taking changes in production and transfer of wealth both into account.

Another interesting article to which reference may be made here is by F. M. Fisher on Income Distribution, Value Judgments and Welfare in the *Quarterly Journal of Economics* of August 1956.

to cancel themselves out in the long run. Even if that view is accepted it would still be difficult to know whether the total gains are greater than total losses or not. The practical statesman can go by the amount of wealth produced. Even here services would have to be neglected in the main. Tangible goods produced would be some criterion of welfare. If all goods increase in amount, it should be taken to be an indication of the possibility of increased welfare. For, the additional amount produced could then be hoped to be distributed among the members of the community. But here also a difficulty is encountered. All goods do not increase as a result of any economic reorganisation. Some goods increase and some always decrease. It would be easy to see the truth of this assertion by considering leisure and rest as commodities. Increased production of commodities (even if all material goods were included in them) would naturally entail a greater amount of work for at least some categories of people. And more work means less leisure and rest. It is difficult for the statesman to judge welfare even when only material goods are taken into account and the question of compensations is waved aside. If some goods increase in amount while others decrease, is the welfare greater or less? All our theories, howsoever correct, fail to be of any help to the practical statesman.

It is here that *our* concept of welfare becomes useful for practical purposes. We have said that (social) welfare is the welfare of the man who has the desire to know the welfare of the society. For the statesman, social welfare is the welfare that he enjoys as a representative of the society. Whatever he feels to be the welfare is the welfare. No detailed calculations need be made. After all welfares cannot be added up; and so no arithmetical calculations are needed. He need not know how to define social welfare—he need not know what is a society—all that he needs to know is that he has some welfare.

The literature on welfare economics is very wide and has, in recent years, grown rapidly. Much work on the subject might, however, be considered as being off the mark in the light of what we have said in this chapter. The task a welfare economist faces is at once enormous and brief. It is brief because social welfare resides in the mind of a man, in the mind of an individual and nowhere else. What it is and when it is maximum are, therefore, questions that should not bother an economist. It is maximum

when the man who estimates it feels that it is maximum. It is impossible for him to analyse his feelings and he cannot make calculations of any kind because of the large number of people involved and the large number of sources from which they derive satisfaction. That accounts for the enormous extent of the problem. But our concept of welfare steers safe of all these obstacles.

For those who are interested in making a systematic study of welfare economics the article on A Survey of Welfare Economics, 1939 to 1959 by E. J. Mishan, *The Economic Journal*, June 1960, may be recommended as a remarkable *survey*. For those who would like to read a lengthy theoretical exposition of the problems of welfare economics and then come to realise that there is no tangible content in welfare economics there is J. de V. Graaff's book on Theoretical Welfare Economics. Graaff in despair advises us to devote our time and energy to the development of positive economics. That, he believes, would be more useful for the policy-makers.

The present author shares with Graaff the rather extreme view such as that the weight of an object is not really a factual question. In the last resort it is, he says, an act of faith to decide by the verdict of a pair of scales.

CHAPTER XI

THE CONCEPT OF MARKET

The concept of market is very important in the study of economic theory. In the theory of value, particularly, this word plays a prominent part. We make use of it in many connections. We speak of a market price, a perfect market, an imperfect market, a wide market, a world market, market demand, market supply, and so on. We have, however, not always devoted much thought to the precise meaning of this term, with the consequence that our conception of it has remained a vague one. Very few of us know what exactly the word refers to. Its connotation is not clear and its denotation not well-defined. Does the word market stand for a region, a commodity, buyers or sellers? Or does it stand for all of them? If the latter, how do we blend all these heterogeneous things into the homogeneous conception of a market? If we mean by it a region, what do we precisely mean by region? Is it necessarily a compact area or could it be a number of disconnected patches? If so, how do we connect them to form a compact idea of a market? If we refer the concept of a market to a commodity, what do we mean by a commodity? Shall substitutes constitute one and the same commodity? If buyers or sellers or both go to build up the concept of a market what conditions should they satisfy in order to constitute a market? Should they be considered as having full knowledge of facts regarding price and conditions of sale of the commodity? Should they, again, be in competition with one another? Can they go to form a market if they are only a few in number, say, only one buyer and one seller? These questions admit of no obvious or easy answers. They point to the fact that the word market has for most of us a vague connotation. We seldom stop to think whether it would be a contradiction in terms to speak of an imperfect market or whether it would be absurd to say that there can be substitutes for a commodity in its own market or that there can be two prices of a commodity in the same market.

We should, it goes without saying, have a clear and definite conception of market. There are two ways in which one can proceed to frame a definition of the term market. One could either

start by taking a definition of some economists and consider how far it satisfied the economic theories based on such a definition and how far, again, one could stick to such a conception in the various connections in which the term is used. As a result of such a procedure one would come to have a conception of market that would harmonise with the various economic theories of value. The other procedure would be to see what conception of market best fitted in with the original necessity of formulating the concept of market. I propose to adopt both these procedures in the manner and to the extent to which they could be independently adopted.

It is not always that an economist begins his treatment of value theory with a definition of the term market. It is so simple, like most other terms in economics, that it seldom occurs to a writer that there is a necessity of defining it. Yet, here and there some economists have attempted to define this term. For instance, Sidgwick defines market as a body of persons in such commercial relations that each can easily acquaint himself with the rates at which certain kinds of exchange of goods or services are from time to time made by the others. Cournot says, Economists understand by the term market, not any particular market place in which things are bought and sold, but the whole of any region in which buyers and sellers are in such free intercourse with one another that the prices of the same goods tend to equality, easily and quickly. Jevons tells us that the word has been generalised so as to mean any body of persons who are in intimate business relations and carry on extensive transaction in any commodity. While Ely says, we mean by market....the general field within which the forces determining the price of a particular commodity operate, Marshall gives no definition of his own and Professor Pigou seems to accept Jevons's definition. These economists whose works command respect have different conceptions of market. For Sidgwick a market means sellers, for Cournot a region, for Jevons sellers, for Ely a field. These are the differences as regards the genus. The differentia too differs. For Sidgwick there must be perfect knowledge among sellers, not necessarily competition between them. For Cournot there must be free competition among buyers and sellers. For Jevons the sellers must be in a position to compete. For Ely competition is not necessary. For Pigou, monopoly and market are compatible. These differences are too great to be ignored. For, if a market means buyers or sellers we should talk of price *of* the

market, not *in* the market. If market necessarily implies competition, then a monopolist is not in the market and the output offered by him is not in the market. The supply and demand being outside the market we do not know where they actually interact. The definition of the term market must also be judged by reference to such phrases as market price, perfect market, wide market, market supply, market demand, etc.

For Professor Pigou, perfection of a market does not depend on the presence or absence of competition. It only depends on perfect knowledge of the condition of supply and demand. For him, therefore, a monopolist is in a market. The commodity in which buyers and sellers trade is said to be in the market. He poses the question as to what commodities should be considered as belonging to one and the same market and says in this connection that the term market is sometimes used in such a way that any two articles are regarded as in a common market if the actual price anywhere of one of them is different from what it would have been had the other not existed. This condition is obviously satisfied when two articles, different in kind, but in some measure capable of satisfying the same needs, are on sale in the same place. Thus substitutes and complementary goods would come to be regarded as belonging to the same market. Nor is this all. In a strict sense, the condition is satisfied for different kinds of articles that are bought and sold in the same neighbourhood, even though they are not related in any of these special ways. For, if one ceases to exist and, therefore, no money is expended on it, there is more money available to spend on the other and then prices are affected. That means that everything in the same neighbourhood is in a common market, and the word loses all significance. To overcome this difficulty Prof. Pigou says that he would premise that in one market there could only be one single type of homogeneous commodity or service. But he does not say in clear words as to what he actually understands by market. He gives conditions in which a market becomes perfect. But he keeps us in the dark at to the genus of a market. One thing is clear that for him a market is a market even when it is imperfect. So long as there are traders there is a market. And two different commodities or different types of the same commodity cannot be in the same market. This means that even when many commodities are displayed or bought and sold in the same place they belong to different markets. Hence, the word market cannot signify

a place, a field or a region. For, if it did, different commodities could belong to the same market.

Which units of a single type of homogeneous commodity should be considered as belonging to the same market is explained by Professor Pigou with reference to what he calls the nodal point. Different units of a commodity are in one market according to him, when *en route* between the seller's works and the buyer's home, they pass through and are available for purchase and sale to any applicant at a common nodal place. A nodal place is conceived as a region between the several parts of which costs of transport are nil. Thus all those bags of sugar which pass through Allahabad on their way to buyers' home from factories are said to belong to the same market provided they are available for sale at Allahabad. And Allahabad then becomes not the market but a nodal place. In case of one seller and only one buyer of a commodity the nodal place is the seller's place. All this Professor Pigou explains with meticulous care but does not tell us what actually a market is.

What are we then to understand by market in view of these unsatisfactory and divergent views held by various economists? When we talk of a market we think of buyers, sellers, a commodity and a place, region or a field. We think also of a price, and absence or presence of competition, or perfection and imperfection of it. The concept of market must be evolved out of these things. Market could either mean any one of these or a combination of any two or more of these or none of these. To identify buyers or sellers with a market, as some economists do, appears absurd. Many economists are buyers and sellers of books but they would not like to be called markets. Similar considerations rule out the possibility of calling a commodity or competition a market. And if these cannot singly be called a market, a combination of two or more of them, too, cannot be called a market.

The thing left then for consideration is the place or the region. If it is to stand for a region should the term market include the place occupied by buyers and sellers or by the commodity or by all of them? If the buyers are in London, sellers in Liverpool and the commodity in Manchester which of these is the market or if all together are to be understood as making up the market shall we include the whole corporation areas or even the suburbs of these places? Likewise should the whole Manchester City be included?

or only the godowns in which the goods are stored? These difficulties most students of Economics ignore but scientific precision demands that we give clear and definite answers to these questions. If we cannot answer them we should realise that something is the matter with our conception of the term market.

We should either do away with the word market, that is, not use it as noun and only use it as a verb in the sense of "selling"; or define the term more cautiously. If we must retain its use as a noun we would propose the following definition. The *word market signifies a state in which a commodity has a demand at a place where it is offered for sale.* Thus there is a market even when there is only one buyer and one seller provided the buyer is able to buy from the seller. This feature of market that follows from our definition is in harmony with the conception of the term held by Professor Pigou and accords also with the common conception of the word marketing. For, to market means to sell.

If there are many buyers of a commodity they must satisfy a certain condition before they can be considered as belonging to the same market. Two buyers A and B can be said to belong to the same market when there is a possibility of a shift of demand between them. Shifting is thus explained. The demand is said to be capable of shifting between buyers A and B when A could buy the commodity and resell it to B or buy it on behalf of B, or *vice versa.* Such a shift of demand depends on two important factors. First, the buyers should have knowledge of facts regarding the price of the commodity and second, there should be no cost of transport of the commodity from A to B. To the extent to which these conditions are not satisfied the buyers are not in one and the same market. Likewise, if there are many sellers of a commodity they too must satisfy the condition of shift of supply so that they could be considered as belonging to the same market.

Again, if there are many units of a commodity they are said to belong to the same market when transaction in them is confined to buyers and sellers that belong to a common market.

The shift of demand ensures that buyers shall not have to pay different prices. The shift of supply ensures that the buyers shall not offer different prices to the sellers. It follows from what is said above that if there be one seller and one buyer of a commodity they must necessarily belong to one and the same market. But

when there are two sellers and one buyer of a commodity a situation is conceivable in which the two sellers belong to different markets while the buyer being one belongs to both the markets. Likewise when there are two buyers and one seller, the buyers might belong to different markets while the seller belongs to both of them.

Economists speak of a wide market and a narrow market, meaning to refer thereby to the size of the area over which the buyers and sellers are scattered. But that such statements should be very cautiously made must have now become obvious. For, a market is not an area, it is a state of affairs and to speak of a state as being wide or narrow is meaningless indeed. Likewise one should be cautioned against the use of the expressions perfect or imperfect market. A market exists when there is a buyer and a seller of a commodity. And then it is perfect indeed. But to call it perfect is to hint at the possibility of an imperfect market. Imperfection could be associated with competition but, as already argued, competition is an essential attribute of a market. Again, imperfection there might be in the shift of demand or supply due to costs of transport or to ignorance. But then the buyers or sellers do not really belong to the same market according to our definition of that term.

It has always been stressed that a market has reference to one commodity only, *i.e.*, two different commodities or qualities of a commodity cannot be in the same market. This view is perhaps correct when exchange takes place between a commodity and money. But let us see what changes become necessary in the above view when things are bartered. That a market exists even then is obvious because there is a buyer and a seller of a commodity. But in each transaction two commodities are involved. If a pen is bartered for a pencil, there is a market for both, for both have buyers and sellers.

Let one man have a pen and another a pencil. They are willing to exchange them. Had there been money instead of pencil we would have said that the two persons and the pen belong to the same market. But now shall we say that the pencil also belongs to the same market? Considerations of symmetry suggest that we should. And if such a suggestion be correct then it follows that cases are conceivable in which two different commodities belong to the same market. But if we wish to retain our former conception

of market in which only one commodity is considered as capable of being in a market—for the definition of market rules out the possibility of any other view—we should explain the case of barter by saying that there are two markets, one of pen and the other of pencil. The one who has the pen is the seller of pen and buyer of pencil and he belongs simultaneously to the two markets. He is a buyer as far as one market is concerned and seller as far as the other is concerned. It is, however, the pure psychologist who will decide whether a person can be looked upon as a buyer and a seller both at the same time. If he cannot, then each of the two persons in the above example should be considered as belonging to two markets but not in the same breath.

Reference has been made above to *units of commodity*. What is a commodity and what is a unit? No meaning of the term market can be considered to be clear till we know precisely what a commodity is. In the literature on imperfect competition we find some material on the definition of this word. Mrs. Joan Robinson, for example, would not like to go into hair-splitting discussion of this problem of defining the word commodity. For her the things that look alike make up the same commodity. But to a theoretician this definition of commodity would not be acceptable. Things may look alike and yet may not serve the same purpose. On the other hand, things that do not look alike might be able to satisfy the same want. Since a commodity is a commodity by virtue of the fact that it satisfies some want would it not be better to say that all those things that satisfy the same want should be regarded as the same commodity?

Alternatively, it might be held that all those things that give the same utility are the same commodity. But one should then be prepared to accept the fact that five pencils and a fountain pen are the same commodity if they give us the same utility. Logic should force us to accept this conclusion. A pure economist has to be prepared to welcome all such conclusions. In the final analysis, all things are alike in some measure or the other. The distinction we make between one thing and another is superficial and satisfies our purpose as laymen. But a pure economist is not a layman and he should be consistent in his arguments. After all there is some competition between a bicycle and a scooter and to that extent they fall under the same category: they are partial substitutes. It is arguable, therefore, that a scooter and a dozen bicycles, perhaps, are the same commodity.

CHAPTER XII

MEANING OF MONOPOLY

The income of the seller of a commodity depends on the degree of control he is able to exercise over the price. In the case of perfect competition a seller is said to have no control over price, while in the case of monopoly he is said to have it in the fullest measure. In between these two cases of competition and monopoly there are others in which a seller can have a partial control over the price. Such cases generally go by the name of imperfect competition or monopolistic competition.[1]

The above description of monopoly and competition suggests that sellers can be arranged in order of the degree of control they are in a position to exercise over the price of the commodity they sell. At one extreme there would be sellers who can exercise no control at all, while at the other extreme there would be those who have full control over the price.[2] All those lying in between these extremes naturally have a partial control over the price. This indi-

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1. Professor Chamberlin makes a distinction between impure and imperfect competition which is explained in the chapter on Imperfect Competition.

2. Pigou writing about the two ways in which a seller can act, says: "In these circumstances there are two possible objectives open to him; to carry his work so far that his aversion from the marginal unit of it is equal to the desire for the value of the marginal product, or to carry it so far that his aversion is equal to his desire for the marginal product of value. If he chooses the first, we say that he is acting in accordance with the rule of competition." (*Economics of Stationary State.*) Pigou thus differentiates between monopolistic and competitive action. But it is clear that his monopoly is characterised by a sloping demand curve.

Mrs. Joan Robinson points out the difficulty of defining the word monopoly in her *The Economics of Imperfect Competition.* An attempt at defining it in certain ways involves us in the additional difficulty of defining the word commodity. She observes that the difficulty is best overcome by abandoning the attempt to confine monopoly in a pen by itself. She writes, "Every individual producer has the monopoly of his own output—that is sufficiently obvious; and if a large number of them are selling in a perfect market the state of affairs exists which we are accustomed to describe as perfect competition." (Page 5.)

See also *Monopoly* by Prof. E. A. G. Robinson for the difficulty of defining monopoly.

cates the fact that there is merely a difference of degree between cases of imperfect competition and perfect competition as also between those of imperfect competition and monopoly[1]. In this threefold classification of sellers the middle class, namely, that to which sellers with only partial control over price belong, is obviously the largest, the other two being narrowly limited (to the vanishing point) by the necessity that the degree of control in their case has to be either nil (zero) or cent per cent.

One is likely to experience some difficulty in fitting this conception of monopoly into one's own conception of it based on experiences of business life. What, one might ask, is the meaning of full or cent per cent control over price? Does it mean that a monopolist is one who can charge any price he likes? If it means that (and perhaps there is nothing else that it could mean) then monopoly thus conceived seems nowhere to exist. No seller in practice is able to exercise such an unlimited control over the price. Nor do our diagrams relating to cases of monopoly make use of demand curves exhibiting such unlimited control over price. If the description of monopoly in terms of full control of price be correct the demand curve for goods sold by a monopolist would have to be a vertical straight line. This appears unrealistic and unless one is prepared to accept the logical conclusion which such a conception of it, namely that a monopolist does not exist in the real world, leads one to feel the necessity of exploring other ways of defining the word monopoly.

The word monopoly connotes the idea of one seller. If there was only one seller of a commodity in the whole world or in a clos-

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1. In the text the word imperfect competition is used in the sense of impure competition as defined by Prof. Chamberlin. He distinguishes impure from imperfect competition. Competition is impure when there is an element of monopoly in it. It is imperfect when due to various frictions competition in an industry co-exists with profits or losses for individual firms. Prof. Chamberlin therefore means by impure competition monopolistic competition.

Prof. Fritz Machlup distinguishes monopolistic competition from Oligopoly. In both there is monopoly element but while in the former it is due to differentiated products in the latter it is due to the fact that there are only a small number of sellers and consequently each seller is conscious of the reactions of other rival sellers to his own move. See *American Economic Review*, September, 1937, "Monopoly and Competition: A Classification of Market Positions".

ed economy he would perhaps be justly and rightly called a monopolist. But even in such a case it would be difficult to define the word precisely. If we ignore the fact that a monopolist must have (some or full) control over price and mean by a monopolist a single seller of a commodity, the question would still be there as to what is meant by the word *Commodity*[1]. Are the different varieties of the same good to be regarded as different commodities or merely as different units of the same commodity? Are units of the physically same commodity available for purchase at different places to be regarded as different commodities? Are units of the physically same commodity available at the same place but offered to buyers at different terms to be regarded as constituting the same commodity? Are physically different things available at the same place to be regarded as different commodities if they satisfy similar wants or afford the same degree of satisfaction? Questions such as these have to be answered before the conception of monopoly can be made clear; and if they are answered in the only logically correct way by saying that two things must be regarded as two units of the same commodity when they are substitutable one for the other in the sense that they give the same utility, fresh difficulties are perhaps created. What do we mean, for instance, when we say that two things should yield the same utility? Do we mean the same utility to the same man at the same place? Or do we mean the same utility to all possible consumers? An attempt at answering these questions would convince one that the concept of monopoly cannot be made precise by defining the word in terms of a single seller.

Further, if a closed economy is not considered what would the expression one seller mean? One where? One in what region? This point need not be laboured further. Suffice it to say that de-

1. The question of defining "a commodity" has come up again and again in economic literature. It is now recognised by all that physical similarity is no criterion for the classification of commodities. Dr. A. P. Lerner suggests—what seems to be the implication of the word as defined by others also—the principle of substitutability at the margin as the criterion for the classification of commodities. It is worth noting that for some a commodity is that which has *exchange value*. Friedrich Engel says: "To become a commodity a product must pass by way of exchange into the hands of the other person for whom it has a use-value." Karl Marx says: "Articles are not commodities before the act of barter. Only then do they become commodities." Mr. Triffin speaks of homogeneity of goods in his *Monopolistic Competitions*.

fining the word monopolist as the only seller of a commodity raises questions of insurmountable difficulties.

It is not necessary, however, to define monopoly in this way. The definition of monopoly given at the beginning, namely, that a monopolist is one who has full control over price is correct and can be made use of in practice as well.

In this world there is no seller the demand for whose goods is perfectly inelastic. It follows from this consideration that a pure monopolist is not to be found anywhere in this world. The reason for it is that there is no commodity that is so necessary as to compel the buyers to purchase it at any price. The buyers have neither the means to do so nor is it necessary for them to stick to any one commodity. For, every commodity has a substitute either in some other commodity or in the same commodity with other sellers. A buyer can always find an alternative enjoyment for himself, and even if he cannot, his means are so limited that the seller is unable to charge whatever price he likes.

A pure or full-fledged monopolist is, therefore, nowhere to be found. Those sellers who are ordinarily called monopolists are in reality sellers with partial monopolistic power. Just as perfect, pure or unadulterated competition is only a theoretical conception, so also is pure monopoly only a theoretical one. In this world what one finds is imperfect or monopolistic or impure competition. It is best, therefore, to define monopoly by the verticality of the demand curve and say that the control over price that is indicated by it is to be found in a greater or lesser degree in the case of every seller.

If a seller can thus be thought of possessing some degree of monopoly rights indicated by a corresponding control over price it should be possible also to devise some method of measuring monopoly power. When the demand curve is perfectly inelastic the income of the seller varies in proportion to the price. Or, in other words, the demand remains constant. The degree of monopoly power can, therefore, be measured by the maximum absolute increase in the price that is possible to make without decreasing the demand. In the case of (the theoretically possible) pure monopolist the maximum absolute increase in price that is possible is infinity. Hence his monopoly power is unlimited. In the case of pure competition the absolute increase in price that is possible to make is zero. In the case of monopolistic or imperfect competition it is possible to

raise the price to some extent without having to suffer a loss of custom. The greater the monopoly power the greater is the extent to which the price can be raised without loss of custom.

In thus calculating the degree of monopoly power we have to take some price as the starting point. If the price is high a given absolute rise in it constitutes a small relative or percentage rise. In comparing the degree of monopoly power of two sellers we have, therefore, it seems to keep the starting price the same. We cannot, to obviate this necessity, measure the monopoly power in terms of relative increase in price. For the relative increase in price is infinitely great when we start from zero price.

Is it necessary, one may ask, to define "commodity" in order to be able to give precision to the meaning of the word monopoly thus understood? Since we are talking of price it is necessary to think of a commodity. For the purpose of the measurement of monopoly power however, whatever the man sells can be regarded as a commodity. Since we have not to take into account any other seller of any commodity, while thus measuring monopoly power, it is not necessary for us to say whether the other things offered for sale by other sellers at the same or any other place constitute the same commodity or not.

It is true, however, that the monopoly power of the same seller will depend on the price that we select as the base price. When, for instance, the price is 50 a greater absolute increase in price is possible without loss of custom than when it is 10. Hence at higher prices a seller is a more thorough monopolist than at lower prices. At no price, however, can a seller be a full-fledged monopolist unless his demand curve stretches out vertically to infinity. The impossibility of such a thing constitutes the proof of the validity of our definition of monopoly.

The fact that at different prices there are different degrees of monopoly-right should not be considered as damaging to our definition. After all, a monopolist is a monopolist by virtue of the fact that he has some control over price. And the control over price must depend, along with other things, on the height of the price itself.[1]

1. Paul M. Sweezy makes it a condition of monopoly that the demand curve should be independent of the profit made. That guards against the production or expectation of production of substitutes encouraged by the profit of the monopolist. See his articles on the "Definition of Monopoly" in *The Quarterly Journal of Economics*, Vol. 51, 1936.

Dr. A. P. Lerner has suggested another measure of monopoly power which, in certain cases, becomes the inverse of elasticity of demand.[1] As a matter of fact we have based our concept of monopoly and consequently our measurement of its power, on the elasticity of the demand curve. When the elasticity of demand is zero it is a case of perfect monopoly for us. When the elasticity of demand is infinity it is, for us, a case of perfect competition. But the difference between our measurement and Dr. Lerner's consists in the fact that for us the mere horizontality of the demand curve does not constitute a case of perfect competition; the demand curve may be horizontal or vertical over a small range (and every demand curve is composed of small vertical and horizontal bits)[2] but that is no indication for us of either perfect competition or perfect monopoly.

It will be realised that the more vertical the curve the greater is the degree of monopoly power that it indicates. But it is not the mere direction of the curve at a point that matters. We have necessarily to consider the length of the arc over which the given direction is maintained. In this world we cannot find a seller the demand curve for whose product or products is vertical all through, *i.e.*, no seller can be a monopolist to an unlimited extent. For, that would necessitate absolutely inelastic demand for his goods; and the demand cannot be so inelastic unless there is no other use of money that can be substituted for the purchase of these goods and unless, further, there is an infinite amount of money available for expenditure.[3]

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1. Dr. Lerner gives us $\frac{p-c}{p}$ as the index of the degree of monopoly power. p stands for price c for marginal cost. See *Review of Economic Studies*, Vol. 1, No. 3.

Mr. Triffin uses $\frac{p_j}{q_i} \times \frac{dq}{dq_j}$ as the index of monopoly element where d is the price and q the quantity sold and i and j are suffixes denoting two sellers.

2. As a matter of fact a demand curve must be understood as composed of bits of vertical lines (of varying lengths) at certain distances from one another.

3. Mrs. Robinson, Prof. Chamberlin and others have also remarked that in order that a monopolist may be free from competition from all other sellers there should be no substitute, in the widest sense of that word, for the goods that he sells. Prof. Chamberlin says, "It might seem that the theory of monopoly would offend equally in the opposite sense by excluding the competitive elements. This would be true, however, only in the case of *pure* mono-

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We have already observed that since our conception of monopoly power does not rest on the comparison of the case of one seller with that of another it is not necessary to define commodity. But is it absolutely unnecessary to do so? How are we to measure the monopoly power of a seller when he is selling goods which in appearance are so different as to justify our calling them different commodities? If a seller, for example, is selling paper and shoes at the same place and time, are we to regard them as different commodities and measure the degree of his monopoly power separately for both? And if so, does it or does it not become necessary to define the words "a commodity"? If both the things, paper and shoes in this case, are allowed the same absolute rise of price at every level of price, there would be no necessity of defining "a commodity". In all those cases in which that is not the case we have to measure the degree of the monopoly power separately for each thing, calling each thing by its name and description. And since no comparison of the case of one seller with that of another is needed this otherwise crude device is not damaging to our conception of monopoly.

The rigour of any possible objection to our concept of monopoly can be diluted by drawing one's attention to the fact that, logically speaking, one should define monopoly beginning with the words, "a monopolist of *a given commodity* is one who...." This would obviate the necessity of having to clarify the meaning of the word commodity. For, we say that a commodity is given to us. The burden of defining the word commodity is thus shifted to other shoulders. In other words, something is given to us to be called

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poly, as defined above....control of the supply of all economic goods by the same person or an agency. The theory of monopoly has never been interpreted in this way. It applies to particular goods, and as such always admits competition between the product concerned and others. Indeed, one may go so far as to say that the theory *seems* fully to meet both elements, and the interesting possibility is at once suggested of turning the tables and describing economic society as perfectly monopolistic instead of as (almost) perfectly competitive. Subsequent chapters will carry the refutation of this view." *The Theory of Monopolistic Competition,* page 54.

For the meanings of "Absolute monopoly" and "Pure monopoly" see "All Laws of Return under Competitive Condition" by Prof. P. Sraffa, *Economic Journal,* 1926, page 545, and *Monopolistic Competition and General Equilibrium Theory* by Robert Triffin.

a commodity. It may include only pens or also pencils: it may include shoes only or along with them paper.

One might ask as to what is the utility of having a concept of monopoly which cannot be found in this world. The answer is that *this world* is not the only world to reckon with. For a scientist, and the economist is a scientist, there are other worlds besides the one a layman is familiar with. The pure economist who is in charge of digging the foundation of economics does not end where he begins. What our eyes see have meaning only by comparison with other things. We compare things with certain norms or ideals. Pure monopoly and pure competition are the ideals or norms from which what our eyes see deviate and unless we know these deviations the things seen have no meaning for us.

CHAPTER XIII

STATIC AND DYNAMIC EQUILIBRIA

Attempts have been made in recent years to state the theory of value in such general terms as to make it applicable to cases of competition, imperfect competition and monopoly alike. Likewise it has been attempted with considerable success to evolve a general theory that may explain how value of money as well as commodities is determined both in domestic and international markets in periods of all duration. Some of the important concepts that have enabled us to formulate such a general theory of value are, as is well known to students of economic theory, those of marginal revenue (replacing that of price), the marginal cost of production (as distinguished from marginal cost of manufacture or sale), marginal rate of substitution (in place of the more easily understood concept of marginal utility), comparative cost[1] (instead of absolute cost) and expectation of supply and demand (instead of actual supply and demand). With the help of these concepts it has been found possible to unify and co-ordinate the hitherto different theories of value of commodities, services and money (relating to cases of competition, monopoly, imperfect competition, domestic trade, inter-regional trade, etc.) into one General Theory.

As it naturally must be, the usual statement of the theory of value is much too vague for a clear understanding of the price doctrine. Thus for instance, when it is said that in equilibrium price equals the cost of production one does not know whether by equilibrium is meant static equilibrium, or dynamic equilibrium, or again whether reference is made to a short period or a long period. Nor is it clear whether price means the price of each and every firm or of a particular firm, say, for instance, the representative firm.[2]

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1. It may be noted here that it is not possible to have any concept of absolute cost, just as it is not possible to have any concept of absolute utility. Cost and utility are again related—cost being displaced utility. The classical concept of real cost is also a relative one. Real cost, since it is measured in terms of human sacrifices, would appear to be absolute. But as even sacrifices are only comparable and not capable of absolute measurement, it is not correct to maintain that real costs are absolute.

2. For a critical study of this see the chapter on the Representative Firm.

Even the word cost is capable of so many interpretations that one does not know whether by it is meant marginal, average or total cost, or if either of the last two, whether it is prime cost, supplementary cost or aggregate cost. Thus, the statement in regard to price is capable of assuming one out of a large number of meanings, for we can have a large number of combinations out of the several meanings of the terms price, equilibrium, period and cost.

Our object is to remove to some extent all these complications by defining precisely the words static and dynamic equilibria. While that is the main object, we shall incidentally be clarifying the meanings of some other basic terms such as "equilibrium", "short period", "long period", "profit" and "rent".

A production unit is said to be in equilibrium when it shows no tendency to expansion or contraction within the period of time under consideration. We cannot talk of equilibrium without referring our case to a period of time. The period may, in limiting cases, contract to a point of time or extend to eternity. In the former case all situations of necessity become positions of equilibrium. In the latter, as we shall see later, equilibrium and static equilibrium become identical terms. By a production unit we understand either a firm or an industry[1]. Expansion of a firm is defined by the flow of resources into the firm, while that of an industry is defined by the flow of resources into the industry. So far as the factor labour is concerned, the expansion of a firm involves inter-firmal transfer of labourers, while the expansion of an industry involves inter-industrial transfer.

A state of equilibrium thus being defined in terms of non-expansion and non-contraction within the period of time under consideration, we can distinguish between static equilibrium and dynamic equilibrium. Static equilibrium is that equilibrium which maintains itself outside the period of time under consideration.[2] Thus,

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1. We have here used the popular terms firm and industry without defining them, for we do not wish to go into the difficult question of the precise meanings of these terms. It is possible, however, to ignore this difficulty without jeopardising the validity of our theory or hampering its understanding.

2. During the currency of the period the equilibrium can be called static if it is expected to continue or maintain itself beyond that period. Such expectation would be dependent on your knowledge of the forces of demand

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an industry that is in equilibrium on a particular day would constitute a case of static equilibrium only when it is known that the industry is going to maintain itself in equilibrium in the future.

Thus, equilibrium referred to a day may be static equilibrium with reference to a number of days. In other words, we cannot talk of static equilibrium without reference to a *period of time*. We cannot talk merely in terms of eternity. The concept of static equilibrium is a function of time just as the concept of equilibrium itself is. The difference, however, consists in the fact that whereas equilibrium has reference to *a* period of time, static equilibrium has necessarily reference to *periods* of time. What is equilibrium with reference to a given period is, therefore, static equilibrium with reference to that period when considered as composed of two or more small periods of time.

In a stationary state (defined by the fixity of consumers' preferences, technique and resources) equilibrium requires the equation of demand and supply. Since demand is fixed and conditions of supply are also constant, all that is needed to bring about lasting equilibrium is an adjustment of supply to demand on the basis of the knowledge of things as they are found existing at the moment.

Where knowledge is perfect the adjustment is possible at once, and there is no *process* of adjustment by the method of trial and error[1]. In a stationary state, therefore, knowledge being assumed perfect, equilibrium is there from the very start, and it is wrong to argue that it is brought about in the long period. This takes us to the consideration of short and long periods.

A long period is defined as the period of time that is required by a production unit to complete all the adjustments that are necessitated by the forces acting on it at *any given time*. All periods of time, of duration shorter than this, would be called short-periods. This of course does not mean that there is no equilibrium in a short period. So long as the production unit does not expand or contract within that short-period it is, by definition, in equilibrium. In the

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and supply. On the termination of the period it can be verified whether the equilibrium which was judged to be static is really so. The static state of an equilibrium can be judged, therefore, by its comparison with the future (and not the present).

1. We ignore here the time required to make adjustments in the use of factors.

short-period there is equilibrium in the sense that no further adjustments are possible within that period and all adjustments that could be made have already been completed. In a short-period, then, there is equilibrium which arithmetically is defined by the equality of marginal revenue with short-period marginal cost (in the case of perfect competition we can substitute the word price for marginal revenue). Geometrically it is defined by the point of intersection of the marginal revenue or the price curve (as the case may be) and the marginal cost of production curve referred to the period under consideration. The marginal cost curve in the case of a short-period is one that would change outside that period[1].

Every period, whatever its length may be, has its own marginal cost curve; and the production unit always equalises its marginal revenue with the marginal cost. But in the short-period as defined by us above, since all necessary adjustments have not been completed, the cost is determined by only those adjustments which have been completed during that short-period. Outside that period some more adjustments are made so that in the long period, as defined above, all possible adjustments are completed and the cost becomes different from and lower than what it was in the short-period.

It will be clear now that equilibrium in a short-period is necessarily dynamic whereas in the long period it *may* be static. Short-period equilibrium cannot maintain itself outside the period (for by definition some further adjustments are made outside the period) and is, therefore, not static equilibrium. Long-period equilibrium can maintain itself outside the period concerned provided no further change takes place, in the meantime, in the forces acting on the production unit. If a month is required to enable the unit to complete all the adjustments necessitated by these forces we would say that one month is the long-period. The implication would be that provided no further change was to take place in these forces the equilibrium that would be reached at the end of a month would

1. It is often erroneously stated that in the short-period demand and supply are not equal and that therefore the price is not determined by the equality of marginal revenue and marginal cost. As a matter of fact, price is, even in a short-period, determined by the intersection of marginal revenue and marginal cost curves. Each period has its own appropriate marginal cost curve and price is always determined by the point where it meets the marginal revenue curve. For a detailed explanation of this point see the chapter on the Determination of Price in the Short and Long Periods.

maintain itself thereafter. Thus, the equilibrium conceived of in the long-period may be static equilibrium though it need not necessarily be so. But the short-period equilibrium is necessarily not static.

In a stationary state long-period equilibrium would be static and given perfect knowledge, as we have said above, the equilibrium would of necessity be static. Thus there would be no short-period equilibrium in a stationary state characterised by perfect knowledge. The distinction between short and long-periods is, therefore, meaningful only in the case of a dynamic state.

We began by saying that in a stationary state equilibrium is attained (given perfect knowledge) at once by the adjustment of supply and demand. How is equilibrium attained in the dynamic state? In the dynamic state since forces are continuously changing, the technique of stationary state, it would seem, would not be applicable to the determination of price. It may, however, be pointed out that equilibrium would take place at every given moment of time, though it would be upset at the next moment and new equilibrium re-established. For, *at any moment of time,* the preferences of consumers, resources and technique are fixed, so that supply can be adjusted to demand in the same way in which it is done in the case of a stationary state.[1]

To this, however, it might be objected that even at a moment of time equilibrium is not possible, for though the demand, resources and technique can be assumed to be fixed, it is not on these alone that equilibrium would depend, but on what they would be in the future. Thus it might be maintained, one cannot proceed on the basis of what is and has to proceed on the basis of what would be in the future—a group of changing forces.

This, however, does not prove that the technique of stationary state is not applicable to the determination of the position ef equilibrium in the dynamic state. For, though our calculations are based on future price and future resources which are necessarily in a process of change, the expectations of the future are themselves con-

1. Professor Hicks's dynamic economics lies within the framework given by three notions. First, there is the week, then the plan and last, the definite expectations. "By using the week, we become able to treat a process of change as consisting of a series of temporary equilibria; this enables us still to use equilibrium analysis in the dynamic field."

stant. Hence the analysis of static equilibrium can be applied to the case of a dynamic state by bringing into our analysis the factor of "expectations" of future changes. This expectation, it may be noted, is a fixed factor and relates to the present. Equilibrium, then, in the dynamic state is brought about by the adjustment of supply to demand; the only difference being that in this case the supply and demand are influenced by the (constant) expectation of changing future forces.

It is, therefore, possible to apply our technique of the stationary state and determine the position of equilibrium at every point of time when dealing with the case of dynamic state. This equilibrium, as explained above, is dynamic as it does not maintain itself outside the period of time under consideration. But the moment the equilibrium is upset it is re-established. Thus there is some position of equilibrium at every moment of time,[1] and disequilibrium exists in the only sense that at every moment there is difference between the price that rules and the price that was expected to establish itself. In the static state such a difference does not exist; for, the future being the same as the present, expected price is the same as the actual price.

The static equilibrium price yields no profit, but the price in dynamic equilibrium does contain a profit element (because of the element of uncertainty). In the former case price equals marginal and average costs; in the latter only marginal cost.[2] In each case

1. A firm or an industry is, therefore, never in disequilibrium; it is always in equilibrium though in this world that equilibrium is itself dynamic. This way of understanding *equilibrium* is not only in itself correct, but it harmonises also with the mathematical explanation of price as being determined by the intersection of demand and supply curves in all cases. The point of intersection connotes equilibrium; for it is there that the two opposing forces balance each other.

2. Here our statements are predicated of perfect competition. In the static state in perfect competition the firm and the industry are both in equilibrium and hence there is no profit. In the dynamic state the firm is, but the industry is not, in equilibrium and hence there is an element of profit. Profit is understood as the remuneration for uncertainty-bearing. All that is true of perfect competition is also true of imperfect competition with the only difference that the marginal cost equals marginal revenue instead of price. In the case of monopoly it is likewise true that static equilibrium price yields no profit. But even then the price is higher than average cost, the difference being rent of monopoly. For the difference between profit and rent see the concluding paragraph of the text.

equilibrium is defined by the absence of the tendency to expansion or contraction of the production unit. Dynamic equilibrium is necessarily a momentary one. At any moment of time marginal cost is equated to price and that puts an end to further adjustment of output *for the time being.*

We can say, then, that in the dynamic state there is equilibrium *at* any given time but not *over* time. It is for this reason that the price or marginal revenue is not equal to the long-period marginal cost. Yet the technique of the static state is applicable, for at any given time the factors to be reckoned with are fixed and the influence of changing future is constant as it works through a definite and constant expression of anticipations. As in the case of the stationary state so also in that of the dynamic state, the producer exploits the situation to maximum advantage at every moment. This he does by equating marginal cost to marginal revenue.

We have already said that the distinction between the short and the long-period is germane to the case of dynamic equilibrium only. For, in the static state the division of time into periods is of no significance whatsoever, as there is equilibrium at all times and adjustments that are associated with the long-period are permanently made. It is the changes in the supply and demand of the dynamic state that necessitate changes of output on the part of the producers and of consumption on the part of the consumers. And changes in the output require time. In a short period, the change is made in one way (the more costly way) while in the long-period it is made in another way. It is these changes, therefore, that make it necessary to distinguish periods according as they are small or big.

Let us now study profit in relation to static and dynamic states. Profit, whether it is understood as the remuneration for uncertainty-bearing or as accidental and unexpected gain, does not exist in the stationary state.[1] It is only when we assume knowledge to be imperfect that profit can be said to exist in such a state in the short-period. The distinction between short and long-periods has meaning in the case of a stationary state only when knowledge is assum-

1. Profit should be understood as the remuneration for uncertainty-bearing. For, it is only when it is thus understood that it is always positive in the dynamic world. Profit thus becomes an element of cost. If there is an accidental gain it should be called accidental surplus and all unexpected losses should be called accidental deficits.

ed to be imperfect. But what would a short-period mean in a stationary state? It can only mean the period of transition from a dynamic to the stationary state. Its duration would be very small; for, however imperfect human knowledge may be, it becomes perfect when conditions remain stable and do not change at all. The knowledge here referred to is the knowledge of the future; and in the stationary state the future is just the same as the present, hence, imperfection can exist only during the period of transition from the dynamic to the static state.

There would, therefore, be no uncertainty and hence no profits nor accidental gains and losses in the stationary state. In the dynamic state, of course, there is profit. In the short-period, the price is equal to marginal cost (perfect competition) but not to average cost. Hence there is accidental gain or loss. The uncertainty caused by such a state makes uncertainty-bearing necessary and, therefore, in the dynamic state in the short-period profit exists as the necessary remuneration for uncertainty-bearing. In the long-period price may be equal to average cost provided during the time that the production unit takes to complete all its adjustments no fresh changes take place. This is not possible, however, in the dynamic world and, therefore, even in the long run the price is not equal to average cost. Risk is, therefore, attached to production making profit, the remuneration of the *entrepreneur,* a necessary element in the cost of production. While the entrepreneur thus always earns profit he may, besides this profit, sometimes secure an accidental gain or suffer an unexpected loss.

In the dynamic state long-period price is only a mental figure. It is the price that would rule when all the adjustments necessitated by the known changes acting on the production unit are completed and no further changes take place. But such a price is never attained in practice. For, before such adjustments are completed fresh changes take place.

It remains now to throw some light on the precise difference between accidental or surplus profit and rent. For, the one difference between static and dynamic economy is that whereas in the former there is rent, in the latter there is profit also. "Rent and profit both belong to the genus surplus." Both these incomes are, mathematically, the difference between income and cost and, therefore, of the nature of a surplus. The differentiating factor, however, is that profit-surplus arises due to our inability to foresee the

future correctly. It is due to uncertainty about the future. Rent, on the other hand, is a known and expected surplus. A monopolist's pure monopoly revenue is a rent-surplus when he equalises his marginal cost with marginal revenue on the basis of his knowledge of facts which turn out to be correct. But a producer, be he a monopolist or not, makes a profit-surplus when the income that he actually gets turns out to be greater than what he had expected it to be. From the psychological point of view, then, the difference between rent and profit[1] is clear enough. Any surplus above cost is rent or profit according as it is one that was foreseen and expected or unforeseen and unexpected.[2] With knowledge of the future perfect (that is, in the absence of uncertainty) all surpluses howsoever earned would be expected surpluses and, therefore, rent in the true economic sense. Profits, therefore, tend to disappar with the growth of our telescopic faculty. Just as imperfect foresight may cause accidental profits, so also it may cause accidental losses. There is no counterpart of accidental losses of dynamic economy in a static economy. For, in such an economy there is no possibility of making mistakes and, therefore, no possibility also of incurring losses.

In other words, the difference between rent and profit can be expressed thus: Rent can be obtained[3] by every factor[4] in its capacity as land, *i.e.*, rent accrues to a factor by virtue of the fact that it has land aspect; profit is received by a factor in its capacity as *entrepreneur*, or, to be more correct in its capacity as a contractor.

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1. As we have said above, the word profit should be used in the sense of the remuneration of the *entrepreneur*, but we have used it here in the sense of accidental gain only to bring out by comparison with the word rent its true character as a surplus. As explained in a subsequent Chapter all accidental surpluses, here called profits, accrue as increase of the volume of land in the ownership of the *entrepreneur*.

2. In this connection note what Professor M. Friedman says: "Profits then are a result of uncertainty and, as Alchian ('Uncertainty, Evolution, and Economic Theory', *Journal of Political Economy*, June 1950), following Tintner, points out, cannot be deliberately maximised in advance. Given uncertainty, individuals or firms choose among alternative anticipated probability distributions of receipts or incomes." *Essays in Positive Economics.*

3. We have used the word "obtained" in preference to the word "earned", for the reason that a surplus is not, in the strict sense of the word, earned. A surplus is an unearned income. However, we have elsewhere in the text and footnotes used the word "earned" instead of the better word "obtained" without implying that it is an earned income.

4. By the word factor we do not mean *factor of production* but just a *thing* or an *agent*.

Before we conclude this chapter a word may be said about other definitions of static and dynamic equilibria. Professor Hahn in an interesting article on "Expectations and Equilibrium", defines the notion of equilibrium by saying that it indicates a situation in which the behaviour of a producer through time remains the same[1]. And then this definition of equilibrium is used to explain the meaning of moving (dynamic) equilibrium. In static equilibrium, the output and prices would be the same or the rate of change would be constant. In dynamic equilibrium, on the other hand, all that is required is that the supply forthcoming at any announced price in any period is exactly taken off the market at that price. Now, if such an equilibrium from time to time has to be achieved a certain type of expectation function is needed. As far as demand is concerned it has to change in a systematic fashion and not at random. And in such a case, further, there is a routine type of behaviour on the part of the *entrepreneur*.

We have explained the concept of static equilibrium, as also that of dynamic equilibrium, with reference to a firm or an industry. But a firm or an industry is propelled by the human mind. Its output changes because the human mind behind it wants it to change. This of course presupposes that output is a function only of the desires of man. But that is not quite so. The output of a firm, for instance, can and does change in spite of the owner not wanting it to change. It is because of this fact that the notion of dynamic equilibrium comes into being. As we have said above, there is equilibrium whether there is a stationary economy or a changing one. But in the former case expectations are realised; in the latter not (due to imperfection of human foresight). Hence, when we speak of dynamic equilibrium there is a deviation of the present from the past of a kind that was not expected.

Hence it is that economists (Harrod, for instance) associate dynamic equilibrium with the fulfilment of the expectations of producers. The price, income and other things are changing in a growing (or decaying) economy but the changes do not force producers to change their plans. Hence, there is equilibrium of the human mind in spite of changes in physical entities. The mind of man reconciles itself, as it were, to external changes and marches along with them.

1. F. H. Hahn, in *Economic Journal*, Dec. 1952.

When the human mind is in equilibrium there is peace and contentment. External things change in a growing or decaying economy but the designs and plans of those in charge of the economy do not change. That requires correct foresight and correct foresight is very rare if it is not altogether wanting. Hence, dynamic equilibrium (as defined by Harrod) is hard to achieve. But it is still a very useful tool for purposes of analysis and the understanding of economic phenomena. An ideal, a norm, is always needed with which to compare what is actually to be found in this removed-from-the-ideal world. *What is* acquires meaning only by comparison with what could be or should be. The effects of *what is* depend on the extent to which it differs from what was expected to be. And it is such effects that, in their turn, influence the course of future events.

CHAPTER XIV

DATA AND CONSEQUENCES IN DYNAMIC ECONOMICS

It is characteristic of the economic system that it tends, when left to itself, to reach the position of equilibrium.[1] In any given situation the forces in operation, therefore, are able to balance themselves in the end. In some rare cases, however, it is possible that the system, instead of showing a tendency to equilibrium, may exhibit a continuous oscillatory or cumulatively changing tendency.

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1. What is meant by this is that at any moment of time the economic system is in equilibrium so that we can say that the tendency to equilibrium position always operates. The system can, however, scarcely be considered to be in equilibrium over time. Not only is disequilibrium caused by changes in the initial data of the system, it may be caused also by some forces inherent in the data themselves that take the system away from equilibrium position.

Hicks says, "So far as this limited sense of equilibrium is concerned, it is quite true that we assume the economic system to be always in equilibrium. Nor is it unreasonable to do so. There is a sense in which current supplies and current demands are always equated in competitive conditions." *Value and Capital*, p. 131.

It has been observed by Robbins that "it is easy to conceive of initial configuration of the data, which have no total tendency to equilibrium, but which rather tend to cumulative oscillation." And again, on p. 107 of his *Essay* he writes, "Pure equilibrium theory, as is well known, does not provide any explanation of the phenomena of booms and slumps....It explains fluctuations which are in the nature of orderly adaptation. But it does not explain the existence in the economic system of tendencies conducive to disproportional development."

Walker, in his *From Economy Theory to Policy* (p. 154), says, "But we must go further and recognise that an appropriate initial configuration of the data might imply neither a total tendency to equilibrium nor cumulative oscillation, but only continuous change, in one or more dependable variables, always in the same direction."

J. B. Clark, in his *Essentials of Economic Theory* (p. 198), says, "Static influences that draw society for ever towards its natural form are always fundamental, and progress has no tendency to suppress them."

The oscillatory or cumulative changes referred to in the text are caused, for instance, by the fact that production is spread over time and consequently it lags behind consumption, and by the operation of the speculative element in economic behaviour. Thus, it can be shown by the application of mathe-

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Before we go into further details it is necessary to understand the precise meaning of the word equilibrium and analyse the process through which a given set of forces work themselves out to a position of final equilibrium. In physical sciences the word equilibrium implies a static state. An object is said to be in equilibrium when it is static, *i.e.*, when it does not move in space. Such a static state of the object is due to the fact that the forces acting on it are themselves in equilibrium or in other words, they neutralise one another's effects. Conversely, when an object is in disequilibrium it moves in space; for, the forces operating on it are not able to balance one another. Thus in mathematics equilibrium is associated with static state while disequilibrium is associated with dynamic state. One would expect the word equilibrium to have a similar connotation in economics too. But the economic system cannot be conceived of as

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matical technique that when demand and supply are certain types of functions of price and the rate at which it is changing, the price goes on diverging from the static equilibrium price when the speculative element in demand is stronger than that in supply. When the speculative element in supply is stronger, the price goes on converging to static equilibrium price. Again, when supply and demand are a certain type of functions of price, since production lags behind, the price oscillates, the oscillations being constant, increasing or decreasing according as the demand is as sensitive, less sensitive or more sensitive to price changes than supply.

J. M. Clark says that the key to statics is a problem of the level of equilibrium. It is an abstraction derived from the knowledge of the relative stability of economic values, and of oscillations whose movements suggest a normal level towards which economic forces exert their pull. The key to dynamics is a different problem. It is a problem of processes which do not visibly tend to any complete and well-defined static equilibrium. He thinks that the importance of this change from the search for levels to the study of processes cannot be overemphasized. *Economic Essays Contributed in Honour of John Bates Clark*, 1927.

Prof. C. H. Cooley says that economics was almost wholly a short-range study of mechanism, where all the details are fully worked out and explained within certain narrow fields. But he deplores that economists have shown no competence for treatment characterised by breadth of vision and their treatment throws no light on the wider economic and social significance of the mechanism of which they treat. To Prof. Cooley, economic theorist appears "like a man who should observe only the second hand of a watch: he counts the seconds with care, but is hardly in a position to tell what time it is." "Political Economy and Social Process", *Journal of Political Economy*, April, 1918.

Prof. H. T. Davis defines statics as the part of econometrics which does not involve time explicitly, whereas he defines dynamics as that which deals with problems involving time. *The Theory of Econometrics*, 1941.

being in a static state in the physical sense. The economic system is a *system* by virtue of the fact that it is in motion, with various economic motives in operation. The word equilibrium must, therefore, have a slightly different meaning attached to it in economics. Take, for instance, the case of a firm. There are various ways in which its state of equilibrium may be described. It may be said to be in equilibrium when its marginal cost is equal to marginal revenue. Or again, when its output does not tend either to increase or to decrease. It may be said to be in equilibrium, also, when it has exploited fully the possibility of maximising its profit or minimising its losses. And, lastly, it might be said to be in equilibrium when there is no tendency on the part of resources to flow into or out of the firm.

This last statement must be clarified further. In the case of a productive enterprise, there is a continuous flow of resources (a discontinuous flow when the word resources is used in a particular sense) into the plant and a continuous flow of produce out of it. When we say, therefore, that in the case of the firm that is in equilibrium there is no tendency of resources to flow into it or out of it, we mean that there is no tendency for the flow of resources into it to increase or decrease. There is, in other words, no net inflow or outflow of resources.

Let us see which of the four ways in which equilibrium is described above adheres most closely to the connotation of that word in physical sciences. Since absence of movement (in space) is the characteristic of equilibrium, perhaps the best way to conceive of the equilibrium of a firm is to imagine it to show no further tendency to net inflow or outflow of resources. The word net here is, however, misleading. It suggests the difference between flows in two opposite directions. It is better therefore to say that a firm is in equilibrium when the flow of resources into it is constant over time. That means that a firm that uses the same quantity of resources of a given kind during a given period of time is in equilibrium over that period. This way of describing the equilibrium of a firm brings the economic meaning of the word equilibrium into conformity with its meaning in mathematics. In economics, equilibrium denotes sameness of quantity of resources used; in mathematics, it denotes sameness of space occupied. In economics there is identity of resources used, in mathematics there is identity of space covered. Hence, while in the physical sciences equilibrium is characterised

by absence of movement, in economics it is characterised by absence of growth or decay. A tree that is growing or decaying is in equilibrium in the physical sense (ignoring the fact that it comes to occupy a wider or narrower space) but not in the economic sense. Conversely, a ball rolling on the ground with a constant velocity may be said to be in equilibrium in the economic sense of the word while in the physical sense it is, of course, not in equilibrium.

Now, instead of defining equilibrium of a firm in terms of the constancy of the quantity of resources used we can define it, if we choose, in terms of output. The point worth noting is that equilibrium (and therefore the static state) generally denotes in economics absence of change in movement while in the physical sciences it denotes absence of movement itself.

An economy is in disequilibrium when the volume of resources used or the quantity of output turned out, varies from time to time. And with the variation in the resources used and, consequently, in the output turned out, there is also in general a change in the prices of goods and services. But the disequilibrium in the economic system, whenever it occurs, may be due to one or more of the following causes. First, the data or the given forces, may themselves change leading to a change in the use of resources. Secondly, the original data may remain the same but there may be changes in the subsidiary forces originating from the operation of the given data. Of these two causes of disequilibrium the first can be broken up into two. The change in the original data may be from without or from within. In familiar terminology such a change may be exogenous or endogenous.

In order to be able to understand how equilibrium is disturbed by the influence of one of these causes, one has first to note the difference between the data and the consequences (the dependent and the independent variables) of economic system. Data and consequences, as the words themselves suggest, are related to each other as cause and effect. For the economist, the data consist of the economic forces in operation at the moment under consideration, while consequences denote the results that these forces produce. When the original forces take time to exhibit or produce their final result (as they necessarily do) some intermediate consequences intervene between the data and the final consequences. Thus in the working of the economic system we observe at every moment of time a certain complex of forces which are themselves the consequences

of the forces in operation at the previous moment. It is not possible, therefore, to say dogmatically that such and such forces are the data or the consequences of the system. Yet it is possible to reason and think out mentally the consequences in the economic field of a given set of data. In such a process of thought, it is naturally assumed that the data remain unchanged. For, it is only then that the consequences deduced can, in the right sense of the word, be regarded as consequences of the data.

In static economics, we study how a given set of data work out their consequences. It is naturally assumed that the data remain the same and all that happens is merely that they, acting one on the other, produce in the course of time certain results (consequences) which objectively exhibit themselves in a certain pattern of distribution of resources and a certain level of prices of goods and services. Let us see how equilibrium in the economic system is established.

We assume naturally that the economic system is in disequilibrium, that is, the conditions are as they obtain in the real world. Crying halt to further changes, we have to reason out the consequences of the inter-play of the existing forces.

Suppose then that at a particular time there are certain forces in operation and that they do not change in intensity or number. They constitute then the data of the system. These data are fixed in the sense that they do not increase or decrease either in their number or in their intensity. Since they are not initially in equilibrium, the economy exhibits signs of expansion or contraction. Static Economics studies how equilibrium in such an economy is ultimately established.[1] Now, if the forces are not in equilibrium to start with,

1. This is one particular meaning of *Static Economics*. Hicks says, "The definition of economic dynamics (that much controverted term) which I have in mind here is this. I call Economic Statics those parts of economic theory where we do not trouble about dating; Economic Dynamics those parts where every quantity must be dated." This is a very general meaning of the term Dynamic Economics.

Walker (*From Economic Theory to Policy*) says, "For instance, the term theory of economic development is sometimes applied to a theory covering the adaptation of the market to changing economic conditions. Thus a contrast is drawn with the economics of stationary states."

Prof. Lindahl (*Money and Capital*) says that it is the aim of economic theory "to provide theoretical structures showing how certain initial condi-

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is it at all possible for the economy to attain equilibrium position? From one's knowledge of applied mathematics one can say that a configuration of forces that is not in equilibrium can be brought to a state of equilibrium only by the addition of new and appropriate forces.

How can then equilibrium be reached if the data are assumed to be fixed? Unless, in the meantime, new forces are allowed to join the given initial ones, equilibrium, it would seem, could not possibly be reached; and, therefore, an economy that is once in disequilibrium must continue to be in disequilibrium unless the original data undergo some change. And if that was so, a stationary economy (*i.e.*, an economy with constant data) would be characterised by dynamic state.

It is the purpose of static economics to study how with a given set of data the economic system ultimately attains the position of equilibrium; it should be obvious, the conception of static economics is one that admits of the intervention of new forces. And yet these new forces cannot be regarded as involving a change in the original data. This obvious contradiction calls for a more detailed enquiry into the precise nature of the distinction between the data of the economic system and the subsidiary forces generated by them in the course of their operation.

We understand by data a given set of potential forces. Thus, when we say that data are fixed we merely imply that the wants of consumers, the resources available, the technique of production, etc., remain unchanged. These are not, in the physical sense of the word, forces in themselves; they are, as it were, the fountain-head of forces or potential forces. Take the simplest case of Robinson Crusoe with given appetite or tastes and a tree bearing a certain

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tions give rise to certain development.'' Further, he says, ''properly interpreted, static theory also has for an object economic developments taking place in time, only the variables studied do not change their values with the lapse of time''.

See also J. A. Schumpeter, *Theory of Economic Development*, and F. H. Knight, *The Ethics of Competition*.

In his *Risk, Uncertainty and Profit*, Knight writes: ''The second problem deals with the use of given productive resources in the production of goods to be used (always in accordance with market price principles) in the satisfaction of given wants: it has become known as the problem of the static state.''

number of fruits. His appetite, taste and the fruits constitute the given fixed data. They are not active forces in themselves but constitute potential forces or the source from which a stream of forces may be considered as issuing. With these data (together with other such data as the road, a stick, etc.) the Crusoe economy may in the beginning be in disequilibrium. Crusoe first plucks a few fruits and finds that the marginal utility of the fruits is greater or less than the marginal disutility of the exertion entailed. He, therefore, plucks either more fruits or less and balances the utility of the fruit with the disutility of work. When he has done that, his economy comes into equilibrium position. Here, then, what was necessary to bring the economy into equilibrium was the generation of some new forces of extra exertion or, in other words, the potential forces had to issue forth a larger or smaller stream of active forces in order to bring the economy into the position of equilibrium. In the more advanced type of economy such as the one we are living in today, the data of the system are much more complex and the forces they generate too are equally complicated. The position of equilibrium is, therefore, reached after a more prolonged process of adjustments. We have to remember then that by data we understand certain potential economic forces and that equilibrium is brought about by an appropriate use of them. The stream of forces that issue forth from the data have to balance one another in order that the economy may reach a position of equilibrium.

Static Economics assumes that, given unchanging data, the economic system is able to reach easily and quickly a position of equilibrium unless there are certain tendencies inherent in the data themselves that produce oscillatory or cumulative changes in the economy. It is, however, not very likely for such tendencies to inhere in the data of the economic system as a whole and thereby keep it perpetually in a state of disequilibrium.[1] It is possible, however, for such tendencies to exhibit themselves over periods of small dura-

1. See footnote on page 128. For the entire economic system to be in disequilibrium what is essential is that supply and demand of productive services in general should be out of balance. In other words, savings and investments should be unequal. (These words are not used in the sense in which they are used by Keynes in his *General Theory*). Trade cycle theories attempt to explain the causes of oscillatory changes in the economy of a country. However, if there has to be a perpetual state of disequilibrium it is perhaps necessary for some exogenous factor to play its part.

tion. The phenomenon of the trade cycle is thus explained by the existence of such tendencies.

We have seen that the data of the economic system are able to liberate streams of forces of such a composition as would ultimately bring the whole system into a state of equilibrium. The data are, therefore, of a nature that are capable of acting and reacting on one another. The data relate to supply and demand. What is significant, however, is that there is some fundamental governing force that makes the data liberate forces capable of bringing the system into equilibrium position. This fundamental force is the economic motive—the desire to maximise satisfaction. If satisfaction is considered as a mere consequence rather than an impelling force, it becomes necessary to give another name to this force. In consideration of such a necessity it is better to say that it is the desire to realise an ideal that is responsible for the creation of forces that neutralise one another. Once the system comes into the state of equilibrium, it continues to be in equilibrium so long as the data —the sources of equilibrating forces—remain the same.

This brings us to the question of changes in data. What are the data of the economic system and how do they change? Are the data capable of endogenous changes? It is said that endogenous changes are those that are produced by the internal working of the economic system. Those changes in the data that are caused by external agencies are called exogenous changes. Clearly enough the exogenous changes include such influences as those of the climate, earthquakes, floods, certain type of epidemics, etc. Changes in the economic data caused by such agencies as the above do not emerge from within the economic system. In short, all those changes which are caused by Nature (understood in the ordinary sense) are exogenous. It follows that the changes caused directly or indirectly by man are endogenous in character. Some economists include in exogenous changes those that are necessitated by political considerations. In our opinion, however, all such changes should be regarded as endogenous since political exigencies are dependent on economic factors.

We have observed earlier that economic data are the reservoi of forces; from this reservoir flow forces that ultimately balance on another. How can such a reservoir undergo changes from within As we have explained above, the forces that the data liberate ca:

change due to the operation of the economic motive—the desire to realise an ideal. But what is it that changes these data themselves? Do they change due to the reaction of the forces liberated by them? If so, then the relation between the data and the forces generated by them would be one of mutual dependence. Thus, for instance, a given size of the population of a country (one of the data) gives rise, along with other things, to a certain method of production and consequently enables the people to live up to a certain standard of living (one of the consequences). And that standard of living in its turn acts on the size of population encouraging or discouraging its further growth. But if the economic data change in this manner and if by endogenous changes we understand such changes then the economy of a country would exhibit endogenous changes in its data alongside the changes in the economic forces liberated by them. And the process of adjustment through which the state of equilibrium is ultimately reached would synchronise with that of endogenous changes in the data. Not only would such a conception of endogenous changes make the changes in the forces liberated by the data and those in the data themselves concurrent, but it would also eliminate all possibilities of any change occurring in the data once the economy attains the position of equilibrium. Since the object of the study of endogenous changes in the data is to determine how the equilibrium of an economy is disturbed, it is obvious that such a conception of endogenous changes is not suitable for our purpose. The conclusion that, therefore, seems inescapable is that either population of a given size cannot be considered as a datum of the economic system or that it is not capable of endogenous changes. Exogenous changes in population are caused by such natural agents as earthquakes, floods, etc. There are again changes, as just noted, that are caused during the process of equilibrium of the system. If these were all the changes that the population of a country could undergo it is clear enough that as a datum, it would not be capable of experiencing any endogenous change. It becomes necessary for us, therefore, to examine more carefully the meaning of the term endogenous change.

Let us stick to our example of population. Let us see in what different ways its size can change. First, there are the exogenous changes already noted, namely, variations in its size caused by natural factors such as climate, floods, earthquakes, etc. In these changes one might also include immigration (provided there are no

restrictions to such movements of people); changes caused by immigration are exogenous to the economy of the country concerned. Then there are the changes in the size of the population caused by and during the process of adjustments, that is, by the reaction of the consequences on the data themselves. Such changes, as observed above, come to an end once the economic system has been able to attain equilibrium. These changes, for the reasons stated earlier, cannot be called endogenous. But these are not all the changes that the population of a country can undergo. Suppose some discovery in the medical science is made, the effect of which is to reduce child mortality or in general to reduce appreciably the death rate in the country. Such a discovery would increase the population of a country. Now clearly a change of this character in the population datum cannot be regarded as an exogenous change. Nor can we call it merely a reaction of the consequences in the economic system on its data. In a sense of course the discovery was motivated by economic considerations; it is the desire to achieve an ideal that ultimately leads to the discovery of the nature described above. Accidental discoveries are accidental only in the sense that they are not precisely what they or their discoverer wanted them to be. But they are not accidental in the sense that no effort was directed in the channel in which it could possibly have resulted in such discoveries. Though then an increase in the size of a population caused by an advancement of medical knowledge can be regarded as the result of the reaction of consequence on the data, it is obvious, it differs in a significant manner from the other changes in population that we have noted above. The main difference consists in the fact that while the other non-exogenous changes were more or less continuous and of a character that could be foreseen with a fair degree of precision, this particular change is neither continuous nor predictable in that manner. The distinction between the two kinds of non-exogenous changes here made is then one of degree if we choose to describe it that way. But this difference of degree is very important and has a profound influence on the economy of a country. A thing that is discontinuous and haphazard in its occurrence is difficult, if not impossible, to predict. It becomes impossible, therefore, for the economy to plan its production so as to succeed in bringing it into equilibrium in the future.

These are the changes occurring in this haphazard fashion that are called endogenous changes. Being changes from within the

economy they are naturally brought about by the reaction of consequences on the data but they differ from other such reactions that occur in a more or less continuous and regular manner and which are, therefore, best described as adjustments. While such adjustments merely move the economy on to a position of equilibrium the endogenous changes jerk it out of such a position.[1] Every time that the economic system is thrown out of its position of equilibrium by some endogenous change the normal process of adjustment starts again to put the economy into a new position of equilibrium.

Endogenous changes are always of the nature of inventions or discoveries in the economic, political, social or other fields. Whether the changes in the data caused by such inventions are endogenous or exogenous would depend on whether their influences work on the economic system from within or without.

As seen above, in the absence of all endogenous and exogenous changes the economy of a country would remain stable and static once the adjustments have been able to effect equilibrium in the system.

There are then three kinds of change in data. First, we have changes that are introduced from without the economic system. Second, there are changes from within the system that occur by fits and starts—changes that are haphazard and discontinuous in their occurrence. And, lastly, we have changes from within the system that are of the nature of adjustments leading to a position of equilibrium. Of these it is only the first two that invariably cause disequilibrium in the system. The characteristic of a dynamic economy consists in the fact that it is subject to exogenous and endogenous changes in its data.

It may now be pointed out that all endogenous changes are changes in the subjective data, while what has been termed adjustments are changes merely in the objective data. Thus, a change in the quantity of a certain type of capital instrument brought about during the process of adjustment leading to the position of equilibrium—a change that we have called adjustment—is not caused by

1. It may be mentioned that all adjustments do not necessarily or always have the ultimate effect of bringing the economy into equilibrium position (See footnote on p. 128). However, it is true that every adjustment is an attempt at equilibrium though it might be foiled by inconsistencies in the designs of the different agencies.

any change in the subjective elements of the given data. But a change in the quantity of the same type of capital goods caused by the invention of a new process of production is, as explained earlier, an endogenous change and is due to a change in the technique of production—a change in a subjective datum.

All changes in adjustments exhibit themselves, in other words, in variations in the quantity or quality of material resources. They are not caused by any change in the technique of production, any change in the sciences having a bearing on production, or any change in the wants or the composition of wants of the people. They are merely the manifestation of the action of subjective elements of data on the material resources determined by the operation of the economic motive.

If we were to understand by the term data merely the subjective data we would be left with only endogenous and exogenous changes in data. For certain purposes such an interpretation of the term data is desirable. For, changes are generally associated in our mind with the notion of disequilibrium or disturbance of a stable position. And if adjustments are regarded as changes they are changes that help to establish equilibrium instead of upsetting it. However, when an economy is not already in equilibrium, changes are needed to bring it into equilibrium. Thus, adjustments can aptly be regarded as changes in data—changes that occur during the process of transition of an economy from a disequilibrium to an equilibrium position.

All disturbances in an economic system that has already reached the position of equilibrium are, therefore, caused by endogenous or exogenous changes in the data, that is, in other words, by changes in the subjective components of the data.

It is necessary now to distinguish more precisely economic data from their consequences. It has already been mentioned that consequences are the result of given data. And in thought, if not always in time, consequences follow the data. And in the field which we are investigating it would not be wrong to assume that consequences follow the data in time. Thus, the consequences of yesterday are the data of today. Whatever is then in existence at any given moment of time constitutes the data of the economic system. All objective and subjective factors make up the data at any instant of time. Many of these that exhibit themselves in a changed shape

in the next period could be regarded as the consequences of the data of the previous period. It is, therefore, not possible to point out any objectively conceivable difference between data and consequences amongst the elements observable at any moment of time. If any sharp distinction between the two has to be made it must be done by including in data only the subjective factors leaving all objective factors to constitute consequences. We would then have data and consequences both existing side by side in the same period of time. All changes in the population, capital resources and consumption goods would then be regarded as constituting variations in consequences, and all changes in these consequences would come to be regarded as caused by the influence of the data. All those changes that we have described above as adjustments are then ruled out as they relate only to objective factors. For, it is not possible for any change in objective factors to initiate a change in subjective factors. The changes in subjective factors that appear to be caused by objective factors are in reality caused by subjective elements of the system through the medium of objective factors. Changes in data, we may then say, are of two kinds, exogenous and endogenous. Over and above these changes there are changes in consequences which we have described earlier in the chapter as adjustments.

We have observed earlier that when the data remain constant and the adjustments in the consequences have been completed the economic system attains equilibrium position. It is essential to note that the absence of exogenous or endogenous changes merely ensures equilibrium of the economy as a whole or of the various industries. The mere absence of such changes is not sufficient to guarantee the equilibrium of a firm. For, in spite of subjective and objective factors remaining constant individual units of capital instruments and individual units of human factors would go on continuously changing. Thus, though the population as a whole and its composition might remain fixed, the individuals composing it would keep on growing and, therefore, getting either more or less efficient. Such changes in the efficiency (say of organisers) would necessitate a change of personnel to maintain productive efficiency intact.

But it is not possible to make rapid changes in the organising staff of a concern or to make appropriate changes the moment they are called for. While then the industry as a whole may remain

in equilibrium, when the economic system has once reached equilibrium the individual firms cannot. The growth of some firms would exactly counterbalance the decline of others, and that is all that could be expected in an economy that is free from data changes. A firm is the smallest unit of production and no equilibrium can, therefore, possibly be expected in it in a world where stationary conditions are defined by the constancy of movements rather than by absence of movement itself.

In a stationary state where all the industries have attained equilibrium the total output of commodities and services per unit of time remains constant. And since population and its composition is also *ex-hypothesis* constant in a stationary state, the *per capita* wealth in such an economy would remain unchanged. Yet the individual firms would not themselves be in equilibrium and would be tending to increase or decrease their output. Thus, while the national dividend remains the same part of it that goes to individual firms keeps on changing. In other words, the distribution of wealth in a stationary state remains unstationary.

A word may here be said about the *stock* and *flow* concepts of data and consequences. By data we understand, as explained above, certain sources from which economic forces flow. Thus, by data we understand *stocks* while by consequences we understand *flows*. When the data of a system are given as fixed the system is characterised by a fixed amount of certain stocks. This notion of stock does not exclude such things as the wants or tastes of the people. Consequences are the flows of forces. Data are like capital and consequences are like income.

But consequences can be subjective or objective. What we have called adjustments are objective in nature. Objective consequences are the result of subjective consequences acting on material resources available to a system. Forces or subjective factors cannot operate in a vacuum; there must be certain material objects for them to operate upon. The objective consequences, in their turn, can be called stocks. And they can generate a stream of forces through the action of the ideal or the motive of maximum satisfaction, for example. This much about the stock and flow concepts.

Changes in data can be classified into autonomous and induced. Perhaps in autonomous changes can be included only those that are

exogenous in character. They are not, in the strictest sense, autonomous as they are caused by certain factors operating on the data. But they are autonomous in the sense that they are not induced or caused by their own consequences. A change in the population of a country caused by earthquakes or floods is, in the above sense, autonomous, while an increase of birthrate leading to population growth made possible by a higher or lower standard of living can be called an induced change.

CHAPTER XV

STATIC, DEVELOPMENTAL & DYNAMIC ECONOMICS

The equilibrium of a production unit is judged by the absence of its expansion or contraction[1]. It is a position in which there is no further want on the part of the unit for expansion or contraction. Applying the same test to the case of a man, the equilibrium of a human being is indicated by the absence of any further *want* of activity. When a particular situation is considered with its particular system of wants, the position of relative equilibrium is then said to have been reached when those wants have been satisfied. A person, for instance, who has a certain amount of money to spend and has a number of alternative things on which to spend it, is in a position of disequilibrium till he has actually been able to spend the money to the optimum satisfaction of his wants. And he attains the position of equilibrium in regard to the situation considered, when he has spent the money in accordance with his wishes, *i.e.*, say, according to the law of equi-marginal utilities. The word equilibrium, therefore, suggests a state in which the operating unit under consideration has attained its objective. The process of attaining the objective is the route that is followed to attain the position of equilibrium.

Full equilibrium is said to have been reached when the unit under consideration has reached its *ultimate* objective. The attainment of an intermediate objective marks the position of equilibrium relative to that intermediate objective. Using the word end in place of objective, we can say that the final or full equilibrium or general equilibrium is reached when the ultimate end is attained. A partial, particular or intermediate equilibrium is reached when a particular, partial or a sub-end is attained.

The object of every operating unit is to attain its final end. And it is able to attain this final end through the attainment of one or more sub-ends. Thus there are a number of partial or particular equilibrium positions through the attainment of which the final equilibrium is reached.

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1. Unless otherwise stated equilibrium means static equilibrium.

In the study of economics we are concerned with the determination of the position of equilibrium. That is, we want to determine the situation as it would exist when the position of equilibrium has been reached. Thus, we determine what would be the share of each factor of production, what would be the prices of all the goods produced and what would be the amounts of the goods and services consumed when the equilibrium position is reached. The study of the situation in which we would expect the economic system to be when such equilibrium is reached, is popularly known as the study of *static economics.* As explained above, our concern is to determine the situation that would obtain when all the wants we start with, have been satisfied. The position in which the given wants (data) are satisfied is a position of equilibrium, or what is better described as the position of static equilibrium. Now, the given system of wants—the data—may in reality change before the position of equilibrium consistent with the given data is reached. If they do change, the theoretically conceived position of equilibrium may not actually be attained in practice. The study of equilibrium in such cases merely indicates the *goal,* the objective or the end which the initial forces comprising the given data are striving to reach.

When the initial data do not change, the final position of equilibrium is reached through a process of adjustments and we can in such a case, take up, if we wish, the study of the manner in which and the path through which the final equilibrium is reached. This study may be called *dynamic economics* as it is meant to describe the process of adjustments over time. We determine there the manner in which the various economic phenomena change from time to time. Such a study is necessarily concerned with a period of time as against the study of static economics that is concerned with (the situation at final) point of time.

This study is sometimes called the study of economic development to distinguish it from that which takes into consideration changes in the initial data as well. When the study of the process through which the final position of equilibrium is reached is thus called economics of development, dynamic economics stands for the study of the situation in which the original data undergo a change. Different economists have given different names to these studies: for instance, the study of the case where the initial data change is

called the theory of historical economics by Prof. Stigler and special economic dynamics by Prof. Lindahl.

It must be noted, however, that it is not only in the case of static economics that we are concerned with the determination of equilibrium situations, that is, with the evaluation of the magnitudes of economic quantities when the position of equilibrium is reached· even in the other cases of economic development and dynamic economics we can study merely the positions of equilibrium. The only difference between these studies is that whereas in the case of static economics there is only the final position of equilibrium that we have to determine, in the other cases we have to determine various positions of equilibrium at successive moments of time. At each moment or within a small period of time, the relevant forces (data or wants) work themselves out to a position of equilibrium and it is the concern of the dynamic economist to determine this relative or temporary point of equilibrium. There is nothing else that a scientific economist can do. Unless the process of change is considered as consisting of successive stages of static states there is nothing that an economist can *determine*. It is only when dynamics is thus conceived of as statics at successive moments of time that the solution becomes at all *determinate*. There is no determinacy in the case of a change as such.

What is true of the study of the case where given fixed data work themselves out to a position of equilibrium is also true of the case where the data themselves are changing. In the latter case the problem becomes more complicated in so far as we have to calculate not only the progress made by the initial data on their journey to the position of equilibrium but have also to take account of the impact of new data on the situation itself. These data may either accelerate or retard the process of adjustment leading to the equilibrium position or may direct the economy to an entirely different position of equilibrium.

Having noted the fact that whatever the situation may be we as economists can only study it with a view to the determination of the position of equilibrium, we have to distinguish the precise nature of the equilibrium in one case from that in the other. In the static case the equilibrium itself is static in the sense described in a previous Chapter; while in the dynamic state the equilibrium is changing from time to time. Thus the difference between static

and dynamic equilibria can be understood only by conceiving them in relation to time. It is for this reason that what is static equilibrium with respect to one period of time may become dynamic equilibrium with respect to another (longer) period of time.

In every case, however, equilibrium indicates a situation in which the wants have been satisfied. In the case of dynamic equilibrium it is only the operative wants relevant to the period under consideration that are satisfied. In the case of static state all relevant wants are satisfied. This consideration gives rise to a pertinent question, namely that, if the static state implies the state of full satisfaction of wants at the position of equilibrium, does it imply also a complete cessation of all activities? If it does not, can we associate the situation, in which all wants have been satisfied, with a life of activity? Dynamic equilibrium, as we have just seen, is compatible with activity; for it is indicative of a stage of only a temporary satisfaction of wants. But how can static equilibrium be associated with a universe of continuing activity?

A static state of economy with its static equilibrium implies that the wants of men do not change nor is there any change in other factors with which the wants are co-ordinated. It implies that the same wants are satisfied in the same way repeatedly. It does not assume that there are no wants; it assumes an absence of any change in wants. A change of wants is again understood in relation to time. There is no change of wants as *between* successive periods of time; there must necessarily be a progressive change of wants (gradual satisfaction of them), during the *currency* of each period. The position of equilibrium attained at the end of a period is precisely the same as that attained at the end of any other period. There is no fresh want in any period relative to any other peroid. The full satisfaction of want that we need to associate with the notion of static equilibrium is to be visualised as an absence of fresh wants.

As explained in an earlier chapter static equilibrium is the equilibrium that has been reached and maintained. To see whether it is maintained or not we have to compare the situation at the end of a period with that at the end of another period. The satisfaction of wants that the position of equilibrium represents remains undisturbed at the end of each successive period of time. But within each period there goes on a gradual process of economic development leading to the position of equilibrium.

When the period of time is small enough or when it is considered to be small enough to allow us to ignore the consideration of what is happening during that period, static equilibrium would be truly compatible with the complete satisfaction of wants. When a man attains the state of wantlessness (the state that has been described as the ultimate end to strive for) not only is there no change in his wants but there is no want at all. He then reaches, in the right sense of the word, the position of static equilibrium. The period of time, which we had felt necessary to reduce to a very small dimension, actually shrinks to zero. In other words, in the truly static equilibrium state there is no necessity of reckoning with time. This characteristic of the real state of static equilibrium is expressed by the saying that a liberated soul is free from the bondage of time.

The difference between static economics, developmental economics and dynamic economics can briefly be stated as follows. In static economics we are concerned with the study of equilibrium which is precisely the same in various periods of time. In developmental economics we are concerned with the study of successive positions of equilibrium within a period of time; these successive positions being only means to the ultimate point of equilibrium that is attained at the end of the period. In dynamic economics we study the equilibrium position at the end of a period as affected by a change in the system of wants (data). We take account here of the changes in the data due to which the equilibrium attained at the end of a period is different from that attained at the end of a previous period. A period is defined here as the length of time needed for the satisfaction of wants existing at any moment of time. Thus, in cruder but more technical language, a period consists of the time that is required to complete the processes of production undertaken at any point of time with a view to the satisfaction of wants then felt.

Taking the case of a microeconomic situation we can illustrate the difference between the three studies in the following manner. Suppose a man requires one day to satisfy the wants that he feels in the beginning of the day from which we start our study. In economics of development we would study how he reaches positions of equilibrium in successive parts of that day, say, every hour, as a preparation for the entire satisfaction of wants by the end of the day. In static economics we would study the situation in which

the man would find himself in regard to his wants and surroundings at the end of the day when he reaches the position of equilibrium (the complete satisfaction of wants). In dynamic economics we would study the situation in which he would find himself at the end of the day when his wants have in the meantime undergone a change. In the terminology of the previous Chapter we would say that in developmental economics we are concerned with *adjustments,* changes that occur more or less in a continuous fashion and are of a character that could be foreseen with a fair degree of precision. In dynamic economics we are concerned with endogenous and exogenous changes—changes that occur from without the economic system or those that occur from within it but are sporadic and haphazard in their occurrence. In static economics we are not concerned with changes at all; we study there merely the final situation in which the economy finds itself when it has attained equilibrium position.

A word here needs to be said about the meaning of the expression satisfaction of wants. Static equilibrium has been identified with the situation in which satisfaction of wants has been completed. Now, there is no case in which our wants are completely satisfied even for a short while. That is due to the scarcity of means (at our command). What we are able to do, therefore, is to satisfy our wants as much as the limited means would permit. Hence, in the position of equilibrium our wants are not fully satisfied; they are satisfied in the best possible manner. What is then meant by saying that equilibrium indicates satisfaction of wants is that when our plan of satisfying a group of wants (felt at a moment of time) in a particular fashion and to a particular extent is fully completed, the position of equilibrium is said to have been reached. In other words, when our plans made at any moment of time are completed we are said to have reached the equilibrium position. In static economics we are thus concerned with the study of equilibrium of *production.* And that equilibrium is called static equilibrium (of production). In the truly static state, referred to above, there is no production and consequently there is equilibrium state as distinguished from equilibrium of production. In the truly static position there is no economy and hence no (static) economics.

The aim of a production unit, then, in static economics is to accomplish its production plans; the aim of an individual is likewise to complete his plans. And in every case the plan has as its

objective the maximisation of pleasure or minimisation of pain. A production unit, like an individual, exploits the situation to maximum advantage. As explained in the first chapter, the ultimate aim is to secure freedom from wants—so to satisfy them as to guard against their recurrence. A short-sighted individual or one who allows himself to be guided by the consideration of immediate benefits, thinks only in terms of pleasure and plans his activities so as to secure maximum enjoyment in the near future. Some have a longer range in planning than others; but seldom does one take the longest possible point of view. Were one, however, to plan one's activities with a view to the ultimate object of gaining freedom from wants, the successive positions of equilibrium would ultimately lead one to the truly static equilibrium stage in which all productive activities would become unnecessary. For, production is only a means to the satisfaction of wants so that when all wants have been eliminated there is no further necessity of undertaking any productive activity.

Before we end a word may be said about the conception of statics and dynamics as used in economic literature. Ragner Frisch, Paul Samuelson and Jan Tinbergen are important names in relevant literature. Frisch defines a dynamical system as one whose behaviour over time is determined by functional equations in which variables at different points of time are involved in an essential way. And Tinbergen says that the economic theory which is based on the assumption of a stationary position may be called economic statics. Explaining the point further he says that we can apply this theory in cases in which we are interested in the determination of ultimate results (long-run tendencies as he calls them) and in which the movements set into motion by the changes in data are damped and the data themselves do not change. Compare this with our definition of statics. We have said that in static economics we are concerned with the study of equilibrium which is precisely the same in various periods of time. Since Tinbergen lays it down as a condition that in static theory, the data do not change, and the adjustments are damped (and he further says alternatively that the theory would hold if the economic magnitudes adapted themselves to the data immediately) the position of ultimate equilibrium will naturally be the same at various periods of time. For, there are two cases in which the final equilibrium position would differ from time to time. First, when the data change and, second, when

the movements are not damped. This condition of damped movements or alternatively the condition that adaptations are immediately made and the movements are damped are meant to make the end result independent of the path taken by economic magnitudes.

We see thus that our definition of economic statics tallies precisely with that given by Tinbergen.

Our developmental economics corresponds to Tinbergen's economic dynamics involving endogenous processes. "The theory which is necessary", says Tinbergen, "to explain these processes and which will follow step by step the process of adaptation and the succeeding movements will be called economic dynamics." What we have called dynamic economics Tinbergen would call economic dynamics involving exogenous movements.

As mentioned by us above, the most useful purpose of static theory is to indicate the end towards which a system tends to proceed. For this reason it is regarded as concerned with the long period. For, it points to the end of a long period. Developmental economics or what is more conventionally called dynamic economics, is not concerned with the end-results; its concern is to show the process of adaptation, to indicate the path that an economy takes to arrive at the ultimate result. It shows the position of an economy at intermediate points of time. It is for this reason that Tinbergen says that economic dynamics is nearer to reality. "Economic statics", he says, "may put forward the theorem that a certain commodity will not be produced in the long run if the production involves a loss. In the short run, however, production at a loss will occur. Economic dynamics will take this fact into consideration and will on that account be more realistic."

Paul Samuelson has not only differentiated static from dynamic but historical from causal. Distinguishing the historical from the causal he says that a system is historical when its behaviour depends on the calendar date. If, on the other hand, its behaviour depends only on the time interval and not on where that time interval is placed in the calendar, it is purely causal dynamic. In other words, Samuelson's historical system is one that exhibits exogenous movements.

Most present-day theories of the trade cycle are built on the dynamical models of Frisch and Samuelson. That is, they proceed

to explain cyclical oscillations as endogenous movements of a self-propelling system. But there are exogenous theories of the trade cycle also, such as for instance, the sun-spot theory of Jevons.

The importance of Static, Developmental and Dynamic economics for the study of the problems of the trade cycle and growth economics must be obvious now. Cyclical fluctuations and growth are old concerns of the economist. But in recent years much has come to be written on Growth and today emphasis is laid on the treatment of all economic problems and theorems from the point of view of the growth of economic entities.

The trade cycle is not necessary a short-period phenomenon though it might appear to concentrate one's attention on fluctuations and, therefore, on those changes that do not hold out a promise of continuance for a long stretch of time. Otherwise, cyclical changes are a permanent feature of our economies. Our economies fluctuate and our economies grow. Growth can, however, be negative. And when growth and decline alternate over a period that we can conveniently take cognizance of we get cyclical fluctuations of economic activities.

There are two theories of the trade cycle, one endogenous and the other exogenous. The former is also called causal while the latter is referred to as historical. Static economics has nothing to do with the trade cycle and growth phenomena except in the sense that the theory of statical system is all-pervading and applies itself to other systems with the introduction of elements that possess time-dimensions. But let the data change in one way or another and you get changes in an economy that either continue in the same direction or take a turn after a while. Where the change of the data of a system is endogenous we get cyclical fluctuations: where the change is exogenous and lasts for a time we might get unilateral changes in our economy.

But this distinction does not always hold. The reason is that in the final analysis all changes must be cyclical. It is only when the amplitude of a cycle is very long that we witness the phenomenon of growth (or that of decline). As a matter of fact every economy grows and declines; there is, therefore, cyclical fluctuation in every economy. But due to the mixed up influences of endogenous and exogenous factors a number of cycles operate simultaneously in every economy. As a result of such a mixture of cycles

of varying amplitudes we get a confused picture and yet that picture shows fluctuations within fluctuations which, again, are themselves fluctuations within other fluctuations.

This fact is referred to by economists as cyclical fluctuations superimposed on a growth trend. Most of the modern models of growth are of the type in which fluctuations are shown to occur along a trend line. We have distinguished regular changes in data from those which are erratic and haphazard in character. In actual practice these two types of change cannot be separated and their effect on our economy cannot be studied in isolation. But our models can explain to us how these changes can produce either fluctuations or growth of national income.

CHAPTER XVI

MACROECONOMICS AND MICROECONOMICS

A community consists of a number of units. The science of economics is concerned with the study of the behaviour of these units. Left to themselves, without stimuli acting on them, they would be in equilibrium and consequently provide no material to an economist to study. But in this world each unit is constantly subjected to various stimuli that emanate from the environments in which it is placed. The general pattern of the behaviour of a unit is what the science of economics aims to discover. In technical language economics consists of the laws of production and consumption of an organism. Thus, given the environmental data it should be possible for an economist to say precisely how much an individual, for instance, would work, how much he would produce, how much he would sell, how much he would buy, how much he would save, how he would consume, and so on, provided he had complete knowledge of the constitution of the individual. The wants with their composition and intensities give an idea of the constitution of the unit under study, while the nature of the environment composed of material and human forces gives us the knowledge of the stimuli to which it is exposed.

When the constitution of an organism and the environmental data are known the manner in which the organism would behave can be ascertained. What is true of one is true of all. If we can ascertain the behaviour of one, we can ascertain that of all the units composing a community. But the task is not as easy as it might appear at the first thought. For, the environmental data of one unit consist, at least partly, of the constitution of other units in the community. And in like manner, its own constitution forms a part of the environments for the rest. This causes the difficulty referred to above. While the behaviour of a particular unit is being studied it has to be assumed that the environmental data are *given*. That is, if the environmetal data—the stimuli—are what they are, we would say the unit would behave in such and such a manner. When we pass on to the study of another unit, we have again to take its environment as *given*. Since its environments consist, at least

partly, of the constitution and the behaviour of the unit just studied, it has to be assumed that this behaviour is given as constant. Thus, what is to be discovered has to be taken as given and known. In other words, we have to apply the partial equilibrium method to study the behaviour of each individual. But this difficulty can be got over by making a simultaneous study of all the units. Mathematically this is possible. We take a number of equations expressing the relationship of the constitution of each to its possible environments, and then solve them *simultaneously*. When that is done we get a picture of the behaviour of the whole community, that is, the picture of the economy of the community as it would be when the position of equilibrium is reached. Or, when there are dynamic elements in the constitutions and the environments, the solution of the equations give us a moving picture of the community-economy in its journey over time.

The study of the behaviour of a unit as explained above constitutes what has often been called *microeconomics*. It is so called because one particular unit is small as compared to all the units taken together. Microeconomics is the study of small units as it were. A truly microeconomic study (of a unit) would enable us to know how a particular unit would behave. It would, therefore, enable us to determine certain magnitudes such as the amount of things it would produce, the amount it would buy, the amount it would sell, etc. It would enable us to find the position in which the unit would be in equilibrium. Thus, a microeconomic study would tell us nothing about the behaviour of other units or of the community to which the unit under study belongs. The simultaneous study of the microeconomics of all the units would, however, enable us to know how the entire community would behave. But such a study is in essence a macroeconomic study rather than a microeconomic one. It would be macroeconomic study inasmuch as it would be a study of the *whole* or of *the all*.

It is essential to keep the distinction between the microeconomic and the macroeconomic studies clear in our mind. It is sometimes said that the study of an organism in respect of its behaviour as conditioned by the environment, that is, the universe external to itself, is a microeconomic study, while that of the organism in respect of its behaviour as a manifestation of the internal coherence of its own closed order is a macroeconomic study. In other words, a microeconomy is open economy while a macroeconomy is a closed

one. This way of indicating the difference between the two studies has some advantage but it is likely to cause some confusion. A macroeconomic study is no doubt a study of an organism that is considered as self-contained and self-sustained. But the human beings (or a human being) within such an organism react not only to the stimuli offered by the behaviour of one another, but also to those offered by Nature. Thus, the study of Robinson Crusoe is a macroeconomic study by virtue of the fact that his behaviour is not determined by the behaviour of other individuals: but Crusoe behaves only because his constitution reacts to the stimuli emanating from the universe outside of him. He reacts to his environments. The difference then between microeconomic and macroeconomic studies consists essentially in the fact that whereas in the former the environmental data include the behaviour of human beings, in the latter they do not.

Just as the study of a single human being (like Robinson Crusoe) can be a macroeconomic study, similarly the study of a community (say, a country's economy) can be a microeconomic study. If we study a country's economy allowing for the influences that it is subject to from the economies of other countries, it becomes a microeconomic study. In a macroeconomic study we are concerned with a large number of individuals in almost all cases. It is, therefore, admissible to understand it as study of aggregates. But, as shown above, it is not the aggregates that make the study a macroeconomic one. It is the absence of human behaviour in the environmental data that puts the seal of macroeconomics on our study.

So long as men live in society the economist cannot afford to neglect the study of its macroeconomy. He must study the behaviour of not one but all the individuals. He adopts any procedure he likes: he may study the economy of one individual at a time and then somehow co-ordinate all such studies to get an idea of the entire economy. Or he may treat the whole society as one unit and study its actions. Whether he starts his enquiry from the micro point of view or not he must in the end have a picture of the whole society. Obviously there are two ways of studying the macroeconomy of a community. We may have individuals as our starting point and then make a simultaneous study of all of them. That would require the knowledge of the constitutions of all the individuals and their environmental data. As noted above, the constitu-

tion of one forms partly the data of the others. But by a simultaneous study of all we can determine a pattern of behaviour that would leave all the individuals in a position of equilibrium. In other words, we can find out, given the constitution of the individuals, the pattern of their behaviour that would be mutually consistent. That way we would get indices of the various magnitudes relevant to their economy. For instance, we could determine the amount each, and therefore all together, would produce, the amounts each would consume, the prices at which the things would be sold, the amount each would save, etc. The national income, national investment and national saving would thus become easily calculable. Not only can we in that manner determine the position of equilibrium for each individual, we can find the position of equilibrium for the economy as a whole also.

This is one way; it is the partial equilibrium analysis of the economies of all the individuals simultaneously carried on. In a big community such an analysis must of necessity be a very difficult one. The procedure has to be mathematical and, therefore, a complicated one. Such a study of the macroeconomy of a community yields results in greater minuteness of details than we sometimes need.

There is another way also of making a macroeconomic study of a community. Instead of starting from the individuals we can directly begin with the community. In such an approach to the study, the community has to be conceived of as one organism like an individual. It has its wants, its constitution, its environments to which it reacts, its output of goods and services, its consumption, its savings and its investment. The major difference between the two studies consists, as we have pointed out, in the fact that here environments consist merely of Nature or, as we economists say, land.

Just as we study the position of equilibrium of an individual so we study here the position of equilibrium of the whole economy. An individual is in equilibrium when he has reached the optimum position, that is, when he has maximised its surplus (or minimised its deficit). A community is in equilibrium likewise, when it has reached the optimum position, that is, when it has maximised its surplus. While the concept of surplus applicable to an individual is clear enough that applicable to the entire economy is not so clear.

Summation of individual surpluses would not serve our purpose. That constitutes individualist approach to the problem. We have to treat the whole community as one unit. Its optimum position is, therefore, to be understood as one in which there is no tendency to expand or contract. In this second method of making a macroeconomic study we have, therefore, to determine a situation in which production neither tends to increase nor decrease. Since for increased production more capital is required and for decreased production less, a community is in equilibrium when its investments remain constant. Without going into the details of such an analysis it may be noted that what is required for equilibrium is that savings should equal investment. We have naturally to take the time element into account. The savings of one period are available for investment in the subsequent period. Equilibrium requires that what is saved is invested. There should be no disparity between the two. Saving is always done for the purpose of investment. If the entire amount saved is not invested it shows that expectations have somewhere gone wrong. With unrealised expectations there cannot be equilibrium.

A community's equilibrium can also be pictured in other ways. But the one we have just noted serves our purpose.

Such a macroeconomic study yields some broad results at once. We directly think and calculate in terms of the aggregate or total income, total production, total consumption, total saving and total investment. Since the community is treated as one organic unit it has its own categories which hardly justify the use of the word "total". Its production, consumption, saving, etc., are, however, the aggregates of the production, consumption and savings of individuals. But the total is all that matters here. In the process of working out the position of equilibrium no account is taken of the complex forces that go to determine the (equilibrium) amounts of each individual. These forces are allowed to work beneath the broader tendencies that we have to take into account. Just as in the microeconomic study we do not consider the separate needs of nourishment of the hands, the legs, the back and the head of an individual consumer, but just assume that these competing needs work out their solution beneath the over-all wants of the consumer as a whole, similarly in the macroeconomic study of a community the needs and the competing needs of the various units are easily bypassed.

Of these two ways of studying the economy of a community, the latter has greater claim to be called a macroeconomic study. The claims of the first, however, cannot be ignored. Although there the environmental data include human behaviour (and to that extent make the study partakes of the nature of a micro study), a simultaneous study of individual economies, by setting the behaviour of one against that of another, eliminates virtually the significance of human reactions as an element in the environmental data.

In the pages that follow we shall understand by macroeconomic study the study of the second type, that is, the one in which the whole community is considered as a unit. Needless to say that the community's economy has to be conceived of as a self-sustaining one. External dependence has to be ignored; unless that is done, the environmental data would include human behaviour as one of its elements.

It is sometimes thought that macroeconomics differs from microeconomics inasmuch as the former studies an organism that differs in one important respect from the organism that the latter studies. An individual of microeconomics is mortal; the organism (the community) of macroeconomics is immortal. An individual grows and ultimately dies. A community does not die. Apart from the fact that this is not wholly true there is another reason why this difference is not valid. In the first place, a community is also subject to the same laws of growth and decay which operate in the case of an individual. Civilisations have been known to flourish and then die out.

Empires rise, grow and then disintegrate. The dynamics of communities is slow; it changes slowly and its full cycle has a vastly longer amplitude. But this is not the only thing that can be said against this alleged difference between micro and macroeconomics. Microeconomics, as we have seen above, is not necessarily a study of the economy of an individual man. Nor is the economics of a nation always of the macro type. If we ignore all external influences save those exerted by non-human agencies the study becomes a macroeconomic one. We can ignore such influences while studying the economy of an individual. Such a study by itself must naturally be of a very limited service. But the same could be said about the macroeconomic study of a community. A community of human beings is not free from the influences of other communities. If the study of a community differs from that of an

individual (and it differs in degree only) it does so not because the former is a macroeconomic study while the latter is microeconomic, but because a community is an aggregate of individuals. Just as the individual cells in the body of a man grow and die rapidly while the man lives on, similarly the individuals in a community grow, decay and disappear while the community continues to live.

It is further supposed by some that there are certain propositions which are true of single individuals which however cannot be applied to the case of the whole economic system. For instance, it is said that an individual can "hoard" money and by so doing increase his stock of money that is, his cash balances. A society, on the other hand, cannot have its cash balances increased by the hoarding of individuals. That is so because one individual can hoard only at the expense of another. Every increase of hoarding by individuals is counterbalanced by dishoarding of other individuals. This however is not a valid example of macroeconomic paradox. It would be a paradox if we could say that though *all* individuals increase their hoarding the community cannot. The fact is that an individual hoards by not spending (either on consumption or on production goods). So does a community hoard by not spending. Its hoarding cannot come about by the increased hoarding by all individuals. In fact, provided the amount of money in the community does not alter, all cannot hoard more, nor can they hoard less. But the community can hoard more by not spending as much as before. An individual increases his hoard of money by keeping with him (not spending) a larger amount of cash during a period of time. This he is able to do by creating more money in the only way in which he is allowed to do. Same is the case with the society. A community increases its hoard of money by keeping with it (not spending) a larger amount of cash during the period of accounting. And this the community too is able to do by creating more money in the way in which it is possible for it to do. An individual creates more money for itself by not spending; the community can do so also by not spending in case there is international money which can be spent on the purchase of foreign goods. But the community can increase its supply of money by coining more coins or by printing more notes or by printing or writing out more credit notes. It is correct to say as some do that the aggregate hoarding of society is not a result of decisions to hoard, but of decisions to create or destroy money. But it is equally correct

to say that an individual's hoarding is the result of creation of money. In fact, it would be more correct to say that every act of hoarding destroys money and every act of spending creates it. Money must have velocity. It is by virtue of its velocity that it is money. Hoarding destroys this velocity; spending creates it.

A word may be said here against the view that provided the amount of money in the community remains the same, some individuals' increase of hoarding is necessarily accompanied by a corresponding dishoarding of other individuals. For the sake of argument above, this view was taken as correct. In a strictly logical sense, however, such a cancelling of hoarding by dishoarding is not inevitable. Take, for purposes of illustration, two individuals to compose a community. Let one have with him Rs. 100 and another Rs. 200 at the start of the period. Now suppose that A spends his Rs. 100 to buy goods (or services) from B, and B spends his Rs. 200 to buy goods from A. Let us say that such purchases are done during the period under consideration. At the start of period the two individuals had with them Rs. 300 in all. During the period they spent Rs. 300 so that they saved or hoarded nothing. Now suppose that A spends during the period Rs. 70 only to buy goods from B. Further suppose that B, during that period, spends only Rs. 150 to buy goods from A. During this period therefore they together have spent Rs. 220. They have consequently not spent or hoarded (in the sense in which this word has been used here) between themselves Rs. 80. The hoarding of one has not been counterbalanced by the dishoarding of the other. This is clearly seen in such a *period-analysis*. In the view above considered such a net hoarding is not possible. It is argued that when A spends only Rs. 70 and thus hoards Rs. 30, B's income is reduced by Rs. 30. And if his income is less by Rs. 30 naturally his saving must be less to that extent. Likewise, it is pointed out that when B spends only Rs. 150 and thereby hoards Rs. 50, he reduces A's income to that extent leaving him with much less to hoard. It is thus impossible, it is argued, to increase or decrease hoarding.

All this amounts merely to saying that the amount of money in existence cannot increase or decrease. At every moment of time it must be somewhere. From what we have said above it should be clear, however, that it is much better to think in terms of periods of time as Professor Robertson so ably pointed out. For, income, expenditure, saving and investment are concepts that logically do

not have reference to the same period of time. And we have to think in terms of periods since buying and selling are *acts of production* and such acts by the very definition of the term production, extend themselves over a stretch of time.

If this view of hoarding is accepted, the difference between the individual and the society in respect of the applicability of the proposition about hoarding disappears altogether.

Next, it is maintained that the proposition about saving also does not apply in the same way to the individual and the community. An individual saves by consuming less than what he produces. He increases his net worth by so doing. He betters his economic position by saving. He is, in a way, richer. But, it is argued, a community does not necessarily get economically better off or richer by such decisions of individuals. If all individuals were to consume less and thereby plan to get richer, the community would become poorer instead of richer. For, such an increase of aggregate savings would not result in increase of investment. A community is better off only when its investment rise. Unless that happens the community's income would not increase and it would not become richer.

This is essentially correct. But one wonders if that way a difference between the applicability of the proposition in regard to savings can be made out. The fact remains that an individual betters his status by widening the gap between his production and his consumption. He is better off by so doing inasmuch as he increases his command over goods (future). But this way of reckoning presupposes a constant value of money or anything in terms of which savings are measured. Likewise, a community betters its position by widening the gap between its production and its consumption. It is better off by so doing inasmuch as it increases its command over (future) goods. Here too this conclusion rests on the supposition that the value of money or of any other thing in terms of which savings are measured remains unaltered. As far as the community is concerned it is natural to reckon the gap between production and consumption directly in terms of goods. Thus, it is only when the stock of goods is greater that the position of the community can be considered to have improved. Unfortunately, when individuals save more (money) they by their combined action reduce the production of goods. This reduction affects them as

much as the community as a whole. The difference consists merely in the fact that whereas an individual reckons in terms of money and thinks that by increasing his saving in terms of money he is able to effect an improvement in his possessions, the community—if it could be imagined to have a mind to think with—would not think that by merely having more money it can become better off in terms of goods. Even a community, however, often makes such a mistake. It thinks that by buying less from another community it can save more and thereby improve its condition. "Keeping money at home" is regarded as an advantage. There is thus no real difference between individual savings and the savings of the community.

It is again believed that the principles which determine the distribution of income between wages and other receipts are different in the case of individuals and in that of the community as a whole. To be more explicit, it is believed that an individual wage earner bargains with his employer and thereby has his wage determined. This bargaining operates on certain given parameters of the situations. There are the wants and sacrifices of the wage earner and the productive efficiency of the organisation and the wants and the sacrifices of the employer. In brief, the demand and supply functions determine the wage *inter alia* the earning of the employer. In the case of a community, it is maintained, other factors of important nature go to determine these earnings. What may appear to increase, for instance, individual wage receipts may cause an actual reduction of wages for the community as a whole. As far as the latter are concerned the liquidity preference of the community and its preference for accumulating real assets play a very decisive part.

This difference is there. But fundamentally there is no difference of a nature that should warrant our regarding this fact as a macroeconomic paradox. The economy as a whole has its demand and supply functions, and wages are as much determined by them as in the case of an individual. The desire to hold cash balances or to accumulate real assets play a part also in the case of individuals. Each individual starts with a certain amount of real assets (may be in the form of his personal faculties only in some cases) and has his own scale of preferences for holding them in the form of cash or in other forms. But this point need not be laboured. It remains true however that those who are accustomed to thinking

in terms of individuals are likely to make a mistake when they begin to apply their analysis to the case of a community as a whole. But it would be too much to say that the principles of the distribution of income are different in the two cases.

As we saw before the difference between microeconomics and macroeconomics consists in the fact that whereas in the former environmental data include human behaviour in the latter they do not. This fact must be clearly borne in mind while making a distinction between the nature and contents of the study of these two types of economics. In one the unit of study is confronted with environments of a dependent nature; in the other it is confronted with independent environment as it were. In the macroeconomic study of a unit we are concerned with finding out how it would react to *given* set of circumstances. Nature (from which we exclude human beings) has its fixed and unalterable attitude to man. It has a certain invariable behaviour, as it were. Whether man behaves in one way or another, its own behaviour is unaltered. For that reason it is predictable. The operating unit knows what precisely to expect from its environments. If he does not know, it is because his knowledge is incomplete. Once it becomes complete and he knows how the environments would react to his efforts, he knows it for all times.

That is not so in the case of microeconomics. There the study of the behaviour of a unit is more difficult. The environments now include human beings themselves. The way in which men react to the efforts made by a unit is not unalterable and consequently not so easily predictable. The root of the trouble is that here environments are "willing and thinking" agents. Freewill distinguishes the environments in this case from those in the former case. The complication can be likened to that one finds in the case of oligopoly. In pure competition it is not necessary to predict the behaviour of competitors. In oligopoly it becomes necessary to know how the competing oligopolists would react to the behaviour of the unit under study. The solution of the problem of oligopoly rests therefore on the assumption made in regard to the reactions of competitors.

All microeconomic studies are fundamentally of the nature of the problem of oligopoly. All macroeconomic studies partake of the nature of the problem of pure competition or of pure monopoly.

A macroeconomic study is essentially the study of Crusoe economy. A community considered as a self-sustained unit differs in no essential way from a Robinson Crusoe. The validity of the conclusions of macroeconomics must be tested, therefore, by their applicability to the case of Crusoe. All the observations of Keynes, for example, in regard to the manner in which national income, employment and production are determined, must be true of Robinson Crusoe also. A Crusoe must be under-employed in certain circumstances. The rate of interest in his economy must normally be above the rate at which full equilibrium can be expected to be reached. Depression (of activities) must be due to deficiency of effective demand in his case also. A redistribution of income between wages and other remunerations earned by him must alter the effective demand and if wisely done must lead to greater activity and therefore to fuller employment. Keynes's economics is essentially a study of Crusoe economy.

The importance of the study of macroeconomics has increased in recent times because we are now faced with certain problems of nationwide concern. For example, in some countries and in all countries at certain times, there is an alarming proportion of people unemployed. There is general over-production and at other times there is general under-production. Further, there are problems created by international trading or by obstacles to such trading. There is the state of subnormal development of an economy or there is the danger, not always realised, of over-growth. These are the problems and features of an economy that have nationwide importance. No economist can solve these problems or give his correct advice in such matters by studying the behaviour of individuals. One has to broaden one's outlook and make a study of the whole.

Such a study requires a broad vision. We have to stop thinking in terms of individuals and conceive of the entire population consisting of all the factors of production as constituting one operating unit. As an exercise in such a macro-study the example of Crusoe is very helpful. It is believed by some students that Keynes is the first economist to think in macro terms. That is not correct. Many classical economists were concerned with problems of the whole nation. Adam Smith was concerned with the wealth of nations. Ricardo, Malthus and Mill all dealt with aggregate entities. It was more natural for them to think in terms of the

whole community. It was felt thereafter (as also by these economists themselves) that to understand the working of the whole economy we must have some understanding of the economy of individual units. However, a time came when the study of individuals became more or less the sole concern of most economists.

Keynes lived in an age in which some problems of national importance assumed tremendous proportion. He felt, and rightly too, that our understanding of the working of the economic system was hampered by our unduly concentrated attention to the behaviour of individual units. He focused his attention on certain broad categories such as national income, national saving, national investment, the total working population and so on. He was then able to show that the system can attain the position of equilibrium before all the factors are fully employed. He could show how the main cause of unemployment in developed countries was deficiency of effective demand. He knew that the solution does not always consist in reducing money wages but it consists in reducing real wages. That unemployment can be reduced by raising money wages, which would increase effective demand, became obvious from his macroeconomic approach to the problem of unemployment.

CHAPTER XVII

PRICE IN RELATION TO PRIME AND SUPPLEMENTARY COSTS

In the case of perfect competition the price of a commodity always equals the marginal cost of production. In the short-period it equals the marginal short-period cost, while in the long-period it equals the marginal long-period cost. Every period has a cost curve appropriate to it. It is sometimes maintained that in a very short period supply cannot be increased and that consequently there can be no (marginal) cost curve referable to it. This view is based on an erroneous conception of the term supply. Supply has a wider connotation than stock. Increase of supply does not necessarily entail increased outturn of manufactured goods. Supply can be increased by means other than the actual manufacture of finished products. When the word supply (as also the word production) is used in its wider sense it is not difficult to see how every period can have its own supply or cost curve. In this extreme case, however, in which the period is infinitely short it may not always be possible to imagine an increase of supply even in the above sense. The supply then may be absolutely rigid and the marginal cost curve may assume the shape of a vertical straight line passing through the point representing the fixed supply. The cost of production is not, then, uniquely fixed and though the price is still defined by the intersection of the demand and supply curve it is equal to the marginal cost only in the geometrical sense. For, marginal cost may now be any cost equal to or greater than the marginal cost of the existing stock.

While we can have a vertical straight line to represent geometrically the marginal cost actually there is no marginal cost for any amount greater than the given supply in cases in which it is absolutely rigid. If we understand by marginal cost, the cost of producing an additional unit it is infinitely great from mathematical point of view. If, however, we understand by it the cost of the last unit produced, it is given by the last point on the sloping marginal cost curve both from the mathematical and the realistic points of view.

The price of the commodity, from the mathematical point of view, is equal to the marginal cost because the vertical supply curve is assumed to represent marginal cost: and unless this equality between price and marginal cost is established profit cannot be maximised or loss minimised. From the point of view of a producer the price in all such cases is higher than the marginal cost if by it we understand the cost of the last unit produced and bears no relation to marginal cost if we understand by it the cost of producing an additional unit. For there is no marginal cost in this sense when production cannot be increased.

Some objection can be taken to this way of stating the relationship between price and marginal cost. We have just said that from the point of view of a producer the price is higher than the marginal cost, understanding by it the cost of the last unit produced. Strictly speaking, however, the cost of the last unit cannot be considered to be the cost of production at all; for, the last unit refers to the past and there is no production currently going on to which it can be referred. Production is an act and the term cost of production must refer to some act. If the stock of the commodity concerned cannot be increased, because we are considering a very small period, the term cost of production can signify not the cost of manufacturing, nor even that of procuring fresh supply from neighbouring market or markets (for the period is too small to permit even such a procurement) but the cost of the mere act of selling the commodity out of the existing stock. Thus understood, we can rightly associate marginal cost with the cost of a particular unit out of the several that are currently being produced. By thus taking note of the fact that production is an act and that there is no production when there is no act currently being undertaken, we can clearly realise how by marginal cost we must understand the cost referred to the present and not the past. It is obvious, therefore, that it is not the cost of the last unit but that of the present that we should associate with the term cost of production. But since the present is, strictly speaking, momentary and all that does not exist at the moment considered as the present belongs to the future, it is difficult to put meaning into the term "marginal cost of production" when the word present is thus understood. However, the difficulty can be got over by introducing the word expectation and saying that the price is equal to the expected marginal cost of production. By so doing we effect, as it were, a

compromise between the present and the future. Marginal cost, we then say, means the expected cost of the additional unit to be produced in the immediate future. The expectation refers of course to the present.

In view of what has just been said, the cost curve represents merely the cost of selling the stock in hand when the period under consideration is too small to allow the stock of the commodity to be increased. And, it is pertinent to note, the cost of selling need not be infinitely great nor infinitely small. For, since cost always means opportunity cost, the cost of selling would include not merely the effort and expenditure required to take the stock out of the store room and offer it to buyers, but the utility of the alternative uses to which the stock could otherwise be put. Thus, if the price is expected to rise in the future the seller would prefer to hold the stock so that the cost of selling would then be equal to the present worth of the price that he is expecting to get for the stock in the future.

In the wider and therefore the correct sense, production of a commodity is possible under all circumstances and, regardless of the length of the period, marginal cost of production is always thinkable. The price of a commodity can, therefore, always be determined. For, the above consideration shows that whatever the period may be supply and demand curves can always be drawn and made to intersect at a point.

So far we have considered the case of perfect competition. But if we use the word marginal revenue instead of price, the equality of it with marginal cost can be affirmed of all cases including those of imperfect competition and monopoly. What, we may now enquire, is the relationship between price and average cost of production? The equality of price (or marginal revenue) and marginal cost does not ensure equality of average cost and price. It is said that in the case of perfect competition the normal or the long-period price equals the average cost of production. Given competition and the long-period profits are annihilated (profit as a surplus over cost) so that the price naturally becomes equal to the average cost. What is true of both the long and the short-periods, is that price is equal to marginal cost (case of perfect competition); what is true of the long-period, but not necessarily of the short, is that price is equal to average cost. Though this is one of the correct ways of expressing the manner in which economic

forces work themselves out, it is in a sense a clumsy way indeed. Cannot one devise a better way of stating the principle of value? Can we not state the principle so as to make it serve our purpose both for the long and the short-periods?

When a stationary state is postulated there is no such difficulty. For, in a static state there is no distinction of periods. As we have discussed elsewhere, when economic forces are stationary, the conditions associated with the concept of the long-period are found to prevail at all times. Hence, the price is always equal to both the marginal and the average cost of production. But in the case of a dynamic state where short and long-period distinctions can be made it is worth considering if the principle can be so restated as to make it applicable with equal validity to periods of all lengths.

Before we take up this question let us see how the disparity between short-period and long-period prices is generally explained. In the short-period, so the ordinary explanation goes, the price need cover only the marginal cost (that maximises gain or minimises loss). Since in the make up of the marginal cost the supplementary cost does not enter, the price does not necessarily equal the average cost. It may be higher or lower than the average cost depending on the fact whether the marginal cost is sufficiently high or sufficiently low. In the long-period the price equals the average cost because if it is too low to cover the supplementary cost it gives rise to a decrease of supply in the market and thereby to a rise of price. If, on the other hand, it is high enough to cover and more than cover the supplementary cost, it invites further resources into the industry and thus leads to an increase of supply and consequently a reduction of price. Thus, the price swings this way and that till it comes to equal the average cost. Whether the short-period price happens to cover the supplementary cost on the average or not, it is true that the producer is concerned merely with the recovery of his marginal cost of production. It appears from the consideration of the part that supplementary cost plays in the determination of the price in the long-period that it would not be possible to restate the theory of value so as to make it applicable alike to short and long-periods. The equality of price and marginal cost appears to be the only universal statement possible. And if it is desired to indicate the manner in which the average cost of production has its own influence on the price it is perhaps

best to say that while the marginal cost adjusts itself to price, the price adjusts itself to average cost. This would be correct from a certain point of view only. Mathematically and logically the only correct statement is that price is determined by supply and demand; price and cost act and react on each other. Price is the independent variable from the point of view of a firm but is the dependent variable from that of the industry. But this very fact can perhaps be expressed in another way by saying that while the marginal cost (of a firm) adjusts itself to the price (the independent variable for the firm), the price (the dependent variable for the industry) adjusts itself to the average cost (of the industry in the case a static state and of the representative firm in the case of a dynamic state).

Talking in terms of prime and supplementary costs it is possible to say that while the price in the short period equals and need only equal the (marginal) prime cost of production, it equals and must equal in the long period the aggregate (average) cost of production. In more explicit terms the same statement can be reworded as: while in the short period the price need only cover the price cost of production, in the long period it must cover the supplementary cost as well. The fact that the price covers the prime cost in the short period does not necessarily mean that it does not, on the average, cover the supplementary cost as well. Since the price has to be equal to the marginal prime cost, and since the marginal cost can be higher than the average cost, the short period price may also happen to cover, on the average, a part or whole of the supplementary cost as well. However, the fact remains that while the short-period price need not cover the supplementary cost, the long-period price must cover it.

This way of stating the facts obviates the necessity of having to make out a sharp distinction between the manner in which economic forces work in the short and the long-periods. At all times, therefore, without explicit reference to any period, the marginal cost adjusts itself to price and the price in its turn tends to adjust itself to the average cost. The only difference, and the one that need not be stressed here, is that whereas the adjustment of marginal cost to price is, as it were, instantaneous, that of the price to average cost is delayed; it is spread over time. When this fact is noted by itself it once more brings into prominence the distinction between short and long periods. However, this point will be clari-

d later on. The consideration of the difference between prime d supplementary costs would be useful here.

Though correct in its own way the statement that the short-riod price need cover only the prime cost while the long-period ice must cover the supplementary cost as well, lacks some theore-al elegance. It reveals the disparity between the two prices and ows the superficial difference between the forces determining em rather than indicate the fundamental uniformity between the o processes of price determination in the short and long-periods.

With a view, therefore, to the necessity of formulating a more ndamental principle, let us examine our concepts of prime and pplementary costs. We need not go into a lengthy discussion the various definitions of these terms. Suffice it to say that ime cost is usually defined as that cost which varies with output d is consequently absent or zero when production is nil. Supple-entary cost is defined as the cost that is constant—that does not ry with the output—and which is consequently equal to the aggre-te cost when the output is nil. For practical, as distinguished om theoretical, purposes, this pair of definitions may be regard-as entirely satisfactory. All fixed charges such as the rent of nd and buildings, interest on capital borrowed and the salary of ganisers are, according to these definitions, supplementary costs, hile the other charges such as the wages of labourers employed the day and the price of raw materials used are prime costs.

Now, it is said, the short-period price must cover the (margi-l) prime cost of production, for it is only the prime cost that incurred in turning out a fresh, additional supply of goods and is this cost, and not the supplementary, that would be saved by ithholding production.

It is logically objectional to say, however, that supplementary st is the total cost when the output is zero. For, when the out-ut is zero there is no production. And when there is no produc-on there can be no cost of production either. One can, of course, eer clear of this difficulty by merely defining supplementary cost the cost that does not vary with the output. But when pro-uction is increased beyond a certain limit even those costs which e ordinarily regarded as supplementary costs have to be increas-l. Are not then even supplementary costs variable? Or shall e say that when the cost that was once fixed becomes variable

it should be called prime cost? Were we to consider the output to increase always by large amounts probably all items of costs would become variable. We would then be left with prime costs only. Theoretically there is every justification for thus regarding every cost as prime cost when large increases in the output are considered. When a producer plans a large increase in the output and needs, therefore, to increase his expenditure on all the items, he does expect the price to cover the aggregate cost. Thus the principle that the price in the short-period or what comes to the same thing, the price at any particular time, need cover only the prime cost, remains applicable to this case as well.

But the fact still remains that the short-period price, according to the theory we are considering, is said to cover prime costs only. And so long as we speak of prime cost we imply the existence of supplementary costs, suggesting at the same time that such supplementary costs are not covered by the short-period price.

It is necessary, therefore, to define prime and supplementary costs in a different way. Let us say that the cost of production, that is, the cost of an act of production, is prime cost while the cost of an act of production which is a means to another act of production is supplementary cost with reference to that other act. Thus, if there are two acts of production, A and B, the former being a means to the latter, then the cost of production of A is the prime cost of A but supplementary cost of B. The cost of production of B is the prime cost of B and since A is a necessary means to B, the aggregate cost of B, in a sense, is composed of the prime costs of A and B, that is, of the prime and supplementary costs of B.

In the case of a textile factory the act of engaging the organiser is a means to the manufacture of cloth. The cost of engaging the organiser, that is, his salary, is the prime cost of such an act of engaging him; but it constitutes the supplementary cost of manufacturing cloth. The cost of raw materials used and the wages of labourers engaged would be the prime cost of manufacturing cloth. Even the cost of manufacturing cloth would perhaps be broken up into two categories of means and ends, in which case some items would constitute prime and others supplementary costs. And that would be in accord with the generally accepted statement that the price of cloth at times need not even cover the cost of raw materials. The cost of raw materials then would not wholly constitute prime cost.

With these slightly modified definitions of the two categories of costs we can proceed now to formulate the theory of the relationship between price and cost. Production and manufacture are not one and the same thing. An act of production is not the same thing as an act of manufacturing a commodity. Cost of production is, therefore, not necessarily identical with the cost of manufacturing an article. An act of production may enable a producer to get a direct return in terms of price or it may merely enable him to pass on to another act of production which may enable him to secure such a direct return. In the former case it becomes possible to establish some sort of relationship between price and cost; the price equals (or the marginal cost of production equals) the marginal cost of production (the price). It is unnecessary to mention the word prime not only because the marginal is always the prime according to the generally accepted meaning of the term prime cost, but also because the cost of an act of production considered as an end (as distinguished from a means to another act) is always prime cost. In those cases in which an act of production does not enable the producer to get a direct return, that is, in cases of acts of production which are regarded as means to further acts, there is equality of marginal cost of production with the expected (indirect) returns. This point can be clarified by taking an example.

Suppose a man makes ladders and uses them to pluck fruits from a tree. There are two distinct acts of production here, namely, the making of a ladder or ladders and the plucking of fruits. Plucking fruits secures direct return. Let us suppose the fruits yield constant utility so that we can compare the returns to the fixed price a producer can get in the case of perfect competition. The man will then continue to pluck the fruits with the help of the ladders till the marginal cost of making them (the ladders) equals the returns he expects indirectly to get *via* the medium of plucking fruits. The part that expectations play comes into prominence here. The return he expects to get is calculated by subtracting from the total returns expected the expected cost of plucking the fruts. Viewed from the point of view of the making of ladders, the act of plucking fruits is the end and, therefore, of the nature of consumption; likewise considered from the point of view of the act of plucking fruits, the act of making ladders is a means and therefore of the nature of production proper. Since the

final act is of the nature of consumption (if it can be conceived of as the final act, or to the extent to which it can be thus conceived) we need only think of the acts other than the final while seeking to establish a relationship between cost and price.

Instead of saying, then, that in the long run the price covers the supplementary cost it is now possible for us to say that the cost (marginal) of production equals the anticipated return (indirectly secured). This way of stating the relationship between cost and returns enables us to link up anticipations with production. It does not involve us into the difficulty of explaining what we precisely mean by price in the long run. The normal or the long-period price as being equal to the average aggregate cost or as covering supplementary cost may not in reality ever be found to exist. Our statement of the relationship of price to cost is straightforward, is correct in itself and does not involve any sacrifice of practical or theoretical facts.

A word may be said about the precise significance of the phrase *price in the long period.* Price is in its nature a concept that has reference to the living presence. There is no price in the long period for the simple reason that in the long period there are prices rather than a single price. Price in the long period is, therefore, a mathematical concept and for the practical or even the theoretical economist it can merely signify a certain *norm* to which the actual price—very-short period price—tends. That is why the long-period price is called the *normal* price.

A further difficulty arises when the word *long-period* is used in different senses in different contexts. This word has historical and analytical connotations. In this chapter its meaning was restricted to its historical connotation. A long period in this sense refers to calendar time; a long period is that period which extends over a large number of days, months or years. What is long for one particular act of production may not be long for another. In the analytical sense it has no direct relation to a stretch of time. It is in the analytical sense that the word long-period has been used in the next chapter.

If we are permitted let us say that the short-period price is determined by the immediate active forces while the long-period price is also influenced by and so determined by the background forces. There is a hierarchy of forces; they act at different levels. Forces that determine the short-period price are more obvious, more visible as it were. The forces that operate to determine the long-period price are more invisible.

CHAPTER XVIII

THE DETERMINATION OF PRICE IN SHORT AND LONG PERIODS

The concepts of short and long-periods are necessarily related to that of the dynamic state. As has been explained elsewhere the influence of the forces governing the determination of price in a stationary state does not depend on the period of time under consideration. There, no difference between short-period and long-period prices exists. As all the forces in a stationary state are constant there is no necessity of changing the technique of production or of making any other adjustments in the factors of production. And since all the activities are thus fixed there is no necessity of considering the time element in production.

A long period by definition is the period of time that is required by a production unit to complete all those adjustments that are called for by the forces acting on the production unit at the moment of time under consideration. In a stationary state no adjustments are needed and hence there is no criterion on which one could distinguish one period from another.

The concepts of dynamic state and its moving equilibrium (the dynamic equilibrium) are, as just mentioned, linked up with the concepts of the short and long-periods. These short and long-periods of productive activity have their different costs which are respectively called short-period and long-period costs. In the diagrammatical representation of the position of equilibrium in a dynamic state the cost curve may, therefore, indicate either short-period or long-period costs. The short-period cost curve represents the cost of producing various amounts when the adjustments necessitated by changed conditions are not allowed adequate time. It will be obvious that there can be a number of short-period curves, for, there can be many periods of time shorter than the one that is necessary to complete all the desired changes in the production unit. However, we shall in what follows speak of the short-period without specifying which one of the several possible short-periods we are referring to. That would not render our analysis invalid as the difference between one short-period and another is not a fundamental one.

Supplementary costs are usually defined as consisting of those elements of the aggregate cost of production which are constant, that is, do not vary with the output. They can also be defined as the total cost of production when the output is zero[1]. Supplementary costs are, therefore, of a nature that does not permit of frequent changes in the sense that small changes in the output of finished goods cannot be followed up by corresponding changes in supplementary costs. It is the divisibility of the factors of production that makes the cost incurred on them rigid and thus gives them the peculiar characteristics of supplementary costs.

While it is only in the dynamic state that we can have short and long-period cost curves, prime and supplementary cost curves we can have both in the static and the dynamic states. Supplementary costs are due to the indivisibilty of certain factors of production and such indivisibility does not depend on the dynamic character of economic forces. Even in a stationary state, therefore, the aggregate cost of production of a commodity is composed of fixed and variable costs.

If in a stationary state a firm was to increase its output little by little the average cost would fall for some time. After reaching a certain minimum point it would begin to rise again. Such a rise would be accounted for by the fixity of certain factors of production whose quantities it is not possible to increase along with the quantities of other factors. The rise in the cost is, therefore, due to the existence of supplementary costs. If the firm was to go on increasing its output a time would eventually come when it would become economical to increase the quantity of fixed factors, that is, to increase supplementary costs. Whenever that is done the cost of production begins to fall again, and continues to do so with every increase in the output of goods till, after a time, it once again begins to rise.

In Fig. I we have drawn a number of curves each beginning from a different point on the Y-axis. The curve that begins from a higher point represents production with greater supplementary costs, or in other words, a larger scale of production. Each individual curve shows that the average cost first falls and then rises again when the supplementary costs remain fixed. The curves, therefore, show the changes in prime costs. These curves are often

1. See the previous Chapter.

called short-period curves. This, however, is misleading. For, as we have said above, there can be no distinction of short and long

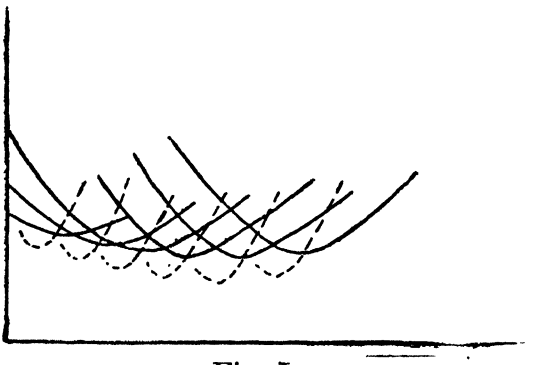


Fig. I.

periods in a stationary state. These curves do not differ from one another because different periods of time are allowed for adjustments in production; they differ because the organisation or the scale of production, or the supplementary cost, is different in each case. The series of curves represent production potentiality at a given moment of time. And in a stationary state one moment is the same as any other moment so that these curves merely indicate production potentialities.

We can draw a marginal cost curve for each of these average cost curves. In the diagram the dotted curves represent marginal costs. If we call this series of curves short-period curves, how can we construct a long-period curve? It has been suggested that the long-period curve corresponding to this series of short-period curves may be either the locus of the minimum point on the short-period curve or the envelope of the short-period curves.

In Fig. II the short-period average cost curves are drawn and the lowest points on them are indicated by dots. The envelope of these curves is shown by a thin continuous line. The locus of the minimum point on the short-period curve is not drawn.

Whether we understand by long-period curve the locus of the lowest point on the short-period curve or the envelope of the short-period curves it will be realised the long-period curve cannot be a continuous curve. For instance, the point A on the long-period curve shows that the average cost for an output OM is AM. As a matter of fact the output OM cannot be produced at the average

cost. It is only when the point A is a common point on the short and the long-period curves that it can indicate the actual average

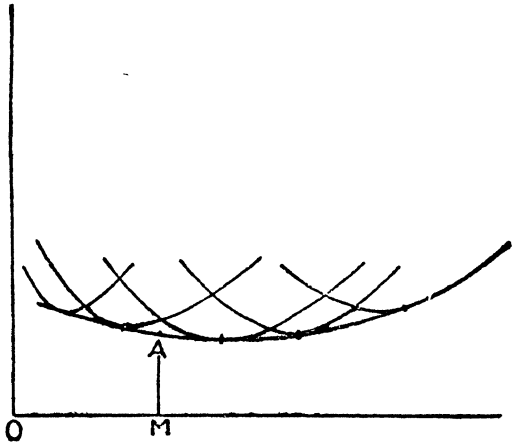


Fig. II.

cost of production. The long-period curve therefore jumps from one such common point to another. It is discontinuous.

It is necessary to remember this discontinuous character of the long-period curve if we have to avoid blunders in the dia-

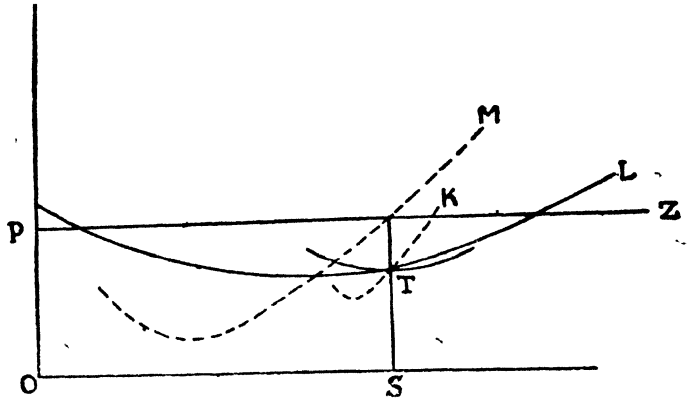


Fig. III.

grammatical representation of the position of equilibrium in a stationary state. Suppose in Fig. III, L is the long-period curve (locus of the lowest point on the short-period curve) and M is the curve marginal to it. The M curve would, therefore, be regarded as the long-period marginal cost curve. Let the price ruling in the mar-

ket be OP. PZ is therefore the price line. How much will the firm under consideration then produce? Judging from these long-period curves an output OS would appear to be the amount that it would produce. For, it is this amount that equalises marginal cost and the price. (This shows the position of equilibrium of the firm and not of the industry. In a stationary state this position would therefore be reached during the process of adjustment leading finally to the equilibrium of the industry). The average cost of this output is TS. Since the curve L is the locus of the lowest point on the short-period curve, T must be a lowest point on the short-period curve. This short-period average cost curve has been shown in the diagram along with its marginal curve. But if it is profitable to produce an output OS, the short-period curve shows that it should be still more profitable to produce an amount PK. The long-period and short-period curves, therefore, indicate different outputs.

We would not have arrived at such contradictory results had we remembered that the long-period curve is not a continuous curve. The point T need not be the lowest point on any short-period curve. If the long-period curve is drawn as shown in the diagram and understood as a discontinuous curve or if it is drawn as a dotted curve composed of points placed at intervals, it is difficult to read the amount that would be produced by the firm. We have therefore to draw the long-period curve in some other way to make such a reading possible. Let the lower portions of short-period curves, shown in Fig. II by thick marking, form the long-period curve. It then becomes a continuous curve with every point on it indicating the actual average cost for output represented by its abscissa. It is the long-period curve of the firm in the sense that when facilities are available for adopting the most suitable scale of production the points on it show by their ordinates the actual average cost for the outputs shown by the abscissa. As we proceed along the long-period curve we find ourselves passing from one short-period curve to another. While passing from one short-period to another the supplementary cost increases and, therefore, in the strict sense of the word, ceases to be supplementary. Portions of the marginal curves corresponding to the portions of the average curves shown by thick lines would, therefore, constitute the long-period marginal cost curve of the firm.

In Fig. IV the long-period average curve is shown along with the relevant portions of the long-period marginal cost curve.[1] The

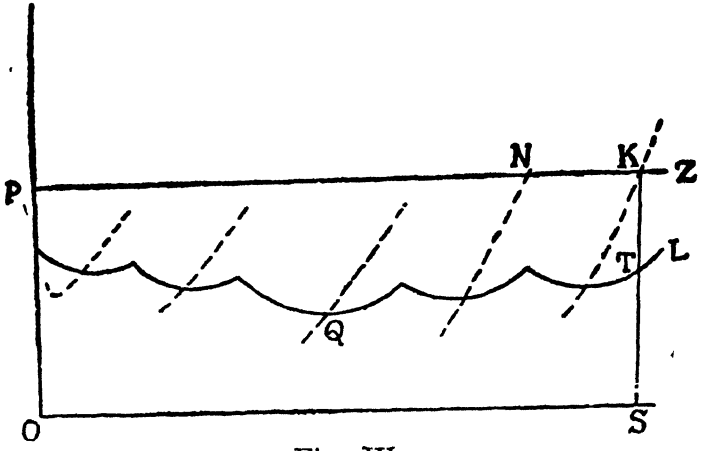


Fig. IV.

marginal cost in the vicinity of the point of intersection of two short-period average cost curves might even be negative. If the price were OP the firm would produce either the amount OS or PN. Both the points N and K are points of relative maximum and the output will be determined by that point which makes the net income maximum. In the figure the point K is obviously the point of absolute maximum net income. In a diagram of long-period curve we have, therefore, to go by the consideration of the average cost rather than the marginal. The net gain indicated by the product of the output and the difference between the price and average cost should be maximum. The output thus indicated will naturally be one of the outputs given by the points of the intersection of the marginal cost curve with the price line.

In a stationary state the diagram given in Fig. IV would be the picture of the production potentialities of a firm and the point S would indicate the output. It is to be remembered that the difference between the long-period and short-period curves is due

1. Long after writing this I came across 'A Note on Discontinuous Cost Curves' by Professor G. J. Stigler in the *American Economic Review*, Dec. 1, 1940. I find that he and others have also pointed out that the cost curve can be as I have shown. They do not call it Long-Period Curve. Also see M. F. W. Joseph's article on 'A Discontinuous Cost Curve and the Tendency to Increasing Returns,' in *Economic Journal*, 1933. Professor Stigler draws our attention to S. Carlson's *A Study on the Pure Theory of Production*.

not to time element but to the element of supplementary costs. If all the costs could be conveniently varied (and that would be possible if all the factors were perfectly divisible) there would be no supplementary costs as such and each short-period average cost curve (and therefore also the marginal) would become horizontal. Were the difference between the various scales of output merely quantitative all the short-period curves would have coincided. But the short-period curves do not differ merely in respect of the quantity of various factors; they differ also in respect of the kind of factors employed. A larger scale of production has a different technique. Just as there are indivisible factors there are, as it were, indivisible techniques also. Of two short-period curves the one that is lower has a more economical technique. This technique requires, for economical use, larger output than what the higher curve represents. Given the divisibility of all the factors (the divisibility of technique consists, after all, of the divisibility of factors, both material and immaterial) the long-period curve in a stationary state would be a horizontal straight line tangential to the long-period curve at its lowest point. Since the factors are not divisible we have a long-period curve of the type shown in Fig. IV, and the firm's equilibrium output is given by the point T in a stationary state.

The marginal curve has not been drawn as a continuous curve in this diagram. As has been said above, at points the marginal curve might extend below the X-axis. At the points of inflexion the marginal curve would fall vertically. The price line may cut the marginal long-period curve at one or more points, depending on the shape of the long-period average cost curve. In a static state firmal equilibrium is given by the point T and industrial equilibrium by the point Q.

In a dynamic state the price, as well as the forces on the supply side, undergoes changes. When the demand changes the long-period supply curve remains the same but the short-period curve changes. Thus, for instance, when the price rises to P′ (see Fig. V) the new equilibrium in the long run is attained at the point K′. But in the short period it is possible to move only along the arc *b*, for it requires time to change the scale of production. If the time allowed be shorter still even the movement along the arc *b* would not be possible and output could only be increased at higher costs indicated by some such curve as *a*. According to the length of

time allowed for increased production to meet the expanded demand the firm would have different cost curves. Other things being the

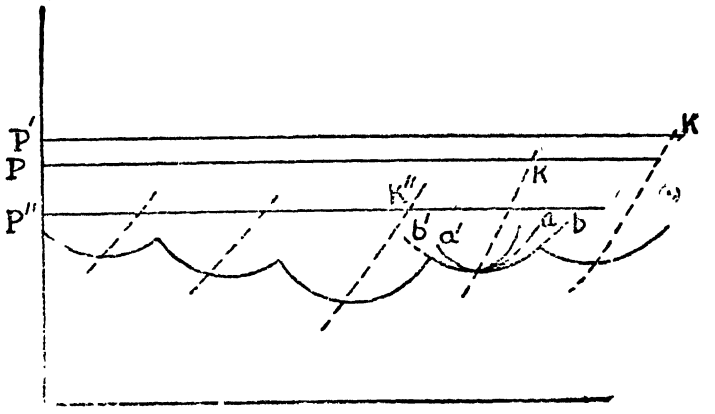


Fig. V.

same, the shorter the time the steeper the curve.

If the demand price were to fall to P'' the long-period equilibrium would be attained at the point K''. In the short period it would be possible to move only along the arc b; and in periods still shorter than this production would contract along such curves as a'.

What emerges from the study of these curves is that the condition that marginal cost should equal the price does not necessarily give us only one position of equilibrium. Its usefulness is confined to short-period considerations. In studying long-period adjustments we have to take average costs into consideration. The condition that the difference between the price and the average cost multiplied by the number of units produced should be maximum gives us one and only one position of equilibrium. That is diagrammatically explained by the fact that the long-period average cost curve is continuous (as defined by us) while the long-period marginal curve is discontinuous with several peaks. In the static state, however, when industrial equilibrium is reached, output is established at the lowest of all lowest points. In the dynamic world, since knowledge is not likely to be perfect, equilibrium is likely to be attained at any of the lowest points on the long-period curve. As a matter of fact, in the dynamic state only a short-period monetary equilibrium is possible. Over time there is no equilibrium though at every moment of time the situation must appear as stationary.

Dynamic equilibrium is moving equilibrium; at every moment variable forces adjust themselves so as to exploit the demand conditions to the greatest advantage. Thus, the equilibrium position in the dynamic state is attained at every moment with price equalling the short-period marginal cost. And the short period in the dynamic state is the shortest possible.

The long-period cost curves are themselves changing in the dynamic world. Thus, every time there is some change either in the demand or in the supply, the entire picture of production potentialities changes. A production unit, therefore, finds itself continually tossed to and fro from one short-period curve to another. In a static state, before the final position of stability is reached, a production unit has to move along one or more short-period curves belonging to relatively fixed long-period curve. But in the dynamic state, movement is not confined to changes of position along the ares of known curves; every moment the old and known ares of short-period curves disappear and in their place new ares appear.

All this has pre-supposed perfect competition among the sellers. When competition is imperfect, the demand curve for the individual production unit is negatively inclined. Our diagrams would, therefore, need to be redrawn with demand curves sloping downwards instead of being horizontal. But the conditions of equilibrium would remain the same with the substitution of marginal revenue for price.

Here we might introduce the distinction between ex-ante and ex-post cost curves. Economist often speak of ex-ante and ex-post (anticipated and actual) demand curves particularly in connection with price determination in impure competition. But the same distinction can easily be made in regard to cost curves. A cost curve shows the (average or marginal) cost of production for different outputs. But it is always in anticipation of cost that arrangements are made for production. Thinking that the cost would be so many rupees, for instance, a producer buys or hires factors and commits himself to the production of a certain amount. When the goods are actually produced and cost is calculated it might turn out to be different from what he had anticipated. The actual cost, the ex-post cost, gives a point on the ex-post cost curve. But it will be realised that output is governed, in the first instance, by the anti-

cipations of the producer in regard to cost of production (also of the demand).

While that is true, it is also true that in the light of the actual cost a producer makes a revised estimate of cost he is likely to incur in the future. Provided the forces on the supply side do not change violently, a producer's ex-ante cost curve approaches the ex-post curve more and more closely as he gathers experience of business.

The fact remains, however, that the curves we have drawn above are all ex-ante curves which will be found to be different from the ex-post curves to a smaller or a greater extent. Because of this fact the whole picture of curves has to be redrawn as the producer comes to realise that the ex-post curves are going to deviate from the ex-ante ones.

CHAPTER XIX
THE REPRESENTATIVE FIRM: ITS PLACE IN DYNAMIC ECONOMICS

The word equilibrium is best defined as indicating a state in which there is no tendency either to expansion or to contraction of production. Thus, equilibrium of a firm would mean that state in which it tends neither to expand nor to contract its output, while the expression equilibrium of an industry would indicate the state in which there is no tendency for its output to increase or decrease[1]. Under certain given conditions this meaning of the word equilibrium may express itself in conditions other than the negation of expansion or contraction of output. For instance, when individual firms are in equilibrium the condition of equilibrium for an industry, namely, that its output, should not tend to change, resolves itself into the condition that there should be no entry of new firms into or exit of old firms from the industry. But when the firms are not in equilibrium mere absence of entry into or exit out of the industry does not ensure equilibrium of industry. The condition that output should not tend to change may again be expressed in terms of the relationship between price and cost. Thus, equilibrium of a firm is defined by the equality of price and marginal cost of production of the firm,[2] whereas the equilibrium of the industry is defined by

1. As Pigou says, "Thus, even when the conditions of demand are constant and output of an industry as a whole is correspondingly constant, the output of many individual firms will not be constant. The industry as a whole will be in a state of equilibrium; the tendency to expand and contract on the part of the individual firms will cancel out; but it is certain that many individual firms will not themselves be in equilibrium and possibly that none will be." *Economics of Welfare,* Appendix III.

2. When price equals marginal cost the firm is in equilibrium. This is a more particular application of the general theorem that equilibrium is defined by the equality of marginal cost and marginal revenue. The situation does not signify absence of profit or loss. It signifies, rather, the state of development in which chances of maximising profits and minimising losses are fully exploited. Marginal cost, it may be noted, necessarily means marginal cost of production. There are, as is indicated in the text later, short-period and long-period marginal costs. The former is marginal to the short-period average cost and the latter to the long-period average cost. The long-period average cost curve is geometrically the locus of the optimum point on the short-period curve.

the equality of price and average cost of production. The condition for firm's equilibrium is that there should be no further possibility of making profit or reducing loss, while that for industry's equilibrium is that there should be no profit or loss.

At this stage a difficulty arises. If all the firms are in the same position then they either all make profits or all make losses or all make neither loss nor profit. In such a case there is some sense in saying that the equilibrium of an industry can express itself in the equality of price and average cost. When, however, all the firms are not in the same position the word average cost loses its definiteness. For, average cost would then differ from firm to firm though not the marginal cost. When individual firms are in equilibrium in such a way that their average costs are also equal to price, no difficulty is felt; for, then the average costs of all firms are equal. In all other cases when the firms' marginal costs only and not the average costs are equal to price what do we mean by saying that industry's equilibrium is defined by the equality of price and average cost? In fact it might even be doubted whether in such a case the equality of price and average cost, even if that expression had a definite meaning, could be regarded as a sufficient condition of equilibrium of industry. It is best, therefore, to relegate the relationship between price and cost to the background and always adhere to the most fundamental condition of equilibrium, *viz.*, that the output should show no tendency either to increase or decrease.

An industry, then, is said to be in equilibrium when its output shows no tendency to expand or contract. And it shows no such tendency under one of the following conditions:

(1) When the individual firms are in equilibrium and there is no tendency for new firms to enter or for old firms to exit from the industry.[1]

(2) When the individual firms are not in equilibrium but the tendency of some firms to expand and of others to contract just counterbalance each other and there is no increase or decrease in the number of firms.

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1. These are two conditions. It does not mean that when individual firms are in equilibrium there will be no tendency for the number of firms to increase or decrease.

(3) When the individual firms are not in equilibrium but the tendency on the part of some to expand and some to contract is just balanced and when the exit of some firms is balanced by the entry of new firms. Alternatively, there is industrial equilibrium where individual firms are not in equilibrium and the net increase (decrease) in their output is balanced by exit (entry) of some firms.

In no other case can an industry be in equilibrium. Let us now see under what circumstances will each of the above conditions of equilibrium be satisfied.

Individual firms are in equilibrium when their marginal costs are equal to price. They are in equilibrium in the sense that the possibility of maximising profit is fully exploited. There is no entry into or exit out of the industry by firms when, (a) all the firms in the industry have their average cost equal to price or (b) when, in spite of the fact that the price and average costs of individual firms are not equal, *i.e.*, in spite of the fact that some of the firms may be making profits and others running at a loss, those who are losing continue in the hope of better times and outsiders are not tempted into the industry by the profits of some. Such a case is imaginable. For, a prospective entrant into the industry is not normally so optimistic as to be attracted to the industry which has concerns both profit-making and loss-incurring. Optimism and pessimism are evenly balanced when *entrepreneurs* think that the probability of making profits like some existing firms is more or less evenly matched by the probability of incurring a loss. And such a view an *entrepreneur* will take either when, regardless of the real condition of the industry, he, somehow thinks that the chances of profit and loss are evenly balanced or when in reality such a balance exists and the knowledge on the part of the prospective entrant is correct.

Lastly, we have to note that entry of firms into an industry is balanced by exit out of it when, in the first place, at least some firms are running at a loss and do not wish to continue in the hope of better times and some new firms enter in the belief, correct or incorrect, that the general condition of the industry indicates greater probability of profits than of losses, and, in the second place, when such exit and entry of firms balance each other.

We thus see that in many cases the possibility of the industry being in equilibrium exists and that the possibility is not a mere theoretical possibility but a very practical one.

In all conditions other than those mentioned above, the industry is out of equilibrium. But whenever it is out of equilibrium forces operate to take it towards the position of equilibrium. Let us, therefore, study the forces that are responsible for such a tendency to equilibrium.

We know that a firm adjusts its output so as to equate its marginal cost to price. When the firms have had time to bring about such adjustments they find themselves in the position of equilibrium. But unless all the firms are of equal efficiency enjoying internal and external economies in the same measure, some firms' average cost will be above and some firms' below the price. Some firms will be making a loss and some profit.[1] Those that are making profit will neither produce more nor less in the short period at any rate; for they have reached the short-period optimum output. Those who are making a loss will either discontinue production or stick to their position in the hope of the return of better times. When those who wish to discontinue have vacated the field the industry is left with firms that are making profits and those that are suffering losses but are hopeful of earning profit in the future. Let us see what it is that is likely to make such firms hopeful. There are three reasons for their optimism.

(1) They may think that the times are abnormal and with the speedy return of normal demand and supply conditions they would be able to balance their accounts.

(2) They may not have had sufficient time to put their concern on a sound basis. In other words, they might still be in the process of reaching the optimum size, so that they know that the losses would soon, or in a reasonable period of time, disappear.[2]

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1. Throughout in this chapter the word profit is used in the sense of excess of income over total cost.

2. This differs from the first reason. In the first case losses are due to some unexpected change in demand or in the prices of factors of production employed. In the second, they are due to the fact that, though the demand and supply conditions have been properly anticipated the firm has not had sufficient time to adjust its economy to the conditions of the industry.

(3) And, lastly, firms may continue to operate at a loss when they think that discontinuation of production and investment of realised capital elsewhere would be a greater loss.

Thus for three reasons losing concerns may be found in the industry. In other words, at any particular time we may find that the price may be above the average cost of some firms and below that of others while it may be that it is just equal to the average cost of some one or more firms. The tendencies then in operation are the following:

(1) Some of those who are making profits neither produce more nor less as they have reached the optimum output. (2) Some of those who are making profits may be expanding if they have not reached the optimum. In both these cases the short-period marginal costs equal the price. (3) Some of those who make profits may be contracting due to the fact that they have passed beyond the optimum size. (4) Some of those that are making losses will be leaving the industry. (5) Some losing concerns will continue producing the same amount in the hope of better times. (6) Some losing concerns will produce more if they have not reached their optimum, and (7) some losing concerns will produce less if they have passed beyond the optimum.

On the whole, therefore, the output may be contracting or expanding from within the industry. If as a result of these varying tendencies the industry is as a whole contracting from within there is not likely to be any inflow of fresh resources into it. That is, the number of firms is not likely to increase. In this world of course anything might happen. But arguing on the basis that what is most likely to happen will happen we may say that the number of firms in the industry will expand when there is a tendency to expansion from within the industry. And this tendency is there when the forces that cause some firms to expand production are stronger than those that cause other firms to contract production or end it altogether.

Now, if when the industry tends to expand from within there is a firm that also tends to expand in a similar manner, let it be called the representative firm. Likewise, when the industry tends to contract let the representative firm be the firm that also tends to contract in the same manner. We shall now argue on the supposition, first, that such a representative firm exists. We can then

translate the foregoing proposition in the following words. When the representative firm tends to contract no new firms enter the industry. When the representative firm tends to expand new firms enter the industry.

When new firms enter the industry the price falls and it does so because the output increases. The increase of output is due to expansion from within and without. As the price falls the tendency on the part of firms to expand becomes weaker. In other words, the representative firm shows a weaker tendency to expand. As resources continue to flow the price continues to fall and with it the tendency of the representative firm to expand gets weaker and weaker. A position of stability is reached when the representative firm shows no further tendency to expand. That happens when the price becomes equal to the average cost of the representative firm.

When, however, the representative firm shows a tendency to contract no firm enters the industry. The contraction from within causes the price to rise and thus weakens the tendency on the part of the representative firm to contract. Ultimately a stage is reached, when the representative firm tends neither to contract nor to expand. And that is again the stage when the price is just equal to the average cost of the representative firm.

Thus the price moves either upwards or downwards till it becomes equal to the average cost of the representative firm. Of course, the average cost of the representative firm itself changes and the representative firm too changes or may change. But the proposition still stands that the price is continually tending to reach the representative firm's average cost.

We may, therefore, say that the price is influenced and determined by the expansion and contraction of the industry's output. And such expansion or contraction is determined by the expansion or contraction of the representative firm. And again, the contraction and expansion of the representative firm is determined by the fact whether its average cost is below or above the price. It is, therefore, possible to say that the average cost of the representative firm determines the price. This does not, however, contradict the more fundamental proposition that price is determined by supply and demand, nor the more particular proposition that it is the price that settles which shall be the representative firm. After all

we cannot say that since the representative firm is determined by the price, therefore, the price is determined by price itself.

The same argument can be worded in a different way. If demand is taken to be fixed, price is determined by cost. Cost is then the independent variable and price the dependent one. It is, however, not the cost of any individual firm that can be regarded as the independent variable in every sense. For, the price is a given fixed quantity from the point of view of an individual firm, in so far as conditions of competition prevail. Hence price is determined by average cost referred to the industry rather than to any firm. Since each has a different average cost there is no identity between the average cost referred to the industry and the average cost referred to an individual firm. It is possible, however, to find such an identity between the cost of the industry and that of the representative firm.

It remains now to see to what extent our reasoning needs modification in the light of the fact that the representative firm which can exist may not actually exist. When such a firm does not exist, it is impossible to find any identity between the cost of the industry and that of a firm. We are thus, prevented from arguing in terms of a firm. Yet if we must predicate our statements of a firm we can still speak of the representative firm, and understand by it not any particular firm but only use it as a small-scale picture of an industry.

Marshall speaks of the representative firm as actually existing. It is a firm that has its average share of internal and external economies.[1] It is one that is neither too young and therefore immature nor too old and tottering. Nor has it any special advantages over other firms in regard to situation or goodwill. It is, therefore, a firm which is not likely to have the tendency to expand when the industry is on the whole tending to contract. Nor is it likely to show a tendency to contract when the general tendency

1. Thus, Marshall says, "And a representative firm is that particular sort of average firm, at which we need to look in order to see how far the economies, *internal* and *external*, of production on a large scale have extended generally in the industry and country in question. We cannot see this by looking at one or two firms taken at random; but we can see it fairly well by reflecting, after a broad survey, a firm, whether in private or joint-stock management (or better still, more than one), that represents to the best of our judgment, this particular average." *Principles of Economics*, Eighth ed., p. 318.

of the industry is to expand. Marshall's conception of the representative firm, therefore, is one that would necessitate no change in our arguments if it were substituted for the representative firm as defined by us. The only difference is that whereas we understand by such a firm one that shows the tendency to expand or contract with industry in the same manner, Marshall defines it as one that has its normal share of economies and is normally placed in regard to situation and other factors that influence the cost of production. Marshall does not feel it necessary to point out the fact that when such a representative firm does not exist we can still have it as a useful concept for purposes of wording our principles in terms of a firm which is a less hotch-potch concept than that of an industry.[1]

In all those cases in which an industry is composed of a large number of firms the probability of a representative firm actually existing becomes obvious.

When we consider the effects of an invention on the cost of production of a commodity the above theory stands in need of restatement though not of a radical change. An invention has the effect of bringing down the cost of production. It often necessitates considerable changes in the general organisation and an enlargement of the scale of production. All the firms in the industry or at any rate those that are not making sufficient profit or are running at a loss find it necessary, therefore, to effect such changes. If a large number of significant firms decide to incorporate the invention and thus expand their scale we may say that the industry shows a tendency to expansion from within. The representative firm would then be the one that is also expanding in like manner. Its cost of production or its expected cost of production would be the normal cost. The influx of new producers in the industry can be then taken to be governed by calculations incorporating the cost

1. Marshall pictures the representative firm as a typical firm "built on a scale to which actual firms tend to approximate.....That this conception is appropriate to actual conditions is well shown by the studies of the sizes of a number of actual business carried out in 1914 by Sir Sydney Chapman and Mr. Ashton." Their conclusion was: "Generally speaking there would seem to exist in industry or branches of industry of adequate size, under given set of conditions, a typical or representative magnitude to which businesses tend to grow.....As there is normal size and form for a man, so, but less markedly, are there normal sizes and forms of business." Pigou, *Economics of Welfare*, Appendix III.

of the representative firm. But when most of the firms in the industry do not find it possible to reorganise themselves so as to be able to take advantage of the invention and, therefore, either discontinue production or cut down their output, the industry shows a tendency to contraction from within. The representative firm then becomes one that is itself contracting. And yet there will be an influx of producers from without. The chances of such a thing happening are, however, rare. Yet, if we do not want to ignore such a possibility, however remote, we should understand by representative firm the firm that shows the same tendency to expand or contract as the industry without limiting the expansion or contraction to changes from within the industry. When, however, the concept of the representative firm is thus widened it ceases, we should note, to have much practical utility. We feel, however, that it serves on the whole a useful purpose in enabling us to apply the technique of static equilibrium analysis to problems of the phenomenal world.

A word may now be said about Pigou's equilibrium firm. His concept of equilibrium firm differs from our concept of the representative firm in this respect that whereas the equilibrium firm is necessarily in equilibrium, the representative firm is not. There is a representative firm in every case, *i.e.*, whether the industry is in equilibrium or not. When, however, the industry is in equilibrium in any of the ways we have described above, the representative firm coincides with Pigou's equilibrium firm. The two concepts of the representative firm and the equilibrium firm are alike in the respect that they both represent the condition of the industry as a whole. When the industry is in equilibrium price equals the marginal as well as the average cost of the equilibrium and the representative firms.

It is sometimes argued that the concept of the representative firm has no usefulness since in the case of perfect competition every firm is alike and consequently there is no necessity of such a concept, while in the case of imperfect competition every firm may (and probably must) have a different price. To speak of the representative firm, in such a case, as determining the price is therefore meaningless, for the simple reason that *the price* does not exist. To realise the usefulness of the concept of the representative firm we have, however, to remember that in the case of imperfect com-

Competition may be imperfect in the sense that the average costs of all the firms are not equal to the price; or rather that they are not equal and hence do not all become equal to any one price. Yet it may be perfect in the sense that there is actually one price at which these firms are forced by circumstances to sell their goods. In the terminology adopted by Professor Chamberlin, and now made use of by many, competition may be imperfect and yet pure. Purity of competition caused by the non-attachment of buyers to sellers guarantees that all the firms will have to charge the same price. In pure but imperfect competition then, all the firms are not alike and yet have to charge the same price. In such a case the unlikeness of firms makes the concept of the representative firm necessary for theoretical purposes and the existence of one and the same price makes it useful.

It is interesting to note that the existence of pure but imperfect competition has recently attracted the attention of economists. Yet its comparative neglect by many has evoked the following remark by Professor David Wright:[1] "The best we can have is pure but imperfect competition. This is a qualification of the utmost importance, and one almost wholly overlooked in recent literature."

The usefulness of the concept of the representative firm is, therefore, confined to cases of a number of firms selling identical goods (guaranteeing non-attachment of buyers to sellers) in an imperfect market, that is, in a situation that is characterised by imperfect mobility of resources between groups of sellers producing different goods. To the extent to which conditions in the world do not conform to such a pattern the concept of the representative firm lacks usefulness in practice. But as a tool of analysis, enabling us to understand the forces at work, the concept has value. To understand what would happen when goods are not identical, it is helpful to know what would happen if goods were identical.

It is necessary to remember here that what we have to study must be real in the sense that it exists. What does not have an

1. In this connection it may be noted that Marshall talks judiciously of *free competition* and not perfect or pure competition. See N. Kaldor's "Market Imperfection and Excess Capacity." *Economica* 1935, and J. R. Hall and C. J. Hitch, "Price Theory and Business Behaviour," *Oxford Eco Papers* II 1939.

existence need not (perhaps cannot) be studied. If it can be shown that pure and imperfect competition of the type indicated above does exist, the case for the representative firm must be taken as well established. Now, existence does not necessarily imply existence in the concrete or objective world. It is sufficient for our purpose if the thing under consideration exists in the subjective world (the world of thought). The study of facts as they are found in the world of matter have to be understood and analysed by the mind through mental concepts. It is necessary to create mental pictures of suitable character to enable us to understand the world external to us.[1] The mind has to bring into existence a subjective world through the medium of which the objective world can be understood. The situation we have described above does therefore exist (in the world of thought). The objection sometimes levelled against the concept of the representative firm, namely, that the representative firm does not actually exist, can be explained away with the help of such a concept of "existence". Nowhere do all the things talked of actually exist in the objective world. The straight line or the circle of geometry does not exist in the material world. They constitute the norms of study; the world of matter, or the world as realised by us, is understood by us through the process of its comparison with the subjective world. Through the understanding of the deviations of the objective from the subjective world comes the understanding of the nature of the world that is called *real* by so many of us.

Now, coming down to a less philosophical plane of thought, the concept of the representative firm can be salvaged through the reinstatement of the concept of the industry. For some time the belief appeared to be getting firmly rooted in theoretical discussions that in pure theory of value the group and the industry are useless concepts.[2] From what we have said above, however, it will be clear that situations are conceivable in which the concept of industry can serve a very useful purpose. And in this connection we may note what Mr. Wolfe has to say. He says, "What

1. Prof. M. W. Reder in *Rehabilitation of Partial Equilibrium Theory*, says, "The Representative firm is a hypothetical entity so defined that if all firms were identical with it, the behaviour of the aggregate supply and demand functions could be deduced perfectly."

2. Robert Riffin, *Monopolistic Competition and General Equilibrium Theory*, 1940.

is important is that however price may change when demand changes, it will still be identical for all competitors. We have here a group of firms to which it appears natural to attach the name 'industry'. And this 'industry' avoids all the pitfalls which beset Mrs. Robinson's attempt to draw up a supply curve under imperfect competition".[1]

Mr. Wolfe defined an industry as those firms involved in a chain of oligopoly which operate as though their demand curves had a kink at the prevailing price. Now, the supply curve of an industry thus defined can be drawn with reference to the costs of production of a Representative Firm. Such a concept of industry is criticised by Mr. J. H. Davies on the ground that the gap between groups of commodities which act as close substitutes, giving rise to a kink in the demand curve, needs to be more clearly defined than Mr. Wolfe has done. And Mr. Davies concludes: "As the matter rests, therefore, neither technological similarity or substitutability present a very convincing case for the use of the 'industry' as a precise tool of economic analysis".[2]

On the whole, however, it appears that the battle is won by those who believe in the usefulness of the concept of industry. In the world of our experience there are very gradual changes from one entity to another and yet the differences are somehow marked enough to enable us to recognise the existence of various entities. The same is true of firms and industries. A group of firms differs from another and justifies our imagining them as belonging to an industry; and yet on the border line between two such groups confusion exists. The border line between two theoretical concepts or two groups relating to the same concept, is a source of trouble no less than the border line between two political territories.

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1. J. N. Wolfe, "The Representative Firm," *The Economic Journal*, June, 1954. It may be recalled that Marshall uses the concept of the Representative Firm in order to explain how price is determined in the case of increasing returns operating in an industry. That necessitated understanding what the supply curve for an industry meant. But P. Sraffa and Professor Robbins argued to show that in the case of static equilibrium there cannot be any scope for internal economies and hence, according to Mrs. Joan Robinson, no scope for external economies either. The concept of the Representative Firm was therefore shown to be needless either in the theory of value or in that of distribution.

2. J. H. Davies, "The Industry and the Representative Firm," *The Economic Journal*, December, 1955.

Our mind is accustomed to thinking within the framework provided by our senses. In the case of the average man it is the testimony of the senses that dominates over the reasoning of the mind. That is not the case with the highest intellects. They use their mind to see what the physical eyes cannot see. The misleading and mutilated picture of the world that our senses paint is corrected and perfected by our thinking mind. That is what is happening in the field of physics and that is what is also happening on a smaller scale in the science of economics.

The representative firm perhaps took birth in the world of matter. But the thinking mind of man has projected it into the non-material world. Matter is governed everywhere by invisible forces. To understand the working of the economic system we must have some idea of those forces which our eyes cannot see. What our eyes see and can see is the physical manifestation of those forces. We see the effect of the forces and not the forces themselves. But from the end-products of a system of forces much cannot be learnt. We must make an attempt to understand what those forces are. The study of the representative firm, as it is made today, is an attempt in that direction. We must remember that we must never end where we begin. A seed is desired for the sake of the plant into which it germinates. The representative firm in a physical sense is the seed; but it must germinate into the representative firm in the mental sense. That is our desideratum. So let no one object to what we have done in this chapter. Let the concept of the representative firm play the part that it can play in our understanding of the subtle forces that operate beneath the surface facts of business life.

CHAPTER XX

IMPERFECT COMPETITION

The classical economists, while tackling the problems of the real world,[1] proceeded with the assumption of perfect or free competition. For them, it was not a simplifying assumption; they thought that in the majority of cases the conditions of free or unlimited competition actually obtained in the real world. It was only in rare cases that competition was restricted by legal or other barriers, and consequently free competition was replaced by monopoly.

Yet it would be a mistake to argue that the classical or the neo-classical school had no idea of imperfect competition. Rather, they were vague in their conception of such a competition. They seldom took the trouble of defining in logical terms what free or unrestricted competition consisted in. And that was quite natural. For, they thought that free and unlimited competition and monopoly between them exhausted almost all the cases of buying and selling of commodities. Nor were they clear in their conception of monopoly. Monopoly signified one seller; but they recognised cases of partial monopoly. In fact, in the absence of logical definitions of these terms, it is difficult for us to say whether the classical economists had perfect or imperfect competition in mind. Yet there are some clear indications pointing to the fact that the Marshallian school, at any rate, assumed perfect competition among the sellers of goods. For, Marshall says that when the number of sellers is large, as it is in most industries, no individual seller is able to influence the price. He has to adjust himself to the market price. The problems of exchange were explained mostly in terms of the industry. The demand curve for the industry is sloping downwards and the price is determined at the point where it cuts the average cost curve (of the representative firm).

It was only recently that the economists of the English-speaking world began to think in terms of the firm.[2] They realised the

1. By the expression *real world* we mean the world of our senses.

2. The attention of economists was first diverted to this aspect of the

(Continued on next page)

fact that increasing returns, the problems of which the classical economists tackled, are not compatible with the assumptions of perfect competition. If increasing returns are to operate in an indus-

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problem by an article by Professor P. Sraffa on the Laws of Returns under Competitive Conditions, published in the *Economic Journal*, December, 1926. Then appeared Professor Hotelling's paper on Stability in Competition in the *Economic Journal* of December, 1929. Allied problems were further discussed by Professor A. C. Pigou in an article on The Laws of Diminishing and Increasing Cost in the *Economic Journal* of June, 1927, by Professor L. Robbins, in his article on The Representative Firm in the *Economic Journal*, September, 1928, and by Professor A. A. Young in his article on Increasing Returns and Economic Progress in the *Economic Journal*, of December, 1928. Then in 1930 Professor Robertson, Professor Sraffa and Professor Shove took part in the symposium on Increasing Returns and the Representative Firm in the *Economic Journal*, March, 1930. The next year Professor R. F. Harrod wrote an article on the Law of Decreasing Cost in the *Economic Journal*. In 1932, Professor R. F. Kahn published an article on Imperfect Competition—A Further Note in the *Economic Journal*. The next year Professor G. F. Shove wrote an article on The Imperfection of the Market in the *Economic Journal* of March 1933 and in the same year appeared Professor Chamberlin's book on the *Theory of Monopolistic Competition* and Mrs. Joan Robinson's book on the *Economics of Imperfect Competition*. In 1934 Professor R. F. Harrod wrote an article on Doctrines of Imperfect Competition in the *Quarterly Journal of Economics*, May issue, and the same year in the November issue Professor A. J. Nichol wrote an article on The Influence of the Marginal Buyer on Monopolistic Competition, while Professor K. N. Kaldor wrote his article on The Equilibrium of the Firm in the *Economic Journal* of March, 1934. In 1936, Professor H. G. White reviewed the theories of Monopolistic Competition and Imperfect Competition in the *American Economic Review*. In December 1942, Professor K. E. Boulding wrote an interesting article on The Theory of the Firm in the *American Economic Review*. More recently a large number of articles have appeared on Imperfect Competition. See Bain, Market Classifications in Modern Price theory, *Quarterly Journal of Economics*, 1942; R. Balkrishna, Monopolistic Influences in Capitalistic Economy, *Indian Journal of Economics*, 1944; Professor J. M. Clark, Imperfect Competition Theory and Basing-Point Problems, *American Economic Review*, 1943. also his article on Realism and Relevance in The Theory of Demand, *Journal of Political Economy*, 1946; Professor C. Kaysen, A Revolution in Economic Theory, *Review of Economic Studies*, 1946-47; Professor F. H. Knight Immutable Law in Economics: Its Reality and Limitations, *American Economic Review*, 1946. Gregg, H. Lewis, Some Observation on Duopoly Theory, *American Economic Review*, 1948; Neumann and Morgenstern, *Theory of Games and Economic Behaviour*, 1944; Professor A. Nicols, The Rehabilitation of Pure Competition, *Quarterly Journal of Economics*, 1947; Rangneker, *Imperfect Competition in International Trade*, 1947; Professor S. Weintraub, The Foundations of the Demand Curve, *American Economic Review*, 1942.

try, competition between the firms must be imperfect. That is, each firm should be able to determine the price for itself within certain limits. It was thus that the attention of the theorists was diverted from the competition element to the monopoly element in each situation.

It has since been more fully realised that every case of exchange is a case of what might be called partial monopoly.[1] And partial monopoly is, looked at from the other side, a case of imperfect competition. There is a blending of both, competition element and monopoly element, in each situation.

If perfect competition is not compatible with increasing returns, one might ask, is it compatible with dynamic state? For perfect competition what is necessary is that resources should be able to move freely from one firm or industry to another. Resources, buyers and sellers should be free to move readily and quickly. In other words, there should be no barriers to movement. One of the barriers to movement is however the hope of making more profit, or to be more correct, the hope of doing better later on in the same situation in which one happens to be. Such a hope prevents movement. And dynamic state creates such hopes in men. Hence, so long as there is dynamic state, perfect competition cannot rule in the market.

Assuming that there is static state, what is the shape of the demand curve for the product of a firm in perfect competition? To be able to answer this question we must have a clear idea of what competition implies. A number of producers can be said to be competing with one another when each of them is willing and able to take away the customers of others. If there are ten other sellers then the one under consideration can be said to be effectively competing with them when he can take away all their customers. If these producers are as big as this particular seller,

1. Partial monopoly, imperfect monopoly and imperfect competition all mean the same thing. As has been mentioned later in the text, Professor Chamberlin makes a distinction between imperfect and impure competition. Otherwise, the above terms and impure competition convey very much the same idea. There are some who have used the term non-perfect competition. For instance, see "Elements of Indeterminance in the Theory of Non-perfect Competition" by Professor Benjamin Higgins in the *American Economic Review*, September, 1939. Some earlier economists used the expression limited competition, while Marshall uses the expression free competition for perfect competition.

then he can sell 11 times the previous amount. If there is only one other seller whose sales are 10 times the sales of this man, then also he can increase his sales 11 times.

Now, what is required for such a competition to be effective in the real sense, and therefore, perfect, is that a seller should be able thus to deprive others of all their custom by reducing his price slightly. In fact, he should be able to attract all customers to himself by the slightest reduction in the price. When that is the case, the demand curve for the seller becomes horizontal. For, with a very small fall of price, say, 1/100th per cent., the demand increases 11 times. That is why the horizontality of the demand or the sales curve of an individual seller is associated with the notion of perfect competition.

However, a question might arise here about the length of the demand curve. Is it necessary merely that the demand curve should be horizontal or is it further required that it should be horizontal over a considerable length? In the example given above, the curve ceases to be horizontal after the output increases to 11 times the previous quantity. For, when once all customers of the other sellers have been drawn to yourself you cannot create more customers without reducing the price of your goods by a considerable amount. But if by competition we understand competition between a given number of sellers of what is regarded as the same commodity, then all that is required is that one should be able, by slightly reducing the price, to deprive the others of all their customers. In such a case, then, the demand curve is horizontal but only over a certain length. If the number of sellers is small the demand curve yielded by perfect competition is correspondingly limited in size.

Now let us study the conditions that are required to make the demand curve horizontal. We can say at once that the buyers should be completely detached from the sellers. They should be attached only to the price, or the commodity. They should be willing and able to buy the commodity from that particular seller (out of all those we are concerned with) who offers it at the lowest price. Given the commodity, the buyers' only concern should be the amount of expenditure that its purchase entails. What is necessary for such a detachment of buyers from the sellers is that there should be no barriers to the free movement of buyers from one seller to another. There should be no physical impediments

in the way of mobility, there should be perfect knowledge about the sources of supply and the prices charged and there should be no social or legal restrictions on the purchase of goods.[1] The buyers should be rational; they should prefer a lower to a higher price. In other words, there should be no force of habit making a buyer purchase from a particular seller even at a higher price.

When the above conditions are satisfied the demand curve becomes horizontal. But these conditions are not sufficient to ensure that the curve remains horizontal over a long range. For that additional conditions are necessary. There should be a large number of buyers forthcoming to purchase from the man under consideration. If the number of sellers is large this condition is satisfied unless they are very small sellers. In order that a particular seller may be able to offer perfect competition to others what is required is that the total number of customers should be very large as compared to the number of his own customers. We can, however, be sure of having a long horizontal demand curve when a seller is able to attract to himself not only the buyers of the commodity from other sellers but also the buyers of other commodities. That amounts to saying that there should be competition between the sellers of different commodities. In other words, the buyers should have no preference for any one or few commodities. They should be concerned with the want-satisfying properties of the commodities and not anything else. They should be willing and able to buy from the seller (and that commodity) who offers the greatest amount of utility for a given price.

Thus we come to realise that what is required for the horizontality of the curve is that buyers should have no preference for any particular seller. What is required for such a horizontal curve to be long enough is that buyers should have no preference for any particular commodity or service. To put the same thing in other words, in order that the demand curve may be horizontal over a distance of sufficient length, the commodity we are con-

1. Both Mrs. Robinson and Professor Chamberlin point out that for perfect competition (pure competition for Chamberlin) the number of sellers should be large and that they should be indifferent to the various sellers. They should care for the price and not for the seller. As barriers to movements, or as Mrs. Robinson calls imperfection of market, the following are mentioned: Cost of transport, differences in the facilities provided by different producers, quickness of service, good manners, length of credit and attention paid to the individual wants, trade-marks, peculiarities of the package, etc.

sidering should be in effective competition with other commodities. But that way of putting the thing unnecessarily invites the difficulty of defining *a commodity*. Perhaps it is best to express the condition by saying that consumers should be indifferent as between one use of money and another.

Since there are a large number of commodities and services that money can buy, the above conditions are sufficient to ensure the horizontality and the length of the demand curve for the product of a single seller.

In the foregoing discussion we have used the word *perfect competition* to connote what Professor Chamberlin calls *pure competition*. He says that competition is pure when it is unalloyed with monopoly element. It is perfect when there is "an absence of friction in the sense of an ideal fluidity or mobility of factors such that adjustment to changing conditions which actually involve time are accomplished instantaneously in theory. It may imply perfect knowledge of the future and the consequent absence of uncertainty".

In the market for wheat in which there are a number of sellers, says Professor Chamberlin, no individual seller has any monopoly right. The price cannot be varied by any seller. He has to sell at the market price; if he charges a higher price he goes without effecting any sale. Yet the price does not equal the *normal* price, the sellers may be making profits or incurring losses. The competition is thus pure but not perfect. In the language of geometry the demand curve for the product of the individual firm is horizontal, according to Professor Chamberlin, but not tangential to the cost curve. It may be below or above the lowest point on the cost curve. When it is above the cost curve there is profit. This profit, in course of time, attracts fresh producers and thereby brings down the demand curve. If new producers are not attracted, the demand curve continues to lie above the cost curve. In order that there may be an influx of new firms what is required is that resources should flow into this line of production. In other words, producers should not be attached to particular lines of production. Thus, for what Professor Chamberlin calls perfect competition, the thing required is that the sellers as a class should be indifferent as between the various productive activities. Or, in simple words, they should be indifferent as between various commodities or services.

Thus, it is only when there is no attachment of buyers to sellers and to commodities, and no attachment of sellers to commodities and to buyers, that the price equals the average cost of production. When the sellers are attached to buyers—and that is a rare occurrence—they prefer to sell to their preferred customers even when they have to sell at a slightly lower price. When that is the case, a seller may be unwilling to change over from the production of one commodity to another or divert his sales from one group of customers to another. And when there are an appreciable number of such sellers either the number of sellers does not increase when the demand curve lies above the cost curve or if it does increase, such an increase does not affect all the demand curves. As a result, some demand curves continue to remain where they were, or if they do fall, they do not necessarily do so sufficiently to touch the cost curve.

For perfect competition to produce the results that are ordinarily associated with that concept, the conditions necessary are, therefore, competition among sellers as well as competition among buyers. That is, competition on supply and demand sides is necessary.

When Professor Chamberlin says that pure competition requires merely the absence of monopoly element while perfect competition requires other conditions as well, he is right. But it is possible to state the same fact in other, perhaps better, words. Perfect competition requires the absence of monopoly (caused by the attachment of buyers) as well as the absence of monopsony (caused by attachment of sellers). Monopsony is defined as the absence of competition among buyers. When sellers are attached to buyers the conditions of monopsony are satisfied. Just as monopoly arises due either to the fact that another seller is not available or another seller is not availed of (and also because another commodity is not available or availed of), similarly, monopsony arises due to the fact that another buyer is not available or is not availed of. And, we may note, monopsony conditions are brought about also because another commodity is not produced or is not available for production.

If monopsony is defined as monopoly among buyers, then perfect competition requires the absence of monopoly. Professor Chamberlin's distinction between pure and perfect competition

narrows down and actually disappears with a widening of the meaning of the term monopoly.

Professor Chamberlin considers the problem of several sellers competing among themselves. Each of these sellers is a monopolist in the sense that he has some control over the price at which he can sell his goods. In the chapter on monopoly we saw how a monopolist, in the correct sense of the word, should have a vertical demand curve for his product. For Professor Chamberlin, as also for Mrs. Joan Robinson, a monopolist has a tilted demand curve (*i.e.*, with an elasticity between zero and infinity). Such a demand curve shows that the monopolist can sell a larger quantity at a slightly lower price, but not an infinitely large quantity. This larger quantity is partly due to new customers and partly to the customers of other sellers now patronising him. When the price is raised he loses only some customers. That is because some customers now prefer to buy other commodities instead, and some go over to other sellers of the same commodity. There is therefore some attachment, but only some, to the particular seller and the particular commodity.

When there are a number of such sellers they compete with one another. They compete because each is able to deprive the others of some of their customers by reducing the price. And when the number of sellers increases each of the old sellers again loses some custom. This loss of custom to new sellers as also to those who reduce their price, is due to the fact that the attachment of buyers to sellers is not perfect. The attraction of a lower price, as also that of a new seller, proves strong enough to overcome the attachment of (some) buyers to their sellers. When, therefore, the demand curve is tilted it is because the attachment of buyers to sellers is imperfect. And since it is imperfect there arises competition between the sellers having such curves. Monopolistic competition is, therefore, merely a case of impure competition.

Professor Chamberlin takes two types of case for consideration. One is that in which there are a small number of monopolistic sellers—which he calls a case of oligopoly—and the other is that in which there are a large number of such sellers. In the latter case the demand curve, as Professor Chamberlin shows, tends to be tangential to the average cost curve. There is no loss nor any profit (above normal profit) for the sellers. Monopolistic com-

petition becomes a case of perfect competition between monopolists in the Chamberlinian sense.

There are a few fundamental points of difference between Professor Chamberlin's approach and that of Mrs. Joan Robinson's to the problem of imperfect competition. To start with, there is the difference in the naming of the problem. Mrs. Robinson calls imperfect competition what Professor Chamberlin calls monopolistic competition. Mrs. Robinson, again, understands by imperfect competition what Professor Chamberlin calls impure competition. To use Professor Chamberlin's terminology, he tackles the problems of both perfect and imperfect competition—imperfect when there is a small group of sellers and perfect when there is a large group. Mrs. Robinson, on the other hand, is concerned only with impure competition. But since she assumes that there are large number of sellers, and the price ultimately becomes equal to the average cost, she converts her case into one of perfect competition (in Professor Chamberlin's sense) between monopolists. But Mrs. Robinson recognises the possibility of there being a small number of monopolists competing with one another. In that case, she points out, the conclusion would need to take account of the existence of super-normal profits.

Another difference between the two treatments is to be found in the use of the demand curve. Professor Chamberlin uses two demand curves, one which is drawn on the assumption that the prices charged by the other sellers are the same, and the other that is not drawn on such an assumption. Mrs. Robinson, on the other hand, makes use of only one demand curve. Her demand curve shows the full effect upon the sales of the firm which results from any change in the price which it charges, whether it causes a change in the prices charged by the other firms or not.

Finally, Mrs. Robinson treats every case as a case of monopoly (remember that for her and Professor Chamberlin monopoly is defined by the non-horizontality of the demand curve for the product of a single seller, and not by the verticality of the curve) disregarding the competition between sellers. Or rather, she takes for granted that there is a sufficient degree of competition between sellers to make the price come down to average cost of production. When the competition is not sufficiently intense for such a result to ensue, profits accrue. Professor Chamberlin does not resolve his problems into those of mere monopoly. He considers each situa-

tion as one in which there is competition between monopolists—the competition may be perfect or imperfect. In other words, he takes the case of sellers each of whom is a monopolist, that is, each of whom belongs to a situation characterised by impure competition. He then shows how the price is determined, first, when there is a small number of such sellers, *i.e.*, when there is imperfect competition between them, and second, when there is a large number of sellers making competition between them perfect in his sense. He studies, therefore, cases of perfect and imperfect competition between sellers each of whom is a (partial) monopolist.

We saw earlier that when buyers are attached to sellers or to commodities there is impure competition. We also saw that when sellers are attached to buyers or to commodities there is imperfect competition. The problems that Professor Chamberlin tackles are, therefore, those of monopsony in monopoly and of buyers' competition in monopoly. Mrs. Robinson, on the other hand, tackles problems of buyers' competition and monopoly only. The main difference between them, therefore, consists in the use of the demand curve.

Is it proper to take only one demand curve when there is competition between monopolists? Can the problem be solved when such a final demand curve is taken as given? Does such a procedure take for granted what is required to be proved? If the demand curve of seller A shows the change in the demand for his product that takes place when he changes his price, the prices of others being allowed to change in response to such a change by A, it means that the demand curve shows the quantities that he would be able to sell at various prices. Such a demand curve does not show what A thinks he will be able to sell at different prices. In reality, all the decisions that A makes depend on what he thinks he will be able to sell at different prices. And it is only when he is able to think and foresee correctly that Mrs. Robinson's demand curve becomes the appropriate curve. Is it possible for the actual sales to be equal to expected sales? That, it should be clear, is possible only in the static state. If it is supposed that the actual demand curve for A's product is known, Mrs. Robinson's technique becomes correct. The whole problem then becomes just one of monopoly and Mrs. Robinson does maintain it to be so.

Professor Chamberlin, on the other hand, emphasises the competition *between* the monopolists. If the competitors are large in

number the price ultimately tends to fall to average cost and the demand curve becomes tangential to the cost curve. When the number of sellers is small interesting cases arise. And it is here that Professor Chamberlin has to say something that Mrs. Robinson does not bother to explain in detail. He says that when the sellers are conscious of the final effect on themselves of the change in the price they charge, the solution is the same as if all had combined and acted as a monopolist. If they think that the price cut would make no change in the prices charged by the rivals, the solution is competitive price. But, it is pointed out, if before this price is reached some sellers find that they cannot produce more, the price shoots up and begins to oscillate as in Edgeworth's solution. If the sellers think that the rivals should keep their outputs constant the price lies in between the monopoly and the competitive prices.

We shall now study the process through which the price is determined. Suppose for the sake of simplicity that there are only two monopolistic sellers A and B. To start with, let them both be selling the commodity at the same price. There may or may not be equal demands for the products of the two sellers. Now, A wishing to maximise his gains will reduce the price. The extent to which he will reduce it depends upon what sales he expects to have by reducing the price to various levels. He has, therefore, to proceed on some assumptions. He knows that if he reduces the price a little the sales will increase only slightly and if he reduces the price more he will find a greater increase in his sales. But all this depends on what price the rival charges. When A reduces the price, B will either keep his price unchanged or reduce his own price also. And if he reduces his price, he may reduce it either slightly or to a greater extent than A has done. A does not know what B will do. He, therefore, just assumes some move on the part of B. What is true of A is also true of B. That is, B while taking any decision about his own price has need to know what price A will charge. He too, therefore, proceeds on the basis of some assumption regarding A's reactions to his price cuts.

Taking the case of A's movements, he has some idea of what amounts he would be able to sell at different prices on any of the assumptions regarding B's reactions. He makes an assumption that he thinks is the most correct one to make, and on the basis of that gets a possible demand curve for his product. With this

demand curve he calculates the most profitable price for his product. When A has thus fixed his price, B starts determining his own price. While deciding what price to charge, he makes some assumption regarding A's reactions to his own price moves. On the basis of such an assumption, he gets a demand curve for his product. He charges the price that such a demand curve makes most profitable for him to charge.

Here there are two kinds of guess work that the sellers have to make. First comes the guess about the reaction of the rival seller and, second, the guess about the behaviour of the buyers. For, not only does a seller not know for certain what price the rival will charge when he has changed his price, but he also does not know for certain in what way the buyers will react to price changes. The buyers are partially attached to sellers and commodities. They do not change the seller they patronise unless the price charged by another seller falls appreciably. And what is an appreciable change for one may not be so for another. And a seller does not know to what extent the buyers are sensitive to price changes.

It is for these uncertainties that the expectations of the sellers turn out to be wrong. A finds that B does not react in the same way in which he had expected him to do. As a result of such unrealised expectations his gains are not as great as could have been. The same is the case with B. In the light of what actually happens they revise their expectations about each other's reactions. They make, further, whatever corrections they find necessary to make in their expectations about buyers' behaviour. On the basis of revised expectations they fix their prices anew. Perhaps they find their anticipations once more unfulfilled. They keep on revising their expectations. It is only when each of them finds that his expectations about the other seller and the buyers are correct that some stability is reached.

The question then is not only how the rivals would react. How one would react depends upon how he thinks the other man would react. The reaction of B is not fixed. It is not only the question of A's finding out, by the trial and error method, what B's reaction will be. For, B's reaction is itself dependent on A's decisions. And as A changes his decision, B's reaction undergoes a change. It is this dependence of one on the other that introduces complications into the problem.

It is possible however for both A and B to come to know each other's mind in the end. And when they do come to know that (as also the minds of the buyers) some final price is reached for both.

The decision of a seller depends on the expectations and realisation of the final results. If he thinks that price-cutting in order to maximise gains is bound to prove ruinous in the end, he will decide to stick to some price higher than the one that he would otherwise charge. And in so doing he would be helped by the hope that if he did so perhaps his rival would also charge a price as high as his own. It is thus that some tacit agreement might be reached and they may therefore happen to charge the price that would be charged were they to combine and act as one monopolist. This is explained by Professor Chamberlin and others. But if the sellers do not realise that it is in their interest to combine informally in this way, they would go on waging price wars against each other. It is perhaps too much to assume that a seller will think that the rival will keep his price constant or his output unchanged. The rival never does that for any length of time, and a seller is bound to change his expectations about his rival's decisions. The most likely thing to happen is that they would in the end combine and act as one seller, or continue to undersell each other till one is driven out of the market.

It is also possible that the price may change in some haphazard fashion. If the sellers are careless and do not try to maximise their gains and remain satisfied with whatever gains they just happen to be making, they may continue to do business without combining or trying to drive each other out of the market.

It is these different possibilities that one should keep in mind in the study of monopolistic or imperfect competition. Mrs. Robinson has taken a short-cut (perhaps not unwisely) by assuming that the demand curve is known. She further takes the case of a large number of sellers. The assumption of a large number simplifies the solution. She assumes perfection of competition among *impure* competitors.

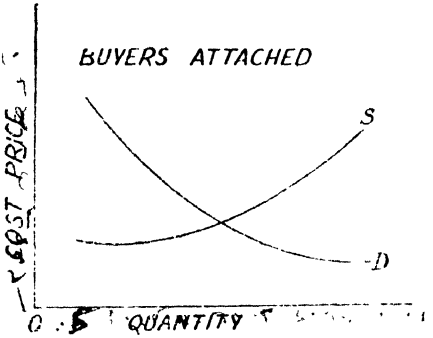
When the number of sellers is small, we have already observed, the price depends on the assumptions made from time to time. The most likely thing to happen is for the rivals eventually to come to some tacit agreement about the price or prices they would charge. When that happens, competition comes to an end. Or, as we have

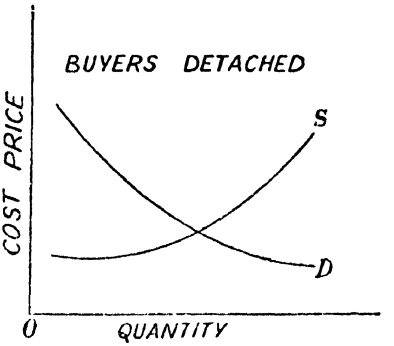
seen, some kind of haphazard movement of price may continue indefinitely. But if neither of these two things happens, a seller will have a demand curve for his own product based on some anticipation of the reactions of other sellers and buyers. The demand curve in such a case is not likely to be a constant one. For, the reactions of other sellers cannot be assumed to be constant. Nor is it possible for a seller to be quite constant in his own decisions made on the basis of given expectations of buyers' and sellers' reactions. For these reasons the demand curve may go on shifting. But there is something that can be said about the general shape of the demand curve. The demand curve will be a negatively inclined curve.[1] If there are a large number of sellers it will eventually touch the cost curve, otherwise it will cut it. In the diagrams below the position and shape of demand and supply curves are shown when there is perfect and imperfect competition. The first two diagrams are drawn from the point of view of a seller, when there is competition among sellers. In the first case, the sellers are detached, that is, there is competition among buyers. The demand curve then is horizontal and touches the average cost curve of the seller. In the second case, the sellers are attached, that is, the buyers' competition is not perfect. Here the demand curve may be higher or lower than in the previous case. The price is not necessarily given, in this case, by the interaction of the marginal cost curve and the demand curve. For as the sellers are attached to particular buyers, a seller may not necessarily be willing to sell to the buyers who are willing to buy from him. But such cases are rare. And, since the buyers are not attached, the seller under consideration has all the buyers to choose from. The price is, therefore, almost always determined by the intersection of the curves.

1. A negatively inclined curve is the most natural to assume; but in reality the demand curve can be even positively inclined. The negative slope is based on certain assumptions—assumptions that obtained in the case in which a seller has no competition to face from rivals. In other words, the demand curve is negatively inclined in the case of monopoly, but not necessarily in that of monopolistic competition. In certain cases the demand curve may be kinked. See "A Note on Kinked Demand Curves," by C. W. Efroymson, *The American Economic Review*, March 1943. For various types of demand curve see "The Foundations of the Demand Curve" by Sidney Weintraub, *The American Economic Review*, 1942. Also see "Demand Curve Under Conditions of Oligopoly," by Paul M. Sweezy, *The Journal of Political Economy*, August, 1939.

Imperfect Competition among Buyers. (Sellers attached)

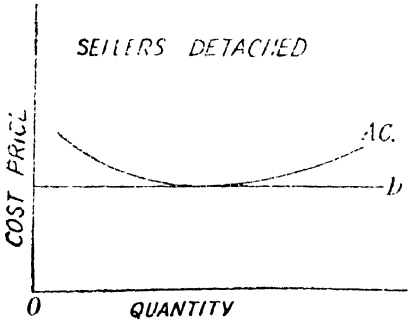
A Buyer's Diagram

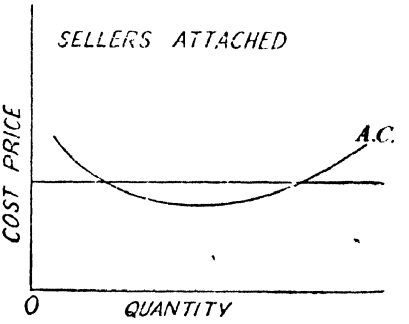




Competition among Sellers. (Buyers detached)

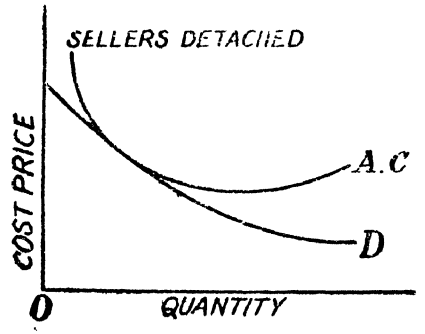
A Seller's Diagram

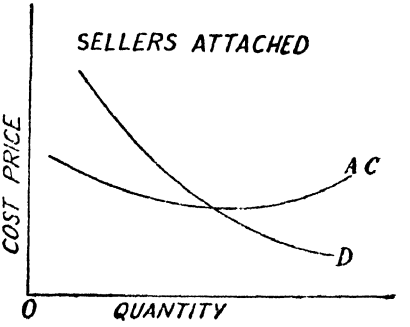




Imperfect Competition among Sellers. (Buyers attached)

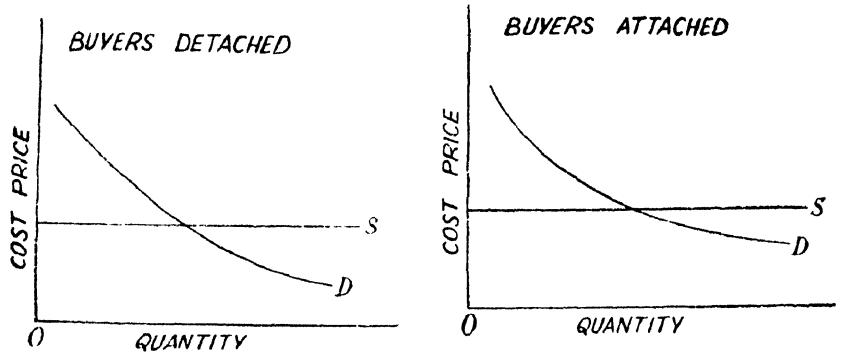
A Seller's Diagram





Competition among Buyers (Sellers detached)

A Buyer's Diagram



The third and fourth diagrams illustrate cases of imperfect competition among sellers. When the sellers are detached, that is, when the buyers compete freely, the demand curve though inclined, just touches the average cost curve. But when the sellers are attached, that is, when competition among buyers is not perfect, the demand curve does not necessarily touch the cost curve.

The next two diagrams represent the position of demand and supply curves when there is perfect competition among buyers. The first one relates to the case in which the buyers are detached, that is, the sellers are competing. Here the supply curve is horizontal (because there is perfect competition among buyers) and cuts the demand curve. The demand curve is sloping downwards because it is the demand curve of a single buyer. It is a buyer's diagram. In the next diagram it is assumed that buyers are attached, that is, the sellers are not in perfect competition. The demand and supply curves again cut each other.

In the last pair of diagrams the cases of imperfect competition among buyers are represented. In the first diagram the buyers are taken to be detached—sellers' competition. In the next, the buyers are attached, that is, the sellers are in imperfect competition. The supply curves are rising and the demand curves falling. The supply curves are rising because a single buyer has to offer a higher price in order to be able to buy more when he is in imperfect competition with other buyers.

CHAPTER XXI

FOUNDATIONS OF IMPERFECT COMPETITION

In the last chapter it was seen how competition becomes imperfect when buyers or sellers are attached. When buyers are attached to sellers competition among sellers becomes imperfct. When sellers are attached to buyers the competition among buyers becomes imperfect.

We have to study in detail here why buyers are attached to particular sellers. The causes of such attachment constitute the foundation of imperfect competition. A buyer sticks to a seller, or is said to stick to a seller, when he purchases the commodity from him even though there are others (or at least one other seller) offering it at a lower price. Here however one difficulty is encountered at the very outset. And that refers to the meaning of the word commodity. Is it necessary for such attachment of buyers to sellers that there should be many sellers selling precisely the same commodity? That is, if a buyer continues to patronise a seller even when he charges a higher price for his goods than another seller who is selling a slightly different quality or type of good, should we call him attached? He is certainly attached when he buys from one who charges a higher price than another who is also offering an identical good for sale. But such cases are very rare. In many cases different sellers sell different qualities of a commodity. How are we then to judge whether a particular seller is selling his commodity at a higher price or not?

This difficulty can be got over by defining attachment of buyers to sellers in a different way. We would say that a buyer is attached to a seller when he continues to buy the same amount of the same thing from him even when he charges a higher price. The attachment would be perfect when even a very great increase in the price does not send the buyer away to another seller. The greater the degree of attachment the greater is the monopoly element on the supply side. It follows directly from this meaning of attachment of buyers to sellers that the measure of monopoly power consists in the maximum rise of price that keeps the buyer attached.

To investigate the causes of imperfect competition we have, therefore, to ask ourselves why a buyer continues to buy the same amount of the same commodity from the same seller even when he charges a higher price. Naturally we have to assume that other things remain the same. If other things do not remain constant we cannot be sure whether it is a real case of attachment of buyers.

Ordinarily we would expect a person to buy less when the price rises; and that a man does in most cases. It is only when the price rises by a very small margin that he does not bother to reduce his consumption. Or, again, he buys the same amount or even a larger amount, when other things change. But when other things remain the same, he buys less when the price goes up. If there are other sellers from whom he can buy the identical commodity he often buys from them when his own firm raises the price. In such a case a slight rise in the price results not only in the reduction of the amount that is purchased from the more expensive source but in its total disappearance. When other sellers of identical goods are not available, those who charge higher prices do not lose their custom in such a fashion.

Let us see then why a buyer continues to buy the same amount of the same thing from the same seller in spite of a higher price. In the first place, he may do so if he is not very sensitive or calculating. And he will not be very sensitive to price-changes if the rise in the price affects his expenditure on other things insignificantly. For that what is needed is that his total expenditure on the commodity under consideration should be a very small fraction of his total aggregate expenditure, and the rise in the price should be small. In the second place, he will do so if other sellers of identical goods are not available. In such a case he will continue to buy the commodity from the same seller. But in order that he may continue to buy the same amount also, some further conditions are necessary. For, if identical goods are not available, substitutes are always available. And a buyer always substitutes a cheaper good for a more expensive one. Hence, when other sellers of identical goods are not available (though substitutes might still be available), there is partial attachment of buyers to sellers. Hence. our discussion now will take into consideration cases of partial attachment also.

The only case in which there is absolute attachment is the one already considered above, namely, that in which the price-rise does

not affect the consumer's expenditure on other goods significantly. Even in such a case, it will be realised the buyer does not stick to his seller when the price rises beyond a certain limit. For, in that case, the expenditure on other goods is significantly affected.

When substitutes are available there is, as we have said, partial attachment of buyers to sellers. Another cause of attachment may be imperfection of knowledge. Identical goods might be available, but the buyer may not be aware of it. In such a case there is again (partial) attachment to sellers. Or again, the buyer may be aware of the existence of other sources of supply of identical commodities, but he may be prevented by circumstances from availing himself of them. These are what are called barriers to free exercise of one's choice. The other sources, for instance, may be far away from his place, requiring additional expenditure on transport. Or the identical goods are perhaps sold in a locality where he does not, for one reason or another, want to shop. Or, again, there may be legal or social obstructions to his movements. There may be, further, the force of habit that keeps him attached to his own firm in spite of there being other firms selling the same commodity at a lower price.

When identical goods are not available, a buyer may be attached to his seller because he prefers the particular type of good he is selling. Here then is attachment to a kind, quality or brand of a good. Such attachment may be due to real or imagined differences. So long as the buyer thinks that the commodity is different from other commodities, the difference is real for the purposes of our analysis. The reason why a consumer prefers a particular kind or quality of commodity is that he expects to derive greater utility from its consumption. And the reason why he expects different amounts of utility from different commodities is that every commodity is a bundle of various potential utilities. A commodity satisfies a number of wants. Some commodities satisfy one want more, while others satisfy some other wants more. A commodity is therefore a combination of various utilities. A buyer has preference for that commodity which he thinks constitutes the best combination of utilities. The attachment of buyers to commodities thus turns out to be their attachment to utility. A consumer is attached to a particular quantity of utility; and naturally that particular quantity is the maximum quantity. Since the commodity he prefers has more utility for him than any other, he is prepared to

pay a little higher price for it. When the price rises he does not, therefore, at once pass on to another commodity. The rise of price must be great enough to cross the barrier of higher utility.

It is thus clear that when each seller has his own (brand, quality or mark of) commodity or product to offer to customers, there enters an additional kind of attachment of buyers to sellers. And that attachment to seller is, in the final analysis, an attachment to utility.

It is now possible for us to generalise and say that every act of purchase is an act of exchange of money for utilities. While buying a commodity we buy several services. We buy transport service, the good behaviour and other qualities of the seller and the commodity which is a bundle of several services in itself.

We stick to a seller when we think that the total cost incurred in purchasing the commodity bears a smaller ratio to the total utility obtained in the process of purchasing it, than the total cost incurred in purchasing any other commodity does. So long as there is consumer's surplus greater than can have from another commodity there is an attachment to the seller. And as already pointed out, what is necessary is that the buyer should think that the consumer's surplus is greater. It is, if we prefer so to describe it, the *ex-ante* and not the *ex-post* consumer's surplus that matters.

Over and above all these causes of attachment there is another that has not been specifically mentioned so far. When the number of sellers is limited, or to put it less vaguely, when the number of sellers is a small oligopoly, some buyers are forced to stick to their respective sellers even when other causes of attachment are not operative. Suppose, for instance, that there are only five sellers of a commodity. Let us suppose further that they are identical in all respects so that the other causes of attachment are absent. Now suppose that one of them raises his price slightly. Since there is no attachment of his buyers to him, they would now purchase the commodity from one or more of the remaining four sellers. But if the other four sellers are not able to meet the increased demand fully, some customers would be compelled to go back to their original firm and purchase the commodity at the higher price. Thus smallness of the number of sellers is another cause of attachment.

But this smallness of the number of sellers hardly becomes as effective factor in operation. For, its significance is confined to

cases in which there are a number of people selling identical commodities. Where products differ from seller to seller there is no special significance attached to this factor of a limited number of sellers.

We can, therefore, maintain that imperfect competition[1] among sellers is due to the fact that each seller is offering for sale a specialised product. There is no other seller that sells precisely the same combination of utilities, as explained above. The so-called seller of a commodity sells not only the material good, finished, packed and named in a certain fashion, but also his personal services. And as we have said, such differences need not be objective differences; subjective differences are sufficient to give rise to imperfect competition. It is possible for purposes of analysis to group all these things together and call the heterogeneous mixture *a commodity*. That is what Professor Chamberlin and Mrs. Robinson do.

Thus, in imperfect competition each seller has his special commodity to sell. There is only one seller of commodity. Imperfect competition therefore becomes a case of monopoly. Monopoly in the sense that a commodity has only one seller. But there are a large number of such monopolists who have some degree of competition between them. A seller is able to raise the price of his good to a certain extent without the fear of losing his customers to other sellers. But beyond that limit he cannot raise the price without sacrificing a part of his custom in favour of other sellers. Hence, the monopolistic competition of Professor Chamberlin.

This way of considering each seller as a single seller of a specialised product enables us to accommodate in our analysis all cases of buying and selling. For, even when there are a number of firms competing freely with one another, the whole group constituting the industry can be likened to a single seller of a specialised commodity. And in such a case the competition between monopolistic sellers of specialised products can be replaced by competition between industries each selling its own product.

That is precisely what Marshall has done. He considers cases of free competition between sellers composing an industry. When there is freedom of entry into the industry, equilibrium is reached when the price equals the average cost of production. But when entry into the industry is somehow restricted, profit accrues. That

1. We are using the word *imperfect* in the sense of *impure*.

is what happens in the case of firms when each has his special product to offer for sale. If the number of sellers (of, now, similar products—not identical products) is large the price equals the average cost of production.

A slight modification of this parallelism is called for. In the case of imperfect competition, that is, when each seller has his special product to sell, a large number of sellers means, as we have said, a large number of similar goods. But since the goods are not quite identical, each commodity has only one seller. It is difficult, therefore, to imagine the case in which the price would quite equal the average cost of production. So long as there is some attachment of buyers to sellers, a seller can charge a price higher than the average production cost. But it has still to be conceded that though buyers will always have preference for a particular product, the number of buyers continuing to have such preference diminishes as similar products increase in number. As Professor Chamberlin says, the sloping demand curve for a firm falls from a higher to lower level as the number of sellers of similar products increases. Eventually it might happen just to touch the supply curve. The crucial point is the degree of difference between similar products, that is, between the substitutes. When one product differs much from another, the presence of a large number of substitutes is not effective in bringing the demand curve down to the point of tangency with the average cost curve.

In conclusion, it may again be emphasised that the foundation of imperfect competition consists in the differences between the ratios of total cost to total utility.

A Mathematical Note:—

A note may be added to bring out the full implications of the matter in the last two chapters through mathematical notations. Suppose we denote price by p and quantity demanded by x, suffixing them with small letters to indicate the source (the seller) to which they belong. Using the ordinary notations of calculus, the elasticity of demand for the product of a seller i can be denoted by

$$\frac{x_i}{\partial p_i} \times \frac{p_i}{x_i}.$$

If a seller decreases p the demand increases, provided nothing happens to the price charged by other sellers. But as other sellers can change their prices we can use the cross-elasticity expression (Pro-

fessor Triffin's) $\frac{\partial x_i}{\partial p_j} \times \frac{p_j}{x_i}$ where xi is now a function of the prices charged by other sellers, p_1, p_2, p_3.....p_n.

Briefly speaking, when the degree of perfection of competition is very high (perfect competition) the above elasticity is infinity (prices to start with being equal). The reader is referred to R. Triffin, *Monopolistic Competition and General Equilibrium Theory*, 1940, and Tun Thin, *Theory of Markets*, 1960.

In monopoly the above elasticity is 0 and in intermediate cases it has a value in between infinity and zero.

As Tin Thun shows Fellener (Competition Among the Few, 1949) introduces a refinement by pointing out that in the case of perfect competition a reduction of price charged by a single seller does not affect the sales of a competitor, but that it is affected when all other sellers lower their prices. Hence, the elasticity conditions are:

$$\frac{\partial x}{\partial p_g} \times \frac{p_g}{x_i} = \infty \text{ and } \frac{\partial x_i}{\partial p_j} \times \frac{p_j}{x_i} = 0.$$

We may remark that when there are only a few sellers the cross-elasticity would be ∞ if a big supplier reduces his price and 0 if a small supplier reduces his price. From the point of view of a particular seller conditions of perfect competition and perfect monopoly would appear to coexist.

CHAPTER XXII

INDUSTRIAL FLUCTUATIONS AND UNEMPLOYMENT

Industrial fluctuations manifest themselves in what may conveniently be called states of over- and under-production. In times of upward movement the economy is characterised by a state of under-production, while in times of downward movement it is characterised by a state of over-production. Thus, in a period of "boom" production appears to lag behind consumption and prices show an upward trend, while in a period of "depression" production seems to be in excess of consumption and prices show, consequently, a downward tendency.[1]

When we view fluctuations in the light of such states of over- and under-production it becomes necessary to consider the precise meaning of over- or under-production. It has frequently been argued that while it is possible for one or a few industries to be in a state of over-production, it is impossible for all industries to be simultaneously in such a state. General over-production, in other words, has been regarded as an impossibility. As against this view it has been observed that while it may be absurd to talk of over-production in all industries in case of barter or non-monetary economy, it is certainly possible to conceive of a state of general over-production in money economy.[2] For, since over-production is a comparative

1. This does not mean, as is shown later in the text, that stability of the price-level is a condition for industrial equilibrium. The tendency to such fluctuations in the price level is often concealed by tendencies on the side of money working in the opposite direction. Pigou writes (*Industrial Fluctuation*, p. 31), "Booms are characterised by the *production of goods in excess of the current rate of consumption, with consequent accumulation of stock* and depression by *curtailment of production below current consumption of stock*". Words in italics are quoted from *The Problem of Business Forecasting* by Persons, Harly and others.

2. The difference between money and barter economy does not consist in the fact that the one uses a medium of exchange whereas the other does not. Most of the theories that call to their aid the difference between money and barter economy fail to understand the essential characteristics of barter economy. Rosenstein-Roden ("The Co-ordination of the General Theories of Money and Price", *Economica*, August 1936) believes that the economy that

(Continued on next page)

term, over-production in one industry must necessarily signify a state of under-production in some other industries. Hence, no sensible meaning can be attached to the term general or all-round over-production if we are considering the case of barter economy. But in the case of money economy such term assumes intelligent meaning. For, general over-production would there mean over-production of all *commodities* as compared to under-production of money. We can thus find a genuine case of general over-production in our modern monetary economy.

Industrial fluctuations then, if they manifest themselves in states of over- and under-production, also naturally manifest themselves in states of shortage or abundance of money. Whatever the causes of such restricted or abundant supplies of money may be a shortage of money signifies a comparative increase of demand for money, while abundance of it signifies a comparative decrease of demand for it. If money be identified with a medium of exchange, so that it is understood as a thing that is in *circulation* and has a positive velocity, the demand for it could be considered in the light of demand for investment[1] (assuming, however, that money is borrowed only for purposes of investment). Supply can similarly be identified with that part of money stock which is not spent and is available for lending. In other words, then, industrial instability can be viewed in the light of a lack of balance between saving and investment. This is the view that is now held by most leading economists[2]. Keynes in his recent book has, however, defined sav-

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uses more than two goods possesses the essential characteristics of money-economy. Adarkar (*The Theory of Monetary Policy*) is of the opinion that comparison of money with barter economy cannot help us in analysing the causes of industrial fluctuations.

1. The word money is capable of various interpretations and, consequently "demand for money" may signify, besides what has been indicated in the text, a demand for liquidity. But the money that possesses cent per cent liquidity has no velocity of circulation and, therefore, in one sense is not money at all. The important point involved here is whether money is a medium of exchange or a store of value meant to satisfy the want of security.

2. Keynes, Hayek, Robertson, Mises, Lindahl, Myrdal, Spiethoff, Fanno, Ropke, Moulton, Hobson, Adarkar, Durbin and others make their theories rest on the pivot of savings investment equilibrium. But there is still considerable difference of opinion as to the precise manner in which saving and investment get out of equilibrium. For Keynes and Hobson, for instance, the cause of

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ing and investment in such a way as to make them necessarily and always equal to each other and, consequently, he seeks to find the cause of unemployment in the deficiency of *effective demand*.[1] As a matter of fact, deficiency of effective demand is caused by hoarding and, therefore, by a lack of proper balance between saving and investment as commonly understood.[2]

Saving and investment get out of balance when a portion of income is hoarded, that is, when it is neither spent nor lent out but kept idle as a cash balance. Of course, the practice of hoarding on a moderate scale in this sense is natural. Had it not been necessary for us thus to hoard any part of our income, production would have been correspondingly larger and probably along with it welfare too. Hoarding signifies, along with other things, the locking up of certain resources of the community. Since income under normal conditions is cost, unless the whole of it is spent (or invested) the cost incurred by the economic system is not fully recovered.

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the trouble lies in the excess of saving (at least to start with), while for Spiethoff it lies in the shortage of saving. There is further disagreement in regard to the meanings of the terms saving and investment. The present writer finds Adarkar's conception of the balance between saving and investment perhaps the most satisfactory.

For Meade equilibrium consists in the constancy of Final Income which however is so defined as to make saving-investment parity a necessary condition for it.

Pigou in his *Industrial Fluctuations* does not touch this point of saving-investment parity; but nevertheless he recognises the importance of a policy that does not interfere with the natural flow of capital into industry. He writes (p. 252), "The monetary and banking influences which at present augment the range of industrial fluctuations will be eliminated if both the banks refrained from interference by way of forced levies with the normal flow of new capital of industry....."

1. Mr. Hobson also recognises the important part that deficiency of effective demand plays in causing industrial depression. As a matter of fact, discrepancy between saving and investment must necessarily manifest itself in deficiency or excess of effective demand.

2. Hensen's comment on this terminology is: "Keynes, refusing to adopt this terminology, is hard put to it to find a satisfactory scheme of exposition. One is never clear precisely what his terminology means.....In terms of real phenomena, obviously saving must always equal investment, but in terms of the receipt and disposition of money funds, such a terminology makes it very difficult to handle satisfactorily the important concepts of hoarding and dishoarding, credit creation and debt cancellation." (Mr. Keynes on "Underemployment Equilibrium", *The Journal of Political Economy*).

Hoarding causes a loss to producers and through them eventually to consumers. However, a fixed amount of hoarding is quite consistent with stationary economic conditions and an economy that somehow adjusts itself to circumstances created by constant hoarding may not suffer any more from such a hoarding.[1] In that case, in fact, hoarding cannot be said to be currently practised. The true cause of fluctuations consists, therefore, not in the fact of hoarding itself, but in the fluctuations of hoarding. For, it is a change in the volume of hoarding that is responsible for disequilibrium between saving and investment. With an increase of income, other things being the same (the propensity to consume and liquidity preference remaining undisturbed), hoarding and cash balance increase and saving and investment tend to get out of equilibrium.[2]

Robertson's definition of hoarding differs from the usual definition of the term. He defines a person as hoarding when he takes step to raise the proportion existing between his money-stock and disposable income. Some economists, as Keynes and Hawtrey, do not favour this new definition of hoarding. To the present writer it seems that while Mr. Robertson's definition has some valuable features, it does not fit in well with the theory of industrial fluctuations that seeks in some way or other to find the cause of disturbances in the disparity between saving and investment.[3]

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1. In the long run, the economic system can adjust itself to circumstances created by the practice of hoarding a constant amount. As a result of such an adjustment the general level of prices would be lower. But it is difficult for the economic system thus to adjust itself in the period which circumstances allow it. For, such an adjustment necessitates reduction of the prices of finished goods, fall of wages, fall of interest, reduction of the hours of work, etc.—changes which are difficult to effect in the absence of flexibility of our economic system. Hence it is hardly possible to reach a position of equilibrium before fresh changes in the system shift the point of equilibrium away from its previous position; or it might be possible to reach it, as Prof. Keynes says, by less economic ways, *i.e.*, with a large percentage of the population unemployed.

2. "Saving and Hoarding", *Economic Journal*, September 1937. Bargar defines the term in a similar manner. "In truth a person performs an act of hoarding or dishoarding according as he allows the ratio of his cash balance to his turn-over to increase or decrease." ("Natural Money and the Trade Cycle", *Economica*, November 1935).

3. Equilibrium of saving and investment necessarily implies the absence of fluctuation in the rate of hoarding. The meaning of the word hoarding must, however, offer some difficulty. But it is possible so to define hoarding as

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When saving increases due to the increase of income, it does not automatically find its way into investments, though the mechanism of the rate of interest does help it, to a certain extent, to find that way.[1] For, as Keynes argues, the volume of saving is determined by income (propensity to consume remaining undisturbed) while investment is induced by the marginal efficiency of capital, and there is no natural force that necessarily harmonises the two.[2] In other words, equilibrium is preserved only when the increase of income is distributed between spending and saving in a unique way. The rate of interest is not powerful enough a force to bring about this the only equilibrium-distribution of increased income. An inappropriate distribution in the beginning generates forces that instead of correcting further upset the distribution and it is only after a time that forces begin to turn in the other direction.

There are about as many theories of the trade cycle as there are writers. But it seems that the differences between most of them are not of a fundamental nature being generally confined to details of exposition and the particular angle from which industrial disturbances or depressions are examined. If we agree that one satisfactory way of looking at fluctuations is to view them in the light of disequilibrium between saving and investment (which in a way is the same thing as inequality between *natural* or *normal*

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to make the balance between saving and investment a condition for its absence. The idea that industrial stability requires absence of hoarding is implied in the works of more or less all trade cycle theorists, but we find it in explicit form in the works of such economists as Robertson, Bargar and Koopman.

1. It is now generally recognised that though the rate of interest can easily check investments it is comparatively ineffective in encouraging them. Prof. Robbins has thus been criticised for having regarded the rate of interest as an active agent in bringing about equilibrium.

Professor Bye still believes in the classical theory that the rate of interest automatically regulates the supply of saving and the demand for capital. ("The Process of Capital Formation and its Relation to Inequality", *The American Economic Review*, December 1936.)

2. This view is now held by most of the leading writers on Trade Cycle Theory. Mill argued, consistently with the teachings of classical economics, that investment always followed upon saving, but he too was careful to observe that disturbance can be caused by too rapid accumulation of savings for which it becomes difficult to find a profitable investment.

rate of interest and the money rate of interest)[1] or fluctuations in hoarding, the next step we have to take is to seek the causes of such a disequilibrium between saving and investment. Assuming that the propensity to consume and the innate preference for liquidity do not change independently, except perhaps in a very long period, for the more ultimate causes of fluctuations we have to look to changes in the income of the people. The effects of changes in income would be comparatively less pronounced were all incomes to increase in the same proportion. But since, in the short period, some incomes are variable and others not, changes leading to a rise of income do not affect all incomes equally. The first effect, favourable or unfavourable, on incomes is on the earnings of *entrepreneurs*. When, therefore, incomes change a redistribution of wealth also takes place. We may, therefore, be reasonably correct in assuming that the equilibrium between saving and investment is upset principally because a redistribution of the community's wealth takes place.

Among the causes of such a redistribution we have inventions leading to changes in the technique of production, changes in tastes of people, causing shifts of demand from one commodity to another, changes in foreign demand for a country's products, fluctuations in agricultural harvest and errors of optimism and pessimism as the most important ones. These are primarily non-monetary in their nature[2]. On the other hand, we have monetary causes which re-

1. Though the rate of interest may not be strong enough a force to bring the dislocated economic system back into a state of equilibrium, yet the rate that prevails when the system is in a position of equilibrium and does not tend to get out of that position, must be looked upon as a natural or ideal rate. Various names have been given to such a rate of interest, *e.g.*, equilibrium rate (Dr. Hayek), normal rate (Wicksell), true rate (Cassel), natural rate (Keynes) and Ideal rate (Adarkar). Yet there is great divergence of opinion as to what this rate of interest is exactly equal to. For a stimulating and critical study of these rates, see Adarkar, *The Theory of Monetary Policy*.

2. Broadly speaking, there are two schools of Trade Cycle theories, monetary and non-monetary. The former believes that non-monetary causes cannot of themselves bring about cyclic fluctuations, for, in the absence of monetary disturbances, the economic system would always exhibit a tendency to return back to a position of equilibrium. For a broad review of various trade cycle theories see Hayek's *Monetary Theory and the Trade Cycle.*

As a matter of fact, no clear-cut distinction between monetary and non-monetary causes is possible. Non-monetary causes must act on monetary fac-

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distribute income even in the absence of the changes just mentioned. Thus an increase or decrease of the supply of money created by banks also upsets the distribution of national dividend. For, it is impossible for the money injected into the system by monetary authorities to get distributed at once among the various income receivers in the proportion of their income-holdings.

So far our treatment of the problem has not been made to rely directly on the equation of supply of and demand for commodities. However, it may be noted at this stage, that industrial equilibrium does require, of course, the balancing of the supply and demand of all commodities. But since the demand for commodities is somewhat uniquely related to the supply of saving and supply of goods to the demand for saving, by taking a step backwards we find that this balance is resolvable into that of supply and demand of saving (social saving as Adarkar explains it). In other words, savings must equal investment. It does not matter, it is maintained, what the absolute volume of saving is[1]; industrial stability is assured if

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tors and *vice versa*. It is difficult even to keep the monetary and non-monetary approaches to the study of trade cycle theories neatly separate. The difficulty is due to the fact that monetary and non-monetary factors act and react on each other. (Recall Adarkar's Active and Passive Aspects in this connection.) Moreover, even in a barter economy influences comparable to monetary influence that operate in money economy would not be totally absent.

Hayek says in a footnote (*Monetary Theory and the Trade Cycle*), "Since the publication of the German edition of this book, I have become less convinced that the difference between monetary and non-monetary explanations is the most important point of disagreement between the various Trade Cycle theories".

Rosenstein-Roden writes ("The Co-ordination of the General Theories of Money and Prices", *Economica*, August 1936), "The distinction between influences from the side of money and from the side of goods and the consequent separation of the monetary and non-monetary approach in economic theory is an inheritance from the classical school which is being overcome only very gradually and with great difficulty".

1. It is generally supposed that the absolute volume of saving does not matter. As is shown in the following pages, there is a way in which the absolute volume of savings can become the cause of disturbances. Wilhelm Ropke ("Socialism, Planning and the Business Cycle", *The Journal of Political Economy*, June 1936) says, "The theory of crises and cycles which I prefer may be conveniently labelled as monetary over-investment theory.... In my analysis it is not the rise of the rate of investment relative to the rise of saving which is the real cause of instability, but the absolute rise of investment, no matter whether financed by voluntary or by forced saving".

investments are made to equal savings. Talking in terms of employment, the workers thrown out by increased saving would be absorbed in investment industries, if savings are turned into investments. No saving is wasted—purchasing power is not allowed to remain unutilised. In this argument there is, however, a fallacy which consists in thinking that the market rate of interest is an effective agent in bringing up investment into level with saving. For there is, according to the stage industrial development has reached, a certain appropriate proportion between capital investment and output. Industrial stability requires that this proportion should coincide with that between saving and expenditure. But there are no forces which the change in the amount of saving automatically releases and which could be relied upon to secure this coincidence. To save more is to spend less, *i.e.*, to demand less consumption goods. To invest more is to plan the production of a large quantity of consumption goods and also to create an additional demand for them through providing more employment. What is the guarantee that these changes in various directions will balance one another?

In short, it is impossible for every increase of saving to be profitably absorbed by new investments. The market rate of interest, therefore, cannot prove effective in pushing up investments into level with savings.[1] For, what is necessary to bring the system back into a position of equilibrium is that the market rate of interest should be capable of affecting, on the one hand, the amount of saving and, on the other, investment.[2] It is unable, however, to do either.

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1. It will be readily understood, if the exposition of the text is clear enough, that the manipulation of the rate of interest can but achieve little when it has to face an economic system that has gone hopelessly out of balance. This fact has not remained unnoticed by Trade Cycle theories. Hayek (*Monetary Theory and the Trade Cycle*, p. 188) writes, "....for it implies that no measure which can be conceived in practice would be able entirely to suppress these fluctuations". Adarkar (*The Theory of Monetary Policy*, p. 188) is, therefore, perfectly justified in his belief "that the concept of the natural rate, which is only appropriate to the theory of moving equilibrium, cannot be extended to that of a disequilibrant economy".

Robertson holds the same view.

2. The classical theory that the rate of interest equalises the supply and demand of saving or equates savings to investment is not applicable to the modern progressive capitalistic economy. All economists are now agreed on the point that the rate of interest has very little influence in increasing

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Specially, the supply of saving is little affected, at times, by changes in the rate of interest; and there lies the root cause of disturbances —hindrances in the way of forces that could otherwise be relied upon to bring the system back into a position of equilibrium.

Although, therefore, we can say that in a state of equilibrium saving equals investment, it is not possible to maintain that a rate of saving that equates investment with saving would necessarily succeed in re-establishing equilibrium. For when consumption is at its low ebb and savings are, therefore, abnormally high, the policy that pushes up investment to balance the savings would cause a large stock of final goods to be produced than the low level of consumption could absorb. The cause of disequilibrium would thus remain, and get strengthened by the policy that aimed at bringing about equilibrium between saving and investment. This might appear as a paradoxical statement. But we should note that increased saving, unless it is deliberately practised to make possible increased consumption in the future (and this may, under normal conditions, be the rational aim of increased saving), signifies a desire to consume less and, therefore, calls for a more or less proportionately decreased volume of investment. Under such conditions equilibrium can be established by allowing saving to remain idle: and in the new position of equilibrium thus established there would be a smaller volume of investment, a smaller output of consumption goods, a lower standard of living and probably though not necessarily, a great percentage of unemployment. (If hours of work could be reduced evenly and equitably, equilibrium would be established without sacrifice of employment. In other words, we would have under-employment instead of unemployment.)

The only way of establishing equilibrium by equating investment and saving would be by allowing the structure of production to get suitably adjusted to changed conditions. Increased volume of investment, consequent upon increased saving, should not be

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the demand for capital in times of falling prices. Hawtrey (*Economic Journal*, 1922, p. 299) expresses the idea very well when he says, "Even lending money without interest would not help if borrowers anticipated a loss on every conceivable use that they could make of the money".

Pigou writes (*Industrial Fluctuations*, p. 257), "People do not want to borrow on any terms and the banks cannot force them to do so".

allowed to increase the output of consumption goods; for, as already shown, the supply of such goods would otherwise exceed the demand. But the only way in which we can conceive of a larger volume of investment associated with a smaller output of final goods is by allowing our mind first to conceive of a changed structure of production. As Dr. Hayek has so ably shown, the lengthening of the structure of production can absorb a larger percentage of saving.[1] Those who criticise Dr. Hayek fail to grasp this fundamental fact. In the normal course of time the lengthening of the structure of production is accompanied by increased productive efficiency and, consequently, a larger output of final goods. But the lengthening of the structure of production that we here envisage is not of this historical type. A lengthened-out structure here represents a productive system that is more complicated or rather more roundabout, and more costly. It signifies a state of affairs in which people save more because more (not less) investment has become necessary to turn out the same (or a smaller) quantity of goods. The implications of the state of equilibrium thus established would be a smaller output of goods and a lower standard of living. But the stability thus secured would have an advantage, namely, that it would provide fuller employment than the state of equilibrium that could be established by allowing increased saving to remain idle.[2]

Often in the study of the problem of trade cycle barter economy is assumed to be a mode of economic life that is free from

1. It seems that Dr. Hayek's theory in terms of the structure of production has been very much misunderstood. The crucial point in the theory is that if increased saving is to be absorbed by investment industries without causing consumption goods to increase, the structure of production must get lengthened. Such a lengthened-out structure of production is less economical, not more. It is the failure to understand this point that is responsible for the criticism of Hayek's theory, based on the size of the structure of production.

That excessive saving can be absorbed when the structure of production gets lengthened is also recognised by Hawtrey. He uses the expression "deepening process" to characterise a more capitalistic system of production.

2. To the present writer it appears that Keynes gives evidence of holding substantially the same view when, while criticizing Robertson's advocacy of nipping the boom in the bud by means of high rate, he says, "It may be that it overlooks the social advantages which accrue from the increased consumption which attends even on investment which proves to have been totally misdirected". (*General Theory*, p. 327.)

all those disturbing influences which the use of money exerts on the equilibrating mechanism of economic forces. Thus it is argued that in barter economy there would be no discrepancy between saving and investment,[1] for savings, in the manner in which they are accumulated in the money economy, would be unthinkable in a barter economy, and, therefore, the amount of saving would be automatically regulated by the needs of investment. Again it is maintained that the rate of interest proper to such a barter economy would be the ideal or natural rate of interest, so that there would be no (monetary) factor whose operation would throw the economic machinery out of gear.

All such theories commit the fundamental mistake of supposing that barter economy differs radically from money-economy in not having in use anything comparable to money. As a matter of fact, even in a barter economy there always exists a substitute for money. Money in a barter economy may be, and of course must be, less universally acceptable, so that its currency is restricted to a smaller economic field. As a consequence of it a barter community would have in use not one but many systems of money. Hence, barter economy would not differ fundamentally from our money-economy, inasmuch as it would have in use (a commodity or) commodities as media of exchange. Yet there is much to be gained by a comparison of money-economy with barter economy. The point of comparison is not that one system uses money whereas the other does not, but that the two systems make use of different kinds of money. In our modern economy money tends to be more and more a *free* and *costless* money—it has an insignificant cost of production and, therefore, no supply price. In a barter economy, money, though not absent from the scene, and though performing fundamentally the same functions, would consist of what may be termed commo-

1. Thus Wicksell identifies his natural rate of interest with that which would prevail in barter economy and Koopman says that in barter economy no one can continually sell without buying.

Bargar thinks that cyclic fluctuations are not possible in barter economy to any great extent; "Act of God and of Politicians," may, however, cause such fluctuations.

Professor Pigou maintains that the essential features of barter economy would be realised in practice if money is kept constant in value (*Industrial Fluctuations*, p. 319).

Zawadzki says that the implications of barter economy are that cash balances should remain constant.

dity-money, having intrinsic value and a cost of production.[1] It is this difference between barter and money economy that makes all the difference in the working of economic force. Where money has a cost of production, in the sense relevant to our purpose here, it is impossible for the economic system to let its investment exceed its saving. It is, however, when money can be freely created at will, *e.g.*, through means of book-credit that the possibility of investment exceeding real saving arises. This fact has not received the recognition it deserves from those who seem to see no sense in bringing in the conception of barter economy as an aid to the understanding of the causes of industrial fluctuations or economic depressions[2].

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1. The implication of such a money that has a cost of production is that the banks should not lend more than what is deposited with them by the people who save, or to be more correct, total lending in the system should equal total saving, or again, investment should equal saving. That this is the condition for industrial stability is no new idea, of course; for this is the gist of the theory of Wicksell, Mises and Hayek, among others, that make use of the concept of natural, normal or equilibrium rate of interest.

The costless (credit) money idea is expressed by Hayek and others in the words that in money economy the supply of money is elastic. Even Wicksell (*Geldzine and Guterpreise*, p. 101) writes, "The more elastic is the currency system the larger can a more or less constant difference persist between the two interest rates and the greater, therefore, will be the influence of this discrepancy on price".—Quoted from Hayek's *Monetary Theory and the Trade Cycle.*

Similar ideas are expressed by other continental writers.

Professor Fetter ("Interest Theories and Price Movements", *American Economic Review*, vol. xvii) writes, "Throughout this process the much esteemed elasticity of bank funds is the very condition causing, or making possible, the rising prices which stimulate the so-called 'needs of business'. Truly a vicious circle, to be broken only by crisis and collapse when bank loans reach a limit and prices fall".

2. Prof. Adarkar, it seems to me, has not done justice to this view. He is however perfectly right in maintaining that money can never be neutral in its effect on the formation of prices. If money changes in supply whether naturally and justifiably or artificially and unjustifiably, it necessarily influences the price level. If, on the other hand, it does not change, the price level may again be influenced by its failure to respond to changes on the commodity side. How should money behave in order to be neutral towards prices? The most convenient answer is that it should behave so as not to be the *cause* of movement in prices. But Adarkar as well as the critics of Wicksell (*e.g.*, Hayek) rightly maintain that a neutral money does not (and we might say, should not) guarantee stability of the price level.

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We have mentioned, as the cause of the trade cycle, the disparity of saving and spending. Such a disparity can lead to over-production or under-production with its accompanying symptoms of rising or slirinking (money) incomes. But the trade cycle consists in the *cycle*. Unless over-production turns into under-production and under-production, again, into over-production there is no cycle. The explanation we have given above, though correct in itself, needs to be supplemented by the inclusion of factors that account for, what is called the turning points.

Once the process starts in one direction it gathers momentum, the rate of increase or decrease gets accelerated and after a time the process comes to an end. It is then that the reverse process starts. During the period of investment going ahead of saving there is increasing economic activity, rising prices, fuller and fuller employment of resources and there are other incidental changes in the economy of a country. But, without being an expert in this branch of economics, one can see how such an upward process cannot continue *ad infinitum*. A time must come when the resources are more or less fully employed and there is no scope for further production of real income. At this stage of growth, or at times before this situation is reached, prices begin to soar up at a rapid rate. The upper turning point is then reached. It comes to be realised by the productive system and the banking system that the rate of growth cannot be profitably maintained. Investment is cut down; credit is restricted and, sometimes, there is a crash, a panic.

From this point onwards investment begins to lag behind saving and as saving begins to outstrip investment this reverse process gathers momentum and the disparity gets accentuated. The state of over-production is witnessed, prices show a tendency to fall, unemployment of resources increases and economic activity in general becomes dull. The depression takes roots. But even this process downwards must come to an end and finally reverse itself if there has to be a trade cycle. And the end does come when the falling

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Our desideratum is not or should not be stability of the general price level, but the more ultimate industrial stability. A system, then, in which money as a cost of production, in the sense of the text, would be industrially more stable though such a money would not be neutral towards prices if stability of the price level be considered the criterion for such neutrality.

rate of investment cannot continue any longer. Net investment can fall till it touches the zero level and thereafter capital might not be replaced as it becomes depreciated. In that way some disinvestment can take place. But beyond abstaining from replacing worn-out capital-goods no further act of disinvestment can easily be undertaken. The economic system has then to cry a halt to further disinvestment: investment receives a push. The encouragement thus given to produciton gives a turn to the economic system. Investment increases and catches up with saving and ultimately begins to run ahead of it. The old process of increased economic activity, with all its accompanying features, is repeated. The trade cycle phenomenon is witnessed.

The above is only a very sketchy account of what happens and how it happens. The upper turning point is provided by more or less full employment of resources or their scarcity; the lower turning point is provided by the impracticability of increasing disinvestment beyond a certain point. All this happens, we can say, because the built-in mechanism of the economic system is such as to make it always overshoot the mark.

But model builders have built endogenous models of our growing economies. They have shown how due to certain saving functions and investment functions the economy advances in one direction and then takes a turn and begins to march in the reverse direction. The models that conveniently exhibit such features of our economy and provide explanation for them are known as multiplier-accelerator models. By giving judiciously selected values to the multiplier and the accelerator we can make an economy move in a cyclical fashion. It is difficult to incorporate all the features of an economy in a model; nor perhaps is that necessary. Our understanding of the forces, innumerable as they are, that propell an economy and make it behave in a particular way is yet incomplete. We can construct a model that would yield the required result but we cannot be sure that it correctly represents or explains the economic behaviour of a society.

CHAPTER XXIII

BASIC PROBLEMS OF DISTRIBUTION

In the course of discussions on problems of distribution, the questions which have often been raised are: (*i*) Does a producer sell his output at the marginal cost of production or the average? (*ii*) If he sells at the marginal cost does he get a surplus? (*iii*) If he does, can we conceive of any peculiar function for the hiring factor which may be said to earn for him this surplus? and (*iv*) Lastly, if the factors of production are paid at rates determined by their marginal productivities, how can one be sure that the entire produce is absorbed by such payments? If it is not absorbed is not a surplus left over as the residual earning of the producer?

These questions have been directly or indirectly answered by such economists as Wicksell, Wicksteed, Walras, Marshall, Prof. Pigou, Dr. Hicks and Mrs. Robinson.[1] But as these problems have never been taken up all in one place and discussed in a rigorous manner intelligible to non-mathematical minds, it is not surprising that the ideas of most students on these points are not sufficiently clear. Unless, therefore, these problems are discussed in relation to one another and the answer to each separate question judged in the light of the answers to the rest, the maze of somewhat confused ideas cannot be cleared.

One great difficulty in tackling these problems is due to the want of precise notions of such terms as cost and profit. To this difficulty, great in itself, is added another caused by the failure on the part of non-mathematically minded students to recognise the fact that all productive efforts obey the laws both of increasing and decreasing costs. Were these tendencies, however, to be taken for granted and the words cost and profit defined beforehand the student would feel no confidence in the conclusions finally reached since such

1. Here, the student's attention is drawn particularly to Wicksteed's *The Co-ordination of the Laws of Distribution*, and *The Commonsense of Political Economy;* Mrs. Joan Robinson's article on Euler's Theorem and the Problem of Distribution (in the *Economic Journal*, September, 1934) and her review of Wicksteed's *Co-ordination* in the *Economic Journal*, June 1933; and Dr. Hicks's *The Theory of Wages*, Appendix (*i*).

a procedure would suggest to him that they were conditional to the assumptions deliberately made or the peculiar conditions postulated. It is necessary, therefore, not only to let the fundamental assumptions be evident in our reasoning but to show, in the most obvious manner, how the other minor conditions postulated by our reasoning are tendencies inherent in them.

Before we take up the problems mentioned above let it be noted that the fourth question is the main and the most fundamental one. It has given rise to what is popularly known as the adding-up problem. It is maintained that the payments made to the factors of production according to their marginal productivities add up to the total produce raised. This assumes in the first instance that payments to factors are made on the basis of marginal productivity and there is no factor which is otherwise remunerated. This obviously rules out land as a separate and independent factor of production. For, land, in the strict sense of the word, is not remunerated according to marginal productivity[1]. It is obvious, further, that a stationary or a riskless economy is postulated. For, in a dynamic economy characterised by risks and uncertainties it is not possible for payments to factors of production to total up exactly to the output raised. Two facts have therefore to be clearly borne in mind. First, that land is not to be treated as an independent factor of production and consequently rent is to be understood as an element in other earnings and second, that a riskless economy is postulated so that there is no entrepreneurship nor any profits to be considered as one of the earnings of the factors of production.

There are, to begin the enquiry into the problem, three independent factors of production, namely, labour, capital and organisation.[2]

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1. Land is a specific and free factor. It does not need any remuneration as there is no (opportunity) cost incurred by it. The income of land can be shown to be determined by marginal productivity only when it is treated as a non-specific factor.

2. As stated in various other connections land is not in the strict sense of the word a factor of production. In a stationary state the landowner as such has no function of production to perform. In a dynamic economy the *entrepreneur* must needs be in possession of land. In that sense land comes into the picture of production. But even in dynamic economy the function of risk-taking is performed by the landowner in his capacity as an *entrepreneur.*

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Of these three factors of production let us suppose the capitalist hires the other two. The hiring factor has to pay the hired factors in advance and, therefore, it is natural for the capitalist to play the role of the employer. In a stationary state the only connotation of the word hiring is that of advancing income. If the man who hires the factor also himself supplies some labour and organisation his total earnings must include along with interest some wages and salary. If he gets some (producer's) surplus over and above what he earns as his share of wages for his labour, interest for his capital and salary for his organising ability, then the office of hiring becomes more attractive and alluring than that of any other factor. Hence, if such a state of affairs prevailed the labourers or organisers would make a shift from their position as ordinary labourers or organisers to that as the hiring factor (provided of course they have whatever little capital is needed for such a role) and by so doing restrict the supply of labour and organisation and raise their prices. This is easy to understand when one remembers that as hiring work becomes more attractive the cost curve of labour rises. For, the cost of labour is merely the utility of its substitute, the hiring work. Hence the change over from labour to the work of hiring other factors raises wages and along with it the total cost of production and thus reduces the surplus. In the position of equilibrium, then, the labourer gets more than before (though still a wage that equals marginal cost) and the capitalist or the hiring factors[1] less. Hence, labourer's position as ordinary labourers and their position as hiring factor becomes equally attractive.

Approaching the problem from another direction it can be shown how the capitalist can secure no surplus[2]. The possibility of a surplus accruing to him is generally understood to arise from

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We cannot therefore, treat entrepreneurship and land as two distinct factors even in a dynamic economy. For further clarification of these points see the Chapter on Rick Rent and Profit.

1. Throughout in the text the words capitalist and hiring factor are used as synonyms. The duty of both is to advance money in the stationary state that is postulated here.

2. It must be emphasised that the treatment of the problem in the text is meant for a non-mathematically inclined student. For one who is well versed in the mathematical technique the treatment of the text is bound to appear laboured and clumsy.

the fact that he can so adjust production as to be able to sell his produce at the marginal cost of production.

In that case also the surplus can accrue only if the initial costs are lower than the marginal. But if cost includes all the elements of cost, as it should really include, then it is not difficult to see how the price must equal the average cost and not only the marginal. If the capitalist's remunerations as a labourer and organiser are also reckoned in the cost, so that when the cost is covered he is amply remunerated for his work and waiting, there is no reason why he should be allowed by economic forces to charge any price above the average cost. For, when cost is thus properly understood, it is clear that the capitalist performs no other specific function and he can have a claim to no other kind of income. The productive system is, therefore, in equilibrium when the hiring factor charges a price that equals his average cost, all possible elements of cost being included in his reckoning. If he charged a higher price others would assume the role of hiring factor and thereby, increasing the supply, reduce the price to the point where it equalled the average cost. It is, therefore, not correct to argue that as price equals the marginal cost it cannot equal the average cost, when cost includes all the elements including the earnings of the hiring factor himself. Obviously, therefore, the employer[1] can secure no surplus, the entire value produced being distributed between the factors that co-operate to produce it.

Our analysis of the problem so far has been independent of the rate of charge of cost, so that whatever law the productive costs may obey our conclusions must remain correct.[2]

We have tacitly assumed the prices of factors of production to be given. But how are they determined? To discuss this problem we have to assume that the price of the produce is fixed[3].

If the price is given the employer as a bargainer with other factors will not pay a factor more than what it contributes to pro-

1. The employer as an employer secures no income besides what he gets as the capitalist. And as a capitalist he gets as any other factor an income determined by his marginal productivity.

2. As a matter of fact our conclusions depend on the assumption of payment to factors according to marginal productivity. And this assumption is dependent on the law of increasing cost.

3. We are adopting the partial equilibrium method for the verbal treatment of the problem before us.

duction. If he pays less he pockets the saving and in order to increase this gain he would employ more units of that factor. But the greater the number of units employed the smaller is the marginal contribution[1]. In the limit, therefore, the payment equals the marginal contribution. If, on the other hand, a factor demands a higher payment the employer gains by reducing all those units of the factors which contribute less to production than what they demand as their remuneration. Eventually, therefore, the prices of factors come to be stabilised at their marginal productivities.

Thus, taking up the problem piecemeal we have arrived at two distinct conclusions. First, that the price of produce equals the average cost and the hiring factor has no surplus left over after paying the factors of production (himself included) and, second, that the price of a factor equals its marginal productivity[2].

Now taking these two propositions together we are able to say that when the factors of production are paid according to marginal productivity the entire produce is exhausted and no surplus is left over for the employer above what he earns as a factor of production along with the other factors.

On the face of it this statement may appear absurd to those who, knowing that marginal productivity is less than the initial, are apt to think that when each factor is paid according to its marginal productivity some surplus must be left over. But the argument that the marginal productivity is less than the initial[3] contains nothing to disprove the proposition that payments to factors made according to their marginal productivities will absorb the entire output. As a matter of fact, the difficulty in understanding this point can be traced to the mistake of multiple counting which is often made while calculating the entire produce.

Taking an individual factor, its initial productivity is greater than its marginal. The entire productivity of labour is calculated

1. This assumes the operation of the law of diminishing marginal productivity.

2. All through the chapter perfect competition is assumed.

3. As a matter of fact production might obey the law of decreasing cost in the beginning so that marginal productivity need not always be less than initial productivity. However, by taking units of sufficiently big size we would always find the marginal productivity to be less than the initial under the assumption postulated in the text.

by adding up the marginal productivities of all the units. This, however, is the aggregate produce—the result of the co-ordinated efforts of all factors of production. The individual factor concerned being an essential factor, when all its units are dispensed with the entire produce disappears. Thus, the attempt to calculate the total productivity of a factor gives us every time the aggregate output. For, as just explained, the total productivity of a factor calculated in this manner comes out to be the entire output. Hence, if we take the total productivity of all the factors together we would find it to be as many times the entire output as there are essential factors.

The argument, therefore, that as the marginal productivity of a factor is less than its initial productivity the payment to factors of production adjusted to their marginal productivities cannot exhaust the entire produce and must consequently leave a surplus for the employer is founded on an erroneous method of calculating the total output.

Although the discussion shows that there is no *prima facie* reason for supposing that payments to factors according to their marginal productivities would not exhaust the entire output, it does not in any way prove that payments so adjusted should exactly cover the total value produced. This cannot be proved independently of our first proposition that the selling price must equal the average cost of production. And it is on the strength of this proposition that we are able to maintain that the sum of the marginal productivity of each factor multiplied by the number of its units equals the total produce. The forces of free competitions, the reduction or increase of the number of hiring factors, and consequently of the amount produced, the increase or decrease of the number of units of the factors employed and, therefore, the decrease or increase of their earnings, bring about that distribution of factors of production between industries and, within an industry between the various production units, which establishes the dual equilibrium, first, between the total cost and the total sale price and, second, between total value produced and the sum of the marginal productivity of each factor multiplied by the number of its units.

We have assumed prices of factors and the price of finished products to be constant and worked out on these bases the problem of the determination of the selling price of produce and the demand

prices of the factors of production. This method which is called the partial equilibrium method we may once more make use of here. Let us assume the price of the produce predetermined for an individual producer and the prices of factors of production used by him fixed by the inter-play of market demand and supply. Now, as he cannot vary these prices he can maximise his earning by producing the optimum amount. The optimum is naturally the amount the marginal cost of which just equals the unit price of produce. If it is greater than the price he can increase his income by reducing output by a suitable amount. If it is below the price he can increase his income by producing a little more and earning the excess on them. Thus, in the position of equilibrium his marginal cost must balance the sale price.

Here is then, our third main proposition. Taking this along with the first proposition we can say that the price equals both the average and the marginal costs. In the long run, therefore, all kinds of resources are so distributed between industries and productive units that a perfect balance is established between marginal cost, average cost and the price. Wherever this exact relationship is found wanting the position should be regarded as being out of equilibrium. But such cases of disequilibrium cannot be found in the stationary state which is postulated here[1].

We have come to a stage where the fact of equality of average and marginal costs needs some explanation. Average and marginal costs can be equal only under one of the two following conditions. First, when production obeys the law of constant returns and, second, when it obeys the laws of decreasing *and* increasing costs or increasing *and* decreasing costs. If it obeyed either the law of increasing costs only or of diminishing costs only, the average cost could not be equal to the marginal cost. As we shall presently show the equality of average and marginal costs is due to the laws of decreasing *and* increasing costs to which all productive efforts are subject. But the mere mathematical equality of the two costs, other considerations apart, can only suggest that costs are either constant or that they first decrease and then increase or *vice versa*.

If the examination of our propositions leads to the above conclusion we cannot feel satisfied by merely saying that production

1. For further explanation of this point see Chapter XIII.

obeys the law of constant returns or a combination of the laws of increasing and decreasing costs.[1] It should be our duty to show that there are certain influences of forces underlying our reasoning so far which necessarily make all productive efforts subject to such laws. For instance, competition, mobility, or any other fundamental assumption should be shown to be invariably based on tendencies which make production operate under the law of constant returns or a combination of the two laws of decreasing and increasing costs. Unless we point out these inherent tendencies and connect them to our fundamental assumptions we cannot feel satisfied that the whole theory of valuation or distribution has been finally verified or its truth firmly established.

Now, the one fundamental assumption on which our reasoning so far has been based is that of free competition. That the employer cannot sell the produce in the long run at a price higher than his unit cost, that otherwise there would be a shift from hired to hiring factors, that factors of production are paid according to their marginal productivity and that in the absence of such an equality between marginal productivity and the earning of a factor the employment of that factor would increase or decrease, are statements of facts which presuppose a competitive organisation of the entire economic system. Remove competition and substitute a comprehensive co-operative organisation and the entire superstructure of the theory we have raised will tumble down.

Now, if competition is to rule in the domain of all productive activities one of the conditions that are necessary to operate in the long run is that no producer should eventually be absolutely superior in efficiency to the rest, irrespective of the amount produced[2]. For, if one were, in this sense, absolutely superior to others he could permanently undersell all the rest and assume command of the entire market. Competition would then naturally disappear and the theory of distribution break down. Similarly it can be shown that it is essential that the productive efficiency of the various pro-

1. Some economists assumed constant returns to prove the fact that payments to factors according to marginal productivity exhausts the entire produce.

2. We are not raising the question of the distinction between perfect and imperfect competition or pure and impure competition. Competition on the part of a seller requires *in the long run* that no seller should eventually be absolutely superior in efficiency to others.

ducers should not eventually be absolutely equal, that is, equal for equal amounts produced, otherwise competition, though possible, would be erratic and spasmodic and, therefore, ineffective.

The first of these two essential conditions, implies that production costs (marginal and average) should eventually increase if they do not increase from the very beginning. The second implies that the cost curves should not, throughout their entire lengths or eventually, be identical.

The second of the two conditions is fulfilled by the fact that no two employers can be exactly equal in their productive efficiency. It, therefore, remains for us to show that in the nature of one or more factors of production there is inherent some quality or attribute by virtue of which every productive effort is subject to the law of increasing costs.

Of the three factors of production mentioned in the beginning of this chapter, organisation implies at least co-ordination of the factors of production, if it does not involve anything besides it. Co-ordination, or as some express it, decision-taking, is an absolutely limited factor of production[1]. (One can employ many units of capital or labour but co-ordination is by nature a single, indivisible and unmultipliable unit.) Inasmuch as it is not capable of being increased it renders the whole productive plant subject to the law of increasing costs. For, once the co-ordinating unit is suitably combined with the rest of the factors so that it is utilised to its fullest capacity, there is no scope for a further increase of the plant keeping all the factors combined in the same proportion. Diminishing returns or increasing costs must, therefore, follow. It is for this reason that all productive plants have eventually to operate under the unrelenting law of increasing costs.

Again, inasmuch as the co-ordinating unit is indivisible it renders the whole productive plant subject to the law of decreasing costs in the initial stages of its expansion. For, while the other factors are employed in small quantities, co-ordination has to be employed in its entirety. Hence, as the rest of the factors are increased, without any additional expenditure on co-ordination, co-ordinating factor gets more and more fully utilised. Hence decreasing costs are encountered.

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1. For an able discussion of this point see Prof. N. Kaldor's article, "The Equilibrium of the Firm", *The Economic Journal*, March 1934.

We are now in a position to say that the one fundamental assumption underlying our reasoning, namely, that of free competition, is inseparably connected with the laws of decreasing and increasing costs in such a way that every productive effort in the field in which competition prevails, obeys the law, first, of increasing returns and then of diminishing returns. And as this was shown to be the technical condition necessary for the equality of average and marginal costs of production, an equality the necessity for which was indicated by the reasoning given earlier, we can now say that the theory of distribution has been adequately reasoned out and rigorously proved[1]. The conclusions may now be briefly summed up as follows:

(1) That factors of production, in the case of a stationary state, can be classified into labour, capital and organisation. The capitalist can conveniently act as the hiring factor, and perform besides, the functions of a labourer and an organiser. The employer's income is therefore determined on the same principle as that of any other hired factor.

(2) Since the employer does no other work his income does not contain any surplus over and above the remuneration that he gets in his capacities as a capitalist and a labourer and/or an organiser.

(3) That consequently the selling price of a commodity equals the average cost of production.

(4) That the selling price also equals the marginal cost of production, for that is the way in which a producer can maximise his income by adjusting factors over which he has a control.

(5) That, consequently, production is stabilised at a point where the average and marginal costs are equal, that is, where the two cost curves intersect.

(6) That every production factor is paid a price that equals its marginal productivity and that when all the factors

1. As already stated verbal proof given here must necessarily appear clumsy when contrasted with the mathematical proof of the adding-up problem. Attempt has, however, been made to supply as rigorous verbal proof as possible.

are thus remunerated the entire value produced is exhausted.

(7) And, lastly, that the theory of distribution, as adumbrated here, postulates free competition and a static economy.

When it is said that an employer gets no surplus over and above his income as capitalist, a labourer and/or an organiser it is not implied that there is no element in his earning that is of the nature of a surplus. The foregoing analysis simply shows that the owner of a productive plant, ordinarily called the producer, gets no surplus over and above what he secures in his capacity as a capitalist, a labourer or an organiser. Every factor of production obtains a surplus measured by the difference between the utility of his income and the disutility of the effort required to earn it. The disutility of the effort is, again, measured by the utility of the alternative forgone. The employer, being a factor of production, secures such a surplus but it appears as a part of his income earned in his capacity as a factor of production. It may incidentally be mentioned that such surpluses are always earned by a person in his capacity as land[1].

1. For a detailed discussion of this point see the next Chapter.

CHAPTER XXIV

THE CONCEPT OF RENT

The term rent, like the term capital or interest, has been used in so many senses that it has not been possible to maintain consistency in its use in one definite sense in any two essays on the subject. And yet there is no term in any science that should admit of more than one fundamental meaning. The various senses in which the word rent is used today can, therefore, be regarded as evidence of loose and confused thinking. Fortunately, however, modern economists, it appears, have come to realise the essential characteristic of rent so that their definitions of this term do not show the same diversity of meaning as those of older economists. Yet, the connotation of the term rent has not been made as definite as we think it could or should be made. Is rent a surplus? Can it never be a part of cost? Is it associated with or earned by land?—are some of the important questions which still seem to trouble many economists. We have, therefore, made an attempt here to clarify the conception of rent and to reconcile the older with the newer meanings of the term wherever such reconciliation was logically and reasonably possible.

It is the fundamental theorem in Distribution that payments to factors are made according to their productivities[1] while payments are demanded by factors according to their sacrifices. In a competitive system the point of equilibrium happens to be one at which the productivity and sacrifices are equal when both are expressed in terms of a common denominator, say, money. But due to the operation of the laws of return and the law of utilities, the productivity and sacrifices go on changing. Hence the equality can only mean the equality of marginal productivity and marginal sacrifice. There thus emerges a difference between total productivity and multiples of marginal productivity on the one hand and total sacrifice and multiples of marginal sacrifice on the other. The first difference—a kind of surplus—constitutes the fund out of

1. This is an oversimplified statement. When amplified it would read as follows: "The upper limit to the payment made to a factor of production equals, in normal times, the expected marginal productivity."

which payments to factors other than the one that is considered, can be and are made. It is for this reason that when we are considering one factor the payments made to other factors appear as surpluses. It is only a mathematical conception, for mathematically, when you compare two unequal quantities the difference between them appears as a surplus of one over the other. When attention is paid to this aspect of the problem of distribution we see that every earning assumes the character of a surplus, so that the peculiarity of land as earning rent (a surplus) seems to disappear[1].

We have also seen that there is a difference between total sacrifices and multiple of marginal sacrifice. Here since it is the latter quantity that is greater, the difference—again a kind of surplus—accrues to the recipient of the income. The surplus accrues—as should be obvious from the fact that the sacrifice of every agent goes on increasing—to all factors, so that if we use the term rent as a technical synonym for the arithmetical term surplus, we can say that rent is also earned by factors that are ordinarily called land[2].

We see then that there are two kinds of surplus which, at least in appearance, are different from each other. The first kind of surplus is the earning of a factor looked at from the point of view of the earning of another factor. The second is what may best be called the element of rent in the earning of a factor. A proper understanding of the nature of these surpluses enables us to recognise the fact that (1) the income of every agent of production is as much a surplus or a residual earning as the classical rent of land and (2) the earning of every agent of production contains within it an element of rent.

We shall now take up this second kind of surplus for a more detailed study. It has been observed before that this surplus is the

1. Clark has done much to emphasise this surplus-aspect of all kinds of earning. Wicksell in Sweden and other economists have also more or less independently argued likewise to show that rent of land and wages of labour do not differ fundamentally. To what extent the statement is correct will become evident as we proceed.

2. A factor has multiple aspects. An agent may be, and generally is, a number of factors combined in one. He may be a capitalist as also an *entrepreneur*, and likewise every factor has his land aspect. A labourer may also be a capitalist, an *entrepreneur* and an organiser; but he would be ordinarily called a labourer.

difference between the multiple of marginal sacrifice, that is, the earning of a factor, and total sacrifice. Obviously, therefore, it must differ according to our conception of total sacrifice. Take, for example, the ease of a labourer. Rather than sit idle and enjoy ease and rest at home, he would be willing to work for, say, Rs. 10. But he actually earns, let us say, Rs. 15. This difference of Rs. 5 is the surplus or the element of rent in his wages. Rs. 10 is the lower limit while Rs. 15 is the amount that the forces of competition have secured for him. This lower limit of Rs. 10 is one measure of his sacrifice. But the word sacrifice is capable of a different interpretation. Let us say that the labourer could earn in another occupation, *i.e.,* by putting his faculties as a labourer to some other alternative use, an income of Rs. 14. In such a case he would not be willing to accept a wage lower than Rs. 14 as a labourer in the employment under consideration. Rs. 14 now measures his sacrifice and his surplus is reduced to Re. 1. Which of these two interpretations of sacrifice and consequently which quantitative measure of surplus are we to regard as correct? The fact that each of these differences is a surplus in its own sense makes it clear that each is rent in its own way. The word rent is, therefore, capable of two equally correct interpretations. What we precisely mean to indicate by the term rent should therefore depend on the expression we use. For instance, in the case cited above, Rs. 5 is the "rent of labour", while Re. 1 is the "rent of a particular use of labour". In the first case the sacrifice or cost is the cost of labouring as against not labouring; in the second, it is the sacrifice or cost of making a particular use of labour. In one case rent is the surplus enjoyed due to the fact of being able to make use of labour: in the other, it is due to the fact of being able to make a particular use of the labour power.[1]

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1. Davenport says, "But perhaps a stronger case may be made for including within the rent-cost of one commodity, say tobacco, only such part of the tobacco rent as the land could be made to earn, if employed in the production of its next best alternative crop". *The Economics of Enterprise,* pp. 188-89.

J. S. Mill says, "When land capable of yielding rent in agriculture is applied to some other purpose, the rent which it would have yielded is an element in the cost of production of the commodity which it is employed to produce". *Principles,* Book III, Ch. VI.

Mrs. Robinson writes, "The cost of any unit of a factor, from the point

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A similar dichotomy is possible in the case of rent of factors other than labour. For instance, the rent of land may signify the difference between the total income and the total cost of production or the difference between the total income from one particular use and the total income from the next best use. In the first case the word rent is employed to measure the "rent of land", while in the other it measures the "rent of a particular use of land".

It remains for us now to link this scientifically correct conception of rent as surplus over cost with the alternative, though not conflicting, conception of it as the income of the specificity of a factor of production.

When a factor of production is (imagined to be) capable of one and only one particular use its entire earning assumes the nature of a surplus; for, the cost or sacrifice involved in the use of the factor disappears altogether. For one who could do but just one kind of work there is no sacrifice in the real sense of the word. The earning becomes a surplus in its entirety.

Now, it is impossible for a factor to have one and only one use. There is no piece of land, no machine and no labourer that is absolutely specific to one particular use.[1] For this reason the difference between specificity and non-specificity of a factor should be understood in the sense of the difference between the specific and non-specific aspects of a factor. Whenever, then, we take into consideration the specific aspect of a factor its entire earning assumes the character of a surplus or rent. This is what is meant by saying that the income of a capital "good" is rent while the same income considered in relation to value of the capital good is interest.[2]

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of view of one industry is, therefore, determined by the reward which that unit can earn in some other industry". *The Economics of Imperfect Competition*, p. 104.

1. The fact must be considered to be of some importance in view of Prof. Robbins' definition of Economics. He defines it as "the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses". He brings out the importance of alternative uses by observing that "if means of satisfaction have no alternative use, then they may be scarce, but they cannot be economised". *An Essay on the Nature and Significance of Economic Science*, pp. 13-14.

2. Most of the modern economists have emphasised this fact but we find the truth stated in beautiful words by Davenport who says, "Those incomes which with passing time accrue to the individual from his possessions are

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Again, when a factor of production earns more in one use than in another the surplus of earning thus considered—a surplus that has been called rent earlier—can justly be associated with the element of specificity of the factor to the particular use in question. The fact that the factor does not earn the same amount in all uses but secures for itself a greater income by applying itself to a particular use can indicate but only one fact, namely, that it is specifically suited, or better suited to that use.

In this connection it is important to note that the concept of surplus or rent or of specificity of a factor is a relative rather than an absolute one. Surplus is always the resultant of two quantities subtracted one from the other. The rent of a factor is one quantity when we compare its productivity in one use with that in the next best use, and another when we compare it with its productivity in the third best use;[1] and yet another when we compare its productivity as that particular factor with its productivity as any other factor.[2] In the case in which a factor cannot be used as another, the entire productivity becomes rent.

The following significant points emerge from the above considerations:

1. That rent is a relative rather than an absolute concept.
2. That it is capable of more than one interpretation even when it is used in its strict sense as a surplus.
3. That every type of income can be made to appear as rent or surplus.
4. That within every type of income there is an element of surplus.

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called now (1) rent, and now (2) interest, according as the income refers (*a*) to the aspect of its source as mere possession or (*b*) to the *capital* aspect of its source''. *Ibid.*, p. 132.

1. A factor is always put to the best known use. If it is put to the second best use it is because the use is not known or for some reason it is not possible to put it to the best use. The phrase ''one use'' in the text means, therefore, any use that is made of the factor. When it is put to second best use, rent as a surplus accrues by comparison with the third best use.

2. A person or a thing can be used as one factor or another. If it is used in the best way, *i.e.*, as a factor with greatest productivity, then rent as a surplus is obtained by subtracting from its productivity, the productivity in the alternative use. In the text, factors are treated as being divisible into five broad categories—land, labour, capital, organisation, and enterprise. However, as made abundantly clear in the text, land is not a factor of production. It is just the specificity (or free gift) aspect of any of the other factors.

5. That the quantitative measure of this element depends on whether we understand by rent the rent of a factor or the rent of a particular use of a factor.
6. That the surplus or rent, in whatever particular sense it may be used, is due to the specificity of a factor to productive use in general or to a definite use in particular.

In the light of the above interpretation of the term rent what are we to call the income of a landlord, that is, the income that a man gets in return for the services of the land he lets to his tenant? In ordinary language it is called rent. But nothing is rent unless it is surplus above cost. If the fact of lending the use of land entails no cost, the entire income becomes rent. But does it not entail some cost? In order to lend the use of his land the owner has to forgo its use for some other purpose such as its use as a recreation ground. Thus viewed the act of lending involves a cost so that the income of the land ceases to be wholly and solely rent. A part of it—the surplus above the cost[1]—however, still retains its character as rent. The income of a landlord, we may therefore maintain, is not rent but contains an element of rent.

But is this element the rent of land? Strictly speaking it is not; it is the rent of a particular use of land, for it is only this particular use that entails a cost. But there is no cost in the act of letting it out for use in general, *i.e.*, if the landlord was to use the land himself there would be no cost in using it, in the sense in which there is cost in using his own labour power[2]. This consideration justifies the common assertion that the income of the land is rent. For rent unqualified means rent of land as distinguished from the rent of a particular use of land.

Since rent is a surplus above cost it cannot be regarded as being *earned* in the strict sense of the word. In other words, it is not, like interest for example, a remuneration for some useful and scarce function. The capitalist "waits" and by performing this

1. The word cost has throughout been used in the sense of opportunity cost. That is the widest and in fact the only conception of cost that we can use and apply to the study of economic problems in all types of cases.

2. The cost of letting out land is nil. The cost if any consists in the alternative use of the land of which the owner is deprived; but this is the cost of a particular use of land and consequently the surplus thus conceived is rent of a particular use of land. In brief, land can be used as land only and hence there is no cost. It is specific, if it is land.

useful and scarce function of production "earns" interest. No such relation can be shown to exist between rent and any function on the part of its recipient for the simple reason that rent is a surplus *above cost.*

There are four principal functions of production, namely, labouring, organising, enterprising and waiting, which earn respectively wages, salaries, (normal) profit and interest. Rent is over and above any and all of these necessary earnings. The so-called landlord performs no function and if he does any it is that of waiting which function he performs in his capacity as a capitalist. But within the income that he earns while performing his function of waiting as a capitalist, there is, as already explained, an element of rent.

In what capacity does the capitalist or any other agent of production earn this rent-element? The logic of our argument indicates clearly the fact that whatever rent-element is earned it is always earned by an agent in his capacity as land. Queer and odd as it may sound, the labourer, the capitalist, the organiser and the enterpriser all have their land aspect. It is only in their capacity as land that they can be understood as earning rent. We are forced, and not unreasonably, to this way of understanding things by the consideration that if land has to be retained in economic theory as a factor or an aspect of a factor, then rent can be associated only with land.[1]

What then is land? We do not understand by it soil, earth or rain as the classical economists did and as some modern economists seem to do. By land, as Fraser says, we now understand a certain aspect of this: it is merely an abstract but omnipresent part of material wealth in general. We can thus find the land aspect in all things just as well as we can find the non-land aspect in a plot of agricultural land.[2]

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1. The practice of associating land with soil is greatly responsible for the reluctance on the part of many to accepting the statement in the text. But that there is no absurdity in it will be realised when the same statement is worded thus: "When an agent earns rent he does so by virtue of the fact that he is specific to a particular use, and the element of rent in his total income is earned by virtue of the fact that he is more specific to one use than to others".

2. *Economic Thought and Language.* The classification of goods into specific and non-specific is well known. Prof. Hayek uses this terminology in

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The best way to understand the meaning of land is to begin by noting the important fact that all concrete things as factors of production can either be land or capital. To understand land we have therefore to understand capital; for, land is that which is not capital. Capital is anything that is saved, *i.e.*, anything that is not used in some way in which it could be used. Thus, the idea of saving and the notion of capital involve the idea of an alternative use. A thing that is capable of only one use can never assume the role of capital or, to be more correct, inasmuch as a thing is considered as having one particular use it has its land aspect. A factor of production, therefore, appears in its land aspect when it is considered as rendering its service without any sacrifice or cost.

When an agent of production earns an element of rent, *i.e.*, when its total earning contains an element of surplus over cost it is obvious that it does so by virtue of the fact that there is no cost to counterbalance it. The part of the income that is balanced by cost is, therefore, to be regarded as being earned in its capacity as capital, while the surplus that remains unbalanced has obviously to be understood as being earned in its capacity as land.

It should be clear now that there is land aspect in every factor of production. The labourer has as much his land aspect as any piece of agricultural land. This discussion incidentally raises some points of profound interest in theory. The labourer, for instance, appears partly as land and partly as capital. His earning is partly rent and partly interest.

Were consumption possible without production there would have been no cost and consequently the entire psychic income (utility) would have become rent. Constituted as most of us are and our economic order being what it is, it is not possible to evade production as a means to consumption. But for the man who has learnt to be wantless, for him who can look upon every act as an end in itself, there is no production. The entire income becomes rent.

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his *Prices and Production*, having taken it from Wieser. Since, as already explained in the text, no good is entirely specific, it is best to say that "things are specific *in so far as* they are *thought of* as serving one particular purpose and are valued on that basis, while they are non-specific in so far as they are valued for their potential usefulness in a wide range of different purposes". *Ibid.*, pp. 208-9.

And this should make one point clear: rent is the income from consumption, it is net income from consumption. Where production is eliminated through wantlessness net income and gross income become identical. When such a stage in the development of a man is reached all things that are consumed become land; they become cent per cent land. And since land can logically be regarded as a gift of God (call Him Nature if you like) he who has become wantless, and is thereby in the enjoyment of rent, can realise that for all that he possesses and all that he uses he is beholden to God. Side by side with the elimination of cost (pain) and the enjoyment of rent in the fullest measure such a man therefore comes to have a religious attitude to life.

CHAPTER XXV

THE CONCEPT OF WAGE

Let us investigate into the nature of wages and compare it with that of interest on the one hand and rent on the other.

The income of a labourer pure and simple is called wage. But seldom does a worker supply manual work only. In fact, it is impossible in the very nature of things to isolate organising work from labour. In most cases, perhaps in all, a workman has to do some amount of waiting and undertake some risk as well. Thus his earning contains elements of salary, interest and profit.

A labourer who is hired by an *entrepreneur* is paid by him at more or less regular intervals, generally a week or a month. When there is perfect competition the wage that he gets, it is generally believed, equals the value of his marginal product. But as the labourer is often paid this marginal productivity in advance, the amount actually received by him equals only the present worth of his marginal productivity. That is, he is paid an amount that would, with interest, equal the value of the marginal product at the end of the production period. By production period we understand here the time that is taken by the process of production culminating in the final sale of goods. And since what is actually received by the labourer is called his wage, it is argued that wages are equal to the discounted marginal productivity of labour.

Suppose a labourer takes six months to produce (a stock of) a commodity which is sold a month after it is completed. If the value of the stock is Rs. 1,000, then the labourer is paid during the six months he works a sum, say, in six instalments, which at the prevailing rate of interest total up to Rs. 1,000, at the end of seven months.

When a labourer is thus paid and the rate of interest is 10%, he gets in the first month a sum of about Rs. 157, being 1/6th of Rs. 1,000 less interest for seven months. If interest was not deducted he would have got Rs. 166 approximately. Are we then to regard Rs. 157 or Rs. 166 as wages in this case? These, however, are not the only figures that could be taken into consideration.

If the labourer knows for certain that he will be paid Rs. 157 at the end of the month and if his (psychological) time-preference is such that a sum of Rs. 157 one month hence is worth to him Rs. 150 now, we can say that he gets on the first day of work a psychic satisfaction worth Rs. 150. Or to be more precise, the labourer's daily wage of about Rs. 5.20 nP. when discounted by his time-preference becomes Rs. 5. That provides another figure for wage. In order that we may be able to compare the three figures let us relate them to one and the same period of time. Taking a month to be the appropriate period, we have three figures of Rs. 166, Rs. 157 and Rs. 150. Rs. 166 may be said to be the monthly average value of the produce when completed and sold. Rs. 157 is the amount that the labourer actually gets at the end of the first month and is equal to the discounted value of the produce. And Rs. 150 is the mental worth (at the time of entering into a contract with the employer) of the money income to be received after a month.

It is obvious that any one of these figures can be called wage. To a great extent nomenclature is a matter of convention. It matters little how we define a word; what is essential, however, is that we should be consistent in the use of the word and in all that such a use implies.

When a labourer works, he forgoes the possibility of enjoying rest. The cost of labour equals, therefore, the satisfaction that he would get from not labouring, that is, by resting. If a labourer contracts to work for an hour, his cost of so doing is equal to the satisfaction that he expects to get from not working (the opportunity cost). The wage that will induce him to work must at least be equal to this satisfaction. In other words, the expected utility of the wage, discounted at the rate of time preference, must be slightly greater than the expected utility of rest discounted in a similar way. These two figures should, at the margin, be equal. If we take an hour as the smallest time unit for purposes of our reckoning, we can say that at the time of working or deciding to work, the labourer's estimate of the two figures should be equal at the margin. As a labourer he is exchanging, as it were, the work (the rest-utility) for the wage (the wage-utility). His cost is the utility of not-working forgone, while his income is the discounted expected utility of the amount of money to be obtained after a month. Since income obtained for the work is called wage, it seems

reasonable to call this discounted expected utility of the remuneration received his wage.

The process of discounting becomes necessary because the remuneration is always received at intervals and not continuously as the work proceeds. What the employer pays is discontinuous; what the labourer receives—the satisfaction—is continuous. Since the work is continuous the wage that remunerates it should also be continuous. Hence, logic demands that wage should be identified with the discounted expected utility of what is received for work. At every moment of time there is some discounted expected utility of the remuneration. The one is the cost item, the other the receipt item. The one is the cost of labour, the other the income of labour.

If then wage is thus understood and accordingly Rs. 150 becomes the wage in the above example, what is the amount of Rs. 157, the sum that the labourer actually gets, to be called? This sum is an objective figure, while the discounted expected value of it that we have considered proper to call wage, is a subjective one. There should be a technical name for this actual, objective receipt. Besides a name, one should expect to find its counterpart on the cost side. Just as the discounted expected utility of the remuneration is balanced by the discounted expected disutility of work (at least partly), similarly the remuneration actually received at the end of the reckoning period should at least partly be balanced by some objective entity. The thing that might be found to balance it would give us some indication of what the actual remuneration is to be called.

When a labourer works and thereby forgoes rest some depreciation of his bodily and mental faculties takes place. It is mainly this that accounts for the disagreeable feeling caused by work and consequently makes rest enjoyable. When, therefore, the work is over and the remuneration is received, it is naturally utilised for the purpose of making good the depreciation. Or, at any rate, if that is not the actual intention, the fact remains that the expenditure of the sum received goes at least partly to make good the depreciation. When the money is wisely spent such a thing always happens. And every wise man utilises the remuneration to repair the damage done to his body and mind by the work. When the remuneration is in excess of what is required for so doing, the balance is spent for other purposes. In such cases a labourer would find himself in a better position after labour than he was before it.

We should therefore note that the sum received at the close of work is always available for the rational purpose of making good the damage done to body and mind. Would not this consideration warrant our calling the amount actually received the *depreciation fund*? And since in most cases the remuneration is in excess of what is needed to repair the damage, it is obvious that the depreciation fund contains an element of rent. The remuneration for the marginal hour of work (if contract is by the hour) will perhaps not contain any rent. That however is not quite certain. For all that can be maintained is that the discounted expected utility of the remuneration for an hour is just equal to the discounted expected disutility of the last hour's work. If the rate of discount is the same in both the cases and the expectations are correct, there is perhaps ample justification for supposing that there is no rent element in the remuneration received for the last hour's work.

If this view of wages is taken, what relationship can we establish between marginal productivity of labour and wages? We have seen that according to the traditional way of expressing the relationship, wages are equal to marginal product of labour in the case of perfect competition. According to Taussig and others they are equal to the discounted marginal product of labour. According to us, it would follow, that wages are equal to the discounted payment made to a labourer. In other words, there is double discounting here: in the first place, the *entrepreneur* discounts the marginal product at the prevailing rate of interest and pays the labourer accordingly and, in the second place, the labourer discounts this figure at the rate of his time-preference. In a way then, wages turn out to be a discounted figure.

If this way of looking at wages be correct, they do not equal the marginal product of labour even when a labourer is paid after the produce is sold. For, though in that case wages would equal the marginal product of labour according to Taussig's definition, they would still need to be discounted at the rate of time-preference according to our definition.

If the labourer was paid for his work by the day he would receive a sum of Rs. 5 a day. For, as we have seen, that is what induces him to work. He is, however, actually paid at the rate of Rs. 5.20 nP. a day at the end of a month. This is worth to him only Rs. 5 at the beginning of the month. He would therefore accept a

daily wage of Rs. 5 if he were to make a fresh contract with the employer every day. But the twenty nP. extra that he gets is in a way the compensation for his waiting for a month to get the sum of Rs. 5. It is, therefore, of the nature of interest. He gets Rs. 5, he lends it back to the employer and receives Rs. 5.20 nP. at the end of the month. It is obvious, therefore, that the sum of Rs. 5.20 nP. can be regarded as wages plus interest. Wages, therefore, do not equal the amount that is actually paid to a labourer by the employer, no matter whether such a payment is made before or after the produce is sold.

Does it follow then that, in view of this meaning of the term wage, the theory of wages couched in terms of marginal productivity of labour needs to be modified? Is it, in every sense of the word *marginal productivity,* wrong to say that wages equal the marginal product of labour? The traditional theory equating wages to marginal product of labour possesses much elegance; to overthrow it lock, stock and barrel seems too drastic a step to take.

Let us suppose, for the sake of simplicity, that an employer pays a labourer when the produce is actually sold and the value is realised. Or, what comes to the same thing, let us suppose that a labourer's output assumes saleable form and is actually sold for a price at the end of the month. In that case what a labourer receives at the end of the month equals his marginal product. But his wage as defined by us does not equal that amount. This means, however, that what the labourer gets does not equal the marginal prductivity of his labour to the employer. Does it also imply that it does not equal the marginal productivity of his labour to himself? What the labourer produces for himself is the income that he gets. And the income that he gets at the end of the month is what the employer pays him. His income, then, at the end of the month equals his productivity. His present income equals his present productivity. In fact the words income or wage and productivity are interchangeable for the labourer. Instead of saying that his wage *equals* his productivity one should say his wage *is* his productivity. And his income or his wage or his productivity is greater than his cost. If he is paid by the hour and he contracts to work five hours a day when paid at the rate of so many rupees an hour, we can say that the wage equals the cost of the fifth hour's labour. Hence, looked at from this point of view his wage contains an element of rent. In the course of this argument it is assumed that the man under con-

sideration supplies labour only. In reality, however, he supplies the other essential factors of production as well. For, nobody can produce any thing without the use of all the essential factors of production. And since the labourer *produced* his wage he must have used or supplied the other services of an organiser, an *entrepreneur* and a capitalist also. It would not be quite correct therefore to call his income wage. It is a mixture of wage, interest, salary and profit. When there are no risks there are no profits and so his income is composed only of wages, salary and interest. But even then, whatever name we give to his income, there is an excess of income over cost. This excess accounts for his preference for the work that he contracts to do over any other work. It is his rent.

What then is his pure wage? Pure wage should consist of what he earns by his labour (excluding organisation and waiting) less the rent element of this earning. To find out this wage we have, therefore, to calculate the cost of supplying labour. And the cost of labour consists of the satisfaction that can be obtained from the non-labour use of time. That is, if the man labours for five hours, the cost of this work equals the satisfaction of enjoying rest for five hours. It is the total satisfaction when he works for five hours minus the total satisfaction when he takes rest for these five hours instead of working, that gives the measure of the rent element.

We come to the queer conclusion then that wages consist of or rather equal the cost of labour. It is thus that part of the discounted expected income that is equal in amount to the cost of supplying labour. The rest of the discounted expected income is of the nature of rent. However, it is worth remembering that if we thus calculate wages, interest and salary—assuming that there are no risks—we would get three figures of rent elements. A certain part of the total income would consist of rent and the rest would make up wages, interest and salary. But if we take labour, organisation and waiting together and calculate their combined cost we will perhaps find it to be zero. For, if a man does not perform any of these services, that is, if he does not do any physical or mental work nor wait for any period of time, he would get nothing instead. Rest is enjoyable because there is some labour done. Mental rest is likewise enjoyed when the mind is tired of organising work. In the absence of any work rest would have no value at all. That is, the alternative to all bodily and mental work, including waiting, has no

utility. The total cost of all these exertions including waiting is, therefore, zero. The whole income then takes the form of rent. Hence, we realise that the true significance of rent is to be found in those cases only in which the rent element associated with any one particular type of income is singled out for consideration.

We have said before that what the so-called labourer gets from the employer is the result of labour, organisation and waiting. That is true. But the discounted expected utility of this income is not the result of waiting. The process of discounting eliminates that part of income that would otherwise have been called interest. There is no waiting in the case of income immediately received; and the discounted expected utility of what is received after a month is obtained immediately. And since it is this immediate income that is called wages, it is clear that it is free from the element of interest In the absence of risks, this discounted figure is composed of wages and salary only.

A word may now be said about interest. The labourer, or to use a more innocent word, the employee, gets his money income or his income in kind from his employer at the end of each month. He has, therefore, to wait, though not for the derived utility obtained through the reflection backwards of future gains, at any rate for what he receives in the more tangible form from the employer. Is there then no waiting involved in an act of production? And, if that is so, is there no interest earned by any person undertaking an act of production? It appears from the foregoing discussion that since for every type of work psychic income is immediately received, there is no room left for interest as a species of remuneration. That deduction is, however, not quite warranted. The very process of discounting and the very necessity of it is an indication that an act of production involves an act of waiting. Such an act does not necessarily reveal itself by the total absence of satisfaction or utility for a period of time. Rather, there is no waiting only when there is no loss of utility sustained by the person concerned when future utility is reflected backward.

Suppose, for instance, that a man lends a sum of Rs. 100 to another man for a period of one year. The borrower contracts to pay back Rs. 110 on the expiry of that period. If Rs. 100 after a year are worth to the lender Rs. 95 now, then he would need to be paid after a year the sum of about Rs. 105.26. For that sum is

worth to him now only Rs. 100. The promise of receiving or the expectation of getting that amount after a year just induces him to lend Rs. 100. His sacrifice of waiting is then equal to about 5% in the sense that 5% of the future income is lost in the process of reflection from the future to the present. For that purpose therefore, to induce him to lend, the lender needs to be paid Rs. 105.26 at the end of a year. His interest and his cost of waiting are equal to Rs. 5 immediately. There is sacrifice or cost in the sense that Rs. 100 paid back after a year are worth less than Rs. 100 in his calculation. This sacrifice is made good by the promise of an extra amount of Rs. 5.26 after a year, that is, by the discounted expected utility worth Rs. 5 now. Interest, like wages, is just equal to cost; all incomes in excess of cost constitute rent.

Interest is then an income (psychic income) that is earned the moment a man lends his consumable income. Such a lending, as has been discussed elsewhere, need not involve two individuals. For, a man can lend to himself as well. At any rate what needs to be emphasised here is that interest is not a delayed income. What is, then, the sum of Rs. 5.6 that the lender receives over and above the Rs. 100 lent? As a matter of fact, the full amount of Rs. 105.6 is to be regarded as an addition to his possession. Out of these Rs. 100 go to make good the loss sustained by lending the amount. They may, therefore, be called, as in the previous case, a kind of depreciation fund. The remaining sum of Rs. 5.6 would appear to be a surplus. But it is not quite a surplus. The disagreeable feeling of waiting has been compensated by the interest as defined above. But the going without the consumption of Rs. 100 for a period of one year can be imagined to cause some depreciation of the position of the lender. Had he spent the amount instead of lending it he would have been better off. The process of lending and consequently the fact of going without its use causes, therefore, by comparison, some loss. The sum of Rs. 5.6 goes to make good such a loss. If the lender finds himself, at the end of the year, in possession of a greater stock of assets (both internal and external to himself) than what he had at the beginning, we can say that the sum of Rs. 5.6 has more than made good the depreciation. The addition to the assets in such a case can be regarded as land, or an addition to his land-holding.

We have so to regard this excess since capital must be taken to maintain itself. It cannot be spoken of as an increment to capi-

tal. This raises the question whether the assets the man had at the starting point (the point at which the enquiry begins) should be regarded as capital or as partly made up of land also. As explained elsewhere, a thing is land or has land aspect to the extent to which its use yields income in excess of cost. Thus the assets at the start can be both capital and land. If they yield income in excess of cost they have a land aspect and we can adopt the convenient way of measuring the land aspect by calculating the percentage of income that is in excess of cost. In short then, the sum of Rs. 5.6 received at the end of the year may be partly or wholly an addition to the land-holding of the lender.

In the normal course of the life of a man the assets of a person go on increasing, at least when measured in physical quantities, unless due to imperfect foresight mistakes are committed in accounting. And these additions to land-holding are the consequences of what is in ordinary language called work.

A word may here be said about the distinction between rent and land. Rent is an income; land is not. Rent is income in the sense that it is obtained along with wages or interest, immediately and continuously. Land is not of this nature. It may take the form of money or other things; but it is neither immediate nor continuous. One gets land, that is, one's holding of land is increased *at the end* of a period. Rent is of the nature of a flow; land is of the nature of a fund. At the beginning of the period under consideration there is a stock of capital and land. That stock of capital, by virtue of the fact that it is capital, maintains itself intact. The stock of capital yields interest; land yields rent. Or the assets yield rent in the proportion in which they are land. At the end of the period under consideration the stock of capital remains what it was; the stock of land changes, or may change. At the beginning of the next period the distribution of the assets between capital and land may, and often does, change. For, to what extent an asset is land depends on the extent to which the income yielded by it is in excess of cost. And this depends on circumstances. As circumstances change the land element of the assets, therefore, changes.

What we have said here about wages does not amount to a theory of wages as such. We have said something about the concept of wage and in that light examined the prevailing notions regarding the wage of labour. We have observed that wage is more

or less continuously earned and that what is in practice called wage is utilised to make good the depreciation of the body of the labourer. But we have not shown *how* wage of any particular type of labour is determined; we have simply pointed out what it is that should be called wage when equilibrium is reached and the so-called wage has already been determined.

Nor is it our purpose to give any theory of wages in this chapter. Labour is like a commodity and has, like it, its demand and supply. And these—demand and supply—must determine its price that we call wages. But, and it has been emphasised by Marshall and Hicks and others, labour differs in certain respects from other commodities that are bought and sold in the market and have consequently their demand and supply. Labour cannot be separated from the supplier of labour in the sense that the labourer has to be present in person where his labour is sold. The man and his physical exertion go together and that makes a difference to the supply side of labour. And, as Hicks has argued, there is a relationship between the labourers and the employers which is not to be found in the case of a material commodity. As a result, wage-rates are more uniform both between workers and over time, than they would be if the labour market worked like a commodity market.

If there is a difference between the theory that determines wages and the theory that determines the price of commodities it cannot be, and is not, due to the fact that in one case the supply and demand forces account for the remuneration or price and in the other not. The supply and demand theory is universally applicable to all cases of determination of value, and the difference where it exists can be found to exist in the degree in which the forces of competition on the supply and demand side have a free play. The peculiarities of labour market affect wage-determination through their effects on the strength of the competitive element present in the market. A study of the theory of wages must be made with the conviction that any difference between it and the theory of commodities must be caused by the difference in the element of competition on the supply and/or demand side.

CHAPTER XXVI

RENT IN RELATION TO COST AND PRICE

Ever since Ricardo defined rent of land as the difference between the produce of a given plot of land and that of the marginal land cultivated in precisely the same manner, it has been maintained that rent is not an element of cost. And since it is not a constituent of cost it is also not a determinant of price. Price, the Ricardians say, is determined by the cost of production of the marginal land which pays no rent. Price is, therefore, determined independently of rent. This is the pet argument of the Ricardian economists. And even when the marginal, no-rent land does not exist, as in the case of old countries, it does not lose its force. For, as the Ricardians say, even if there is no marginal land there is the marginal dose. In place of the extensive margin we can substitute the intensive margin and the argument would stand.

Thus, rent determines neither cost nor price. Some economists have, however, argued that though from the point of view of society rent is a surplus above cost, from the point of view of individuals it is cost itself. For, an individual producer reckons as his cost not only wages, interest, salaries, and normal profit[1] but also the rent that he pays to the landlord for the use of his land. This argument is correct only in the sense that somebody else's rent is his cost. But a person's own rent is never part of his own cost. His cost of producing a commodity does not contain his rent (from the production and sale of that commodity) as one of its elements. His cost expressed in money consists of the payment made to all the hired factors of production and his sacrifices computed in terms of money. In other words, his cost of production consists of wages, salaries, interest and profit whether paid to hired factors or appropriated by himself, together with rent paid to the landlord. But the payment made to the landlord is not, in the economic sense of the word, rent. For, the so-called landlord does not supply what in the economic sense is spoken of as land. He supplies, in reality, capital

1. Here the term *normal profit* is used to denote the income of the *entrepreneur* as an uncertainty-bearer and *surplus profit* to denote the unexpected excess of income over cost. As has been pointed out in the Chapter on profit it constitutes accidental appreciation of land.

which has a land element in it. And, such land element is to be found in other factors too.

Since land does not exist as an independent factor of production rent also does not exist as an independent income. It is, therefore, sufficient to say that cost is composed of wages, salaries, interest and profit. The income of each agent of production consists partly of rent and partly of one or more of the four categories just mentioned. A labourer, or to be more correct one who goes by that name, earns income that can be broken up into two parts; that which is equal in value to the sacrifices that he has to make as labourer is called wages, while the surplus above it is called rent. If the so-called labourer is also an organiser (he generally is an organiser, an *entrepreneur* and a capitalist besides) his income has a third part equal in value to the sacrifices he has to make as an organiser. And what is true of the so-called labourer is true also of all agents of production. The cost of producing a commodity, therefore, excludes that part of the income of the producer which is (his) rent in the economic sense of the word, though it includes what constitutes the rent element in the incomes of the hired factors. That is so because the incomes of the hired factors is the sacrifice of the hiring factor.

While it is true that the cost of production incurred by a producer consists of the sacrifices made by him—that is, of all that he pays to factors and all other sacrifices he makes himself—it is not quite correct to say that cost of production is composed of wages, salaries, interest and profit. For, as we have just seen, the cost of production is composed of wages, interest, profit and the rents earned by the hired factors. However, it is clear that the rent of the producer is wholly outside his cost. The view, therefore, that from the point of view of an individual rent is a part of cost is incorrect.

Since rent is the surplus above cost it is obvious that rent arises only when income is greater than cost. In terms of price we say that rent arises when the price of a commodity is higher than its average cost of production. When the selling price is just equal to average cost there is no rent. And this equality of price and average cost is ordinarily regarded as an indication of absence of surplus profit. Thus the existence of surplus profit appears as the condition for the emergence of rent, and in static states in which surplus profits are eliminated, there would appear to be no room

left for rent. It is clear from this consideration that either surplus profit and rent are the same (since both are due to the price being higher than average cost) or, if they are not the same, the difference between price and average cost is not a sufficient condition for profit. Since rent and surplus profit are not one and the same thing, as can be seen from the fact that in a static state profit cannot be earned though each seller may secure considerable rent, it follows that excess of price over average cost is no indication of surplus profit. That is, in other words, while all surplus profits are due to the difference between price and average cost, all such differences do not indicate the existence of surplus profit. For, as has been discussed elsewhere,[1] the difference between price and average cost may either be an expected difference or an unexpected one. It may, in other words, be due either to the possibility of taking advantage of a special quality or to errors in forecasting the future. In the former case, the surplus that accrues is called rent; in the latter, it is called surplus profit. While, then, surplus profit is due to imperfection of foresight, rent is due to imperfection of competition. Let us examine this point in greater detail.

It is a fundamental fact in the theory of value that the normal (long-period equilibrium) price of a commodity in case of perfect competition just equals the average cost of production. In statements such as this the term cost of production is used in a particular sense. For, as we have seen, if the commodity sells for its average cost there is no rent left for the producer. But every producer earns rent *as a producer* in the sense that as a productive agent he earns more than what he would have otherwise been able to earn. Since a producer earns rent the price of the commodity he produces cannot be equal to average cost. But if the price is not equal to cost even in the case of long-period equilibrium, how is it after all determined?

The fact, however, is that a producer gets as his income, after paying the hired factors, a sum that exceeds his cost as a producer; and this surplus of income over cost is his rent. But his income does not, in competition, exceed his cost as the producer of *the particular commodity* he produces. For, his cost as the producer of that particular commodity consists of what he could have earned as a producer of another commodity. Since, in competition he would

1. See Chapter XXIV.

earn the same amount in both the cases, his income is equal to his cost. Hence, as the producer of a particular commodity, he earns no rent. His income is just equal to cost and the price of the commodity is just equal to the average cost of production. It must, therefore, be clearly noted that the equality of price and average cost that the forces of competition bring about does not imply that the producer of a commodity does not earn rent in his capacity as a productive agent. It does however imply that rent from the production of a particular commodity disappears in perfect competitions in regard to prices are not fully realised, or to both these fac-

Let us study, therefore, the various categories of rent and see which of them is likely to disappear in the case of perfect competition.

Since rent is the surplus of income over cost or, what comes to the same thing, the surplus of income over alternative income or earning, let us see in what different ways we can conceive of alternative earnings.

In the first place, a producer's alternative earning consists of what he would be able to earn by producing the same commodity in another place. In the second place, his alternative earning consists of what he would be able to earn by producing a different commodity. Then, in the third place, what he would earn by acting as a hired factor (such as a labourer, an organiser, etc.) constitutes his alternative earning in another sense. In the fourth place, his alternative earning consists of what he would earn by not engaging himself in the task of production as any one of the various factors of production. This last type of alternative earning is directly obtained in terms of psychic income.

We can similarly classify the alternative earnings of any other factor of production. Since then there are four main types of alternative earnings, there are four kinds of surplus of income over cost that can be considered as rent. These different types of rent may respectively be called the rent of the producer of a commodity at a particular place, the rent of the producer of a particular commodity, the rent of a particular factor of production and, lastly, the rent of a producer or a factor of production.

When there is perfect competition between the sellers of a commodity at different places it is conceivable that the alternative earning of a producer would be the same. Rent of the first kind

would therefore disappear in competition. Likewise, when there is perfect competition between the producers of different commodities (that is, when resources could move freely from one industry to another) the rent of the second kind would disappear also. And in the case of competition between different factors of production (that is, when people could freely choose the type of productive work they would do) the third type of rent disappears. It is difficult, however, to conceive of such competition between work and leisure. It is not possible for one's income from work to be equal to one's income from leisure that could be substituted for work.

Hence in the case of competition rent of all the kinds, except the last, would disappear. And even this last type of rent would disappear at the margin. That is, the income from the last time-unit of work would be equal to that from the last time-unit of leisure when a man is free to choose the number of hours he would prefer to work. When we understand perfect competition to imply also this freedom to work or rest as long as one liked (and in a sense such an implication is natural) rent of every kind would disappear but *only* at the margin. And, therefore, in perfect competition every person would earn rent in each of the four capacities mentioned above. If somehow each unit of work or leisure could compete with every other unit, rent would altogether disappear. Since rent represents the benefit that a person derives from doing a particular type of work instead of any other or from work instead of leisure, it follows that in the last type of situation in which each unit of a person could compete with every other, there would be no special advantage in doing one particular work nor any in abstaining from work. And so the exercise of choice by an individual would in such a case become unnecessary. Since that would be a violence of an extreme type against our fundamental conception of economic (human!) behaviour, we should not consider, even for theoretical purposes, the situation in which the various units of a person compete with one another. The conclusion then emerges that in perfect competition rent cannot be eliminated altogether.

We have considered the case in which price is equal to average cost and when such an equality is due to perfect competition in the sense described above, rent does not disappear altogether. Let us now study the case in which price is not equal to average cost.

In a stationary state that has existed for any length of time the inequality of price and average cost can be accounted for by

the presence of monopoly element on the supply side. In the case of monopoly, as we know, the price of a commodity does not equal the average cost of production; and the position of equilibrium is determined by the equality of marginal cost with marginal revenue. Thus, there is a surplus of income of the producer over the cost of production of the particular commodity he is producing. Rent, then, in each of the four senses considered above must exist in such a case. The extent to which the earning of the producer consists of rent would depend naturally on the degree of monopoly element in the situation. And since in a stationary state the actual price is equal to the expected, the entire surplus of income over cost is rent, no part of it being of the nature of surplus profit.

In a dynamic economy things are different. There the difference between the price and average cost of production may be due to the existence of monopoly element or to the fact that the expectations in regard to prices are not fully realised, or to both these factors. In so far as the excess of price is due to incorrect expectations it is called surplus profit. When competition is perfect in a dynamic state the entire surplus of income over cost is surplus profit. But in a dynamic economy it is extremely difficult, if not impossible, for the forces of perfect competition to operate freely and the excess of income over cost therefore rarely, if at all, consists entirely of surplus profit. We can, therefore, say that in a dynamic economy when the income is in excess of cost, that part of the excess which was unexpected is surplus profit while the rest is rent.

The relation between rent and price may now be considered more fully. Arithmetically the relation can be thus expressed: Price minus cost equals rent, price minus rent equals cost; and rent plus cost equals price. But in these arithmetical equations there is no indication of any casual relationship between rent, price and cost. For such a relationship we have to look elsewhere. Taking the first equation we find that if price increases, cost remaining the same, the rent also increases. Again, when cost decreases, the price remaining the same, rent again decreases. It is obvious that we are considering cases in which rent actually exists. In other words, we are considering the situation in which there is either imperfect competition or perfect competition with freedom on the part of individuals to work for as many hours as they like in any occupation. In either of these situations rent will exist. And when it does exist, it can increase when the price rises relatively to cost or

cost decreases relatively to price. It would appear from this consideration that price and cost are the causes of rent. When, however, we take the third equation we find that if rent increases or the cost increases the price rises also. From this one might conclude that rent and cost determine price. Whether rent is one of the factors that determine price or price is a factor that determines rent cannot be ascertained from the above arithmetical relationships. For, all depends on the fact whether price, rent or cost can change independently of the other two. Let us, therefore, go a step backward and see how a change in these three quantities is brought about.

The price of a commodity is determined by the forces of supply and demand. The cost of production of a commodity is determined by the forces of supply and demand for the factors that are used in its production. Thus the supply and demand of the commodity and the factors of production determine the price and cost. And when these are determined the rent is also determined. Since we cannot argue that supply and demand determine rent it follows that rent is not determined independently of price and cost. This, however, does not prove that price and cost together determine rent. For, all that the above considerations point to is that rent is not determined without price and cost being also determined at the same time. There is no indication that price and cost are determined before rent is determined. In reality price, cost and rent are simultaneously determined[1]. But the logical sequence is clear enough. Rent is logically defined as the difference between price and cost. Price cannot logically be defined as the sum of cost and rent. That is merely an arithmetical deduction from the logical definition of rent. When we say that price minus cost is rent we are not, as a matter of fact, defining the concept of rent; we are merely indicating the quantitative relationship between the three magnitudes.

The sequence of thought then is from the supply and demand of a commodity and its factors to price and cost, and from price and cost to rent.

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1. Davenport says, "The truth is, as we shall see, and as in other connections we have already seen, that the cause of the price is not ultimately with the rent, nor is the cause of the rent ultimately with the price. The scarcity of product explains—on the cost side—the price of the product". *Economics of Enterprise*, p. 187.

Rent is income minus cost. Let us mathematically express this surplus. For the sake of simplicity we shall assume that demand and supply curves are linear (straight lines). For the supply curve put A.C.$=AX+C$ for the demand curve, A.R.$=-A'X+C'$. Then, T.C.$+AX^2+CX$ and M.C.$=2AX+C$. Also, TR$-A'X^2+C'X$ and M.R.$=-2A'X+C'$. (A.C. stands for average cost, T.C. for total cost and M.C. for marginal cost. Likewise, A.R. stands for average revenue price, T.R. for total revenue and M.R. for marginal revenue).

To maximise net income the producer (a partial monopolist) equater M.R. and M.C. and gets,

$$2Ax+c=-2A'x+c' \text{ point which } c=\frac{c'-c}{2(A+A')}$$

Net income or rent is given by $x(-A'x+c'-Ax-c)$. Substituting the above value of x we get,

$$\text{Rent}=\tfrac{1}{4}\,\frac{(c'-c)^2}{(A+A')}$$

Where the supply and demand curves are inclined at an angle of 45° to the axes $A=A'=1$. If the demand and supply curves meet the axes of Y at heights 10 and 2 respectively, rent then becomes 8.

It will be seen from the expression for rent that it is greater, greater is $c'-a$, that is, the difference between the highest price and lowest average cost. Also, rent is greater, smaller are the values of A and A', that is, the gentler the slopes of the demand and supply curves (*i.e.*, when cost and utility of the output vary slowly).

CHAPTER XXVII

CO-ORDINATION OF THE THEORIES OF INTEREST

Of all the theories in Economics that of interest is perhaps the most important both from theoretical and practical points of view. In theory its importance can be judged from the innumerable explanations of the phenomenon of interest offered to us by all writers from Adam Smith to Keynes. Its practical importance hardly needs mention to-day. Problems of Public Economics such as international trade, public finance, the control of trade cycles and economic planning have to depend for their solution on the correct understanding of the nature and behaviour of interest in the modern progressive world. An attempt at the relationalisation of the theories of interest, as has been made in this chapter, should therefore need no apology.

All writers on Political Economy from the time of Adam Smith seem to have placed one guiding question before them, namely, what is interest due to, in the light of the answer to which they have developed their own theories of interest. Obviously, of course, this simple question admits of some such answer as that interest is due to the productivity of capital (demand side) or to time-preference (supply side). Sometimes, again, the question seems to have been posed in a slightly different way and it has been asked, "What is interest a payment for?" And the answers to this question, such as that it is a payment for waiting, for abstinence[1] or for the loan of money, have suggested a series of apparently divergent explanations of the phenomenon of interest.

All the doctrines of interest that spring from an attempt to answer such questions in a direct and categorical manner must of necessity be incomplete. The best approach to the theory of interest

1. Properly understood waiting and abstinence mean the same thing. It is strange, therefore, that economists should have quarrelled on this point. Marshall prefers the word waiting while Davenport considers the word abstinence to be the better of the two. For him, however, neither waiting nor abstinence is a satisfactory word. But Davenport in his zeal for originality has unnecessarily created confusion here. To wait means, as is shown later in the text, not to consume, and not to consume means to abstain.

must be one that starts from the fundamental conception of interest. And linked as it naturally is to that of capital no explanation of interest should be considered as complete that does not satisfy the logical definition of the term capital. Whether the rate of interest can be zero or negative, or whether productivity is an essential condition for the existence of a positive rate of interest[1], are some of the questions which would be extremely easy to answer (but which have led to much confused thinking) were one to keep before one's mind a clear conception of capital and remember that interest is what such capital earns.

Interest must be defined as the earning of capital; and the earning of capital, like that of any other factor, is determined by its marginal productivity. This simple statement contains answers to two questions: What is interest and how is its rate determined? The marginal productivity of capital depends on its supply, under given conditions of demand or, which is the same thing, given technique of production. Let us consider a third question. Why is there interest? This is tantamount to asking why is interest a positive quantity greater than zero? The answer of course is that it is a positive quantity greater than zero because marginal productivity is greater than zero and that is so because the supply of capital is scarce. Scarcity of capital, like that of any other factor, is to be understood in the sense of its productivity. It is regarded as a scarce factor of production when it is not possible to reduce its quantity in use without decreasing the amount that it produces in co-operation with other factors[2]. In other words, it is scarce so long as it has some (positive) marginal productivity. It

1. There are many who still believe that the rate of interest can be zero or even negative. In 1886 Foxwell in a paper on "Some Social Aspects of Banking" explained the possibility of a negative rate of interest. Marshall and Fisher also identify themselves with such a view. Even Keynes's explanation of the theory of interest would admit of such a view. It should be noted, however, that interest, being the earning of capital—a factor of production—can never be negative, just as wages can never be negative. What could, however, be negative is the payment from a person who borrows to another who lends. But such a payment is hardly ever pure interest.

2. In other words, a factor is scarce when its marginal utility (in our example, productivity) is greater than zero. In modern phraseology, we could say that as far as considerations of production go, a factor is not scarce when its elasticity of substitution is zero. Mrs. Robinson and J. R. Hicks were the first to speak of elasticity of substitution.

follows from this that the only logically straightforward answer is that interest is due to, or exists because of, the productivity of capital. This statement might seem to lay emphasis on the demand or productivity side of capital neglecting to take account of the forces on the side of supply. However, it does not amount merely to the so-called marginal productivity theory of capital. For, in this notion of marginal productivity is implicit that of the supply of capital. The marginal productivity of capital depends on the amount of capital in use, and the amount in use is determined not only by the considerations of productivity but also by those of the ease with which the supply can be increased. So, behind the fact of marginal productivity the forces of supply and demand play equally important parts.

Coming now to our original proposition, namely, that interest is due to the marginal productivity of capital being greater than zero, we may link it with another on the side of supply and say that interest is due to the scarcity of capital in the sense that it requires some effort to produce it. Had the production or creation of capital required no effort, the use of capital for purposes of production would have been carried to an extent where its marginal productivity had dwindled to zero. Thus, we can explain the phenomenon of interest in another way by saying that interest is due to the effort or abstinence that creation of capital requires. This effort or abstinence is, however, due to the fact of waiting, for in Economics to create capital means simply to wait—a fact that will be made clear presently.

Hence, the phenomenon of interest can be looked at from three points of view. From one point of view, interest appears as due to and determined by the marginal productivity of capital. From another point of view it appears to be due to and consequently determined by the abstinence or effort that the creation of capital necessitates. While, from the third point of view it appears to be a price of waiting. These, as has already been observed, are not three different and antagonistic explanations of the phenomenon of interest and do not form bases of divergent theories of interest.

We can now add to these three a fourth explanation of interest, namely, that interest is the tangible expression of time-preference. This follows directly from one of the above explanations. Waiting involves abstinence only because one does not like to wait, a present

enjoyment being always preferred to an equal enjoyment in the future[1]. But the discussion of this point may be put off till we have examined the concept capital itself.

Before passing on to the discussion of the meaning of capital let us summarise the foregoing explanations of interest. Interest is the price for the use of capital. (It is due to the marginal productivity of capital being greater than zero. This is derived from the user's or borrower's conception of capital.) In the second place, interest is the price of waiting or abstinence. (It is due to the fact that the creation of the marginal unit of capital requires effort or abstinence. This is the conception of interest from the creator's or lender's point of view.) In the third place, interest is the expression of time-preference. (It is due to the fact that present enjoyment is preferred to an equal enjoyment in the future. This is also the lender's or creator's conception of interest.)

If now interest is at once the price for the use of capital and the price of waiting or the reward of abstinence, it is clear that in a competitive market for capital interest would be settled at the point at which the marginal productivity of capital and the marginal disutility of waiting or marginal abstinence become equal when both are expressed in money or any other common medium of measurement. Consistently with all these explanations of capital we can define interest as we did in the beginning of this chapter, that is, as the earning of capital. This is a fundamental definition of capital and is applicable alike to cases in which capital is used by the creator himself and those in which it is used by the borrower. The earning of capital is determined (in a competitive system) by the productivity of the last unit of capital in use; the amount of capital in use is determined (under given conditions) by the available supply; the supply available depends on the cost of creating capital, *i.e.*, on the cost of waiting or abstinence; and finally, the

1. This is a debatable point. Some of the modern economists think that for a perfectly rational man present and future enjoyments are of equal significance (certainty being assumed). Though agreeing in substance with these economists, I would prefer still to maintain that it is the essence of human psychology to prefer the present to the future.

Often, of course, a man is found to postpone an enjoyment, preferring to have it in the future rather than at once. He does so because he obtains thereby the pleasure that consists in hoping and expecting. But this only goes to support the contention that the ultimate aim is to maximise *present enjoyment*.

cost of waiting or abstinence is determined by the preference for the present over future enjoyment. In the position of equilibrium, the marginal productivity of capital (on the demand side) equals the marginal cost of waiting or the preference at the margin, of the present over future enjoyment.

It has been felt necessary to analyse the concept of capital because interest has been defined as the (marginal) cost of creating capital, and the creation of capital has been explained as consisting in waiting. Thus interest, from the supply side, has been understood as a compensation for the cost of waiting. The concept of capital is thus linked to that of waiting. It is necessary, therefore, to explain how capital is created by a process of waiting[1].

Capital is a factor of production and, therefore, it consists of material goods that are used in an act of indirect satisfaction of wants. A commodity that is used in the direct satisfaction of a want is thus not capital. There are two broad uses of every commodity. We can use a thing to satisfy a want directly or to satisfy it indirectly. In the first case, we are said to consume it; in the second, to use it as capital. Thus capital is that which is not directly or immediately consumed. In other words, the use of capital involves the forgoing of immediate consumption. A thing that is capable of being consumed at once thus becomes capital when it is used as a means to some remote satisfaction. Hence, we create capital by undertaking to postpone consumption, *i.e.*, by undertaking to wait. A thing that is by nature capable of being used only as capital is capital by existence and cannot be considered as being created. This is true more or less of all capital goods. They are by nature incapable of being used as commodities of consumption. We can then be said to create capital only when we decide to use as capital what is capable of being used in the direct satisfaction of wants, and when we so decide we are said to make a decision to wait. Creation of capital is thus tantamount to waiting. A thing that is capable of two such alternative uses is the command over consumption goods, general purchasing power or money. Thus, for

1. Certain differences between conflicting theories of interest can be traced to the different senses in which the term capital is used. It is of paramount importance, therefore, to define capital as widely as is consistent with the true economic meaning of that term. It seems to me that there is no simpler and better definition of capital than that which identifies it with anything that is saved.

purposes of the study of interest, capital means money or any general command over consumption goods. It is, therefore, clear that the only way to create capital is to wait or to abstain from immediate enjoyment. It has already been said that a thing that exists as capital for an individual at any particular time is incapable of rendering direct and immediate satisfaction and, therefore, the income derived from it cannot aptly be called the price of waiting. It is for this reason that modern economists prefer to designate such incomes from all capital goods quasi-rent.

Interest, then, in the modern world is purely a monetary phenomenon. In the absence of money or, what comes to the same thing, in the absence of any commodity that represents a general command over consumption goods, the conception of interest would be linked to labour more appropriately than to any other factor. For, in the absence of money things would by nature be fit either for use as consumption goods or for use as capital goods; and in such cases the only thing that would admit of alternative uses would be labour (all human faculties included). It would, for example, be open to an individual, then, to use his labour power for the enjoyment of consumption goods or capital goods[1]. But this is probably beside our point.

At this stage now interest can be defined as the earning of capital and capital is the thing that is not used in the direct satisfaction of wants. Further, interest equals the marginal productivity of capital and the marginal productivity depends on the amount of capital in use. This amount depends on the supply of capital and the supply of capital is directly regulated by the cost of supplying or creating it. Since capital is that which is not directly consumed but which is the result of postponed enjoyment, the cost of capital creation consists in the cost of waiting. Interest, then, is determined by the amount of capital in use which, on the one hand, is regulated by marginal productivity and, on the other, by the marginal cost of waiting. As marginal productivity diminishes and

1. Prof. Adarkar should agree with me here, for he says in his book *The Theory of Monetary Policy* that a community can save but only its productive resources.

Armstrong is also of the same view. For he says that in a state of equilibrium there would be no interest, all income being regarded as wages of labour. Probably Armstrong overstates the case.

marginal cost remains constant or increases, with use, it is possible for us to reach a point at which these become equal. So long as this point of equilibrium is not reached interest continues as an unstable income.

These propositions are universally true and their validity does not depend necessarily on lending and borrowing transactions. When a man uses his capital himself or, to express it more correctly, when a man decides to use his resources as capital rather than as consumption goods, he combines in himself, in a sense, the agencies of the lender and the borrower. He is a lender inasmuch as he forgoes temporarily the enjoyment of direct satisfaction and is a borrower inasmuch as he makes use of the capital goods.[1] (As a matter of fact, however, he is only a lender—for he has forgone the enjoyment of direct satisfaction. The borrower should strictly mean the borrower of direct satisfaction. We have such borrowers in the case of loans for consumption purposes.)

Let us now make the concept of time-preference a little more precise. The cost of waiting—the expression that has been repeatedly used above—implies the idea of time-preference. Waiting is a cost item only because it is disagreeable. And it is disagreeable because man is so constituted mentally that he prefers present to future enjoyment of the same magnitude. It is necessary to note carefully that what a man prefers is not necessarily present goods to future goods, but present enjoyment to future enjoyment. A final psychic income of a given intensity or magnitude has greater attractiveness in the present than in a future period.[2] It is the damage that enjoyment suffers through its journey over time, as it were, that is the true cost of waiting. Man's mind may fully well

1. Most of the theories of interest are the theories of lending and borrowing of money. When Keynes, for instance, says that interest is the price not of saving but of not hoarding he is clearly but unwisely identifying interest with the earning of only that part of capital which is lent or borrowed. The difficulty cannot be got over by calling the income of capital that is not lent quasi-rent. For, even quasi-rent is interest referred to an object instead of its value.

2. Professor Fisher does not always make a clear distinction between the preference for present goods and the preference for present enjoyment. He speaks, for instance, of negative preference or impatience saying that when future income is relatively scarce, preference is negative. For a correct theory of interest it is necessary always to understand preference in the sense of preference for enjoyment rather than for goods.

measure the intensity of a distant enjoyment but that measure is invariably discounted and makes a feebler appeal than an equal measure of present or immediate enjoyment. Man prefers, in other words, the nearer to the farther. His preference for one over the other is a mere time-preference and this time-preference makes waiting a disagreeable job—a cost. In an act of saving or waiting, therefore, the future enjoyment in itself must be greater by at least the rate at which the human mind discounts the future. This rate at which future enjoyments are discounted is perhaps constant, though the rate at which commodities are discounted varies with the provision already made for the future. But things (or command over consumption goods) fructify by the process of saving, that is, in more familiar words, capital is productive, and this productivity diminishes with the increase in the quantity of capital. Hence, as said above, capital creation stops when the marginal productivity equals the marginal cost of waiting—it equals the rate of time-preference.

When it is said that interest is the expression of time-preference[1], it is meant merely to draw one's attention to the most fundamental factor that determines the rate of interest. But it would be an error to imagine that in the real world where exchanges are made not between enjoyments of a given intensity but between money (of unstable value) at one time and money at another, the concept of cost of waiting is synonymous with that of time-preference. For, under a given stage of development of a man's mind, his time-preference is fixed at a certain figure, say, 10% per annum. But had time-preference been the same as the cost waiting and had it consequently gone to determine the rate of interest, the equilibrium rate of interest would have remained stable at that figure of 10 per cent. The fact, however, is that what a man saves or lends in a tangible shape is money (to take a concretely perceivable case) and what he uses or receives back is also money. The utility of money received, at the time of receiving it, must be greater, by the rate of time-preference, than the utility of the money saved, at the time of saving. But in the world in which reckonings are made in

1. Time-preference plays an important role as a determinant of interest in Pigou's *Economics of Stationary States*. He says, "These two rates (death-rate and birth-rate of capital) are equal when the stock is such that its marginal product expressed in the manner of Chapter X-6, are a rate of interest, is equal to the rate at which the representative man possessed of representative income discounts future satisfactions."

terms of tangible things, the cost of waiting is measured in, say, money and the difference between the money received and the money saved (at the margin) gives us the measure of cost of waiting. For, here, cost of waiting means the cost of waiting to consume money, and not, as the expression time-preference would signify, the cost of waiting to enjoy satisfaction of a given intensity.

In a similar way the productivity of capital is measured in terms of money, and not, as it conceivably should be measured, in terms of satisfaction. If an investment of Rs. 100 yields, after a year, an income of Rs. 110, productivity of capital is reckoned at the figure 10 per cent. per annum. In reality, however, the true productivity of capital is given by a comparison of the utility of Rs. 110 with that of 100. An equilibrium rate of interest of 5 per cent. thus indicates marginal productivity of capital of 5 per cent. in terms of money and the marginal cost of waiting also of 5 per cent. reckoned in money again. But a 5 per cent. rate of interest does not indicate a time-preference of 5 per cent. and it is, therefore, illicit to argue that the rate of interest in the manner in which it is actually reckoned and stated, equals the rate of time-preference. The recognition of this fact does not, however, in any way, minimise the importance of the concept of time-preference or the role that it plays in the determination of the rate of interest. The cost of waiting as it is actually measured, is a function of time-preference and the utility of money.

The study of this case points to the difference of the same order as that between nominal and real rates of interest as defined by Professor Fisher though, it may be noted, our exposition does not at all run on precisely the same lines.

It has been shown that interest could be considered as a compensation for the exchange of present enjoyment for future enjoyment. When a consumption good is turned into capital good or when the right to enjoy consumption goods is exchanged for the possession of capital goods, what is really done is to exchange present enjoyment for future enjoyment. In the case of money, the present and future uses take respectively the forms of hoarding money and lending it out. Thus, interest could be viewed as a payment for not hoarding. Keynes for this reason looks upon interest as a payment for forgoing liquidity. The recognition of the part that liquidity preference plays in the determination of the rate of in-

terest, therefore, does not render our explanation of the phenomenon of interest incomplete. Liquidity-preference does not play its part only in matters of money. Not only can a person hold in liquid form money that is capable of being lent but he can hold other commodities as well in such a form. Making consumption-use of a commodity has the same relation to making a capital-use of it as idle cash or liquid money has to investment.

Keynes's theory[1] is that the rate of interest is not determined by the supply (and demand) of saving. The amount of money saved by the recipients of income does not all become available for purposes of lending. Only a part of the money saved is actually offered to borrowers, while the rest remains hoarded. Hence, interest is determined by the supply of money that is not hoarded. It is the price for not hoarding, rather than for not consuming. Since the money that is hoarded is, according to Keynes, meant simply to satisfy liquidity-preference of the holder of money, it follows by direct substitution that the rate of interest is determined by liquidity-preference.

This way of reasoning is open to attacks from two directions. In the first place, the apparent conflict between Keynes's theory and the classical explanation of the phenomenon of interest arises from an erroneous conception of the nature of saving. As a matter of fact, the amount of money that is hoarded is not, in the true economic sense of the word, saved. Hoarded wealth administers directly to the satisfaction of wants. It constitutes a consumption good, not a capital stock. Saving, on the other hand, involves sacrifice of immediate enjoyment; hoarded wealth involves no such sacrifice—it directly satisfies a want.[2] The price for not hoarding is, therefore, in reality the price for saving. On a wider and more correct view of saving the apparent loophole in the classical doctrine disappears.

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1. For a critical study of Keynes's theory see Chapter XXIX.

2. A miser is, therefore, not a saver of wealth. He puts aside his income not with a view to using it in the future. His hoard gives him a direct satisfaction immediately. He does not abstain when he hoards. True, there is no such pure and simple miser. But the miser in every man undergoes no abstinence when he hoards wealth. This point is important in the scientific study of the theory of interest. Keynes ignoring this difference between saving and hoarding includes the desire 'to satisfy pure miserliness' in the list of factors on which the amount of saving depends. For him not-spending and saving are the same.

The entire amount of money held in liquid state by a person, however, does not constitute his hoard. A part of such money—perhaps a large part—has the express object of satisfying the want of liquidity. This part is, in the proper sense of the word, said to be saved, and yet, it might appear it does not go to determine the rate of interest since it does constitute a part of the supply of saving. Here, it might be supposed, is a real conflict between the classical and Keynes's explanation of interest. The conflict can, however, be traced to the fact that the term rate of interest is capable of two different interpretations. Keynes understands by interest the payment made by the borrower to the lender when they are different persons. If we admit that the borrower and the lender can as well be one and the same person then, as argued in the earlier part of this chapter, interest appears as the earning of capital. The amount of hoarded money that is meant to satisfy the preference of the person for liquidity earns interest as much as the amount that is actually lent. On a wider interpretation of interest, then, the rate of interest appears as a function of the supply and demand of saving.

It should now be clear why Keynes rejects the view that interest is the price of waiting. Since waiting goes with the entire amount saved (not consumed) and since, in his view, only a part of this amount goes to determine the rate of interest, the "price of waiting" cannot be regarded as an adequate description of interest. No further explanation should, however, be necessary to show that when the terms saving and interest are correctly interpreted every part of saving involves waiting and every part of it goes to determine the rate of interest.

Keynes explains the difference between his and the classical theory by saying that while the classical doctrine maintains that the rate of interest is determined by the demand and supply of saving (credit) his own theory is that it is determined by the demand and supply of money.[1] As a matter of fact the two theories are one and the same.

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1. In the symposium referred to elsewhere, Robertson comments on this point as follows: "Does it follow that we are debarred from regarding the rate of interest as the price of the use of loanable funds? I do not think so .....The fact that rate of interest measures the marginal convenience of holding idle money need not prevent it from measuring also the marginal inconvenience of abstaining from consumption".

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The demand for money consists in the demand for liquidity while the demand for credit consists in the demand for purchasing power. The supply of money consists in the acquisition of deferred claim on goods, and likewise supply of credit also consists in the acquisition of such a claim. Speaking in terms of credit, the rate of interest is governed by the amounts offered by lenders and demanded by borrowers (that is, by the quantity of pure capital or money). But the amount that people want to lend depends on how much they want to hold in liquid shape, or rather on how much they do not want to hold in that shape. Similarly, the amount that people want to borrow depends on how much cash (or liquidity) they want to possess.

Some difficulty arises when credit means or includes (as it of course should) bank loans. For, a bank might create loans without the appropriate money backing—that is, out of nothing, as it were. But this difficulty could be got over by regarding bank loans as money. As a matter of fact, we should make a clear distinction between the fact of the creation of a loan by a bank and its grant to a debtor. As soon as a banker gives credit to a client by creating new money—bank loan—he performs two operations simultaneously. In the first place, he creates money and, in the second place, he lends it. Since the act of creating money is concurrent with that of allowing credit, it gives rise to the erroneous idea that in such cases the banker creates credit.

We now come to Armstrong's theory. His conceptions of capital, saving and investment are novel and confusing. His theory of interest differs from almost all the well-known theories. His conception of capital is very much the period-of-production conception of the Austrian school. There is no capital so long as the process of production is not being lengthened. Saving is defined as consisting in the sacrifice of earlier for later incomes. (This is the

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Ohlin writes similarly, "The theory I advance does not dispute that the rate of interest equalises the advantages of holding actual cash and a deferred claim on cash. The difference between Mr. Keynes's theory of interest and my own, which is built on the Stockholm theory of saving and investment, lies in the fact that Mr. Keynes gives to the quantity of cash a central place, whereas in my opinion the quantity of claims plays just as fundamental a role and provides a direct link with saving, investment and the whole economic process".

accepted definition of saving today.) But there is said to be no saving and no investment when development stops and the method of production (though already round-about) ceases either to become longer or to become shorter still. Accordingly, in a stationary state there is no capital, no saving, no investment and no interest. The crux of the problem is that there is no saving because there is no waiting or abstinence in the act of merely maintaining a round-about method of production. According to the theory we have put forward here, in such a case there is no *further* saving and therefore no *further* income, because there is no *further* abstinence. This should remind one of Davenport's similar view on waiting. For him too, abstaining from eating up capital is no abstinence. What is the waiting involved, he asks, in using Nature's waterfalls for productive purposes?

If the material means of production used in creating income be not capital because the process of production is not being further lengthened, what are they? And what is the income from them to be called? Armstrong has only a partly satisfactory answer to give. While explaining this point he writes, "He is much more likely to regard the whole of his income as the product of his labour and will be quite unconscious of any compulsion to treat part of his income as being paid by one part of himself to another part for the service of refraining from reverting to a less productive method of utilizing his labour". But there is a difference between what a man may be conscious of and what economic analysis may reveal to a student of the subject. When the labourer owns his own capital and when the stationary state is reached there certainly arises no necessity for him to separate the share of capital from his own earning of labour. Nevertheless, it would be possible to find out by the marginal productivity analysis the share of capital. Armstrong looks at the process of production and the ultimate receipt of income from the point of view of the human factor, the labourer. The traditional theory, taking the dynamic character of economy for granted, looks upon the process of production and its productivity from the point of view of the human factor, labour, as also from that of the lifeless factor, capital. And since capital is owned by human beings there is no absurdity in such a point of view.

CHAPTER XXVIII

NEGATIVE RATE OF INTEREST

The belief in the possibility of a negative rate of interest has been held by economists for quite a long time now. Evidence of such a belief is to be found in the works of Economists of the eminence of Marshall, Foxwell, Keynes and Fisher.[1] For all of them the rate of interest may not only fall to zero but may conceivably cross the zero line and become a negative quantity. It should not be difficult to prove that such a view and consequently the relevant theories of interest have no scientific or logical foundation. The very phrase "negative rate of interest" is an example of a curious contradiction in terms. Interest is the earning of capital. Capital, being a factor of production, is necessarily productive.[2] Interest is,

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1. Marshall: "In such a state of things the postponement of and waiting for enjoyment would be an action that incurred a penalty rather than reaped a reward: by handing over his means to another to be taken care of, a person could only expect to get a sure promise of something less, and not of something more than that which is lent; the rate of interest would be negative". *Principles*, 8th ed., p. 232.

Foxwell: That the rate of interest may conceivably become a negative quantity was discussed by Foxwell in 1886 in a paper on *Some Social Aspects of Banking* read before the Bankers' Institution.

Keynes: He believes in the abstract possibility of the rate of interest being negative. "We have assumed so far an institutional factor which prevents the rate of interest from being negative". *General Theory*, p. 218.

Fisher: In his book on *The Theory of Interest*, Prof. Fisher has, by a long process of reasoning, attempted to show how the rate of interest can be zero and even negative. His examples of hard-tacks and figs will be recalled by the readers. He has, it may be mentioned, confused net interest with that omnibus concept of gross interest in one case and commodity interest in the other.

2. Every factor of production is productive (of utility) during the full period of its employment. If it were to produce no income (and income in the final analysis is psychic), it would not be used as a factor of production. Of course the income thus understood is a derived one. While capital is being used as a factor of production the income that is concurrently earned is due to the expectation of the final income. Whether the final income is positive or not matters little, so long as a positive income is anticipated. And unless such a positive return is expected a thing is not used as capital. We might,

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therefore, invariably positive. This point will be explained later with the help of a diagram.

The fallacious view that the rate of interest can be negative has its foundation partly in the confusion between pure or net interest and gross interest. That gross interest can be negative should be obvious to all. For it is an algebraic sum of net interest and other charges which are anything but interest. If by negative interest is meant negative gross interest, then the phenomenon of negative interest becomes so bare and simple that it hardly deserves a mention in the study of Economics. For Marshall, Foxwell, Fisher and others the negative rate of interest is really the positive pure rate of interest plus the negative charge for the safe custody of capital. In certain cases the concept of zero rate of interest owes its origin to the failure to realise the fact that interest and money interest are not one and the same thing. There is no money interest in Robinsonian economy. But there *is* capital and there *is* its earning, its productivity, the pure interest.[1]

One of the fruitful sources of confusion between pure interest, gross interest and money interest can be traced to the erroneous conception of capital. A sum of money deposited in a bank to ensure its safety is not capital in so far as it is regarded as a valuable *commodity*. For, capital is what is rightly called *pure* capital. The sum of money considered as a valuable possession, needing a safe place for deposit, is only a capital-good. Nor is hoarded wealth ever to be confused with capital.[2] A capital-good is a good that is

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if we so desire, call the final income rent of the capital-goods and the income that is being concurrently earned interest. This logically correct conception of interest is the only one that enables us to see the positive interest of a productive factor in the final negative result, which is an algebraic sum of interest and positive or negative surplus profit.

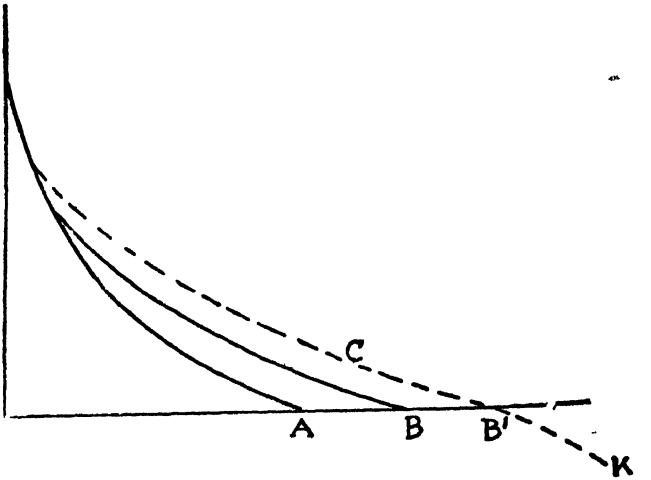
1. Most economists, Fisher and Keynes not excepted, confuse interest with money interest. For them interest arises only when there are two persons —one a lender, the other a borrower. They fail to realise the fact that the functions of a borrower and a lender can be performed by the same man. Robinson Crusoe *did* produce wealth, he *did* use capital and his capital *was* productive. He *did* perform the function of waiting and he *did* earn interest for it. Would we say that there was no interest in his case? The divergencies between the various modern theories of interest are in no small measure due to this erroneous conception of interest.

2. For Keynes there is no difference between saving and hoarding. He says, "To satisfy pure miserliness, *i.e.*, unreasonable but insistent inhibitions against acts of expenditure as such", as a cause of accumulation of saving.

saved as contra-distinguished from a good that is consumed. Money or wealth that is hoarded is not, in the right sense of the word, saved. A hoard satisfies a direct want—the satisfaction derived from it is direct, whereas the satisfaction derived from a capital good or saved wealth is indirect.[1]

Is capital, understood in its correct economic sense, then, likely to yield negative pure interest? The question could be answered with a straightforward "no". But we shall proceed analytically and logically to arrive at a correct and full answer to this question.

Let us begin by taking the case of a man who has a certain stock of a commodity which he can either use in the present or save for



future consumption. The amount saved would become capital in such a case.[2] In the diagram above the curve A represents the diminishing marginal utility of expenditure; the curve C the diminishing

1. For Keynes interest is due not to saving but to not-hoarding. It would appear, therefore, that he was excluding hoarded wealth from capital. This, however, is not the fact. For Keynes understands by interest money interest or at any rate what the borrower receives from the lender when the lender and borrower are not one and the same man. If he were made to see that interest can be earned by a man lending to himself he would include a miser's hoard in capital.

2. Capital is best defined as that which is saved. This definition leads to the correct conception of capital as pure capital. When we talk of the commodity saved as capital we really mean to say that it is a capital good. The difference between what is and what is not a capital good is of the same order as that between consumption and production.

marginal utility of saving (undiscounted); and the curve B the diminishing discounted marginal utility of saving. The vertical distance between the curves C and B indicates the rate of time-preference.

If the stock of wealth be OB, OA of it would be consumed and AB saved; the rate of interest would equal CB and would balance the time-preference.

If the stock of wealth be OB′, OA would be consumed and AB′ saved: the rate of interest would be zero. The future marginal utility of AB′ saved is zero, its discounted value is also zero. The curve B coincides with the X-axis after reaching the point B. If the rate of discount be not zero, saving of AB′ would entail a loss of utility in the present, to minimise which consumption would also be increased. But it is more reasonable to suppose that human mind can ignore the quantity BB′, so that the saving of AB′ causes no disutility.[1] In that case interest would be zero. When the stock is larger than OB′ the person would not consume the excess over OB′ even in the future—it would be as good as non-existing. The rate of interest would still be zero.[2]

If the person cannot completely disregard the extra amount of the commodity, that is, if it cannot but be a cause of disutility to him in future, then the dotted curve would extend below the X-axis and the curve would take the shape B′K after the point B′.

In such a case it is conceivable that when the stock is larger than OB′, a greater quantity than OA would be consumed and would give negative marginal utility, giving indication of a negative rate of interest, in the sense that the amount saved instead of having more utility in the future and less, by discount, in the present, has really a greater utility or less disutility in the present.

Such a case is, however, purely hypothetical. It is not easily possible to conceive of a stock of commodity that would be in excess

1. It is difficult to say whether the rate of time-preference, indicated in the diagram by the vertical distance between curves B and C, is constant, diminishing, or increasing. But it seems most reasonable to assume, in the absence of any clear indication to the contrary, that it gradually decreases. Consistently with this assumption the curve B is drawn here to meet the curve 'C in B'. Further light is thrown on this point later in the body of this chapter.

2. The curve C, under such a consideration, would coincide with the 'X-axis after reaching the point B''.

of all present and future needs.[1] But even when such a case is imaginable it is not difficult to see how the quantity of the commodity in excess of the amount AB′ cannot be regarded as having been saved. For, to save means not to consume, it implies the idea of abstaining from the present use, and clearly there is no such saving when all present wants are fully satisfied.[2] As a matter of fact, the quantity AB′ fixes the maximum limit to the amount of capital that the person can create, that is, accumulate. All quantities of the commodity in excess of the amount OB′ must, therefore, be looked upon as a fresh commodity, satisfying or obstructing the satisfaction of some other want than the one that is under consideration. For example, suppose OB′ quantity of wheat is all that would ever be needed by a person (assuming that wheat is not perishable); then the surplus above this quantity would neither be consumed as food nor saved as provision for the future, but would be treated merely as a commodity that either satisfies some other want or obstructs its satisfaction. Suppose that this surplus amount causes some disutility—an assumption that is most favourable to the treatment of the so-called negative interest. The most natural course for the person to adopt in such a case is perhaps to destroy this superfluous quantity. Let us say he burns it. We then should look upon this surplus as a commodity satisfying another want, the want to burn it away. The quantity of wheat that is burnt would in such a case be his capital (not of the same type as the wheat saved) satisfying some remote want. More correctly it would be *land*, for the wheat that is burnt is not capable of an alternative use and is, therefore, not capital in the strict sense of the word.[3]

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1. When we understand by capital pure capital, say, as money kept aside for future use, it becomes abundantly clear that such a case of marginal utility sinking to zero or becoming a negative quantity is impossible.

2. This point can be explained in another way also. Saving necessarily involves abstinence and when all present wants that a commodity can satisfy are fulfilled, there is obviously no abstinence involved in the act of letting the surplus remain unused. Of course the word abstinence has to be used in its correct sense. Those economists who maintain that saving involves no abstinence on the part of the rich man, misuse the word abstinence. The fact that a rich man can save more easily than a poor man does not mean that he can save without forgoing the satisfaction of some possible present wants.

3. Any thing that is not wanted—superfluous quantity of wheat in this example—has to be wanted for purpose of disposal. But as it can be used

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Adopting this correct attitude towards every amount of the commodity in excess of OB′ we can easily explain how the rate of interest can never become negative.

In our daily life many different kinds of income are earned together and many kinds of expenditure are incurred together. A worker, for example, is paid by his employer a sum of money that includes his wage and his salary for the mental or organising work that he does and, in fact, a little of profit for the uncertainty that he bears. But the most important and the most obvious part of his income is wage. In practical life it does not become necessary for us to recognise the fact that a worker earns different kinds of income which he receives in a lump. In precisely the same manner one has to incur many different categories of expenditure together. And nobody feels the need of analysing the contents of the expenditure he incurs except when some cost accounting has to be done.

Further, often income and expenditure are mingled together. What one has to receive and what one has to pay are not kept distinct. When one deposits some money in the bank he has to get interest for it but at times also has to pay the banker for the safe deposit of his money. Interest has to be received by the lender and the remuneration for the safety of the saving has to be received by the borrower. But the two processes are combined into one and after deducting one amount from the other the balance is paid to the depositor. Neither the lender nor the borrower is always conscious of the fact that what is passed on from the borrower to the lender is a balance of two payments in opposite directions. It might well happen that when the charge for the safe keeping of the money is greater than interest money passes in the reverse direction, *i.e.*, from the lender to the borrower, giving rise to the phenomenon of negative rate of interest. It has been argued to show above how it is not (and can never be) interest. An economist is concerned with the study of the life of consumers and producers no doubt but in order to make fruitful study he has to analyse the phenomena he sees. And when they are analysed it is realised that what appears as negative interest is a mixture of positive interest and some other income or incomes in the reverse direction.

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for that and only that purpose and cannot be used for the purpose of direct satisfaction of want, it is best defined as land. For, capital is a creation of man, that is, something that he has *turned* into capital.

Luckily, however, no economist ever speaks of negative wage or negative salary. That is because it is so obvious to him that a labourer must get his positive income, his positive remuneration, for the work he does and an organiser must get his remuneration for the mental work he does for the employer. It is unfortunate that it is forgotten that in the same way a saver (as also a lender) must get a compensation for what he does—to forgo the present use of his goods or money. Perhaps that is due to the fact that it is felt that a saver and a lender have not to make a sacrifice of the kind that a labourer or an organiser has to make. That is true; the sacrifice is of a different kind but sacrifice is there all the same. An economist has to be different from a lay man; he has to have an analytical mind and he must look at the familiar phenomena with piercing eyes. A scientist cannot afford to behave like a lay man.

CHAPTER XXIX

THE KEYNESIAN THEORY OF INTEREST

Lord Keynes's theory of interest may be called Liquidity preference theory or Monetary theory of interest.[1] The former designation brings it into contrast with the classical time-preference theory (Fisher's time-preference, Bohm Bowerk's agio, Senior's abstinence and others' waiting theory) while the latter differentiates it from the classical supply and demand of savings theory (Ohlin's credit, Hicks's Loans and Robertson's loanable fund theories).

One must remember at the outset that interest is a price and like every other price must necessarily be determined by the forces of supply and demand. It is important to remember this so that we may apply with confidence the familiar supply and demand technique to the problem of the determination of the rate of interest. Such a technique compels one to think in terms of some object the supply and demand of which may determine interest. The necessity of clearly perceiving some such object makes one think further, whether interest should be associated with (and therefore said to be determined by) saving, credit, loanable fund, capital or money. It is in this connection that a controversy had arisen between Lord Keynes and other economists.

The next thing that we have to remember is that interest is an income just as wages and profits are, and that the recipient of interest is a factor (agent) of production. A factor of production makes some sacrifice and the income he earns in his capacity as such a factor is, from his point of view, a compensation for it. The classical and neo-classical economists called this sacrifice abstinence, waiting or patience (acting against one's time-preference). Keynes calls it not-hoarding (acting against one's liquidity preference).

Both these facts and the controversies that have arisen in regard to them have brought into prominence the necessity, as also the difficulty, of defining precisely certain basic terms that constitute the

1. It is interesting to note that Prof. A. L. Hahn had also propounded a theory of interest based on liquidity preference. He stated that interest was the price paid for the loss of liquidity. See *Theorie des Bankkredits*, 1920.

foundation of the theory of interest. And sometimes the centre of gravity of the controversy has shifted from the main theorem of interest to the corollary of the relationship between saving and investment.

It is convenient to study Keynes's theory in the light of this issue of saving-investment parity. Such a study would give one an insight into the manner in which different minds look at the same phenomenon. Let us, therefore, take up first the question of the relationship between saving and investment.

The classical economists maintained that the rate of interest brought about equality of the supply and demand of saving. And since the demand of saving constitutes investment, the rate of interest equalised saving and investment. This equality depends on the flexibility of the rate of interest. The rate of interest, therefore, continues to change till saving and investment ultimately become equal. This rate may be called the equilibrium rate of interest. At all other rates saving and investment are unequal. Saving, for the classical economists, meant income not spent on consumption goods and investment income spent on other goods. The disparity between saving and investment gives rise to the Wicksellian cumulative process leading to booms and depressions. The rate of interest, however, continues to exert its own influence on both saving and investment and tends constantly to make them equal.

The influence of the rate of interest on saving and investment which Keynes had acknowledged in his *Treatise* he denies in his *General Theory*. The rate of interest, he here maintains, has practically no influence on savings. Savings can never be greater or less than investment. It is not the function of the rate of interest to equalise them. The phenomenon of the Trade Cycle cannot be explained by the disparity between saving and investment. Let us see how Keynes shows that saving and investment are necessarily equal. We shall begin with his definition of saving and investment and then illustrate his thesis by an example. Definition is a matter of convention and one may define terms in any manner one likes provided there are no inconsistencies in the definitions of different terms. With this safeguard two entirely different pairs of definitions of saving and investment may both be correct; and our preference for one pair of definitions over the other would rest entirely on the object that we want it to serve. Keynes defines investment

as the value of all output minus the value of all the output of consumption goods. Since the value of all output is income and the value of the output of consumption goods (sold) is expenditure, investment is equal to income minus expenditure. Saving is defined as the excess of income over expenditure. Thus by definitions investment and saving are equal.

In the classical explanation every new investment does not necessarily increase savings at once. In Keynesian explanation every investment is actually saving. Every supply of new money injected into the system (through lending for investment purposes) finds itself in the cash balance with somebody and, therefore, constitutes saving.

Let us take an example to explain the relationship between saving and investment. Suppose at any given time the income of a community is 100, its expenditure 80, savings 20 and investment also 20. There is thus parity between investment and saving. Now suppose banks create additional credit of 10 for investment purposes. The figures then change as shown below.

	Income	Expenditure	Saving	Investment
1st period	100	80	20	20
2nd period	100	80	20	30

The classical disparity between saving and investment is seen here. The process of expansion would start and the rate of interest would continue to exert its influence to bring about equality between saving and investment.

According to Keynes's definition the mistake in these figures consists in the fact that income has been shown as 100 instead of as 110. Since income is composed of investment plus expenditure it should be 80 plus 30, *i.e.*, 110. And since saving equals income minus expenditure it should be 110 minus 80, *i.e.*, 30. Hence, saving and investment, according to Keynes, should again be equal. The new money (10) that is invested in excess of saving (in the previous period) is either with the employers or with the wage-earners or with other sellers from whom the wage-earners have made purchases. Thus, this additional amount of money is in cash balances with one category of people or another and is consequently a part of (and therefore an addition to) saving.

As we have already remarked, definitions are a matter of convention. According to Keynes's definitions of the terms saving and

investment they are equal in the above example. We have, however, to see whether there is any advantage in so defining these terms as to make the volume of one always equal to that of the other. Let us see, first, why in the above example, saving and investment have become equal. What has actually taken place can be expressed in simple language thus. At a certain time when saving and investment are equal in both the classical and Keynesian senses, new money is injected into the system (the place of injection being the investors). This amount goes to increase investments. These investments, together with expenditure, are taken to constitute total income, so that it is considered as having increased by the amount of the new money. Saving is equal to income minus expenditure and therefore it increases also by the same amount. Thus the additional amount of money is shown at once as an addition to investment, to income and to saving.

Is it proper that a flow of money, to the extent of 10 in this example, should be considered as augmenting at the same time three different things? Whether it is proper or not depends on whether these different things are similar in respect of time. Do income, saving and investment as monetary concepts have any time-attribute?

Income means (whatever the particular form of the definition of this term may be) what comes in. It indicates something being received or just received. Expenditure likewise means something that is going out. As far as one individual is concerned expenditure must, therefore, follow income (provided we do not introduce a new concept of capital). As far as the society or the community is concerned, taking all men collectively, the same sequence is again there. The fact to be noted is that income and expenditure belong necessarily to different periods of time. Saving indicates the act of not spending what was received. It refers, therefore, to a stage following income. Expenditure and saving belong consequently to the same period of time. Investment is more difficult to locate in time, the reason being that it is a less clearly defined concept. However, we do not need here to locate investment in time.

When Keynes argues that the addition of 10 to investment must be considered as an addition to income and also to saving, it is clear, he disregards the element of time. Income and saving (as also expenditure) belong to different periods of time. Keynes is, therefore, thinking without time. There is nothing wrong in itself in thus

thinking without time. But does that help us in understanding the things that actually happen in the real world? It is for this reason that Myrdal pointed out the distinction between ex-ante and ex-post analyses.[1] It makes all the difference to the actual business world whether income precedes expenditure (and saving) or not. Whether any two given flows or events synchronise or not is a matter of great consequence to practical affairs.

Myrdal, who was perhaps the first to point this out, says that saving and investment can be unequal in ex-ante sense but are always equal in the ex-post sense. That is, planned saving and investment may not be equal, but the actual investment and the actual saving must be equal. It is this very fact that is expressed by Keynes himself in a different manner when he says that investments increase the level of incomes and *through* it the volume of savings. Investment and saving fall or rise together. This is correct; but viewed in time-perspective one follows the other and does not co-exist with it. To say that investment increases saving is one thing; to say that it is just equal to it is another.

Robertson feeling the same necessity of taking note of the time-element has said that income should be understood as man's disposable income—the income about which the question arises on any particular day as to whether it shall be saved or spent. It is therefore the income received not on that day but on the previous day. The use of the word "day" by Robertson is perfectly justified but its choice is an unhappy one and has caused a good deal of confusion leading to unnecessary criticism.[2]

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1. See Gunner Myrdal's *Monetary Equilibrium*.

2. See "Saving and Hoarding" by D. H. Robertson, *Economic Journal*, Sept. 1933. Also Keynes's and Hawtrey's objections to Robertson's definition of saving in *Economic Journal*, Dec. 1933.

A. H. Hansen accepts Robertson's definition of Income and Saving. A. P. Lerner does not consider it proper to regard expenditure as coming out of income already received. He says that saving equals investment is an analytical proposition and not about the real world. It cannot therefore tell us anything that we did not know. Saving equals investment. *Quarterly Journal of Economics*, Feb. 1938.

Pigou defines savings and investment in the same way as Keynes has done. See his *Employment and Equilibrium*. W. E. Armstrong has used the words saving and investment in a different sense. "Investment on the other hand", he writes, "is the actual process of applying labour to the lengthier method instead of to the shorter, so that saving and investment are two aspects of one and the same complex adjustment and investment necessarily precedes the saving which it implies". See his *Saving and Investment*.

Keynes, we repeat, has defined saving, investment and income irrespective of time, and thereby made saving equal to investment. But it is hardly a criticism of the classical theory to say that its propositions regarding saving and investment do not stand when these terms are given a new interpretation.

Keynes would not have ignored the element of time and added investment to expenditure to get at the figure of income had he been more cautious in defining his terms. What is income after all? In a purely mechanical sense income includes also the money borrowed by investors. But money borrowed is not in the economic sense income. It is income only when it is earned. Investment, as investment, cannot therefore constitute a part of income. Investment must first become expenditure, (that is cease to be investment), before it can become income. When Keynes includes the new investment in income he is obviously considering this amount as expended and should, therefore, cease to consider it as investment. When, however, it is taken as a part of income, it cannot automatically be assumed that previous expenditure and investment would be maintained at their old levels.

Keynes's contention is merely this that the stock of money with the community at any instant of time is fixed and that it can be understood either as saving or as investment.

It is saving from one point of view and investment from another. That is a perfectly innocent way of looking at a given stock of money. But when these two aspects of the same thing (saving and investment aspects) are interwoven with the two concepts of income and expenditure confusion arises. The income-expenditure and saving-investment concepts cannot go together. Saving and investment as defined by Keynes are two aspects of the same thing *at the same time*, while income and expenditure are things belonging to different periods of time.

It is necessary, therefore, to remember that Keynes's theory is a purely monetary theory attempting to explain the phenomenon of interest in terms of stocks of money and that the conceptions of income and expenditure cannot be dragged into such a theory.

This brings us to the main objective difference between the classical and the Keynesian theories of interest. The classical school understood interest as the payment for waiting. Interest, for them, is determined by the supply and demand of saving. But Keynes

points out that there is no interest unless one lends what one has saved. Interest is, therefore, not a payment for waiting but for lending, *i.e.*, for not-hoarding, for parting with liquidity. What determines the rate of interest is, therefore, the amount of money that is lent and the amount of money that is borrowed. It is not what is saved, but what is lent, that affects the rate of interest.

The amount of money that people do not want to hoard nor to spend on consumption goods, that is, the amount that becomes available for lending depends, along with other things, on liquidity preference. Interest must be sufficiently high to overcome this liquidity preference. It is for this reason that Keynes's theory is called liquidity-preference theory or money theory of interest.

Let us see whether this explanation of the theory of interest is an improvement on the classical doctrine. It is maintained, first, that all that is saved is not lent. All that is saved does not therefore earn interest. If interest is understood as a payment from one man to another for the money borrowed by him, this view is correct. But if interest is understood as the earning of capital (or the productivity of capital), then this view is wrong. For, what is saved is capital. It is capital because it cannot be any other factor of production. And it is a factor of production because it is not a consumption good. If it is the hoard of a miser it is not in reality his saving. If what is saved is really saved and not hoarded, then it is capital and must earn interest. It earns interest in terms of utility and manifests itself in the difference between the utility of the amount if spent now and the discounted value of *expected future* utility. A man saves money not because he likes saving for its own sake (if that is why he saves, he is really hoarding) but because he expects to gain utility by so doing. This utility is his interest.

There is no reason why interest should not be understood in this wider sense. The moment we grant that what is saved is capital (and if we do not grant that what else could it be?) we have to grant also that it earns interest in terms of utility. To maintain that the phenomenon of interest arises only when what is saved is lent is, therefore, wrong.

Moreover, it must be noted that the difference between lending and saving (that is, the money saved and the money lent) that Keynes points out is only a superficial one. What is saved and not lent to others is really lent to one's own self. He who saves lends

to himself in the future. But it is not necessary to argue in this way to be able to show that lending and saving are not fundamentally different acts. Keynes talks of money; for him interest is the price of not-hoarding money (for him hoarding means saving and keeping with one's own self). If we thus think in terms of money the amount kept with one's own self is not saving; the money lent is saving. The amount saved and not lent is saving in the sense of purchasing power; in the sense of money objectively considered it is not saving. It is saved when it is lent. Thus when attention is focussed on money and interest is understood as a monetary concept, the money lent constitutes saving; the money kept with one's own self constitutes spending or expenditure. For, money (objectively viewed as Keynes does for the purpose of explaining the theory of interest) cannot be spent in any other way than by keeping it with one's self. We must be considered as using money when we keep it with us; and therefore when we lend it we must be considered as saving it. This usage of the word saving is consistent with Keynes's monetary approach to the theory of interest.

We have said that Keynes's theory of interest can also be called liquidity preference theory. Is liquidity preference different from the classical time-preference? According to the classical and the neo-classical economists interest rewards waiting. Waiting involves sacrifice or abstinence because we do not like to wait; we have a disposition to spend and an indisposition to wait. Present enjoyment is always preferred to an equal and certain future enjoyment. This psychological fact is beyond dispute.

Keynes denies that interest is a reward for waiting. By merely waiting one does not earn interest; one must lend what one has saved. We have already observed that for Keynes interest is that income which one man receives from another. Consistently with this narrow interpretation of the word interest he maintains that it is not waiting but not-hoarding that is rewarded by interest. Not-hoarding is a sacrifice because people have preference for liquidity. According to him therefore interest has to be paid if people are to be induced to act against their liquidity preference. According to the classical economists, interest has to be paid if people are to be induced to act against their time-preference.

Liquidity preference and time-preference are different. One is a wider concept than the other. But do they not become one and the same when interest is considered as a purely monetary phenome-

non? Time-preference implies preference for the present over the future. In its broadest sense (the sense that is consistent with the widest sense of the word interest) it refers to satisfaction or utility or, to use Fisher's terminology, "enjoyable income"; in a narrower sense it may refer to money income, or to anything else that has utility. If we talk in terms of money we have to consider that part of our income that we have not spent as what we have saved. For, the money spent is not our money, it becomes somebody else's income. We can use our saved income in two ways: we may "hoard" it (using the word hoard in Keynesian sense), or lend it. If we lend it we know we would be getting it back. But it involves waiting. If we keep it with us (that is, hoard it in Keynesian sense or save it in the classical sense) then we do not have to wait (to get it back). If we lend it, we expect to get interest and this interest is a reward for not-hoarding, that is, for waiting. That shows that people prefer ready money, cash in hand, or liquid money, to money that is locked up for a period of time. Interest is, therefore, necessary to make a person act against his preference. This preference is time-preference. We want cash or money now. If we lend we have to go against our preference. Interest is a reward for it. Thus liquidity preference is time-preference as applied to money saved.[1]

We conclude, therefore, by saying that Keynes's theory of interest differs from the classical theory inasmuch as it is based on a narrow interpretation of the word interest.[2] For Keynes mere saving does not earn interest (utility gained is no interest for him; interest must be in the shape of money), for him time-preference provides no explanation of interest unless it refers to money. You must forgo present possession of money (not present enjoyable income) in order to earn interest. As we have observed, Keynes's lending is classical saving in a narrow sense. We see now that his liquidity preference is classical time-preference in an equally narrow sense.

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1. Keynes says, the psychological time-preference depends on (1) the propensity to consume—saving, and (2) liquidity preference—hoarding. These are the set of decisions to carry on completely the time-preference.

2. It is not meant to say that the classical economists interpreted interest in a wider sense than Keynes had done. But the terminology used by the classical writers is capable of a wider interpretation. When, for instance, they say that interest is determined by the supply and demand of saving they are making a statement of facts based upon the widest interpretation of the terms saving and interest. Again, when they say that saving need not equal investment they are using these in their wider significance.

It now remains to be seen whether the fundamental proposition of Keynes, namely, that interest does not determine savings directly and consequently the rate of interest is determined by the supply of (loanable) money and not by the entire volume of saving is defendable when interest is understood in the narrow sense in which Keynes (and most other economists) have used the term. There are three uses to which a man can put his income. He may consume it, that is, spend it on consumption goods (or hoard it in the real sense of the word), he may save it and keep it with himself or he may lend the amount that he has saved. According to the law of equimarginal utilities the total income is distributed between these three uses in such wise as to make its marginal utility in each use the same. The utility of the amount spent is directly obtained, that of the amount saved is derived from the expected future utility, while the utility of the amount lent is dependent further on utility of the interest to be earned in the form of money. With every variation in the rate of interest the amount lent must naturally change. Keynes mentions this fact; but denies that such variations can have any (substantial) effect on the amount saved. With a fall in the rate of interest, for instance, the amount lent would decrease. With such a decrease the amount saved and kept with the man himself would increase. The marginal utility would, therefore, decrease. There would thus be disparities between the marginal utilities of amounts put to the different uses. The total amount of income would, therefore, be redistributed so as to make the marginal utilities equal again. With a fall in the rate of interest, therefore, a little more than before would be spent, a little more would be saved and hoarded in Keynesian sense and a little less would be lent out of the saving. If that is what happens, then we can say that interest affects saving also and that the rate of interest can be said to be determined by either of the three amounts—the amount spent, the amount saved or the amount lent. A rigorous statement would of course be that the rate of interest is determined by the combined and concurrently acting forces. But that is the general equilibrium approach to the problem. Keynes is, however, right in giving a practical tinge to the problem. It is the fact that the amount lent is more sensitive to the variations in the rate of interest than the amount spent (and consequently the amount saved). But that is a matter of emphasis only and to say that one amount is more sensitive than the other does not constitute a denial of the validity of an alternative theory[1].

1. P. T. Ellsworth says, "Mr. Keynes's solution stands on all fours in exactly the same position as the classical solution. The relations of investment, saving, income and the rate of interest are completely interdependent and the situation, Mr. Keynes would say, is indeterminate".

CHAPTER XXX

TIME-PREFERENCE

There are two decisions that a man can take in regard to anything that he possesses. He can either consume it (in the present) or keep it for consumption in the future. In the former case he is supposed to consume; in the latter to undertake production. The thing concerned becomes a consumption good in the first case and capital (good) in the second.

Let us see what utility a person derives in each of the two cases. The utility obtained by him in either case may be derived through a number of sources. And since utility comes from the satisfaction of a want, it follows that in each situation there can be more than one want present.

Let us make simplifying assumptions which, however, do not alter the fundamental nature of our conclusions. First, let us suppose that there are only two periods of time, one coming immediately after the other, or what comes to the same thing, our analysis is confined to two consecutive periods only. We suppose, in the second place, that the man under consideration has the same attitude towards the thing in both the periods, or more generally, that his wants for the thing for consumption purposes are such as to make him obtain the same amount of utility from the process of consumption of the thing, now or in the future. With these two assumptions the study of the situation in the two cases becomes simplified though not radically changed.

We take first the situation in which he decides to consume the thing in the present. The decision is taken in the first of the two periods and let us begin to calculate the sources of the utility he obtains. First, he gets some utility from the process of consumption directly. Let us suppose it is equal to 100 units. This is derived from the want of consuming the thing being satisfied by the act of consumption. There is no other utility that the man obtains from his decision to consume the thing now. It is assumed that there is no doubt whatsoever about the certainty of his anticipations about the future. Having consumed the thing now in the first period, let us see what follows in the next period. When the next period comes

he goes without the actual consumption of the thing. Is there any utility that he derives from the consequences of his having taken the decision in the first period to consume the thing then? If there is some utility, it must come from the satisfaction of a want. It is necessary for us to see, therefore, what wants a man is likely to have that could have any relevance to the problem under consideration.

First, there must be the want to consume in the present. Second, there is the want of having the knowledge of satisfaction having been enjoyed in the past. We are unhappy with the thought of an unhappy past and happy with the knowledge of having had a happy yesterday. That means, in simple words, that we have also the want of the knowledge of a satisfactory past. Then comes, in the third place, the want of the knowledge of satisfactory conditions in the future. In other words, we have the want now of consumption in the future. Hence, there are always three kinds of wants present at any point of time. One is of the present consumption, the other is of past consumption, to put it crudely; and last, there is the want of future consumption. We live in the present, but the past and the present reflect themselves into the present. We look before and after.

Now, when the second period comes, we have therefore these three wants. The first is not satisfied and we do not, therefore, get any utility from that source. The second want of past satisfaction *is* satisfied in this situation and we get some utility from it. Let us say it is equal to 20. Then, the third want is not satisfied because we have no future to bother about in this case, as we have assumed that there are only two periods to consider.

In the two periods taken together the man therefore obtains 120 units of utility. Let us now see what utility he would get in the second situation, that is, when he decides to keep the thing for consumption in the second period. In such a case, in the first period, he gets no utility from the first want. It remains unsatisfied; for, he goes without the actual consumption of the thing. The second want of past consumption is out of consideration. For, there is no past to reckon with, as we have confined our analysis to two periods only of which this one is the first. Our conclusions, we may repeat, are not coloured by such an assumption. It simplifies but does not alter the fundamental nature of our deductions. Then, coming to the third want, we know it *is* satisfied. The want of future consumption is satisfied by the decision to lay the thing by

for consumption in the coming period. What utility does he get from this source? Does he get more or less than 20? That depends on which want is the stronger: the one of having the knowledge of past satisfaction or that of having the consciousness of future consumption. Perhaps that depends on the nature of the man whose behaviour we are studying. Some think more of the future and some more of the past. Some dwell immoderately upon past occurrences, while others always look eagerly forward to coming events. The illiterate and the poor class of people, as a general rule, think less of the distant periods, whether in the past or in the future, than the wealthier and literate class of people. But perhaps it can be maintained that an average man is more concerned about the future than he is thoughtful of the past. The want of having something to consume in the time to come is stronger than that of the knowledge that he had something to consume in the period gone by. It is reasonable, therefore, to say that he gets from the satisfaction of this third want, utility equal to a figure greater than 20. Let us say it is 30.

When the next period comes he gets utility, in the first place, from the actual process of consuming the thing. Then, he gets no utility from the second want. It is not satisfied. The third want too is not satisfied, as there is no further period to consider. Hence, in this situation he obtains in the two periods together utility equal to 130. Thus the decision to treat the thing as capital rather than as consumption good results in his deriving in all 10 units of utility more.

If his want for the consumption of the thing is greater in the present than it would be in the future, the calculations would accordingly change. It might then be that his decision to consume now, that is, to turn the thing into consumption good, would give him, on the whole, more utility than the alternative decision. But likewise, if the want of consumption is more intense in the future than in the present, the conclusion of our first analysis is further strengthened. In cases in which other things are assumed to be the same, the conclusion previously arrived at stands. It seems, it is then in the interest of a man always to turn a thing into capital rather than treat it as consumption good. In the case, however, of a man who deviates in one direction or the other from the average type, the conclusion might need modification. If the man sees the past more clearly and feels it more keenly than the future, our conclusion would have to be reversed.

Our general conclusion then, that a man has a preference for saving than for consumption is likely to be misinterpreted. It does not point to the fact that we have a negative time-preference. Negative preference implies that a man prefers a given enjoyment in the future to the same in the present. No such thing is implied in our conclusion. Our conclusion relates to a given amount of a thing which if consumed gives the same utility regardless of the time of consumption. We have not maintained that a given amount of satisfaction is preferred in the future because that in itself is considered better. In fact, time-preference which is based on the process of discounting the future, has not figured anywhere in our analysis. We have not taken into consideration the reflection of future utility into the present or the *vice versa*. Were we to do that the utilities derived would be as follows.

In the first situation in which our decision is to consume in the present, the utility in the first period would be 100 from actual consumption and, in the second, 20 from the knowledge of past satisfaction, and say, 50 from the reflection of past satisfaction into the present. The 20 units of utility are due to the want of having knowledge of satisfaction in the past being fulfilled. The 50 units are derived from the past 100 units of utility being reflected into the present. What kind of want are we considering here? Which is the want the satisfaction of which gives these 50 units of utility? We create a want of reflecting the past into the present. This is called discounting the past. It is due to time-preference. Time-preference being positive, we prefer the utility in the present, or rather the distant appears smaller because it is at a distance. The positive time-preference, therefore, implies preference for the present over the past as well as over the future. Coming to the calculation of utility, the man obtains all told 170 units of utility.

In the other situation, in which he decides to consume the thing in the coming period, his utility in the first period is 30 from the satisfaction of the want of the knowledge of having some satisfaction to enjoy in the future. Then, again, he gets some utility from the reflection of the future utility into the present. Here, as before, the future or the distant is discounted and assuming the rate of discount to be 50 again, he gets 50 units of utility.[1] In the

1. The distinction here made between the utility obtained from the satisfaction of the want of the knowledge of a happy future and the utility obtain-

(Continued on next page)

second period he gets the utility of 100 units from the actual process of consumption. In this case, then, the total utility between the two periods is 180. The difference is again of 10 units as before. That is so because in both the cases there has been an addition of 50 due to the reflection of the distant satisfaction into the immediate.

Now, the time-preference theory of interest maintains that the rate of interest equals in equilibrium the time-preference or rather the marginal time-preference. If we take the marginal time-preference to be constant, we need only say that the rate of interest equals the time-preference. Now, the consideration of the two cases given above brings out the fact that if the man concerned was to lend to another person the thing that he has the option of keeping to himself or consuming, he would be a gainer to the extent of 10 units of utility as compared to the case of his consumption in the present, and would be neither a gainer nor a loser as compared to his keeping the thing with himself for future use. We must remember that we have assumed the future to be certain. There is no chance of default on the part of the borrower either.

If the man keeps the thing with himself for future consumption, we can take it to be a case of his lending to himself. Thus, we need only consider two situations: one in which he consumes immediately and the other in which he lends it (it making no difference whether he lends to himself or to another man).

It follows therefore that there is an advantage in lending (which might be alternatively called saving) measured by units of utility. Why should then interest be charged? It would appear rather that interest would have to be negative. If the person was to take the two periods of time into consideration and total up his utilities he would, it appears, be prepared to lend or save without any remuneration. For, the very act of saving yields an income of 10 units of utility.

To understand then why interest is charged we have to reconsider the problem. What we have done above is to add up the utilities obtained at two different times. The utility of period one

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ed by the process of discounting future utility, is a very fine one. For ordinary purposes it is best to ignore the first or amalgamate the two into one. But psychologically the two are different though the utilities from the two sources are experienced so closely knit together that it is difficult to separate the two in practice.

is added to the utility of period two. Now, there is no sense in such an addition. These two quantities of utility are not felt at the same time. Such an addition is therefore meaningless. What we have to do is to take the utility experienced at one time into consideration. When the decision about the disposal of the thing is taken, he compares the results of the two situations. He estimates the utility he would derive from consuming the thing in the future or from not consuming it then. Let us therefore bring backward the utility that he would derive in the second period to make the calculation realistic.

First take the case in which he decides to consume the thing now. He gets 100 units of utility immediately. He anticipates in the second period the utility of 20 from the satisfaction of what is called the second want in the foregoing pages. Then, there are 50 units more to be obtained from the reflection of past satisfaction into the present. Thus he expects all told 70 units in the future. These 70 units he reflects backward into the present. Assuming, as before, that the discount is 50 per cent, these 70 units are worth 35 units only to him now. Thus he gets in all 135 units of utility.

In the second case when he decides to save or lend, he gets in the first period 30 units of utility from the satisfaction of what is called the third want. Then he expects to get in the second period 100 units from actual consumption. He also gets in the first period 50 units from the reflection backwards of his utility of 100 units in the second period. Thus, he gets in the first period 80 units utility and in the second 100. These 100 have to be brought into the present. Discounting at the rate of 50 per cent, they are worth 50 now. Thus, in all, he gets in the first period 130 units.

Thus by deciding to save he is worse off to the extent of 5 units. The interest he would demand should therefore equal at least 5 units of utility. Were the utility to be obtained from the knowledge of getting some satisfaction in the future the same as that obtained from the knowledge of having had some satisfaction in the past, the difference between the two situations would have been 15. The rate of interest in that case would need to be 15 per cent. Now we get a positive rate of interest but unequal to the time-preference. With a time-preference of 50 per cent we get a rate of interest of 15 per cent only. Is that, then, the correct understanding of the problem?

Here we are making the mistake that most people have made in other connections. Fifteen is not the rate of interest. It is the net disadvantage that is suffered from the act of saving or turning the consumption good into capital. There must be a net gain if saving has to be undertaken. Something is lost by waiting or saving, and something is gained by so doing. The loss is spoken of as the sacrifice of waiting; the gain is the interest. In this case the interest is less than the sacrifice and so saving would not take place. There must be an additional inducement to the man to persuade him to save. Such an additional inducement is provided by the interest paid by the borrower in terms of money or kind.

In the example just taken, let us separate the credit and the debit sides. On the debit side of saving we have 50. This is what is lost by postponing consumption through the process of discounting the future utility backwards. This is due to time-preference. On the credit side we have the gain of 70 minus 35, that is, 35. This is explained in the table given below. We see thus, that there is the sacrifice of 50 caused by waiting which is partly remunerated by the gain of 35 which is the incidental advantage gained from the act of saving. Here 35 is the interest obtained in real terms. There is required an additional interest of 15. If the thing saved is lent out to another man who contracts to pay interest, an interest of 30 per cent would have to be paid to make the person willing to lend.

Utility in the First period.	*Utility in the Second period.*	*Present worth of Utilities in the two periods.*
Consuming 100	$\underset{\text{II D}}{20+50}$	$100+\frac{\overset{\text{D'}}{20+50}}{2}=135$
Saving $\underset{\text{III D}}{20+50}$	100	$20+50+\frac{\overset{\text{D}}{100}}{}=120$

Loss from saving $100-\frac{100}{2}=50$

Gain from saving $20+50-\frac{20+50}{2}=35.$

As the table shows, the decision to consume gives in the first period a total utility of 135. This includes the present worth of the utility in the second period. The decision to save gives the total utility of 120.

The loss from saving is equal to 100 minus half of 100. For, the loss from saving is measured by subtracting from the utility that is obtained by consuming, the present worth of the utility that is obtained by consuming it in the second period. This loss is known as the discount; it is the index of time-preference. The gain from saving equals 20 plus 50 minus half of 20 plus 50, that is, 35. It is measured by subtracting from the satisfaction obtained from making provision for the future, the present worth of the satisfaction that is obtained in the next period from the memory of past satisfaction. This is known as the interest earned, in kind or in real terms, from the act of saving.

In the table above the mark II indicates utility from the satisfaction of what has been called the second want. The mark III indicates the utility obtained from the satisfaction of the third want. The letter D stands for discounted utility, that is, the present worth of past or future utility.

In all ordinary cases the table would be a very simple one. It would contain only the figures of 100 for actual consumption and 50 for present worth of future utility. That would yield a time-preference of 50, needing interest of 50.

It is worth while considering how far back into the future or the past human mind is able to see and accordingly feel. In the practical world we are confronted with more complicated cases with a number of periods. The calculations would, therefore, be more difficult and complicated where the mind of the person concerned is able to look far ahead into the future and a way back into the past.

Not only would a sensitive mind make the calculation complicated because it would be affected by distant satisfactions, but it would cause further complications by its ability to reflect backward and forward several times the satisfaction obtained from saving or consumption.

Suppose, for instance, that a man saves a thing which is expected to give him 100 units of utility when it is consumed. Suppose again, that time-preference is 50 per cent. The present worth of 100 is 50 and so the man gets utility equal to 50 in the first period. The knowledge of having obtained 50 units of utility would give him in the second period, after discount, 25 units of utility. The man can hope for this utility in the second period and therefore feel

in the present satisfaction worth 12½. In this way the satisfaction would be reflected to and fro and the man concerned would get in the present, that is, in the first period, a series of satisfaction. This is shown in the following table.

Saving.

First period.	*Second Period*
50	100
12½	25
3½	6¼
2 5/32	9 5/16
1 2/128	2 5/64
...	...
...	...
66·6	133·3

When time-preference is 50 per cent the man gets a series of satisfaction as shown above. If we carry the series to infinity the total satisfaction in the first period becomes 66.6 approximately, while that in the second period comes to 133.3 approximately. With a higher rate of time-preference, that is, with a higher rate of discount, the utility would be less in both the periods. If the mind is not so sensitive as to allow the reflection of utility to and fro more than thrice, the total utility in the first period would be only 65⅝. Ordinarily the utility is taken to be 50. That is, it is assumed that there is a single reflection from the future to the present. Or, it may be that full account is taken of such a series of reflection and the time-preference is said to be 100 minus 66.6, that is, 33.4 approximately.

It will be obvious that when time-preference is zero, which however is not possible, the utility would add up to infinity. With time-preference infinitely great the utility in the first period becomes zero and in the second 100.

There is an element of arbitrariness in the above calculations. If the actual consumption of a thing gives 100 units of utility and the rate of time-preference is 50 per cent, the man derives 50 units of satisfaction in the first period. It is the utility obtained from the expectation of satisfaction in the future. When such an expectation is held in the first period, it is doubtful whether the actual consumption of the thing when the second period comes can give

the man 100 units of utility. What comes after a more or less prolonged expectation seems smaller by contrast. Rs. 100 obtained when unexpected give more utility than when they had been expected for some time. The reverse may be the case only in those circumstances in which the expectation of the sum has enabled the man to plan his consumption in a better way.

In the foregoing cases it has throughout been assumed that the thing under consideration gives the same utility when actually consumed regardless of the time of consumption. In other words, the future is considered to be identical with the present in respect of wants and resources. This is, however, seldom the case in life. For many of us the future has more wants pressing on our purse than the present. In such cases the utility to be obtained by saving is greater than has been shown in the calculation above. A positive real interest is then obtained from the act of saving. A person desires in such cases to postpone consumption, that is, decides to save, even though there is no interest to be obtained in money or kind from an outside agency. The desire to save or postpone consumption in cases such as these should not be taken to indicate the presence of negative time-preference. Dr. I. Fisher in his book *The Theory of Interest* cites such examples to show that time-preference can be negative. This, however, leads to confusion. When a man voluntarily saves a sum of money (even though there is no interest to be obtained for it from another person or institution) he does so not because a *given amount of enjoyment* in the future is preferred to an equal amount in the present. He does so because a *given amount of money* yields more utility in the future than in the present. The word time-preference should in all cases refer to the preference for having a given amount of enjoyment now rather than later. It is this mistake of calling such instances cases of negative preference that is responsible for the absurd conclusion to which many economists arrive (even Dr. Fisher), namely, that the rate of interest can be negative.

CHAPTER XXXI

RISK, RENT AND PROFIT

Man's actions in a continuously changing world cannot be studied all at once. We can merely study the manner in which a person reacts to groups of stimuli at a given moment of time. A series of observations relating to his reactions at consecutive moments of time when taken one with another give us a picture of his behaviour in a dynamic world. What the economist does and can only do is to study the tendencies at work at any given moment of time and then proceed to find their resultant, that is, to calculate the effects which they would produce if no new forces were in the meantime to come into operation. He takes, in other words, a snapshot picture of the world; he studies the tendencies at work at a moment of time and on the basis of those tendencies draws his conclusions. The equilibrium of forces that he envisages is a kind of static equilibrium,[1] that is, he considers the world to be static in order to be able to predict the manner in which human beings would react to given stimuli.

In a world that was, however, really static,[2] in the sense that all the forces were permanently in equilibrium, in other words, a world in which wants, knowledge and stocks of resources did not change, wealth would be appropriated by labour, capital, organisation and land. And since land, as explained elsewhere, does not

1. For the precise meaning of static equilibrium *see* Ch. XIII.

2. The words static and stationary are used as synonyms in the text. The world cannot be imagined to be static in the sense that it is devoid of all movements. For our purpose a static or stationary state is that in which each category of factor exercises a constant net force, *i.e.*, where the components of each factor may be changing and fluctuating but the factor as a whole is constant.

We have said that a dynamic economy can be studied only if a snapshot picture is taken. The *fiction* of stationary state, as Pigou calls it, is therefore not a fiction in the real sense. For us the dynamic world is composed of a series of static worlds put side by side. The study of the dynamic world is a running study of the static world at different moments of time. As explained elsewhere, in the study of both the static and the dynamic systems, we are concerned with the determination of the position of equilibrium. In the static state the equilibrium is static; in the dynamic state it is dynamic.

really constitute a factor of production, wealth would in fact be divided between labourers, capitalists and organisers as wages, interest and salaries respectively—rent appearing merely as an element in each of these.

In a dynamic world the situation would be precisely the same and the total produce would be divided between and appropriated by the three factors of production—labour, capital and organisation, provided knowledge of existing facts and the ability to foresee the future were perfect. In such a dynamic world, just as in a stationary world, the results of productive activities would turn out to be exactly as anticipated and consequently human activities would entail no risk of loss. Production would then consist of three kinds of sacrifice, namely, labouring, that is, physical exertion; organising, that is, mental exertion; and waiting, that is, patience.[1] The fruits of these sacrifices would become available for payment to the factors of production and the excess of the payment over the sacrifice[2] would in each case constitute rent.

Labouring and organising are considered as sacrifices because man does not like to exert himself either physically or mentally; and he does not want so to exert because he prefers rest to work.[3] Waiting is a sacrifice because one does not want to postpone one's present enjoyments. Postponement of enjoyment is similar to organisation in respect of the mental pain that it entails. But while organisation is painful because mental rest (freedom from logical process of thinking) is pleasurable, waiting is painful because present gratification is preferable to equal future gratification. Waiting necessitates patience; organisation requires the drawing of logical conclusions. And since no conclusion can be drawn unless there are premises, organisation necessarily requires the knowledge of

1. We have used the word patience in the absence of a better word. The sacrifice that waiting causes is due to the fact that man is impatient by nature. Patience is, therefore, a sacrifice. It should not be understood to mean that he who is patient by nature has to make a sacrifice; he who exercises patience makes a sacrifice.

2. Sacrifice in each case has to be evaluated in terms of money before it can be deducted from the payment made.

3. The fact that a person often enjoys work does not contradict the fundamental truth that he prefers rest to work (*i.e.*, exertion) just as the fact that man may prefer to save a part of his small income does not invalidate the proposition that he prefers present enjoyment to equal future enjoyment.

certain data. An organiser must, therefore, possess a certain type of mental equipment. A capitalist requires a control over his desire to consume immediately; he must therefore possess what could be immediately consumed. Organisation is more mental while waiting is more emotional. One is concerned with the mind, the other more with feelings.

Labouring and organising require a certain state of physical and mental health and consequently after a certain stage of decline has set in, it becomes increasingly difficult, and eventually impossible, to labour or organise further. Not so with waiting. Since waiting consists merely in abstinence, with declining powers of the body and the mind it does not *necessarily* become more difficult to "wait". It is for this reason that public sentiment is so strongly opposed to opulence of those who earn their income by waiting.

Labouring, organising and waiting are sacrifices; they cause pain, for they involve going without the satisfaction of some wants. Labouring and organising cause the wants of physical and mental rest to remain unsatisfied. Waiting causes the want of consumption to remain unsatisfied. The former involves going without the satisfaction of some wants. The latter involves a mere postponement of the satisfaction of wants.[1] In those cases in which labouring or organising merely cause postponement of physical or mental rest, the sacrifices entailed should be considered as belonging to the category of waiting.

In a static world (or in a dynamic world with knowledge and foresight perfect) there must, therefore, be four categories of incomes, namely, wages, salaries, interest and rent. Rent would consist of the surplus of satisfaction over sacrifice or of income over cost. This would be true of an imperfectly competitive economy as well as of a perfectly competitive one. In the former, if things are sold for a price, rent is received merely by virtue of the fact that each factor is the owner of certain faculties that are put to productive uses. In the case of imperfect competition rent accrues for the additional reason that the person is in possession of the faculty (the right) to dispose of the goods. In whatever capacity the ex-

1. Labouring and organising are phenomena of replacement of wants; waiting is a phenomenon of postponement of wants. To labour is to exchange want of physical rest for, say, that of consumption goods. To wait is to exchange, say, the use of consumption goods now for their use later.

cess of income over cost (satisfaction over cost) is obtained, it must necessarily appear as an element of wages, salaries or interest. In the case of imperfect competition price is above the average cost so that the person who has the right to sell the goods earns a surplus over and above what he would have earned in case competition was perfect. But even this additional surplus must necessarily form a part of his income earned as a labourer, an organiser, and/or a capitalist. Thus, monopoly revenue is the rent of a monopolist. And since a monopolist must be one or more of the three factors of production, it follows that monopoly revenue is rent in precisely the same sense in which any other income is.

A labourer's wage contains an element of rent because it is greater in amount than what would be just sufficient to induce him to offer his services as a labourer. A monopolist's income contains an element of rent for precisely similar reasons. In each case the existence of rent element can be attributed to (partial or complete) absence of competition. In the case of a labourer when there are other labourers competing with him, the rent element is due to the fact that the labourer constitutes one non-competing unit. He is paid for all the hours of work at the same rate at which the last hour needs to be paid. The labourer's several hours of work do not, as it were, compete among themselves. Were it possible somehow for a labourer to compete with himself (that is, were the different hours of work to compete with one another) payment at such a uniform rate could not have been secured. The rent element, in that case, would have altogether disappeared from wages.

In a static state, therefore, since competition cannot be eliminated altogether, rent must accrue to all the agents of production and appear as a part and parcel of wages, salaries and interest.

In the dynamic world, since the ability to foresee the future is imperfect, the results of productive activities seldom turn out to be as expected. Hence, the discounted future satisfaction is uncertain and the balancing of it with present dissatisfaction or sacrifice becomes a difficult task. This element of uncertainty introduces a fourth category of sacrifice in the productive activities of men in a dynamic world. This category is risk-taking or uncertainty-bearing.[1] It is remunerated by *profit*. Profit must be sufficiently high

1. We have used the expressions risk-taking and uncertainty-bearing as synonyms, though a clear distinction can be made between them.

to make a person overcome the disinclination to put himself or herself under an uncertain state of mind. The produce, in the dynamic world, is therefore divided between labourers, organisers, capitalists and *entrepreneurs* (as these risk-takers are called).

A word might be said here about the precise nature of this new sacrifice of uncertainty-bearing. Uncertainty-bearing, or what might alternatively be called risk-taking, is a mental phenomenon. It indicates a ruffled state of the mind. Organisation, as we have seen, involves a process of logical thinking and decision taking. There, external forces act on the mind and the mind reacts to them in the light of knowledge acquired in the past. Risk-taking is not a process of thinking or decision taking. Here external forces act on the mind; but the mind is not able to react to them in the light of knowledge for the simple reason that such light does not exist. Were such light available risk would have been no risk. Risk exists in the degree in which darkness exists. Since the mind is unable to react to external forces in the manner in which it is able to do in the case of organisation, it has to suffer patiently under the pressure of uncertainty.

The intensity of sacrifice involved in taking risks depends on the knowledge of uncertainty and the mental constitution of the *entrepreneur*. The knowledge of uncertainty depends on uncertainty itself, *i.e.*, on the external forces which affect the results of productive activities, as also on the ability and the desire of the *entrepreneur* clearly to foresee the future. The external forces being what they are, the knowledge of uncertainty can be said to depend on the ability and the desire of the *entrepreneur* to foresee the future. The mental constitution of the *entrepreneur* is another factor on which his sacrifice depends. There are some whose minds react more strongly to the knowledge of uncertainty than those of others; they are more easily ruffled by the feeling of uncertainty. There are others who find pleasure in undertaking a work which does not promise definite and certain results. For such persons risk-taking entails less sacrifice and consequently their supply price of risk-taking is lower.

Why is the feeling of uncertainty a sacrifice? In the modern world where production is carried on on the principle of division of labour the person who bears uncertainty is the one who engages hired factors of production. These factors are promised fixed remunerations on the basis of anticipated results. When the re-

sults turn out to be other than expected in such wise that the income is insufficient to meet the commitments, the *entrepreneur* has to draw on his capital to fulfil his promises to the hired factors It is the fear of such a possible encroachment on his capital[1] that makes the knowledge of uncertainty painful to him. Were it not for this fact the knowledge of uncertainty would not have been painful and production in the dynamic world would not have entailed any sacrifice over and above those which are required in a stationary world. Uncertainty-bearing, therefore, involves the risk of losing capital.

An *entrepreneur* must of necessity be the owner of capital. A capitalist alone can, therefore, take risks in his capacity as an *entrepreneur*. In other words, the risk-taker in the modern world must have money or command over money to be able to take risks. For, today, the risk-taker's risk is the risk of losing money. And he who has no money can risk nothing. It is, however, necessary to call money or whatever is exposed to risk by some other name than *capital* if we have to avoid the awkward statement that a capitalist takes risk (in his capacity as an *entrepreneur*).[2] If capital is ex-

1. As explained later, it is not capital but land whose volume is encroached upon.

It is interesting to note Prof. Michal Kalecki's views here. Entrepreneurship is accepted as a scarce factor. Because of that the marginal cost curve of production rises and the size of a firm is limited. Prof. Kalecki points out another factor responsible for the limitation of the size. It is the principle of increasing risk. The curve of marginal rate of risk rises as investment increases, because the greater the investment the greater is the reduction of the *entrepreneur's* income from his own capital invested, when the average rate of profit falls short of the rate of interest. *Essays in the Theory of Economic Fluctuations*, 1939.

2. Perhaps no economist has realised the fact that it is land and not capital that is exposed to risk. Davenport, Clark and others have stressed the point that risk is borne by the capitalist in his capacity as an *entrepreneur* or *vice versa*. For Professor Schumpeter risk-taking is in no case an element of the *entrepreneurial* function; risk is taken by the capitalist.

It is interesting to note in this connection what Prof. F. H. Knight has to say about profit. "The crucial element", he says, "in the profit problem in a society in which capital is employed, has to do with asset values. It is a question of expenditures and receipts and of the relative value of assets at the beginning and the end of the accounting period.....The main point for emphasis is that the outlays and returns compared to determine profit are not separated by any time interval, but belong to the same accounting period,

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posed to risk it should follow that risk is taken by a capitalist. I what is exposed to risk is not called capital, what should it be cal ed? The most appropriate name for it is *land.* Since land is specific factor—a factor whose return has not been debited by an opportunity cost—the stock with the *entrepreneur* that is expose to risk must exhibit this specificity character if it is to be calle land. It certainly does exhibit this characteristic. Capital earn fixed interest. It does not have to face risks. What is exposed t risk of loss (and likewise to the possibility of gain) is, therefor land. Any additional gain that is not balanced by cost is of th nature of surplus and is associated with land. Land is a free gif —a specific factor—and just as additions to it are chance gain (natural), subtractions from it are chance losses. It is characteris tic of land that its quantity is subject to variations beyond ou control. It follows, therefore, that a landholder is the only perso who takes risk.[1] In the dynamic world, the *entrepreneur* and th landlord are the same persons; it is the volume of land that is sul ject to uncertainty and consequently uncertainty-bearing is th function of the landlord.[2] If uncertainty is called enterprise an the bearer of uncertainty the *entrepreneur,* it follows that the land lord who in a stationary world has no function to perform, has t perform the function of risk-taking in the dynamic world (paren thetically we might say, in his capacity as an *entrepreneur*).[3]

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however short it may be. For any outlay in business or production the corre ponding return is not in the future but contemporary. Time and uncertaint enter into profit in a different way altogether—namely, through the capit account, or specifically, through inventories and depreciation. But capital i self is always a matter of anticipation to the infinite future''. ''Prof. Haye and the Theory of Investment'', *The Economic Journal,* 1935, footnote, p. 8(

1. A landholder or a landlord is one who owns land, the word land bein used in its true economic sense. The easiest way to picture land is to thin of all stocks of things after excluding from them all those things that ar consumed directly and those whose consumption is merely postponed. Th specificity (as also the free gift) aspect of land becomes apparent when th terms consumption and postponement of consumption are precisely defined.

2. Is it really the function of the landowner or the *entrepreneur?* Tru it is that the landlord and the *entrepreneur* are the same person in the dyna mic world; but they have different aspects. Brevity of expression is the excus for using at times expressions that lack scientific accuracy.

3. There are static and dynamic aspects of land, as it were. In its stati aspect land earns always a positive rent. In its dynamic aspect it is expose

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A person who has a stock of consumable things (consumption goods) can, if he decides to undertake a productive activity, either turn it into capital by putting off its consumption for a period of time, or turn it into land by exposing it to risk of loss (or chance of gain). If after appropriating his remuneration for uncertainty-bearing (which we call profit) the owner of consumable goods—who has turned it into land—has a surplus left over it goes to increase the volume of land or the stock that was exposed to risk. If there is a loss the volume of land is decreased. All such unexpected additions to and subtractions from the volume of land must be called unexpected appreciation or unexpected depreciation of land.

In a static state, as already observed, risk is altogether absent and consequently land is not exposed to risk. The landowner has therefore no function to perform. Yet rent as a positive and expected element in other earnings does exist in the static state. In the dynamic world land is exposed to risk. The volume of land may decrease (if there is a loss) but rent in the sense of expected gain from exchange would still accrue to the owner of land.

Does this analysis show that since risks, in the dynamic world, are always borne by a *person* in his capacity as a landholder, all landholders are necessarily risk-takers? A wage earner, for instance, who gets his stipulated wage, irrespective of the condition of the market, for the goods he is instrumental in producing seems to be taking no risk, but he has his land aspect inasmuch as his wage contains an element of rent. If it is true that a labourer (the *man* who labours) takes no risk in spite of his having the land aspect (that is, in spite of his being a landholder) it follows that in the dynamic world land cannot necessarily be associated with risk-taking. The wage earner, however, does take some risk. He is the holder of land in the sense that whatever powers or faculties he possesses yield him a surplus of income over cost. In this sense he is the recipient of rent. He takes risk because he is after all not certain that he will get what he anticipates. He certainly gets the sum of money equal to the contract wage. But the utility of this sum is not fixed and cannot, in the dynamic world, be accurately anticipated. Nor can he cor-

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to risk. We might say that the dynamic landowner (if such an awkward expression is permitted) takes risk; he is an *entrepreneur*. In the static state the dynamic aspect of land is absent but in the dynamic state both the aspects are present.

rectly value the sacrifices he has to make as a labourer. It is only when his labour is performed and he has received his wage that he can ascertain whether he has got less or more than what he expected and whether the work has involved a greater sacrifice or less than what he had thought it would. It is only after the completion of the productive activity that he can realise that some changes have accrued in his land-holding. It is true that as a labourer he does not take any risks; as a labourer he earns a fixed wage. But besides being a labourer he is a holder of land, and since he is living in a changing world, where the future cannot be clearly foreseen, this land is exposed to risk.

Land exists both in the static and in the dynamic world. It can be defined either as a specific factor (specific element in a factor) or as a free gift; that is, as a source the income from which does not need to be debited by any cost. In a static state the volume of land does not fluctuate; it earns rent (which is necessarily positive). In a dynamic world the volume of land may increase or decrease.

All concrete things that are not treated as consumption goods are either capital or land. Capital is fixed in the sense that it is not exposed to risk of loss. It is that which is merely waited for, or that whose consumption is merely postponed. It is implied, therefore, that its volume remains constant. Any part of income that is over and above the yield that is just sufficient to cover the sacrifice of waiting is the rent element in interest. And when attention is diverted to this aspect of the earning, capital appears to possess land aspect. An act of production is a process that enables capital to maintain itself. In a static world productive processes go on without causing fluctuations either in capital or in land. In a dynamic economy production may happen to increase or decrease the volume of land though it always maintains capital intact. This is quite consistent with the fact that a community may go on making greater and greater use of capital, that is, it may go on converting a greater and greater quantity of consumption goods into capital. Capital may increase, in other words, because people may decide to convert more consumption goods into capital, but the amount already so converted cannot increase because of productive processes.

In a dynamic world, therefore, there is, in the first instance, a (positive) rent, similar to the rent in a static world. Over and above that there may be (and almost always actually is) an un-

volume of land. These surpluses or losses cannot be considered as making any alterations to capital because, as already said, the capitalist does not take risk. The unexpected incomes or outgoings must, therefore, necessarily go to increase or decrease landholdings. Thus in the dynamic world though land always earns rent its volume is none the less exposed to risk of loss.

It is this fear of the loss of land that introduces the risk-taking element in production and necessitates the payment of profit.[1] Profit is thus positive for precisely the same reasons for which wages and interest are. The positive profit induces the *entrepreneur* to take risks, that is, to perform the function of uncertainty-bearing. The forces of supply and demand enable him to secure a greater amount as profit than the minimum that he would be willing to take risk for. That accounts for the rent element of profit. He earns it by virtue of the land element in his enterprise or the capacity to bear uncertainties. When production is completed he may either find that he has obtained an income over and above the positive profit with its positive rent element, or that he has not even obtained his bare profit. In the former case his land-holding would be increased, while in the latter it would be decreased. The loss of land, whenever it occurs, falls on the amount of money or any other thing that is exposed to risk, that is, on the amount that is treated as land. The extent of loss is limited by the quantity of things exposed to risk, that is, by the volume of land.

In the static world risk-taking is not necessary and, therefore, the landholder has no function to perform. Landholder, as an *agent of production,* does not exist in such a world, in the dynamic world a person, be he a labourer, a capitalist or an organiser, can take risk only in so far as he is a landholder. A labourer, a capitalist or an organiser does not take risk; he has a fixed income equal to the anticipated income. And when incomes are always as expected there is no risk. It is, therefore, the landowner element in the so-called capitalist, the labourer or the enterpriser that really takes risk.

Since profit is the remuneration for risk-taking it forms a part of cost of production. Whatever is left over after the hired factors are paid and profit is appropriated by the enterpriser is the unexpected surplus; if what is left over is negative it is called unexpect-

1. See page 324 for a clarification of this point.

ed deficit. Profit, and the unexpected surplus (or the unexpected deficit) accrue to the enterpriser. Production therefore secures for him profit and causes, in the dynamic world, an appreciation or depreciation of his land. The increase of the volume of land, called here the appreciation of land, must be clearly differentiated from profit. In most works on profit this distinction is not always made.[1]

Let us now see how the rate of profit is determined. Profit, like any other income, is determined by the supply and demand of the factor that earns it. That is, in other words, the supply and demand of enterprise determine the rate of profit. The supply of enterprise depends on the number of people who are willing and able to take risk. The ability to take risk depends, as we have already seen, on the possession of land. It does not depend on the possession of capital. Capital consists of that stock which is not exposed to risk. Capital is *invested* and earns positive interest. Our ability to take risk is measured by the part of the so-called capital which we are able to expose to risk. The quantity of land (which, in other words, is the part of stock that is exposed to risk) depends on the willingness of the people to convert consumable goods into land. This ability is itself a function of the willingness to take risk. Though the ability to take risk depends on willingness to expose one's possessions to risk, the upper limit to it is set by the amount of consumable goods available. The willingness to take risk depends on the nature of a person. The more cautious by nature a man is the greater is the remuneration that is required to induce him to take risk. The supply of enterprise is, therefore, greater when people are more adventurous. The willingness to take risk does not, however, depend merely on the psychological make-up of the man; it depends also on the degree of uncertainty

1. Professor Frank H. Knight does not distinguish profit as the remuneration for risk-taking from the unexpected surplus or windfall that we have called unexpected appreciation of land. In many works on profit distinction is made between normal profit and surplus profit. Normal profit, according to some, is an element of cost and includes either the remuneration for risk-taking (in which case it is identical with our profit), or besides it, the remuneration for the work of co-ordination of factors. It should be clear from what has been said in the text that the remuneration for organising work cannot be included in profit howsoever conceived. Clark includes in profit the income that an *entrepreneur* earns by taking and reducing risks.

that is, in his opinion, attached to the productivity under consideration.

The demand for enterprise likewise depends on the inability and unwillingness of people to take risks. Those who cannot take risk themselves must naturally be willing to hire others to take risk on their behalf. Those who cannot or would not take risk become the hired factors; others become the hiring factors. Those who have insufficient land in their possession lack the ability (to that extent) to take risk; those who are very timid or cautious likewise lack the willingness to take risk. The supply and demand of enterprise thus determined give us a certain rate of profit. Shift of human resources from the hiring factor to the hired ones or *vice versa* takes place continuously in the dynamic world in order to equate the supply and demand of enterprise.

The demand for risk-taking can also be said to depend on the productivity of risk-taking. The marginal productivity of risk-taking can be determined by decreasing risk-taking by one unit. When the other factors are maintained in the same proportion and quantities as before and enterprise is reduced by one unit the difference manifests itself in the greater concentration of factors under each unit of enterprise. With such increased concentration the productivity should not as a matter of fact decrease at all. And if it does not decrease, marginal productivity is zero. This is true if enterprise could be separated entirely from other functions of production. With one enterpriser less, for instance, two of the existing production plants would come under one of the previous enterprisers. And since the enterpriser does no other work except that of risk-taking, it would not make any difference to production. Productivity of enterprise cannot, therefore, be determined in this way. It may however be said to consist in the relief from uncertainty bearing that the hired factors get. And this relief is dependent on their unwillingness to take risk. It is thus, as said above, the competition of those who are willing and able to take risk and those who are not that goes to determine the price of risk-taking. In equilibrium this price equates the supply of and demand for risk-taking.

It will be obvious from what has been said above that the remuneration of risk-taking (*i.e.*, profit) need not equal the loss that land suffers (when it does suffer, or what it might in the long run suffer) in production. In other words, it is possible for a com-

munity to find itself with less resources in its possession than it had anticipated at the beginning of its productive activities. Likewise, it is possible for the resources to be greater than anticipated.

According as there is, on the whole, a greater or smaller quantity of resources at the end of productive activities than what had been anticipated the price of risk-taking falls or rises. For, in the former case, the supply of enterprise increases, while in the latter it decreases. Thus the price of risk-taking (profit) while bringing about equilibrium between the demand for and supply of risk-taking, tends also to annihilate all differences between the anticipated and the actual results. In other words, the forces of demand and supply operate to bring about, in the light of knowledge gained by experience, a better distribution of resources and to reduce all accidental or unexpected surpluses or losses. Since knowledge is imperfect it is never possible so to utilise all available resources as to make them yield profit, wages, salaries and interest (with a rent element in each of these) without any surplus or deficit to increase or decrease land-holdings.

The entire exposition so far has adopted the popular terminology and stuck as far as possible to the commonly accepted views on profit. And yet it has been possible for us to make a clear distinction between profit and accidental gain or accidental loss. And that has been our main object here. It, therefore, became necessary to dilate on some relevant points in order to emphasise the fact that when an accidental gain accrues it goes to the credit of the landholding of the man who is functioning as an *entrepreneur*. And when unexpected losses are incurred the landholding gets depleted. It is the land in the possession of a man that comes to be exposed to unpredictable variations. We have stuck to the view that the *entrepreneur* needs profit to compensate him for the sacrifice involved in exposing the landholding to such fluctuations.

But our views, where we do not adopt the popular terminology, are to an extent different. We believe that an *entrepreneur* needs to be remunerated not for any risk that he takes but for the feeling of uncertainty that he bears. Risk of any possible loss of his landholding is counterbalanced by the knowledge of the possibility of gain. These two variations in opposite directions are so balanced as to leave the *entrepreneur* free of any feeling or fear of risk. The remuneration of hired factors are so fixed as to leave him (as

far as his knowledge goes) evenly poised at the point of no gain and no loss. And yet, the world being what it is, he knows that though the chances of loss are neutralised by those of gain there is a neutral type of uncertainty in his mind. The very fact that his mind reckons in terms of *chances* (even though neutralising chances) makes him entertain a feeling of uncertainty. It is for this feeling, never liked in itself, that the *entrepreneur* needs a remuneration. This is his profit.

CHAPTER XXXII

DEVELOPMENT OF BACKWARD COUNTRIES: CAUSES OF UNDER-GROWTH

While happiness is the ultimate aim of all economic activities, it is secured, in most cases, through the production and use of wealth. The periodic or annual output of the wealth of a country is known as its national income. It is this income that is attempted to be increased in order to increase welfare. All productive activities are the result of the application of human resources to those provided by Nature. Thus, labour, organisation, waiting and uncertainty-bearing (to use technical terms) when combined with the gifts of Nature, ordinarily called land, produce utility-producing goods and services for the consumption of a people. It is naturally the aim of every economy to raise this income to the maximum possible extent.

Our experience shows that most of our economies, if not all, have suffered in the past from two kinds of leakages of national income. Both these can ultimately be traced to inefficiency of our productive organisation but more particularly they can be described as caused by, first, periodic under-employment of all our resources and, second, a more or less permanent unemployment of certain actual or potential means of production. The former is the problem of the trade cycle or business fluctuations while the second is what has come to be called the problem of secular stagnation.

Secular stagnation is caused by certain available resources of a country remaining unemployed due to some institutional factors. While cyclical fluctuations leading to temporary under-employment of resources are caused by what might be called an over-shooting of the mark (such as, for example, over-saving or over-investment) secular or the more permanent type of unemployment is caused by certain features of our economic order that fail to bring wants and the power to satisfy them together in the same hands.

To these causes of leakages of national income which it is our object to maximise we can add a third one of a slightly different kind. Not only do the available (ready-made, as it were) resources remain under-employed, some potential resources too remain

unexploited. That means in simple words that some of our natural as also man-made resources are not fully developed. This factor has come to be called the problem of under-development. Some countries are more under-developed than others and a country that is under-developed in comparison to one may be over-developed in comparison to another. There are degrees of under-development and there can perhaps be no absolute connotation of this term. Perhaps for this reason, along with others, those countries that were called under-developed are today called developing countries. That, however, is not much of an improvement over the older terminology. For, in a sense, every economy is developing: the process of development is continuing and will for ever continue in all the economies of the world.

In this chapter we are not specifically concerned with the first type of leakage of wealth and income that is caused by cyclical fluctuations. This is taken up in the chapter on Industrial Fluctuations and Unemployment. We are then left with two issues. First, how to avoid a more or less permanent under-employment of available resources and, second, how to develop the potential efficiency of existing resources so that they can more effectively contribute to the production of wealth. We must remember that wealth is only a means to an end: the final end always being happiness of mankind, or welfare.

The two questions just mentioned are closely inter-related. Steps taken to reduce under-employment of existing resources would also help us to develop more fully the productive efficiency of the more or less unexploited resources. Why is it that in some economies Nature-given resources remain very insufficiently exploited? Why is it that in spite of the desire to grow and develop and in spite of the countries of the world coming close together through a system of mutual dependence, all economies have not developed equally? Some difference in the degree of development can always be understood: but today the difference is so great that our ordinary understanding of the working of economic factors fails to offer a satisfactory explanation. Let us, therefore, address ourselves in this chapter first to the question of the causes of backwardness or relative under-development.

The literature on the topic under consideration is very wide. In recent years a number of books and articles concerning the various problems of development have been published, written,

among many others, by W. A. Lewis (Theory of Economic Growth, 1955), W. W. Rostow (The Take-off Into Self-sustained Growth, E. J. Mar. 1956), S. Kuznets (Towards a Theory of Economic Growth in National Policy for Economic Welfare at Home and Abroad, 1955), R. Nurkse (Problems of Capital Formation in Under-developed Countries, 1953), T. W. Schultz (The Role of Government in Promoting Economic Growth, in The State of the Social Sciences, 1956), K. K. Kurihara (Growth Analysis and the Problem of Capital Accumulation in Under-developed Countries, in Metroeconomica, Dec. 1954), P. N. Rosentein-Rodan (Capital Needs in Under-developed Countries, Economique Appliquee, 1954), Maurice Dobb (Some Aspects of Economic Development, 1951) and G. M. Meir and R. E. Baldwin (Economic Development). Excellent material is contained in these writings but we shall deal with the problem in our own way here.

The expressions, backward countries, under-developed (or developing) countries and countries with under-growth are often used as synonyms. The word backward economy is a general term and has never claimed for itself a technical meaning in economic writings. But it has been used in the sense of under-developed economy. But growth and development are two different words with meanings of their own.

An economy is an organism in the sense that it is capable of expanding or contracting from within itself. It is in that sense an endogenous system, propelled by internal forces that have not harmonised themselves or attained equilibrium. This internal disharmony of forces within a system results in the absorption of environmental or exogenous material. It thus grows or expands in its efforts to put its own house in order, as it were. An economy, therefore, reacts to its environments, absorbs elements taken from them and grows as a result. But, it might be mentioned here, a time comes when due to its having reached internal equilibrium it ceases to make an inroad on its environments and begins to show signs of decay. In other words, no system can grow without limit. Growth manifests itself objectively by increase of goods or wealth. An economy grows by acquiring, producing and consuming more wealth. Increase of consumption and production goods is the objective result or exhibition of the growth of an economy.

But the word development has a different connotation. A developed or developing economy may not be a growing economy. An

economy is said to be developing when it is increasing its stock of capital-goods. Or to be still more correct, an economy is developed when it has a large stock of production-goods produced by it. Development, therefore, consists in the production of capital-goods. When such a development is taking place in a country its stock of consumption-goods may be limited and hence, in that sense, its growth is retarded. An under-developed country can have a large stock of consumption-goods and a well-developed country can have a small stock of consumption-goods. Just as there is a difference between a well-developed physique and an over-grown or well-grown body, there is a difference between a well-developed economy and a well-grown economy. The development of a country is, therefore, to be judged by the state of its capital structure. India, for instance, is under-developed not because we have not a sufficient *per-capita* income of rice, wheat, cloth, milk, sugar, etc., but because our capital-structure is poor. It is because of this connotation of the word under-development that the need of capital-formation and improvement of production technique is emphasised for an under-developed country.

In spite of this basic difference between growth and development the two cannot for long remain separated. A country that is gifted with abundant natural resources and has a small population can remain materially well-off for a long time without having to develop her capital structure. But sooner or later her population is bound to outgrow her production of material resources needed for a comfortable life and the need would then be felt of capitalising her economic system to a greater degree of intensity. It is for this reason that we generally find an under-developed country materially poor with a low standard of living.

Under-development and under-growth, therefore, generally go together. What is the cause of under-development? Having seen that under-development is a relative term, our question amounts to enquiring why one country is less developed than another. And that makes us investigate into the factors on which the development of a country depends. But development depends on capital formation and so we have to see on what factors the formation of capital depends.

Creation of capital depends, in the first place, on the availability of natural resources. Capital is formed by the application of human

labour and skill to the resources supplied by Nature. But objectively looked at capital consists of rearrangement of natural elements. And in a way, therefore, it can be considered as the outcome of the growth of land, growth of natural resources. They grow by absorbing one another. Physical transformation of land into capital can only take place through a process of one natural element acting on another. But there is a systematic way in which these elements must act on one another and that way is guaranteed by the human mind that exploits Nature's gifts. We can say, therefore, that there must, to start with, be the desire to grow, to enjoy a higher standard of living. Unless that is there no efforts necessary for the development of capital-structure would be forthcoming. It is not meant to say that the desire to grow and satisfy a growing number of wants is desirable in itself. In fact, as shown elsewhere, such a desire is self-defeating in its purpose. But if our productive system has to become capital-intensive such a desire to satisfy more and more wants must be there.

Next comes the psychological willingness to make necessary sacrifices. One has to pay a price for every good thing. An economy, if it has to have a developed structure, must be prepared to make adequate sacrifices for it. Capital is born of postponed consumption. That is why we say that waiting is the function of the capitalist. The resources that are used for the production of consumption-goods must be diverted to the production of capital-goods. For the time being an economy should remain content with a restricted amount of consumption-goods. This is, in the final analysis, the sacrifice that is needed. The people of an under-developed country should not only have the desire to improve their material standard of life they should also be willing to wait, to make some sacrifice of the enjoyment of life in the present for the sake of living a better life in the future.

Once the necessary psychological make-up is given the rate of growth of capital will be the function of natural resources. For, human psychology has to operate on material resources supplied by Nature. A country must have primary goods in plenty if it has to develop. There must be mineral resources, a fertile soil, water resources, a suitable climate and in short all that is needed for the production of capital-goods.

The natural resources above mentioned are all exogenous factors. There must be a suitable climate which is also an exogenous

condition for development. But a country needs also another type of climate—climate that is more endogenous than exogenous. There must be a favourable social, political and religious climate. The human mind must have a suitable framework within which to function. The mind of a man, on which development ultimately hinges, needs the support of institutional factors. There should be no restraints on his ability and willingness to make necessary sacrifices for the sake of development. The political system, social customs and religious beliefs and practices must side with the captains of the productive system and co-operate with them for the formation of capital.

And in the end we must recognise the importance of technical knowledge as one of the factors on which the rate of development of an economy depends. This knowledge refers to the manner in which natural elements act and react, it refers to the properties of material objects. Technique of production is determined by scientific knowledge, knowledge of chemical and physical sciences and mathematics. Unless an economy possesses the necessary technical knowledge no development can be expected to proceed at a rapid rate. There are two ways of acquiring such a knowledge. One can borrow the technique of production from other already well-developed economies or invent and determine its own technique. In the modern world both the ways are adopted with perhaps a heavier leaning on the former. Whether we choose to adopt one way or the other some sacrifice has to be made. Some expenditure of money is needed both to experiment ourselves and to get ready-made knowledge from other economies. And here, as far as the latter alternative is concerned, a country has to depend on the willingness of others to make their own findings available to us. And here, again, the influence of political ideologies is an important consideration.

A word may be said about the distinction between capital-widening and capital-deepening processes. Increased use of capital, so necessary for development, can take two forms. First, an economy may use more capital-goods of the same kind as before. Second, it may use different and of course more efficient kind of capital-goods. The latter system is called a capital-deepened structure. Here a relatively greater initial expenditure is needed on capital: the system becomes more mechanised. With a smaller amount of human sacrifices a larger output can be turned out in

this system once it begins to operate. That is because the methods of production become more round-about. Work is transferred from the human body and mind to machines. It is this capital-deepening process that we have in mind when we talk of improved technique of production. The development of an economy needs, principally, capital creation of this kind.

We have defined development and have enumerated the factors on which capital creation depends. Having done that we know the causes of under-development or slow growth of an economy. Let us remember that we are not advocating rapid growth for any economy; our observations are neutral. We are making here a factual study, a positive and objective study of facts. Whether it is desirable to be well-developed and consequently to emulate the example of other more highly developed countries is beside the point in this study.

A few more specific statements might here be made about the causes of under-development. We mentioned earlier that the absence of a strong desire to grow, *i.e.*, to satisfy an increasing number of wants, is one of the primary causes of slow process of capital formation. Under-development of a country is, therefore, the result of contentment. Where people are contented with whatever they have or with whatever they have been accustomed to having, where their minds are at peace, where their mental resources are in harmony one with another, there the desire to accumulate wealth or raise the standard of living is weak. Capital in such a climate does not accumulate rapidly. A backward country is for that reason one where as a substitute for material wealth people have peace and contentment. They show a more complete resignation to the will of God: they have a tendency to yield to all the external forces that act on them. They are less aggressive in their attitude to Nature and to their fellow brethren than the members of a more developed society.

By contrast, the people of a highly developed economy are less satisfied with their lot and consequently they are able to raise their material standard of life only at the expense of mental peace. With the accumulation of wealth the number of unsatisfied wants increases and they begin to play havoc with the real welfare of the people. Sooner or later people come to realise their folly in pursuing an end that never can be reached. But old habits die hard and in an

economy that has adjusted itself to a high plane of living people find themselves crushed under the weight of the wealth they have themselves produced.

Capital formation proceeds more rapidly when people not only feel the want of a better material standard of living but also have the necessary foresight wherewith to visualise the long-period effects of a mechanised system of production. The deepening of the capital structure of an economy requires restriction of consumption in the present. The sacrifice thus made is rewarded by increased production of consumption-goods at a later date. Unless, therefore, people have the faculty to see the distant future they cannot be expected to cut down their present needs and spend their resources on the production of new forms of capital-goods. Such a faculty is rare in a country where people are contented with their lot. One cause of under-development, therefore, gives rise to another cause: each acts on the other and retards the progress of development. In a country that has made some progress already people have a better vision of the future; their ability to visualise the benefits of a capitalised system of production develops as increased production of wealth whets their appetite for accumulation of further wealth and stimulates (an irrational) desire for a more comfortable living.

Given the above requirements of capital formation the rate of development depends on the people's willingness and ability to make the necessary sacrifices. To be able to see the rosy picture on the distant screen is not enough; one must also have the will-power to curb one's immediate desires and march patiently on the road to the future. People who are by nature contented with what little they have are precisely those that are likely to lack such a will-power. The need to stir up their determination to go ahead is not so strong in their case as in that of people who are thirsting for wealth and power. It is easy, therefore, to see how one cause of backwardness gives rise to another. Rightly has it been maintained, therefore, that progress (!) must be initiated with a desire to have a higher standard of living. People must be made to feel dissatisfied with what they have so that they may make the necessary endeavour for the provision of greater satisfaction in the future. But, alas, little does the human mind know that a dissatisfied and grunting man is just one who tries to catch at the shadow.

The importance of objective factors must not be lost sight of. On what will subjective determinants of development act? Mind and will-power cannot produce a rabbit out of a hat: there must be raw-material for man to work upon. These are called in economics, land or the good gifts of Nature. Resources of all kinds have to be worked up into capital-goods. The development of a country is, therefore, subject to the important constraint imposed by the niggardliness of Nature. While one cannot minimise the important part that natural resources must play in economic development one must, at the same time, remember that Nature is not as partial as some of us might believe. There are varieties of resources in the world and while one country may have more of some of them others have more of other kinds. On the whole perfect equity might not be there in the distribution of Nature's gifts but it is not difficult perhaps to over-emphasise that fact. In the end, let us note this as one of the factors on which the extent of development must depend. Natural resources are necessary and to an extent determine the direction in which development proceeds; but the over-all development of an economy is more a function of the subjective factors noted above than anything else.

But to work up natural resources and produce capital-goods we need technological knowledge. This knowledge can, if one likes, be called the knowledge of the behaviour of material goods. Where such knowledge is wanting development suffers. In common discussions of the problem of slow growth much is made of the non-availability of technical knowledge, somewhat crudely called these days the *know-how*. Without undermining the importance of this knowledge it can be maintained that the main cause of scarcity of technical skill is contentment. Pure intelligence, the ability to reason and arrange phenomena in their natural and temporal order, is never wanting in any community. But pure intelligence is passive in nature and unless there is a desire to use it, it remains dormant. It is said that where there is a will there is a way. That is very true in this context. The best stimulant to inventions and discoveries is the desire to have a high standard of living. The mind that is dissatisfied with the standard of comforts enjoyed seeks new ways of exploiting Nature. And here the word *exploiting* is very appropriate indeed. Man can have more by robbing Nature and, in the final analysis, there is perhaps no other way of progressing on the material plane. Necessity is the mother of invention: let us feel the necessity of living well and inventions will follow.

An under-developed country can utilise its own mental resources and develop the needed technology. That is the right thing to do. But the correct method is always a slow method also. To expedite development a backward country, therefore, borrows skill in very much the same way in which it borrows goods. It also buys skill and uses it for its own purpose. But one cannot for ever go on borrowing or buying. That is a palliative only. Sound economics suggests that we have real cures for our maladies. If we have to have a sustained rate of growth we must stop relying on foreign technical skill and plan to evolve a technology of our own. But where people are not bubbling with wants such an evolution is difficult to bring about. We realise once again that most of the causes of under-development spring from internal equilibrium. Where the mind is at peace development is not needed.

We have been talking more or less in microeconomic terms. Let us now consider the influence of the part that the government can play in the economic development of a country. An ideal government is one that helps the people to satisfy their wants easily, quickly and to the maximum extent. But wants are of many kinds and often of a conflicting nature. The satisfaction of some of them goes counter to the satisfaction of others. Wants for material progress are opposed to those for spiritual development. A good government caters to both these kinds of want. Where emphasis is laid on material progress spiritual values of life suffer. The reverse is the case where spiritual development is held in high esteem. There are diverse ways in which a government can either help or hinder the efforts of individuals in the satisfaction of their wants. It can make people more dissatisfied with their lot than before and thus stir up those activities that lead to material progress. By a good system of education it can build up a social psychology that is favourable to growth. It can help and encourage the people to save more income and build up capital.

The part that the state can play in the development of a country is now increasingly recognised. In particular, what it can do to increase the tempo of economic activities and lessen the extent of unemployment of resources has received the attention of economists and politicians alike in recent times. Here we are not concerned with the study of that problem. We simply note that one of the factors on which development depends is the manner in which a government performs its task of looking after the welfare of the

people. A callous and inefficient government can, therefore, be considered as one of the causes of under-development.

It is sometimes said that a country is poor because it is poor. This is anything but logic. Can poverty be the cause of poverty? Can anything be its own cause? The answer is in the negative. What does poverty mean? It implies a low *per capita* income, of course income in real terms. But income is derived from capital. Income flows from capital. Capital is a stock and income is a flow. If income is low it can be due to two reasons. Either the stock of capital is small or the capital-output ratio is high, or both these causes are operating together. To remove poverty we must, therefore, operate on these two factors. We must increase capital formation (we must increase the rate at which capital is created) and we must make it produce more income. The first amounts to what is called expansion of capital, the second to its intensification or its deepening. In simple language, we must have more capital and more efficient capital. But for these changes in the structure of an economy one and only one thing is needed and that is increased saving. Unless a country saves more, unless it consumes less, it cannot build up a larger stock of capital-goods of the same kind or transform capital of less productive type into one of greater productivity.

Saving is a kind of surplus. When a country is poor its capacity to produce a surplus is low because its ability, as also its willingness, to save is at a low level. But as by the process of saving and turning it into appropriate type of capital-goods a country becomes richer its ability to save increases and along with it the willingness to postpone consumption also gets strengthened. It becomes, therefore, easier to get richer. The rate at which poverty decreases goes on increasing. This is the familiar law of increasing returns. The cause of poverty is not poverty. All that can, with respect for logic, be said is that due to the operation of the law of increasing returns it is easier for a rich country to develop than it is for a poor one.

CHAPTER XXXIII

PROCESS OF DEVELOPMENT: CAPITAL FORMATION

Having defined development in terms of creation of capital, having seen that development, as against simple growth, requires improvement in the quality and quantity of capital-goods used, we can say that the process of development of an economy must manifest itself in the formation of real capital. What is necessary, however, for sustained development is that creation of real capital should be accompanied with full employment of available resources. The development of an economy leads to growth (of income, for instance) but growth does not necessarily lead to development. We can judge the success of development, therefore, by the rate or extent of growth of, say, national income.

Given the resources at any particular time the problem before an economy is how to employ them in the production of income. As new (forms of) capital comes into being the proportion of factors of production changes and consequently the problem of how to employ the available factors is continually kept alive. Whether capital is undergoing the process of formation or has stopped growing, the problem at any particular time or during a period of time is to put the given resources to optimum employment. Naturally as students of economics we can say that the total supply of the various kinds of resources should be distributed among different uses according to the principle of equi-marginal productivity. This is the problem of allocation of resources.

Optimum allocation of resources has to encounter many obstacles. Full knowledge of existing resources and full knowledge of methods and technique of production constitute the prime necessity. Such knowledge is always wanting and that is our first obstacle. Next, there should be perfect mobility of factors of production. We should be able to move factors from one place to another and one productive use to another. This is not merely a matter of transportation; there are social, political and religious impediments to the movement of factors. For optimum allocation of resources all these subjective and objective obstacles should be

removed. Then, there are purely economic obstacles such as those provided by the behaviour of producers and consumers. As we know, and it has become a commonplace of the economist's stock of knowledge, savings are made by one set of people and investment by another, at least to some extent. Savings and investment, therefore, do not always run parallel to each other. Excess of one over the other causes either under-production or over-production. Factors of production thus, at times, remain under-employed. Optimum allocation of resources cannot be effected when some factors are under-employed. We are not concerned with the explanation of the phenomenon of under-employment equilibrium: we are making only a passing reference to that phenomenon as it constitutes one of the obstacles to optimum allocation.

There are, over and above these, some institutional factors that act as impediments to ideal allocation of resources among different lines of production. For example, when competition is not pure and perfect, monopolistic element in the market might serve to restrict the employment of certain factors as it becomes more profitable to produce less than the competitive output. Again, as we live in a money economy, the employment of resources depends to an extent on the availability of finance. The banking system should be ready to supply credit when it is needed for genuine purposes. Money (credit included) should facilitate economic activities but not control them. Money should be neutral; it should not by its over-supply inflate prices or by its scarcity deflate them. If money begins to dictate its own terms, as it were, resources cannot be optimally allocated.

Creation of new capital, capital formation as it has come to be called, is not entirely a different problem from that of optimum allocation of resources. Natural resources and human factors need to be judicially and optimally combined to produce the needed real-capital. Development of an economy through the creation of new capital-goods, therefore, requires the same attention: we must distribute the resources among different uses in the best way. When we concentrate our attention only on consumption-goods the allocation problem becomes a short-term problem but when we bring within the focus of our attention capital-goods also the problem acquires larger dimensions—the problem of allocation has to be solved from the long-period point of view. This point is of some importance as it bridges the two separate problems of the best use of existing re-

sources and the creation of new resources. Static conditions are thus considered along with dynamic conditions. It is often said that the problem of optimum use of existing resources is a problem in static economics while that of the creation of new resources or the formation of capital of more automatic type is a problem in dynamic economics. From what we have just mentioned it should be clear, however, that such a dichotomy stems from a defective understanding of the working of economic forces. New capital, new methods and technique of production, cannot spring from nowhere. They are created and developed out of the existing resources and consequently constitute the very same problem of optimum allocation of resources, considered only from an extended point of view.

In this connection we might mention some other impediments to the best allocation of resources and, therefore, also to development. International commercial relations giving rise to international trade is, in normal circumstances, expected to assist the process of development. To trade with other countries is to make another use of our resources and we shall make that use only when it is found to be a better use. Thus, international trade can be regarded as a sign and a cause of development. That both the trading countries, or all the trading countries (in the case multiangular trade), gain by such trade should, therefore, be admitted. But all our statements in economics are based on certain assumptions. Our propositions are logical conclusions from assumed premises. Further, we assume that other things remain the same, so that the given premises do not change. It is argued in certain quarters that the propositions in regard to international trade are based on premises that are not always correct. For instances, what is the cause of foreign trade? All of us know that international trade arises due to immobility of factors of production (at least of one) as between regions. Otherwise instead of produced goods moving across the frontiers factors of production (that earn income) would have moved. The assumption of immobility is not questioned but it is maintained that even within a country factors are not mobile. That gives rise to conditions of international trade even within the boundaries of the same country. And if that is the case then international trade is just a kind of trade that goes on within the country. In such conditions of an economy, then, international trade does not supplement domestic trade but acts as a rival. When international trade begins and gathers momentum domestic trade that could have developed is

somehow prevented from developing. Raw materials needed for industrial production, for example, might be exported even though there may be scope for their use within the domestic economy. It is for this reason that it is at times argued that when a poor or backward country engages in international trade other healthy internal developments are prevented from taking place. That might be true; but it is still arguable that perhaps in the absence of international trade things would have been worse. But because of extra-economic forces that often act in unison with economic forces it might happen that domestic, and perhaps more profitable, use of resources is prevented by the institution of foreign trade. If so, international trade in certain conditions becomes another impediment to the progress of an economy.

We now take up the discussion of capital accumulation. We have already explained that for the development of a country, as against its mere growth, improved types of capital-goods are required. Capital deepening is very necessary for development; without it we might be able to make fuller use of the resources that are available but cannot develop those resources or, what comes to the same thing, cannot convert them into new types. How does capital accumulate? How does capital formation take place?

We have to make a distinction between real capital and money capital. For an individual industrialist this distinction is not of much significance. When he has obtained funds he can in most cases buy the required capital-goods with them. Each producer thinks, therefore, that when money is obtained getting capital-goods is a question of time only. That does not mean that converting money into machines is an automatic process. To get money and then to invest it properly requires knowledge and much work. But that is all. For an individual producer the question of the availability of real capital is not a serious problem.

When, however, we take the case of the whole economy, when we look at the problem from macroeconomic point of view, the distinction assumes importance. Money is useless if capital-goods are not available. What is required for development is, therefore, real capital. This is not the only thing required but it is one of the most important things needed for the development of an economy. It is an essential condition, though not a sufficient condition, of development. We have, therefore, to see how and when real capital would be produced. Like anything else that a producer produces

capital-goods require for their production rawmaterials and the services of agents of production. In other words, rawmaterials and human services (labour, organisation, waiting and enterprise) are needed. These should be available for the production of real capital and money should be available to buy or hire them.

Availability of money depends on the banking system and all that goes with it. An economy has a stock of money with it which circulates in the process of its being used for buying goods and services. A part of it does not circulate and, in a sense, remains hoarded. It satisfies, what Keynes calls, liquidity preference. It is used, in other words, mostly for purposes of speculation. A part of the total stock of money with a community can thus become available as capital (money-capital) to those who need it. If people spend all they earn there is nothing left for purposes of lending. And this is absolutely true when money is quickly spent. The speed with which it is spent determines whether any part of it, however small, would be available for lending. When people do not spend all they earn something is saved. This is their money-capital and it can be used as such by those who save or those who borrow it.

Hence, we can say that the finance needed for the production of real capital requires, first, that people should save a part of their incomes and, second, that they should use it themselves or lend it to those who need it for the purpose of creation of real capital. The first requirement raises the consideration of the propensity to consume while the second leads to the consideration of the banking system. We have not considered yet the question of the availability of rawmaterials and human services; we want to consider first the factors on which the supply of money-capital depends. It is in our money-economy that this becomes a separate problem. We have to buy and sell all goods and all services using money as a medium of exchange. Any way, we have to face this problem of getting sufficient money for the purpose of producing or procuring real capital.

What are the prospects of supply of money in the case of a backward or poorly developed country? It is essential to remember in this context that though as a general rule there is a large volume of money in a highly developed economy there is no invariable relationship between the state of development of a country and the volume of money in its possession. In a more developed country there is more real wealth—there are more goods of all kinds and more extensive services—but not necessarily a large volume of money.

But perhaps something can be said about the relationship between the state of development and the distribution of money. Income is more likely to be somewhat equally distributed in a poorer or less developed country than in a richer and more developed country. The propensity to save money is, therefore, low. In highly developed countries where money is less evenly distributed there is a greater scope for saving.

It is sometimes said that the propensity to save is low in a poor or under-developed country because of its poverty. People, we are told, cannot save money because it is all spent in buying the necessities or ordinary comforts of life. Whether that is the case or not should depend on the value of money. If prices of essential commodities are low something can be saved even if there is very little to buy. But in such countries perhaps prices would not continue to be low. Any way, this is question of the price level and one cannot say whether prices would be higher or lower in a poorer country than in a richer country. This question of the propensity to save and its relationship to the state of development of an economy has a logical place in the discussion of the availability of real resources.

So let us be content with noting that from the purely money-point of view a less developed country has a lower propensity to save (money) because of the greater equality of incomes. Leaving exceptions, as a country develops its income gets more and more concentrated in the hands of a few people. This tendency can be checked by special measures taken by the government. And such measures are often taken to make the benefit of development available to a large section of the population. But economic forces, as they operate in our capitalistic countries, tend to bring about a more unequal distribution of income as development proceeds. For this reason an under-developed country finds it hard to get sufficient money-capital to accelerate the rate of growth of its economy.

The two aspects of saving—saving of money and saving of real income—are so closely related together that the effort to keep them in separate compartments imposes a great strain on our mind. But analysis consists in so doing and if our thoughts have to be orderly arranged we must disentangle the forces that tend to operate together. The discovery of causal relationships which is the objective of a science needs such an analysis.

So here we have one great difficulty that a poorly developed country has to face. Money income has to be saved in sufficient proportion to stimulate growth of the economy but that cannot be done to the required extent because of a fairly equal distribution of income. It should not be taken to mean that in a country that has not sufficiently developed perfect equality of income prevails. Such an equality, even if desirable, cannot be achieved in any stage of the development of an economy. But, as observed above, whatever the inequalities of income, they get further accentuated with the growth of national income unless special measures are taken by the government to counter such a tendency. To accelerate the rate of development a greater disparity of income as between the rich and the poor is needed but it is precisely such a distribution of income that would impose perhaps an unbearable burden on the macroeconomy of the country. For speedy growth we have, therefore, to look elsewhere.

But a word might be said here about the organisation of the money or capital market. Even when individuals save a part of their income we need an organisation to pool those savings and make them available to those who can use them for the purpose of production.

The organisation of capital market plays a very important part in mobilising the savings of the people for productive purposes. But the existence of such a system is not sufficient by itself to guarantee that savings shall be turned into investment. But other things remaining the same, the better the facilities offered by the banking system for the lending and borrowing of money the quicker is the development of the economy of a country.

But the relationship between the banking system and the state of an economy is a mutual one. One cannot expect the one to wait till the other improves. If left to itself the banking system would not make much progress in the absence of a high rate of growth of national income. It becomes necessary for the government to come to the rescue of a poor country. The initiative cannot be expected to lie with the banking system; the government must play its legitimate part here in helping to provide good banking facilities to the economy in anticipation of a real demand for it in the future.

We now come to the real side of the process of saving. Money is only (and at any rate supposed to be *only*) a medium of exchange

and money saved is only a measure of real resources saved. What is required for the building up of capital is the saving of resources. We need raw materials and human services for the production of capital and these are the things that must be saved (abstained from consumption) if the economy of a country has to develop. If such resources are out of use, if some of them are unemployed, all that needs to be done is to put them to productive use. People need not, in such a case, cut down the use they have been making of the factors of production. In other words, their consumption need not be decreased to enable increased production and use of capital-goods. In a poor country, or in one that has not made much progress, such unemployed resources are frequently to be found. Labour is generally under-employed and other natural resources needed for the production of capital-goods, therefore, remain inadequately exploited. In a way, we can say, real saving already exists. It is not saving in the logical sense; but resources are available in the same way in which they would be were the people actually to save real resources.

While such under-employed resources are often to be found in the case of poorly developed societies, it might still be of interest to see what would be needed where such voluntary idleness does not exist. The analysis would be more appropriate to cases where the development of a country has already made some progress. However, let us proceed with our work.

Let us fix our attention on the fact that for the creation of capital-goods resources are needed and if they are not available we must economise their use in the creation of consumption-goods. In short, resources must be shifted from one use to the other. That can be done only when the people are willing to consume a smaller quantity of consumption-goods than before. Who will tell them that such a sacrifice is needed? And who will persuade them to make such a sacrifice? One way is persuasion by the State. Where there is at all some scope for curtailment of consumption, government can adopt various ways of tempting or persuading people to do that. Take, for example, the floating of a loan bearing attractive rate of interest. That would tempt at least some (who can manage with restricted consumption) to buy the government loan. Where much scope for reduction of consumption exists this method is very successful. But in a country where development has made little progress the scope for cutting down expenditure on consump-

tion-goods is very much limited. Whatever little can be achieved would however be achieved by government borrowing.

Government borrowing releases factors of production for gainful employment in capital-producing industries in another way also. Money thus obtained by the government, when invested in capital-goods industries, would in course of time increase the national income. A part of this additional income would become available for further investment. In other words, when a nation's real income increases it becomes easier for it to cut down its consumption. That is, if the previous level of consumption is maintained there would be a greater percentage of resources that can be spared for use in the production of capital-goods. To put it in a different way, wise expenditure of borrowed money would increase the productivity of investment and thus enable an economy to manage with a smaller supply of factors for the satisfaction of its wants of consumption-goods.

Much cannot be expected, however, from government loans bearing a high interest rate. That is a very weak inducement to consume less and thereby release real resources for use elsewhere. For, a poor country with its poor and satisfied population has no desire to have a higher standard of living. Where people have an aversion to new ways of life and new methods of production, leisure is preferred to goods. There hardly exists any inducement to make sacrifices in the present for the sake of increased consumption in the future. In the previous chapter we have enumerated the characteristics of the people of a backward country and indicated the obstacles to development. Suffice it to emphasise it here that a high rate of interest on government loan is hardly an inducement to capital formation.

An alternative to this type of voluntary saving by the people is what is called forced saving. It is open to the government of a country to print notes and create money for itself instead of borrowing it from the public. In this way finance can be obtained for the production of capital-goods. With the money thus created factors of production can be bought or hired. A slightly higher rate of remuneration to them would draw a part of their supply from existing consumption-goods industries. This method substitutes more effectively government investment for private investment. But deficit financing, as this is called, has its own disadvantages. Prices rise and the entire pattern of distribution of income changes.

As the rise of prices is not uniform it causes hardship to certain classes or categories of people. However, it is possible to make some progress by adopting this method. Under certain favourable circumstances capital formation can be secured. But the circumstances may not be favourable. Social and political atmosphere in a poor country might militate against a rapid development of its economy. A backward country lacks, at times, that stability of its government which is to be found in an advanced country. Social ways of living being more primitive in a poor country there are bound to be leakages in the economic system. Increase in income is likely to be put to wasteful (from the point of view of development) uses. There has to be an all-round progress in the economy. The whole pattern of living and thinking has to adjust itself to the requirements of development.

For the reasons given above one should not expect a miracle. A backward economy must plod its way upwards to development. Those countries that are today highly developed in the technique of production and are enjoying a high standard of living had to pass through long years of hardship. Good things of life cannot be had without appropriate efforts; one must be prepared to work and wait patiently. And that enables us to sound another note of warning. No attempt should be made, either, to speed up progress. We must remember that *slow and steady wins the race.* What we are witnessing in our country is a sorry state of affairs. Perhaps much wasteful expenditure could have been avoided if we had remembered that we cannot grow rich overnight.

We have said that the whole pattern of living and thinking has to adjust itself to the requirements of development: and that must of necessity be a slow process. Tacked on to the attitude of resignation there is a rapidly growing population in a backward country. Unless our attitude to life changes in the matter of the size of a family, for instance, we cannot derive full benefit from our efforts to promote capital formation. Social and political reforms must go side by side with economic reform. We should not be unduly optimistic about our being able to bring about a rapid rate of development. And for the same reason we should not be disappointed if success is slow in coming.

We have seen what we can do to initiate or speed up development when there are no idle resources. That, however, is only a

theoretically possible position. In a country that has not been developed to any very great extent there always are some unemployed resources. In particular, there is unemployed labour and there is also some disguised unemployment of labour. Further, mental resources in a poor country are also not properly exploited: we can say that organisation is under-employed. In simple words, human intelligence is not fully used (developed) so that skill and technical knowledge are found wanting. There is very little application of science to industries. Unless full use is made of the mental faculties that a nation is gifted with development cannot be stepped up. We can say, therefore, that in countries that are not well developed there are some unemployed mental resources (organisation is under-employed). Moreover, in such countries people are not very enterprising, partly because of political instability (if that is there) and partly because they have limited wants and do not care to raise their standard of living by working harder and taking increased risks. In one word, then, in a backward country there almost always are under-employed resources. To initiate or speed up the development of such a country we must adopt measures to increase the employment of these under-employed factors of production.

The problem of development is, therefore, threefold. As a necessary first step to growth is the creation of capital-goods. We must first have adequate finance wherewith to start the process of deepening of the capital-structure of the economy. That, as explained above, can be done by altering the distribution of income, making it less equal, howsoever undesirable that may be as an ultimate ideal. In the next place, we have, thinking in terms of real capital, to make provision for its production. Factors of production are needed for that. If they are available due to under-employment we have to take measures to employ them through the agency of the government. Left to themselves, for the reasons stated above, the people would not utilise the idle resources. They are too contented with what they have to think of increased production and lack assurance of adequate reward for their work and enterprise. Where there is scarcity of some factors of production, such as specific types of natural resources or man-made instruments of production, factors of production have to be diverted from consumption-goods industries to capital-goods industries. Various ways of effecting such a diversion have been explained above. Taxation, loans and deficit financing are some of the means to that end.

All the three steps mentioned here are interlinked, as they necessarily must be, each having its impact on the others. But the problem is not a simple one. The whole socio-economic and politico-economic set up has to change. Patient endeavour is required and we have to have a sense of proportion lest in our enthusiasm to develop we overshoot the mark. The existence of developed economies is a spur to progress. But jealousy and envy have to be guarded against. We must not forget the hard toil and sweat that developed countries needed before they could reach their present state of development.

The process of development can be accelerated by the help of other already developed countries. It is not impossible for a country to depend entirely on its own resources, physical and mental, for the development of its economy. But the process would then be slow and an attempt at acceleration of the rate of development would impose a great strain on the people. Development of all kinds shower their benefits on future generations. The present has to make sacrifice the reward for which is obtained after a long time in the future. There is a way of spreading this sacrifice over a period of time: a country can pawn its future, as it were. In other words, the present generation can borrow consumption-goods from future generations. The best way to do that is to take the help of foreign countries. Borrow from them goods and skill so that you may not have to make heavy sacrifices. The debt can be paid off easily in the future out of its own productivity.

It would not be unwise, therefore, for a poor country to rely on the help of developed countries. Let those countries act as lenders or capitalists: let them lend machinery, essential raw materials and technical skill. Such a reliance on other countries constitutes an act of co-operation between countries. It constitutes international trade in capital: the borrowing country buys present goods in exchange of future goods.

It has been calculated that in a developing country the capital-output ratio is, in general higher than that in a fairly advanced country. The ratio might be anywhere between 3 to 1 and 6 to 1. That means that to get an output of the value of a crore of rupees we would have to invest anywhere between three and six crores of rupees. In the initial stages of growth, therefore, heavy investment is needed. For a reasonable rate of growth of the economy

of a poor country over 10% of its national income has to be invested in production. It is this burden that can be greatly reduced if it could be spread over a number of years. And the one easy way to do that is to borrow money (necessary real-capital and other resources) from those foreign countries that are willing to lend without strings attached to their lending.

CHAPTER XXXIV

THE PROBLEM OF EMPLOYMENT IN CLASSICAL AND KEYNESIAN ECONOMICS

It is not possible to imagine a situation in which all the factors of production are fully employed. First of all, one must know what precisely is meant by full employment and, then, one must clearly define the concept of factor of production itself. This latter point is due to the possible difference between an actual and a potential factor. When a man's intelligence is not fully developed, for instance, shall we call it a case in which a factor (organisation) is under-employed? Such difficulties as the above need not, however, hold up the study of the problem of employment. As we proceed with the discussion of the problem we shall, at appropriate places, indicate what we understand by factor of production.

There are many reasons for less than full employment of factors of production to one of which attention might be drawn immediately. We are not provided with just those quantities of factors (natural and man-made—man-made factors are ultimately derived from nature-given resources) that we need for the satisfaction of our wants. When we employ the available factors, combining them in technically the best possible way, some quantities of one or more factors are bound to be left without any use for them. It is the inelasticity of technique that is responsible for it: the coefficients of production are not infinitely elastic.

We shall ignore this type of unemployment as perhaps nothing can be done to do away with it entirely. The classical ideas about unemployment and Keynes' ideas are different. In the final analysis it might become possible to reconcile them but otherwise the causes of unemployment as seen by Keynes differ from those as seen by the classical writers. And due to this difference while Keynes thinks that an economy can reach the position of equilibrium even when resources are not fully employed classical economists thought that unemployment could exist only during the process of adjustment to a position of equilibrium. Why this difference, let us see.

We can say, to begin with, that (and we shall confine our attention to only one factor of production, namely, labour) labourers are

unemployed either when they are not able to produce any commodity (services being considered as a commodity) or when they are not able to sell what they are able to produce. If they are not selling their output but consuming it themselves we shall have to substitute the word *consume* for the word *sell*. It is hardly conceivable that labour cannot produce anything and it is equally impossible to conceive of a situation in which it cannot sell what it can produce. Something can somehow be always produced and something can somehow be always sold. So we can combine the two considerations and say that labour is unemployed when it is not able to sell what it can produce or is not able to produce what it can sell. Here we synthesise the two forces that our analysis had separated. But even this last statement needs further refinement. We can always produce somehow what we can sell somehow and *vice versa*. But somehow would not do; we should be able to produce and sell without a loss. If we make a loss we would choose to remain unemployed.

Now bring in the employer of labour. We can say that a producer will employ labourers only when he can produce what can be sold without involving him in a loss. The concept of loss or profit does not need to be clarified here. The production and sale of a commodity without loss can be shown, now, to be a function of two variables. For, to avoid loss cost of production should be low or the sale price of the output should be high or, to be more logical in our statement, the cost should be low in relation to price or price should be high in relation to cost. In fact, these two statements mean one and the same thing. We can begin to investigate the cause or causes of unemployment from this point, bearing in mind that unemployment results from cost being relatively high, *i.e.*, high in relation to the price of the product.

Now look at the classical ideas about unemployment. For them the economic problem was mainly one of allocation of resources. For best results there was one thing to be done and that was to put all the resources at our command to optimum use. Transfer resources from the place and industry where their productivity is low to the place and industry where it is high. By doing that you get the best result and there will be no unemployed factors of production. They, consciously or unconsciously, regarded unemployment as the result of high cost of production. We observed earlier that people are unemployed when cost of production is too high

or the price of things produced is too low. Later we corrected ourselves by saying that unemployment results from the cost of production being high in relation to price, or price being low in relation to cost. But the classical economists looked at the problem from the point of view of production costs. Cost of production is high when a large quantity of factors is needed to produce a given output. To reduce the cost we must, therefore, transfer the factors of production to other industries where they would not be needed in such large quantities. The law of diminishing returns is all-pervading and it is because of this law that for optimum results we have to shift resources from one industry to another according to their (marginal) productivity. To sum up, labour is unemployed because the cost of production is high; it is high because labourers are not producing enough where they are seeking employment or where they are attempted to be employed. Transfer them from industries where their productivity is low to places or industries where they can produce more. If such transfer is possible there will be no unemployment.

The classical theory is correct as far as it goes. It looked at the problem of employment from the cost-of-production point of view. And it conceived of the economic problem as one of allocation of resources. They knew that everywhere the law of diminishing returns ultimately operates. The only obstacle to full employment of resources is the difficulty of shifting resources from one place or occupation to another. Immobility of factors of production would be the only cause of unemployment. And there would be many causes of immobility; but in perfect competition which is the framework within which most of the classical economic thinking was done, factors of production would be as mobile as is needed. This theory, let us emphasise the fact once again, is correct as far as it goes.

It will be realised that the classical explanation was couched in *real* terms as against monetary terms. Productivity of labour or other factors of production and the factors themselves were measured in real terms. It was natural in such a case to assume that wages equalled the real marginal product of labour; they could not be otherwise. Hence, one could with impunity forget all about wages in such a presentation of the theory of employment. And when any specific mention has to be made of wages or of the remuneration of factors of production it would be said that the

earning of a factor must naturally equal its marginal product and if it is not, and only when it is not, there will be unemployment. Hence, the corollary from the classical theory is that if there is unemployment the solution lies in bringing the wages (or the remuneration of the factor concerned) down to the level of the marginal product of labour. All this was in the true and rich tradition of classical economics.

Contrast this with the problem of employment as conceived by Keynes. Unemployment, for him, was not a manifestation of disequilibrium of the system. It can be there even when the economy has reached the position of equilibrium. That gives rise to what has been called under-employment equilibrium of the economic system.

Keynes looks at unemployment from the point of view of price. There is unemployment of labour when the price of the things that it produces is low. We shall not repeat again and again that statements such as the above are not logically quite correct. Let us once more emphasise that price has to be considered in relation to cost. Any way, Keynes' way of stating the cause of unemployment can be associated with the price-angle. In some sense price of the product is too low to secure employment for labour. And the remedy is then obvious; raise the price of the product and employment will follow.

But why is the price (in some sense) too low and how is the price to be raised? Price, as the classical exposition would view it, is the ultimate result of the distribution of resources among their various uses. Price structure is the resultant of a certain pattern of allocation of resources to various uses. To raise the price of the product of labour should we then operate directly on the allocation of resources? Should we transfer labourers from one occupation to another?

Here it becomes necessary to make a distinction between real and monetary approach. Once you talk of price you are forced to take the monetary view of the matter. Money has to be recognised as intervening between economic forces that could otherwise be viewed in real terms. Price is the expression of value in terms of money. Value becomes a function of an additional variable with the result that the quantity of money that is used for purposes of exchange begins to have some say in the matter of employment.

So according to Keynes we must raise the price of what labour produces in order to promote employment of labour and that can be done by operating on the supply of money. There are other ways also of raising the price of a commodity but all of them are not equally reliable and equally efficient. We know that other things being the same the price level depends on the supply of money. More the money the higher the price. But where should the money be increased? If we want to raise the price of chairs we should increase the supply of money that is spent on, or is available for spending on, chairs. If labourers (of a particular category) are producing goods X, Y and Z and we want to raise their prices we must increase the income of the buyers of these commodities.

Now let us extend this analysis to cover wider areas. Suppose we want to raise the prices of all the goods because labourers (cooperating with other factors) produce all of them. Unemployment may be of a general type affecting all categories of labourers. Then, we must increase the income of all the labourers for then they will spend more money on all the goods produced and thus raise their prices. When prices rise, other things remaining the same, employment will increase. Remember our two basic statements which we said can logically be combined into one, namely, that to remove unemployment either the cost of production should fall or the price of goods should rise. By increasing the income of the labourers we attempt to tackle the problem of unemployment through the medium of price.

It should follow, therefore, that if we increase the income of labourers, *i.e.*, if we raise their wages, unemployment would decrease. But put this way it does not appeal to our commonsense. For, if we raise wages the cost of production would rise and, therefore, according to the classical reasoning, unemployment should increase. Considerations of the two changes, cost of production and price, should not yield contradictory results. Hence, we have to word our finding in a different way. Let us say that to reduce unemployment we should increase the income of the labour class not necessarily by raising the level of wages. The way to do that is to employ more labourers: when a larger number than before is employed the income (and, therefore, the purchasing power) of the labour class would increase. But again we are up against a difficulty. How can we employ more labourers? We are arguing in

a circle: to reduce employment, our suggested solution is that, we should employ more labourers. Let us, therefore, spell out our remedy more fully.

To decrease the volume of unemployment of labour we must raise the price level. We can do that by increasing the income of labourers. We can increase this income by employing more labourers. We can employ more labourers by opening out fresh avenues of employment. Fresh acts of production must be undertaken. The best agency to be relied upon for this purpose is the government. Let the government undertake to produce more goods or, better still, more goods of the nature of capital-goods. So that the money spent in these lines of production makes a net addition to the income of the labourers the government should obtain the funds from a source other than the income of the labourers that they would have spent in buying goods.

Hence, we conclude that to reduce the volume of unemployment of labour the government should inject fresh money into circulation. The money to be invested in the new lines of production should be a net addition to consumable income. Either the printing press should be used to print more notes or the reserve of money with the government should be utilised for the purpose. Or, if that be possible, unused savings of the people should be borrowed from them by the government for the purpose. A (good) part of this additional money expended by the government would be spent on goods in general and thus go to raise the price level.

The two ways of creating jobs, one by bringing down the cost of production and the other by raising prices, suit two different types of economy. Keynes' prescription of public expenditure on new production schemes is more suitable when what is needed is to raise the price level by inducing increased expenditure on goods. In countries that have made sufficient progress in developing their production potential the problem is not so much of decreasing the cost of production as of raising prices. But in more backward countries the more important problem is that of reducing the cost of production.

And now to express the above ideas in terms that modern economists employ, in poor countries there is unemployment of labour mainly because the resources are not properly utilised. There, what is needed is to develop the technique of production or the economy as a whole. All natural resources should be more fully

utilised and their potentialities for the production of national income more speedily developed. In simple language (the language that we would not like ourselves to use) the problem is that of production. Produce more and employ more thereby.

In a country that has made a good advance in technology the problem is different. There unemployment of labour is due to insufficiency of effective demand. That is how the Keynesians express themselves. In our terminology there is a low level of prices due to stinted expenditure on goods and services. The economists of the modern school would say that people are unemployed because more money is saved than is needed for purposes for investment. That creates an investment gap. Thus, to use familiar language, in a poor country people are unemployed because they *do not produce;* in an advanced country people are unemployed because they *do not consume.*

Let us consider in greater detail the case of advanced countries. There, as just explained, there is unemployment (if it is there) because people do not consume the required amount. In modern language effective demand is deficient. People as a whole do not spend their entire income either on consumption-goods or on capital-goods. Those who earn their income spend a part of it and save the rest. This saving goes in the hands of investors but when the whole of it does not go in the hands of investors a part remains, what is called in popular terminology, hoarded. It is in such a case that effective demand becomes deficient. The money that the system distributes as income to people engaged in the production of consumption and production-goods is not ploughed back, as it were, into production. When that happens, according to our explanation of unemployment, prices are not as high as they should be. The production machinery is starved; its input of money does not equal its output. More money goes out of it than flows back into it.

As a result of such a lack of demand production becomes unprofitable and is, therefore, decreased. As a consequence factors of production are under-employed. What is then to be done to correct such a situation? Naturally something has to be done to increase effective demand. We would have said that something must be done to raise prices. This is also a correct way of looking at the problem. For when people are not spending enough and production is cut down there is not only more unemployment, there is

also a fall of prices. If prices were rising when effective demand began to decrease, the rise would now be arrested and there would be a deceleration of the rise.

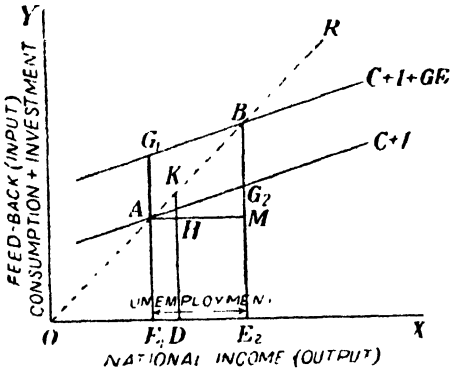
How should we go about to increase the expenditure of money? Here we may use the expression *propensity to consume*. The thing to be done is to raise the economy's propensity to consume. It is known to us that the poorer the people the higher is their propensity to consume and lower the propensity to save. In the case of the rich the propensity to consume is relatively low and the propensity to save relatively greater. To increase the expenditure of money we should, therefore, somehow bring about a transfer of income from the rich to the poor. There are two ways of doing that. Either the existing volume of money (income) should be redistributed in favour of the poor or additional money (income) should be pumped into circulation in such a way that a greater part of it goes to the poor. The net effect of such a redistribution of national income would be to increase consumption and thereby to create a greater demand for goods and for the factors of production. This desired result would be achieved *via* the rise of prices so that even according to our way of looking at the problem it is the correct remedy.

Keynes suggested the second way of transferring purchasing power from the rich to the poor. He suggested that because it is, in the first place, easier to do that without inviting trouble from the richer sections of the population and, second, because that directly increases the wealth of the country. Of course, it is assumed that wise investment of money would be made. Keynes would be satisfied even if the additional money injected into the economy did not produce any tangible goods or rendered any useful service to the society. For, even when investment is not productive in the ordinary sense of the word it accomplishes its main task of altering the distribution of purchasing power. How?

When new money is injected into the system through the production of a commodity, let us say the building of roads, a good part of it goes into the hands of the people who would spend it on consumption-goods. The industries producing consumption-goods would, therefore, find the demand for their goods increased. As far as the buyers of such goods are concerned the fresh money is instrumental in putting more purchasing power in the hands of

the poor. In other words, the propensity to consume (to spend money on consumption-goods) increases. The effect is the same as if money had been transferred from the rich to the poor. When the effective demand for consumption-goods almost immediately increases the profit margin also increases. The producers exploit this change in demand and produce more. This increased production gives employment to people, to the unemployed labourers. This is the first phase of the economic activity resulting from government investment. But this primary effect on employment of labour is followed by secondary and, later, tertiary effects. The effect continues, theoretically, till infinity. This effect is known as the Multiplier effect. But into the discussion and explanation of that effect we shall not plunge ourselves here.

Let us explain this point of deficiency of effective demand leading to unemployment with the help of a diagram. In the diagram below we measure national income or output (the earnings of all the



factors of production) on the axis of X. On the Y-axis we measure the income that is fed back into the system, *i.e.*, the amount that people or income-earners spend and the amount that produces investment. This is the total spending of the economy. The line $C+I$ shows the total spending of the economy at different levels of national income. Thus, when the total national income (output) or the total earnings of the factors of productions is OE_1 the total spending is AE_1. We have not shown the components of the total spending. Some of it is done by the consumers and some by producers; some of it is saving and some investment. We have drawn a broken line through the origin, OR, which is inclined to the axes at an angle of 45°. The horizontal distance of any point on it from

the Y-axis is, therefore, equal to its vertical distance from X-axis. In the diagram OE_1 must, therefore, be equal to AE_1.

We see from the diagram that as income increases the total spending also increases but it does not increase as fast as income. That is because the slope of the line $C+I$ is gentler than that of the line OR. Now suppose that when all the resources are fully employed (to simplify, when there is full employment of labour) the total income is equal is OE_2. But from the diagram it is obvious that when income is OE_1 there is equilibrium as seen from the fact that this income is equal to total spending AE_1 ($OE_1 = AE_1$). Once such an equilibrium is reached income and employment cannot change. This is the phenomenon of under-employment equilibrium. The extent of unemployment is not shown in the diagram but it is of the dimension that is capable of adding E_1E_2 to income.

At this stage of the growth of the economy there is equilibrium. It is the position that is prematurely reached. There is less spending than is needed. If, for example, more people were to be employed somehow income would increase but the whole of it would not be spent. Suppose some more people are employed and income is increased to OD. Total spending, as can be seen from the line $C+I$, increases only to HD. The amount KH of income is, therefore, withheld from being fed back into the system. Production cannot, in such circumstances, be maintained as there would be a loss. Hence, the economy would remain in equilibrium with income equal to OE_1 and some resources unemployed.

To remove this unemployment Keynes advocates increased spending which, as said above, can best be brought about by the government. We would have said that the remedy lies in raising prices. But when there is more spending by the government prices rise and so there is no conflict between the two ways of indicating the remedial step.

Let us suppose that the government decides to spend G_1A amount of money during every period. As soon as that is done the total spending increases to G_1E_1 and income remains at the level OE_1. This might be called the inflationary gap as the excess of spending over (previously disbersed) income would tend to raise prices. Any way the extra income earned by producers induces them to employ more men and increase production. Eventually, with increased employment income increases to OE_2 at which stage

the total spending (including that done by the government) becomes equal to it, *i.e.*, BE_2 ($BE_2 = OE_2$). Once more equilibrium is reached, this time at a point where all the resources are fully employed. There is full employment and capacity-production. The deficiency of effective demand is made up by government spending. At this level of income and employment prices will be higher than before

We can see the multiplier effect here in the diagram. Government spending (investment by the government—autonomous investment) is equal to G_2B. National income has increased from AE_1 to BE_2 or from OE_1 to OE_2. The increase of income is, therefore, equal to AM or BM. This is greater than the investment by the government which is BG.

In a backward country employment can be increased by technical advancement of the productive system. What is needed, according to our way of looking at the situation, is to reduce the cost of production. That really means improved technique of production. But for that we have to develop the production-potential of the economy. All the available resources should be utilised to their full capacity. For that, as we said above, the intelligence of man has to be exploited. The development of technique of production means, in the ultimate analysis, the fullest possible use of human intelligence. In more particular words, we must capitalise the system more intensively. We must have better, more productive, instruments of production. Organisation must improve. That is what is required for fuller employment of resources in a poor country. It is for this reason that some economists have said that Keynesian formula for the removal of unemployment is not applicable to the case of a poor country. We have said something about the causes of backwardness and how to remove them in the previous chapters. When steps are taken to remove the causes of under-development employment naturally increases.

CHAPTER XXXV

GROWTH THROUGH THE MULTIPLIER AND THE ACCELERATOR

The word growth can have many meanings but most of us today understand by it the growth of national income. It refers to the aggregate national income of a country and not its *per-capita* income. It is true, however, that the developments in an economy that lead to the increase of national income also tend to raise the *per-capita* income. As a matter of fact we are interested in the rise of *per capita* income. And this income is a function of many variables of which the size of population is one. In most of our models this point is not emphasised. And we assume that income is increasing (the economy is growing) and investigate the manner in which it is likely to grow. We are interested in equilibrium rate of growth and we are interested also in full employment of resources and so we build a model of an economy and see what conditions should be fulfilled in order that there may be growth without disequilibrium. We speak of a stable rate of growth of income and investigate into the essential conditions for such a growth.

We shall understand by growth the increase of national income over time. We shall see how the multiplier and the accelerator operate to bring about growth *via* cyclical fluctuations. We have a number of models of economic growth and some of them are very complicated. One can make a model as complicated as one likes. The stronger the desire to make a model depict all the features of an economy the greater become the complications. There are so many factors on which income depends that it is not possible to incorporate them all in a model, nor perhaps is that even desirable. So we select only some very important factors which must be found in all economies and neglect the rest. After all a model is just a model and it is meant only to help us in understanding the operation of some of the fundamental forces on which the generation and behaviour of income depends. Income can mean money income or real income the distinction between which is significant only when the price level is changing. A model that explains pheno-

mena in terms of money income can be taken to show the behaviour of real income by assuming a stable level of prices, and *vice versa.*

There are many things that change during the process of growth or fluctuation of income. Prices change, interest rates change, population changes, its composition changes, the habits of consumers and producers change and so on. And such changes in the whole economy are natural phenomena. But in our models we do not make specific provision for all these changes or we do not indicate these changes in our models. Our models are macroeconomic models in which we take into account certain fundamental features of an economy. We assume those features as constants (at least in simple versions of our models) and allow other changes to take place in the economy within the framework provided by those features.

Our models show fluctuations along a rising trend of income. It was Harrod who in recent times set the ball rolling in that direction. He assumed that income is increasing; he assumed a certain type of behaviour on the part of consumers and producers (a certain type of reaction to income or profit changes) and proceeded to find a rate of growth of income which would maintain equilibrium. We must note the fact that no scientist can determine a rate of growth that is not consistent with equilibrium. Determination is always *via* equilibrium. The rate at which income changes in an economy is rarely an equilibrium rate of growth. And such a rate, or better still such rates, cannot be determined. The word determination is a technical word and when we determine a thing, a price, or output or expenditure or wages or interest or income we put supply and demand of the relevant thing equal to each other. And that is the only way in which a thing can be *determined.* Hence, it will be seen that a determined rate of growth must be an equilibrium rate of growth.

Harrod and others speak of a number of rates of growth. One is the equilibrium rate of growth that is called by Harrod the *warranted* rate of growth. Then there is the *natural* rate (Nature's equilibrium rate) of growth which in a sense is the capacity rate of growth. And (as a result of the combined effect of the forces tending to establish the warranted and the natural rates) we have, in the third place, the *actual* rate of growth. This last is, in an important sense, real rate of growth but for that very reason it cannot be *determined.* A rate that can in some measure be deter-

mined is an *ideal* rate, a *norm* of rate. But we shall not dilate on this point.

In all models which are not complicated it is assumed, to start with, that income is increasing. Then, a certain type of behaviour of consumers and of producers is assumed. These make up the parameters of the system. They are the constants of our equations. The variable left to be determined is income. When it is determined with respect to time we get the rate of growth of income. As we observed earlier, a model can be made complicated so that it might conform closely to the economy as it actually functions. Economists who are mathematically minded have introduced refinements in their models, made them more *realistic*, and thereby made them more complicated. We shall confine our attention to very simple models.

So let us assume that income is increasing. Let us assume a certain type of behaviour on the part of producers and consumers, which is expressed in terms of their investment habit and spending or saving habit. These latter give rise to the concepts of the multiplier co-efficient and the acceleration co-efficient.

We shall use the letter Y to denote income, C to denote consumption, S to denote saving and I to denote investment. We shall suffix these where necessary by the letter t which stands for time.

Let us say that income in a given period is composed of what people spend on consumption-goods and production-goods. For, what they spend becomes the income of businessmen. Hence, we can put down our first equation in the form,

$$Y(t)=C(t)+I(t) \quad .. \quad (1)$$

Now we assume a certain behaviour on the part of consumers. Let us suppose that they spend a certain fixed proportion (call it c) of their income on consumption-goods. Since income can be spent only after it has been earned, spending belongs to the period coming next to that in which income is earned. This behaviour can be expressed in the form of the equation,

$$C(t)=c.\ Y(t-1) \quad .. \quad (2)$$

Next comes the behaviour of a buyer of production-goods who is called the investor. Let us suppose, as does Professor Samuelson, that an investor invests a fixed proportion (call it B) of the additional income he has earned. Since he can invest, *i.e.*, buy pro-

duction-goods and services, only after the income is earned, the additional income must belong to the period of time that succeeds that in which income is earned. This behaviour gives us another equation,

$$I(t) = B[Y(t-1) + Y(t-2)] \quad .. \quad (3)$$

The equations (2) and 3 are called behaviouristic equations as they are derived from the behaviour of consumers and producers. Before we proceed further let us note certain facts about these equations. That income of the people is composed of what they get and what they get is what people spend, is not an assumption but the fact. The first equation is, therefore, of the nature of an identity. In the consumption equation (2) we have assumed that the co-efficient c is a constant. This is in the real sense an assumption because in actual practice it is not a constant. The proportion of income we spend depends on the size of our income. The smaller the income the larger is the proportion that we spend. This is the characteristic of the propensity to consume. But as a first approximation c is taken to be constant. Likewise, we have assumed that B is a constant. Actually it is not quite constant. It depends on two factors, first, technology and the other psychology. Technology determines the capital-output ratio and psychology determines the optimism or pessimism of producers. As income increases both these factors change and hence B does not get a chance to remain constant. But to simplify the solution we just assume that B is a constant.

We have three equations and now it is left to algebra to solve the problem. By substituting (2) and (3) in (1) we get,

$$Y(t) = c.\ Y(t-1) + B\,[Y(t-1) + Y(t-2)] \quad .. \quad (4)$$

In this equation c, B, $Y(t)$ and $Y(t-1)$ are known. C and B are given as constants and we suppose that the initial income. $Y(t)$ and the succeeding income $Y(t-1)$ are known. This gives us the initial additional income which we assume to be known. Something must be known otherwise the problem cannot be solved. So the only unknown thing here is $Y(t-2)$. There is one unknown and there is one (independent) equation (4) and so the value of the unknown can be determined. This is the business of algebra only.

Our purpose here is not to explain or comment on Professor Samuelson's model. But what Professor Samuelson does is to sub-

tract from each side of the equation $Y(t-1)$ and divide each side by it and get the equation,

$$\frac{Y(t)-Y(t-1)}{Y(t-1)} = (c-1)+B[1-Y(t-2)/Y(t-1)] \quad \ldots 5$$

It will be seen from this equation that for equilibrium the condition required is that income should increase at greater and greater rate. Harrod's model yields similar result. According to his model if income is increasing, equilibrium requires that it should continue to increase by a greater and greater absolute amount. There are many models which are called growth models or dynamic models which all point to the same fundamental fact. But these models are also used to show how national income fluctuates in a cyclical manner. We are not concerned with all that here. As we have just said, we are not here to study Professor Samuelson's or any other economist's model. We have merely used the above model to say something about the multiplier and the accelerator.

Look at the equation (2). It says that consumption in any period is c proportion of the income of the preceding period. Let us ignore the fact of time-lag here as that does not matter much in this connection. Let us merely note the fact that it is assumed that the economy consumes c times its income. c, as should be obvious, is a fraction less than one. If peoples' propensity to consume is 80% than c is equal to 4/5. From this we can calculate that marginal propensity to save is 1/5. It can be shown that the multiplier would then be equal to 5, *i.e.*, the inverse of the marginal propensity to save.

Suppose the government decides to spend a crore of rupees, *i.e.*, inject that amount into the economic system with the object of removing unemployment. As soon as this money gets into the hands of the factors of production c proportion of it would be spent on consumption-goods (or goods in general). If c is 4/5, then 80 lakhs of rupees would be spent. When this money becomes somebody's income c proportion of it would again be spent, *i.e.*, 64 lakhs of rupees would again be spent. And when that amount becomes, in the next round, the income of somebody 4/ths of it would again be spent, *i.e.*, nearly 51 lakhs of rupees would again be spent. In this way the income of the people goes on increasing and if we were to add up these figures of 80, 64, 51....till we reach the end we would get 5 crores of rupees.

There is another easy way of calculating this figure. Since the people's propensity to save is 1/5 and since equilibrium conditions imply that what is saved is invested or what is invested is saved, then an investment of a crore of rupees by the government implies, in the final analysis, a saving of a crore of rupees by the people. If they save that amount and if their propensity to save is 1/5, it follows that their income must be 5 times that amount, *i.e.*, 5 crores of rupees. The income finally generated by the investment of one crore of rupees is, therefore, five crores of rupees. The multiplier is thus 5.

If we assume that there is more or less a proportionate increase of employment, *i.e.*, if we assume that every increase of income leading to increased production requires the same and proportional increase of labour, then we can say that if government investment in real terms was a lakh of people employed the eventual increase of employment would be equal to five lakhs of people. Thus, when we speak of the multiplier we can either refer to a multiplied increase of money-incomes of the people or to a multiplied increase of employment. The multiplier in money terms would be equal to the multiplier in real terms if prices were not to change. But it is impossible for prices not to change. When employment and production and consumption and saving and investment are increasing, and since such increases are neither quite proportional nor equally spaced, prices cannot be expected to remain unchanged.

Before we mention some of the assumptions on which the multiplier, as explained above, is based let us arithmetically and algebraically explain how the multiplier is calculated.

We have assumed that consumption is $cY(t-1)$. When income has stopped increasing (we assume that the economy is stationary so that it is not under the influence of exogenous factors and even the population is not changing) income $Y(t)$ and income $Y(t-1)$ will be equal to each other. Hence, it is permissible to replace $cY(t-1)$ by $cY(t)$. If the government invests (injects money) the amount G then ultimately G becomes the investment and, therefore, the saving of the whole economy. Since out of Y, cY is consumed we can say that $(1-c)Y$ is saved. Therefore, G can be put equal to $(-c)Y$, that is,

$$G = (1-c)\,Y$$

or

$$Y = \frac{G}{1-c}$$

This means that addition to income made by the initial investment of G is equal $\frac{1}{1-c}$ times G. The multiplier is, therefore, $\frac{1}{1-c}$ which is the same as $\frac{1}{s}$ if the saving coefficient is called s.

If we call the multiplier M then,

$$M = \frac{1}{1-c}$$

$$\text{or} \quad 1-c = \frac{1}{M}$$

$$\text{or} \quad c = 1 - \frac{1}{M}$$

$$= \frac{M-1}{M}$$

Thus, the co-efficient c in the consumption function (2) is a function of M the multiplier. c is, therefore, called the multiplier coefficient.

Due to the multiplier effect income increases and to that extent, we can say, growth of an economy is caused by the multiplier effect of the injection of money into the system. And the multiplier effect is due to the peculiar form of the consumption function, or to the behaviour of consumers or, again, to their reaction to change of income. Income is always derived from capital. Capital is a *stock* and income is a *flow;* it flows out of capital. To increase the flow we must increase the stock: to increase income we must increase capital. Government expenditure that leads to the employment and use of factors of production can be looked upon as capital.

But money is not real capital. Real income can increase when real capital increases. Money income can increase when money-capital increases. But we are interested in the increase of the real income of a community. It can be said to grow when its real income increases. We must, therefore, make a distinction between real and money income.

Let us begin with the assumptions underlying the above operation of the multiplier. In the first place it must be remembered that the full multiplier effect is obtained at infinity, *i.e.*, after an infinitely large number of production periods. In our example income increases by 80 lakhs of rupees in the first period, by 64 lakhs in the second period and so on. Theoretically the effect continues for ever though after a few rounds it becomes negligible. If we

take a static view of it or, in other words, if we apply statical analysis we jump at once to the final result which gives us the final value of the multiplier which in our example is 5. In the first period it is only 1; rather immediately it is 1 and it gradually rises till at infinity it is 5.

Keynes' analysis is, therefore, said to be statical and the multiplier is said to be static multiplier. And so economists have now introduced into their analysis the dynamic multiplier. We are not concerned with that. In dynamical analysis we get the gradually rising value of the multiplier till it reaches its full static value. In dynamical analysis time becomes a variable factor and all our values have a time location.

Next we have to note that we have assumed the marginal propensity to consume to remain constant throughout. In our example it is c which has been given the value 4/5. This is only a simplifying assumption. As a matter of fact when national income is increasing through the employment of previously unemployed resources and when prices are changing, the distribution of income also undergoes a change. To expect, then, the propensity to consume (the average propensity to consume for the economy as a whole) to remain the same is not correct. If the poor are becoming less poor and the distribution of income is changing in favour of the poor we should expect the marginal propensity to decrease. And if it does decrease, as it should, the value of the multiplier would be affected. Lower marginal or average propensity to consume means higher marginal or average propensity to save and, therefore, the multiplier is smaller (because it is the inverse of the propensity to save). The assumption of a constant marginal propensity to consume is only a simplifying device but we should remember that our explanation and calculation of the multiplier is based on that assumption.

We must, further, remember that for the multiplier effect to proceed without any obstacles there should be an elastic credit system. As income increases—and as observed earlier it can increase only through the increase of capital—more capital-goods are needed. If income has increased by five times the investment there must be more capital in use. And for this development of the economy credit is necessary. As, due to government investment, the demand for goods produced by private producers (also by government de-

partments) increases production has to be increased. That requires more investment by the producers. They have to use their own money, if they have money to spare, or borrow it from the banking system. If the supply of credit is available, if it is elastic, the multiplier effect proceeds without any check. But if credit, for some reason or the other, becomes scarce production cannot expand. And that would have the tendency to put a stop to the multiplier effect.

There is another assumption that has tacitly been made. We have said that the multiplier operates over time. The increase of income is brought about by stages. In the first period, in our example, it is 80 lakhs of rupees and in the second it is 64 lakhs of rupees. But what is this period? Money is invested in production and as soon as it is invested it becomes the income of the factors of production. But there are so many time-lags in a productive system. First comes the decision to invest and then comes actual investment. Some time intervenes here. It requires time to make the necessary arrangements for investment and to employ the required factors of production. Then once the production starts it takes time to produce the final goods and then some time to sell them. The decision to invest is separated from the actual sale of finished goods by a certain period of time. It is only when goods are sold that the second round begins. So the successive rounds are placed at certain time intervals. We have assumed, tacitly, that this time interval remains unchanged. If it changes the multiplier will operate more or less quickly. This assumption of the constancy of the production period does not, however, make much difference to the understanding of the problem. It is yet desirable that we note the fact that the production period is most likely to undergo a change when everything in the economy is changing.

Then, we have to bear in mind that leakages at various stages of development might interfere with the smooth working of the multiplier process. The assumption is that there are no leakages. As income is generated and savings are made, according to the consumption function, 4/5th in our example, they must be used either immediately or at a later stage to pay off the debt. Money has to be borrowed from the banking system to build up the capital structure that is needed to produce the increasing income and this must be paid back out of the periodic savings of the people. If this is not done the period required for the multiplier to reach its

final value would be indefinitely prolonged. Even as it is the multiplier reaches its static value (in our example 5) after an infinitely long period of time: but within about ten rounds it reaches this value quite closely. If savings are not utilised to pay off the debt it would take the multiplier a much longer time to reach that level. There are many factors that can possibly account for the leakage. In the first place, savings currently made by the system might be utilised to pay off old debts instead of the debts that have helped to generate the increasing income. Leakages of other kinds are also possible: for instance borrowers might expect a low marginal efficiency of capital (expected value of marginal product of capital over a period of time in the future) or lenders might tighten up credit in the expectation of a rise in the rate of interest in the near future. In short, what is required is that there should be no friction of any kind obstructing the flow of money from the banking system to the productive system and back from it to the banking system. Everywhere in the statement of our laws and theories in regard to economic phenomena it is assumed that other things remain the same. It is also assumed that there will be reasonable mobility of all factors. No law and no principle in economics is possible without such assumptions. So even in the case of the multiplier it is assumed that there will be no impediments in the way of formation and cancellation of credit.

In the above model, taken from Professor Samuelson for the purpose of explaining the multiplier, we have as our equation (2) a consumption function. Harrod starts with a savings function. That should make no difference. Income minus consumption is saving. But Harrod assumes that savings are made in the same period in which income is earned. He does not make one lag behind the other. That, however, does not complicate matters for us: we are concerned with the understanding of the way in which the multiplier operates.

Let us repeat, before we pass on to the discussion of the accelerator, that the multiplier operates to increase income and employment. It helps us to make the fullest possible use of existing resources. And this it is able to do by increasing effective demand. Deficiency of effective demand is caused by propensity to consume that is lower than what is required and it is lower because purchasing power does not get distributed among the different factors of production in proportion to their wants for goods produced.

One word more about the multiplier. The increase of income initiated by government expenditure can be calculated in money-terms or real terms, as we have explained earlier. In real terms it comes to an end when all real resources are fully employed or as fully employed as is possible. The multiplier leads to fuller employment of resources and when there is no further scope for increasing the employment of factors real income stops increasing. If the multiplier process is allowed to operate even after this stage is reached it is only money income that can increase. Prices would then begin rising and the economy would witness the phenomenon of inflation (of prices). Much hardship might then be caused to the people. For, when prices rise they do not, and never can, rise uniformly so that some categories of income earners gain at the cost of others. This is the bane of inflation howsoever brought about. Deficit financing that is resorted to for purpose of planning, for example, causes such an inflation and that imposes a great strain on those people whose sources of income are inelastic. Moreover, inflation benefits the borrowers at the expense of the lenders. For, the lenders get back their loan which has in the mean time depreciated in value. For the same reason borrowers gain because they return the money that has less real value.

Let us pass on to the *accelerator* now. Look at the equation (3) above. Investment is shown to be B times the increment of income earned during the last period. There is a time lag here. Income available for spending in period t is that which was earned in the preceding period, *i.e.*, the period $t-1$. For that reason the increment of income is also available in the next period. However, here also it does not matter whether we introduce this time-lag or not.

This investment function shows the behaviour of producers; it shows on what their investment decision depends. Professor Samuelson assumes in this model that a producer will base his investment on the increase of income earned during the last period. This may or not be a realistic assumption in all cases but there is nothing absurd about it. Other model-builders make other assumptions. For instance, Harrod assumes that investment is a certain multiple of the increment of the current period and Hansen assumes that it is a certain multiple of the increment of consumption of the current period. For our purpose it matters little what assumption is made so long as investment is recognised to be so many times income or

consumption added during any given time interval. Some, like Kalecki, would make investment an increasing function of capitalist's income and a decreasing function of capital-equipment already in use. The greater the stock of accumulated capital the weaker is the inducement to make further investment. But such differences in the details of investment function should not detain us.

To go back to equation (3). There B is a co-efficient which is greater than 1. If the increment of income is, say, 10 crores of rupees, producers would perhaps decide to invest 30 crores of rupees. Such a decision would be prompted by the belief that the increment of income of 10 crores would continue and that to produce that much of income a capital-structure of the value of 30 crores of rupees is needed. The value of B, therefore, depends somehow on the capital-output ratio. We have said that it somehow depends on it because we do not want to say that it is identical with it. In other words, B is a psychological coefficient and not a technological one, though in the long run they cannot afford to be different. But we are not concerned with that here. But it might be noted in passing that in Domar's model a technological coefficient is used.

The investment function shows that when income increases by a certain amount investment increases by B times that amount. That means that investment is accelerated. To produce a certain quantity of goods we have to buy a machine, for example, costing a large amount. But we do not have to buy the machine every year. It lasts for a number of years so that the next year there is no further investment in machines. Instead of investing a small amount every year a big amount is invested in one year and then there is no investment for some time. This is due to the indivisibility of capital. An increase of income by one crore of rupees would then induce producers to make an investment of B crores of rupees but then there is, in subsequent periods, no further investment required on the basis of the initial increase of one crore of rupees. We call B the accelerator coefficient because it indicates how capital (production or use) is accelerated by a given increase of income.

These B crores of rupees become the income of the factors of production and then, as the equation (2) shows, a part of it (in our example 4/5ths) is spent and a part saved. The multiplier process begins to operate. And as the multiplier acts and income increases there is further investment to meet the demand for goods that increases due to increase of income. Hence, we can say that

though due to indivisibility of capital investment is lumped (it is not evenly spaced in time) there is still fresh investment in every period due to the multiplier effect.

It will be seen, therefore, that the multiplier and the accelerator act on each other. For the multiplier to act there must be fresh investment and for fresh investment there must be increase of income. The multiplier causes increase of income and increase of income causes the accelerator to operate and its operation leads to increase of investment which sets the stage for the operation of the multiplier. Due to the combined effects of the two (which feed on each other) income increases rapidly.

But as we have remarked earlier real income cannot increase *ad infinitum*. Sooner or later the point of full employment of resources is reached when further increase of production of goods comes to an end. Real income stops increasing. What will then happen? Our models show that due to certain other features of our economy which are not incorporated in the models there is a tendency to overshoot the mark so that after or even before the full employment level is reached income begins to decline. The trade cycle phenomenon is witnessed.

In the language of trade cycle theories the scarcity of resources gives us the upper turning point. The lower turning point is provided by the limit to disinvestment. The former is called the *ceiling* and the latter the *floor*. We are not concerned with trade cycle theories here and so there is no need to dilate on this point. All that we have to note is that the multiplier and the accelerator help the economic system to grow by making full (or as full as possible) use of existing resources. In advanced countries at times full use is not made because it cannot be made due to deficiency of effective demand and then government expenditure (investment) can bring about fuller use of factors of production through the operation of the multiplier and the accelerator. An advanced country does not need to develop (though development is always welcome) though it does at times need to increase the employment of some or all the factors of production. A poor or improperly developed country needs development and for that purpose mere reliance on government expenditure does not suffice. For, the cause of unemployment and poverty is not deficiency of effective demand but the improper exploitation of its resources. A poor country does not

merely need to employ the factors that are available; it needs to develop the potentialities of those factors.

We observed a little while ago that most of our modern dynamic models are called growth models. In building our models we assume that income is growing and then proceed to determine the rate at which it should grow to maintain equilibrium. A growth that is consistent with equilibrium is called warranted rate of growth by Harrod. We have mentioned this fact above and in that connection spoke of other growth rates also. If income is growing, if it has an upward secular trend (on which cyclical fluctuations are superimposed), the multiplier and the accelerator cannot account for it. For a secular growth the quantity of the factors of production must increase or their quality must improve. The one factor that has a tendency to increase is population. But it does not increase uniformly at all layers. If it was so to increase perhaps national income would also increase. But what we want is that national income should increase at a faster rate than population. For that a mere increase of factors of production is not enough. The quality of our factors should improve. Human intelligence and skill must be developed and used to invent ways and means of developing natural resources. A backward country needs scientific advancement: scientific discoveries should be applied to industries. We do not suggest that such a development would increase the sum total of human welfare. It certainly will not: but it will nevertheless give a country more material wealth. If it wants it let it have it.

APPENDIX

ECONOMICS—POSITIVE OR NORMATIVE?

The question whether Economics is a positive or a normative science has engaged the attention of many economists in the past. Even recently much discussion has taken place on this controversial point but the views continue to be sharply divided. On the one hand we have a school of economists who maintain that the teachings of their science are normative in character and partake of the nature of ethical judgments. On the other hand, we have those who believe that Economics is a mere study of facts as they are and does not concern itself with the question of the *right* and the *wrong*. For them, the study of human behaviour is completely dissociated from the consideration of what ought to be.[1] They

1. J. N. Keynes recognises a branch of Economics or a branch of Ethics which he would wish to call the Ethics of Political Economy and which seeks to determine economic ideals, but maintains that it is desirable to keep the positive science of Economics whose sole province is to establish economic uniformities, separate from it. On the other hand we have Prof. Wagner who distinguishes the positive from the ethical problems but denies that they could be treated separately. Dr. Von Scheel maintains that the history, theory and the art of Political Economy form one indivisible whole. Dr. Cunningham understands by Economics a system of maxims. "Economic science", he says, "is wholly practical, it has no *raison d'etre* except as directing conduct towards a given end". (See *Scope and Method of Political Economy*, J. N. Keynes). Prof. C. S. Devas in an article entitled. "The Restoration of Economics to Ethics" published in *International Journal of Ethics*, 1897, says that those who take the stricter view of Economic Science are not inconsistent when, after describing Political Economy as a positive science, they go on to introduce in their treatises a number of ethical and practical pronouncements, provided they are introduced incidentally by way of illustration.

Prof. Hobson and Mr. Hawtrey take the view that Economics should not only take account of ethical standards as given data, but that it should also pronounce upon the ultimate validity of these standards. Prof. Hobson, in his *Wealth and Life* says, "In other words, human conduct differs from every other known sort of organic conduct in that the operative units entertain, and are immediately influenced in their activities by advance images of 'the desirable', termed ideals. The drive or urge towards these ideals is an 'ought' seeing that those ideals, and this feeling of 'ought' (the moral of human craving) are more and more potent factors in the economic conduct of to-day, the disposi-

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would, therefore, recognise Economics of wrong behaviour as much as they do the Economics of right conduct. While we have on the one side these two views that differ, at least in form, on broad fundamentals, on the other, we have economists like Prof. Pigou who, wishing to avoid being dragged directly into this controversy, merely maintain that Economics is a fruit-bearing study.[1] They point

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tion to deny the term 'normative' to economic science, or to draw tight limits to its application, is an obstructive procedure which hampers the progress of a social science''.

Prof. Robbins created fresh interest in this controversy by publishing his book *An Essay on the Nature and Significance of Economic Science*. He mentions there, ''Unfortunately it does not seem logically possible to associate the two studies in any form but mere juxtaposition. Economics deals with ascertainable facts, Ethics with valuation and obligations''. Again, ''it is incapable of deciding as between the desirability of different ends'', and, he further says, ''As we have seen already, there are no economical ends. There are only economical and uneconomical ways of achieving given ends''.

Similar views are found expressed in the works of Wicksteed, Mises and Strigl. Fraser (See his *Economic Thought and Language*) appears to think that it is not possible to keep economic propositions entirely devoid of all normative implications. ''To detach'', he writes, ''the normative from the positive implications of its particular propositions in an operation, not of logical but of the surgeon's knife''.

1. Prof. Pigou, as against Mr. Hawtrey, asserts that Economics is a positive science of what is and does tend to be a normative science of what ought to be. But, he points out, a positive science may be of the pure type whose function it is to discover implications or of the realistic type being concerned with actualities. But we shall not confine ourselves, he writes, ''to those fields of positive scientific inquiry which have an obvious relevance to immediate practical problems. For this course would hamper thorough investigation, and shut out inquiries that might ultimately bear fruits''. Prof. Pigou thus expresses himself in no uncertain terms when he states that Economics is not a normative science. But he does not wish to dilate much on this point. His main concern is to stress the point that the ''type of science that the economist will endeavour to develop must be one adapted to form the basis of an art''. Further in that connection he says, ''It has now to be added that, just as the motive and purpose of our inquiry govern its forms so also they control its scope. The goal sought is to make more easy practical measures to promote welfare. The form as well as the scope of an inquiry is governed and limited by the desire to seek a goal. The positive economist has a clear object to strive for. Is he then a scientist of the positive type? Should it be the concern of a positive scientist, as such, to recognise an ideal and limit the scope of his inquiry in the light of such an ideal?'' Prof. Robbins takes a similarly doubtful stand when he says, ''All this is not to say that economists should

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out the fact that though Economics may not be directly concerned with the problem of ultimate values or of their relative importance, its usefulness yet consists in its being able to provide us with knowledge that can be profitably used to serve social ends.

From an intelligent observation of human behaviour one can deduce a set of laws that could, if one so desired, be used as the basis of an art. Now there is no evident conflict between this view and that held by the positive school. All that Pigou and his followers maintain is that economic laws could be used to formulate a theory of social welfare and Prof. Robbins would not deny that we could have an Economics of social welfare just as he would not deny that we could have Economics of illfare. Maintaining an absolutely neutral attitude Prof. Robbins would leave it to individual choice to utilise the knowledge of positive Economics to any end, while Prof. Pigou would rather say that it was used for furthering the cause of social welfare.

The positive school in distinguishing the nature of their Economics from that of what is called normative Economics, draw our attention to the fact that Economics is concerned with what can be called either economical or uneconomical and it is only the means not ends that could be thus called. An end cannot be put in the category of economical or uneconomical. We can speak of economical or wasteful means and Economics as a science thus concerns itself with means which it may approve or reject according as they enable one to attain the given end or not. Its judgment is on the appropriateness of means and not of ends. Since the desirability or otherwise (from the economic point of view) of means depends on the fact whether they enable one to attain a given end, it is obvious that Prof. Robbins recognises the necessity of conceiving of an end (or ends) though not of passing judgment on them. Given any end whatsoever, Economics would merely indicate the proper means. There is, for Prof. Robbins, no science of Economics built round an unchanging end. A logical conclusion is then drawn from such

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not deliver themselves on ethical questions, any more than an argument that Botany is not aesthetics, that is to say, that Botanists should not have views of their own on the lay out of gardens. On the contrary, it is greatly to be desired that economists should have speculated long and widely on these matters, since only in this way will they be in a position to appreciate the implication as regards given ends of problems which are put to them for solution."

a nature of the science of Economics, namely, that Economics is a positive and not a normative science. Whether or not such a conclusion is deducible depends on the precise meaning of the word normative. Ordinarily one understands by the word normative that which prescribes or lays down a norm. Thus a normative science is said to point out an ideal or an ultimate end. It constitutes a body of systematised knowledge leading to the discovery of a norm or a pattern. Its object is to determine the ultimate end. Since Prof. Robbins makes Economics neutral towards ends it clearly falls wholly outside the scope of a normative science.

Our conception of Economics, as explained in the opening chapter of the book, differs significantly from that of Prof. Robbins in regard to the role of ends. For us Economics consists of a body of laws built round the one final end of elimination of wants. Does such a conception of Economics make it normative in the sense considered above? When it is said that a normative science lays down or determines an end the term normative admits of two different interpretations. It could be understood to imply either that a normative science *invents* an end or that it *discovers* an end. Discovery of an end differs from invention of an end inasmuch as the former presumes the existence of an end while the latter does not. Whether in the strict sense of the term invention of an end (or as a matter of that invention of anything) is possible is a matter of grave doubts. An end discovered can be justified by reasoning: an end invented lacks any such means of justification. If a normative science invents an end or is (rightly or wrongly) understood so to do, Economics, as defined by us, is not normative. But the end of elimination of wants, as we have observed, lies concealed behind the rational behaviour of men. A careful observation of rational conduct reveals this end to us. An invented end cannot in like manner be the result of a process of reasoning: it is (when contradistinguished from a discovered end) the outcome of intuition seeking its justification in the belief in the "inner voice". Prof. Robbins has clearly this conception of normative science in mind when he says, "If we disagree about ends it is a case of thy blood or mine; or live and let live, according to the importance of the difference, or the relative strength of our opponents". Now, the Economics that does not claim to invent an end but merely uses an end that is discovered—an end that is found to direct the action of wise and farseeing men—may not, perhaps cannot, be labelled as norma-

tive. But if by normative science we understand a science that invents an end it is not conceivable how the teachings of such a science could be supported by reason and justified by logic. Could then the word science be appropriately used at all to designate such knowledge? Since such an end would have no arguments to justify it, the contents of the normative science would be devoid of any systematic exposition of theories such as constitute an indispensable part of all the sciences we know of.

The science of Economics, as defined by us in the first chapter, is then normative in the sense (and from what has just been said, the only sense) that it studies human behaviour as means to one particular end. If this view of the nature of Economics differs from that of Prof. Robbins it is because we take one particular end and examine all activities as means to that end, while Prof. Robbins recognises no such specific end. This difference accounts for the fact that while Prof. Robbins' definition makes Economics a positive science pure and simple, our definition makes it, by contrast, a normative science in perhaps the only sense in which a science could be normative. It is, however, necessary to examine whether this contrast is real or apparent. We consider all activities as means to an end—as means to one particular end. Prof. Robbins considers all activities as means; but he does not consider them as means to any one particular end. At any rate, that is what Prof. Robbins maintains one should do. But concealed behind this veil of multiple ends, the attainment of which in the most economical manner is considered to constitute the economic problem, there is found to exist a remote end which is the same in all cases. Thus, as has been mentioned in the first chapter, when there are a number of ends the attainment of some of which interferes with the attainment of others, there is no way to decide which ends shall be satisfied and to what extent until we are able to resolve them into some common end. Thus, as the elementary principles of Economics tell us, we have to keep the ultimate end of maximising utility in mind. Whatever the combination of ends may be, the solution of the problem in every case consists in utilising the resources so as to maximise total utility.[1]

1. It may be pointed out here that Prof. Robbins makes no mention, in so many words, of this ultimate end of maximum utility. He instead, always lays emphasis on the scarcity of means (time included) that are available for the attainment of any system of ends. Thus the course of action that could

(Continued on next page)

There is then, according to Prof. Robbins, one final end into which the multiple sub-ends must resolve themselves. It thus turns out that Prof. Robbins, though claiming to be neutral towards ends, still has to depend on the recognition of one particular end without reference to which no judgment on the suitability of means is possible. Indeed, "there is no penumbra of approbation round the Theory of Equilibrium" if the word approbation has necessarily a social import.[1] Otherwise the approbation rests on the fact that it is in the position of equilibrium that a given situation is exploited to the greatest advantage—exploitation proceeds till equilibrium is reached.

If then there is, after all, one particular end in the light of which all actions are judged there is no difference between our conception of Economics and that of Prof. Robbins significant enough to brand one as a normative science while branding the other as a positive one. The difference consists in the nature and not the number of ends recognised. And the reasons for our choice of *elimination of wants* as the ultimate end have been stated in the first chapter.

(Continued from previous page)
have the approval of the economist would be the one that economised to the greatest extent the available ends. But this economy of means cannot be judged independently of the number and intensity of the wants (ends) that the means help to satisfy. Due to the scarcity of means wants remain inadequately satisfied. "Everywhere we turn", says Prof. Robbins, "if we choose one thing we must relinquish others which in different circumstances we would wish not to have relinquished". The problem of economising means is then the problem of choosing the ends that would maximise utility.

1. That Economics is neutral towards ends in the sense in which Prof. Robbins uses the word was observed by older economists also. N. W. Senior, for instance, said long ago that the business of a political economist "is neither to recommend nor to dissuade, but to state general principles which it is fatal to neglect, but neither advisable nor perhaps practicable to use as the sole or even the principal guide in the conduct of affairs". Further, he writes, that the statesman who has to solve the problems of production and distribution of wealth must consider all the causes which may promote or impede the general welfare of the society for which he proposes to legislate; the political economist, whose systematic attention has concentrated on wealth, "has considered only one, though the most important, of those causes": accordingly his scientific conclusions, however true, "do not authorise him in adding a single syllable of advice".

J. E. Cairnes in his *Lectures on the Character and Logical Method of Political Economy*, says: "Political Economy stands neutral between competing social schemes, as the science of mechanics stands neutral between competing plans of railway construction, as Chemistry stands neutral between competing plans of sanitary improvement".

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